APPENDIX C

COMMENT LETTERS

DEPARTMENT OF TRANSPORTATION
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A-1

August 1, 2011

11-SD-5
PM VAR
Shipyard Sediment Remediation Project

Mr. Vicente Rodriguez
Regional Water Quality Control Board, Region 9
9174 Sky Park Ct., Suite 100
San Diego, CA 92123

Dear Mr. Rodriguez:

The California Department of Transportation (Caltrans) appreciates the opportunity to comment on the Draft Environmental Impact Report (DEIR) for the Shipyard Sediment Remediation Project. The Shipyard Sediment Remediation Project (Project) is located along the eastern shore of the central San Diego Bay, extending approximately from the Sampson Street extension on the northwest to Chollas Creek on the "southeast, and from the shoreline out to the San Diego Bay main shipping channel to the west. The State highway serving the project is Interstate 5 (I-5). Caltrans would like to submit the following comments: A-1-1

- Mitigation Measure 4.1.1, states "Haul, delivery, and employee traffic shall be discouraged at I-5 southbound ramp/Boston Avenue intersection and on the roadway segment of Boston Avenue between 28th Street and the I-5 southbound (SB) ramp". Please clarify how this mitigation measure will be enforced. A-1-2

- On the TIA, Figure 2A & 2B, there are some discrepancies in the Existing Peak Hour Traffic Volume when comparing to Caltrans' 2009 volume within the intersections for on/off-ramps along I-5 as follow: A-1-3

  - Intersection #7, SB-off, AM Peak Volume should be 611 instead of 508.
  - Intersection #9, NB-off, cumulative AM/PM Peak Volume should be 714/491 instead of 383/436.
  - Intersection #9, NB-on, cumulative AM/PM Peak Volume should be 629/310 instead of 19/44. NB-on from 28th Street should also be included.
  - Intersection #10, SB-on, cumulative AM/PM Peak Volume should be 675/973 instead of 321/636.
  - Intersection #12, SB-on, cumulative AM Peak Volume should be 472 instead of 260.

- Based on the new Peak Volumes above, all Delays and Level of Service (LOS) Tables and Figures need to be re-calculated for these intersections. A-1-4

- It appears that Staging Areas 1-4 will access I-5 via intersection # 7, 9 & 10. Currently, intersections #7 & #9 operate at LOS F, and intersection #10 will degrade to LOS F with this project. Although the TIS called out to signalize intersection #10 as the proposed mitigation, additional measures could be made to minimize the impact to the local community by routing all trucks to SB Harbor Drive then use Civic Center Drive interchange. A-1-5

- All state-owned signalized intersection affected by this project shall be analyzed using the Intersecting Lane Vehicle (ILV) procedure per Highway Design Manual (HDM), Topic 406, Page 400-430. A-1-6

If you have any questions on the comments Caltrans has provided, please contact Anthony Aguirre of the Development Review Branch at (619) 688-3161. A-1-7

Sincerely,

JACOB ARMSTRONG, Chief
Development Review Branch

Mr. Vicente Rodriguez
San Diego Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Re: Shipyard Sediment Remediation Project Draft Environmental Impact Report

Dear: Mr. Rodriguez

On behalf of the San Diego Unified Port District (District), thank you for the opportunity to review the Draft EIR for the Shipyard Sediment Remediation Project. The District has identified some areas within the Draft EIR that could be clarified in order to improve the documents thoroughness, clarity and compliance with the California Environmental Quality Act (CEQA). Our review includes comments regarding the content of the Draft EIR, in the following categories: A-2-1

1) Dewatering Sites;
2) Inconsistencies between the Draft EIR and Project's Cost Analysis Assumptions;
3) Sediment Sampling and Disposal;
4) Air Quality and Greenhouse Gas Emission Analysis; and
5) Mitigation Measures for the Convair Lagoon Alternative.

The District's comments and suggested revisions to the Draft EIR provided below are organized by these five categories.

DEWATERING SITES

The following comments are provided for the sediment staging areas identified in the Draft EIR for dewatering operations. The comments are organized by chapter, section and page number.

<u>Chapter 3, Project Description</u>

A. Page 3-1, Section 3.2, Project Location

EIR: *"The removal of the marine sediments will require upland areas for dewatering, solidification, and stockpiling of the materials and potential treatment of decanted waters prior to off-site disposal. Therefore, in addition to the open waters of the Shipyard Sediment Site, five upland areas have been identified by the San Diego Water Board as potential sediment staging areas."* A-2-2

Comment: These five potential sediment staging areas appear to be disconnected parcels that are under the control of various District tenants or other entities. The availability and suitability of these parcels should be analyzed in greater detail. The Draft EIR should include a survey of the parcels accessibility, pavement durability and the water containment collection and removal systems that would be needed to ensure no releases occur from dewatering activities.

Comment: The Draft EIR should analyze less space intensive sediment dewatering systems, such as centrifuges and/or reagent dehydration of sediments, which could be used on barges and would allow for sediment to be directly off-loaded from barges to trucks for disposal. A-2-3

Comment: Staging Area 1 encompasses a significant portion of a 96-acre site that is occupied by Tenth Avenue Marine Terminal (TAMT). The Draft EIR has identified 36.14 acres in the south west section of the site as a "usable area". The report also identifies a 13.52 acre "usable area" site in the northeast portion of Staging Area 1 which is predominately occupied by Burlington Northern Santa Fe Railroad's (BNSF) major San Diego switching yard. The 36.14 acre "usable area" is partially comprised of the 20.5 acre Dole Fresh Fruit Company leasehold that is used as a container yard for weekly importation of bananas and other fresh fruit from Central America. The remaining 15.64 acres consists of the following; a portion of the San Diego Refrigerated Storage leasehold that is used for employee parking, container inspections by US Customs and Border Protection and for staging palletized break-bulk fruit cargos; a portion of the Cemex Pacific Coast Cement Corporation leasehold that is used for the importation of bulk cement; the wharf apron docks at Berth's 10-1 through 10-6 where a variety of cargos are handled when loading or unloading cargo vessels; and the remainder consisting of paved open areas that contain storage areas for cargo, space for cargo handling equipment, truck staging lanes, rail tracks and roadways. A-2-4

Use of all or any portion of these areas for the treatment of dredged sediments would have the following impacts at TAMT: (1) An average of 100 vessels per year dock at TAMT. The cargos consist mainly of 40-foot-long refrigerated containers or project cargos such as large wind mill components or large electrical transformers. Dole uses its entire facility to stage over 500 containers each week prior to delivery to West Coast markets or before being loaded back on board a vessel. Typical wind mill blades range in length from 130 feet to 160 feet and the tower sections can be up to 80 feet in length. These types of cargos normally cannot be stacked and tens of thousands of square feet of open space are needed to both store and handle them properly. A-2-5 (2) The terminal's system of roadways and rail track need to be kept clear to effectively move cargo, material and equipment on and off the facility. Any prolonged closure of any portion of the terminal's transportation system would have a significant impact on the efficiency of the entire terminal. A-2-6 (3) Within the area deemed as "useable" there are three tenant leaseholds. These leases would have to be re-negotiated, if the tenants are willing, to allow for this activity to occur. A-2-7 (4) The Port of San Diego is designated as a "Strategic Port" by the Federal Maritime Administration to handle military cargos. Under the San Diego "Port Planning Order" the Port is required to provide "staging space of no less than 8 acres" at TAMT within 48 hours after receiving notification from the US Military's "Surface Deployment and Distribution Command" (SDDC). Any materials or equipment within the 8-acre footprint would need to be relocated on or off the terminal within the stipulated time frame. Since 2008, two to four military operations have taken place each year at TAMT. A-2-8 (5) Any reduction in space at the Terminal will result in lost revenue due to a reduction in cargo volumes, increased costs due to ineffective handling of cargo and impact the ability of the Port to effectively market its maritime cargo handling facilities. A-2-9 (6) If any of the existing activities described above were required to be relocated to accommodate use of the TAMT as Staging Area 1, such relocation may result in significant environmental impacts at the relocation site, which would need to be evaluated in the Draft EIR. As a result of these constraints, the use of a significant portion of the TAMT as Staging Area 1 to conduct the dewatering operations is likely to be infeasible. A-2-10

Comment: Staging Area 2 also contains portions of the 96-acre TAMT site as well as a portion of the BNSF switching yard. "Useable Areas" within Staging Area 2 are further defined as: 0.57 acres within the Searles Valley leasehold (bulk cargo handler); 0.79 acres within the Stella Maris Seaman's Center leasehold as well as the approaches to the TAMT truck scale; 2.77 acres containing a truck staging lot that is used as an overflow lot by Dole and whenever military operations are taking place. This area also contains a one acre site which is slated for development to begin during the 2nd quarter of 2012 in which an office complex for the Maritime Operations Department and potentially an office and warehouse A-2-11 complex for the National Oceanic and Atmospheric Administration will be built. The remaining 2.59 acres contains both Port and BNSF property consisting of the lead rail tracks that serve TAMT as well as equipment storage areas for both entities. A-2-11

Use of these areas for onshore dewatering and treatment will have similar impacts as described above including leasehold issues, potential loss of the staging area if a "Port Planning Order" is invoked, disruption of both cargo handling operations, disruption of transportation infrastructure and development plans resulting in loss of revenue. As a result of these constraints, the use of a significant portion of the TAMT as Staging Area 2 to conduct the dewatering operations is likely to be infeasible. A-2-12

Comment: Staging Area 5 shows a "Useable Area" of 145.31 acres that consists of the 125 acre National City Marine Terminal (NCMT) with the remainder of the acreage split between BNSF property and the Dixieline Lumber leasehold on Port property. Pasha is the principal terminal operator at NCMT where it conducts operations consisting of the import, export, handling and storage of motor vehicles and a biweekly cargo service to and from Hawaii by Pasha's Hawaii Transport Lines (PHTL). During each of the last three years Pasha has received an average of approximately 243,000 vehicles on 165 vessels. PHTL annually ships and receives in excess of 100,000 tons of cargo consisting of a variety of high and wide cargos (cement trucks, fire trucks, sewer pipe, Ferris wheels, yachts, containers, recreational trailers, crates etc.) on 30 vessels in the Hawaiian trade. Dixieline Lumber and Weyerhaeuser Lumber, another lumber company which is not within the "useable area", receive approximately 96 million board feet of lumber each year on 12 lumber barges. All of these cargos require large open paved areas for storage plus roadways and rail tracks for handling and transport. Each month up to 26,000 vehicles can be stored on the terminal. A-2-13

The "Port Planning Order" applies to NCMT as well. If notification is made by SDDC 15 acres of staging space must be made available within 48 hours. Again, the use of NCMT for onshore dewatering and treatment will have significant lease issues, disruption of revenue producing cargo operations, have a negative effect upon marketing of the terminal and could interfere with national security if a PPO is initiated. As a result of these constraints, the use of the NCMT as Staging Area 5 to conduct the dewatering operations is likely to be infeasible. A-2-14

B. Pages 3-16 through 3-26, Figures

Comment: Figures 3-3 through 3-7, which identify the location of proposed staging areas, appear to be out of date. For example, the CP Kelko waterside leasehold does not reflect the recent demolition of waterside structures and the related increase in open space. This information should be updated in the Final EIR. A-2-15

INCONSISTENCIES BETWEEN THE DRAFT EIR PROJECT DESCRIPTION AND THE PROJECT'S COST ANALYSIS ASSUMPTIONS

The *Revised Tentative Cleanup and Abatement Order and Draft Technical Report* identifies a cost estimate for the Shipyard Sediment Remediation Project within Appendix 4, Section 32, Table A32-26. The District has identified some inconsistencies between the cost estimate project assumptions and the Shipyard Sediment Remediation Project Description provided in Chapter 3, Project Description, of the Draft EIR. A-2-16

In general, the District has identified inconsistencies that pertain to (1) the Construction Schedule, (2) Demolition and Capping Activities, (3) Landfill Disposal, (4) Dredge Quantity, and (5) Quarry Run Rock. Table 1, provided at the end of this comment letter, identifies each cost assumption, inconsistency in the Draft EIR, and applicable environmental issue. Below is a summary of the inconsistencies that have been identified between the cost estimate project description/assumptions and the Draft EIR project description, and their potential repercussions on the analysis contained in the Draft EIR. A-2-16

1. **Construction Schedule.** In the cost estimate, the construction scenario for the proposed project is described as '3 Construction Seasons,' without further definition. In the Draft EIR, the construction scenario is described as follows: *"There are two scheduling options for completion of the remedial action. The first scheduling option is expected to take 2 to 2.5 years to complete. Under this option, the dredging operations would occur for 7 months of the year and would cease from April through August during the endangered California least tern breeding season. The second option is to implement the remedial plan with continuous dredging operations, which would be expected to take approximately 12.5 months to complete. This scenario assumes that the dewatering, solidification, and stockpiling of the materials would occur simultaneously and continuously with the dredging. Also assumed under this compressed schedule option is that dredging operations could proceed year-round, including during the breeding season of the endangered California least tern (April through August)."* A-2-17

   The construction scenarios described in the cost estimate and the Draft EIR are not consistent. The cost estimate identifies three construction seasons, while the Draft EIR identifies 12.5 months or 2.5 years to complete construction. Assuming one construction season equates to one year of construction, the cost estimate anticipates a longer duration of construction. If this extended period of construction is accurate, the Air Quality analysis within the Draft EIR may need to be revised to evaluate the extended construction timeline. An extended construction timeline could reduce air quality emission impacts, if the amount and type of daily construction is reduced from what is currently accounted for within the Draft EIR. A-2-18

2. **Demolition and Capping Activities.** The cost estimate identifies the demolition of an existing BAE pier, while the Draft EIR does not mention demolition of this pier. If demolition of the BAE pier is considered a component of the proposed project, the Project Description, and Air Quality and Transportation and Circulation analysis in the Draft EIR would need to be revised to reflect this demolition work. Demolition of the BAE pier would likely require off-site disposal, which would result in increased truck trips and associated air emissions. Additional construction equipment may also be required for this demolition, or equipment already identified in the Draft EIR may be used for longer periods of time, which would result in increased construction-related emissions. An increase in truck traffic and construction-related emissions from demolition of the BAE pier thus may result in greater impacts to Air Quality and Transportation and Circulation than accounted for in the Draft EIR. A-2-19

   The cost estimate also assumes that half of the total dredged area will receive 1-3 feet of clean sand for a cap. The Draft EIR assumes that only the pier and pilings will receive a clean sand cap. If half of the dredged area is to receive a sand cap, the Draft EIR should to be revised to reflect the additional placement and importation of sand within the Project Description, Transportation and Circulation and Air Quality EIR sections. In the Transportation and Circulation analysis, the importation of additional sand would increase truck trips and associated air emissions above levels currently accounted for in the Draft EIR. Additional construction equipment may also be required for the placement of the sand cap, or equipment already identified may be used for longer periods of time, which also would increase construction-related emissions. An increase in truck traffic and construction equipment emissions would likely result in greater impacts to Air Quality and Transportation and Circulation than accounted for in the Draft EIR. A-2-20

3. **Landfill Disposal.** The cost estimate identifies the Copper Mountain landfill in Arizona as the disposal site for all sediment. The Draft EIR identifies the Kettleman Hills landfill, in Kings County, A-2-21

California, as the disposal site for sediment classified as a hazardous material (up to 15 percent of the sediment) and the Otay Landfill in San Diego, California, as the disposal site for non-hazardous sediment (85 percent of the sediment). If dredged sediment is to be disposed of at the Copper Mountain landfill in Arizona, the Project Description, and Air Quality and Transportation and Circulation analysis in the Draft EIR should be revised. In the Transportation and Circulation analysis, the disposal location in Arizona would increase truck trip vehicle miles traveled. An increase in vehicle miles traveled by the disposal trucks would result in an associated increase in air emissions. If sediment is to be disposed of at the Copper Mountain landfill, the proposed project would likely result in greater impacts to Transportation and Circulation and Air Quality than accounted for in the Draft EIR. A-2-21

Additionally, the cost estimate assumes a total quantity of 171,500 cubic yards (cy) of sediment will be disposed after handling and dewatering activities. The Draft EIR identifies a total quantity of 164,910 cy to be disposed after handling and dewatering activities. If 171,500 cy of sediment must be disposed of off-site, the Draft EIR should be revised to reflect this additional quantity within the Project Description, Air Quality and Transportation and Circulation sections. An increase in off-site disposal would require additional truck trips, resulting in increased air emissions, and would potentially result in greater impacts to Transportation and Circulation and Air Quality than analyzed in the Draft EIR. A-2-22

4. **Dredge Quantity.** In addition to an initial 143,400 cy of dredging, the cost estimate identifies 28,100 cy of "Additional Dredging." Additional dredging is described "as needed for a second pass." The cost estimate states that this additional dredging will consist of two feet of dredging over one-half of the remedial area. Including initial and secondary dredging, the cost estimate identifies a total of 171,500 cy of sediment that will be dredged. However, the Draft EIR identifies a total of 143,400 cy of sediment that will be dredged. The Draft EIR does not identify additional dredging as part of the proposed project and does not account for the additional 28,100 cy of dredge identified in the cost estimate. If a total of 171,500 cy of sediment will be dredged (as identified in the cost estimate), rather than 143,400 cy of sediment (as identified in the Draft EIR), the Draft EIR should be revised to reflect this additional dredging in the Project Description, Transportation and Circulation, and Air Quality sections. In the Transportation and Circulation analysis, the removal of sediment during additional dredging activities would increase truck trips (and associated air emissions) and would likely result in greater Transportation and Circulation impacts than accounted for in the Draft EIR. Additional construction equipment may also be required for the additional dredging, or equipment already identified may be used for longer periods of time, which would increase construction-related emissions and cause impacts to Air Quality to be greater than accounted for in the Draft EIR. A-2-23

5. **Quarry Run Rock.** The cost estimate identifies the placement of 21,887 tons of quarry run rock for the protection of marine structures. The Draft EIR does not account for the importation or placement of quarry run rock. If 21,877 tons of rock is required to be placed within the proposed project site, the Draft EIR should be revised to reflect this change in the Project Description, Air Quality, and Transportation and Circulation sections. The import of the quarry run rock would result in increased truck trips (and associated air emissions) and would result in potentially greater impacts to Transportation and Circulation than analyzed in the Draft EIR. Additional construction equipment may also be required for the placement of quarry run rock, or equipment already identified may be used for longer periods of time, which would further increase construction related emissions and cause impacts to Air Quality to be greater than accounted for in the Draft EIR. A-2-24

SEDIMENT SAMPLING AND DISPOSAL A-2-25

The following comments are provided for sediment sampling and disposal information described in the Draft EIR. The comments are organized by chapter, section and page number.

A-2-25

Chapter 3 Project Description

A. Page 3-9, Section 3.6.2, Onshore Dewatering and Treatment.

EIR: *"After drying, soil sampling will be conducted, and all dredged material will be loaded directly onto trucks for disposal at an approved upland landfill."*

Comment: Please include a description of the contaminants that would be tested, the protocol that would be followed, the criteria upon which this protocol is based, and the thresholds that would be used to determine what material would require disposal at Kettleman Hills landfill rather than Otay landfill.

B. Page 3-9, Section 3.6.3, Transportation and Disposal.

A-2-26

EIR: *"For purposes of this project, it is assumed that 85 percent of the material will be transported from the staging area to Otay Landfill, which is approximately 15 miles southeast of the Shipyard Sediment Site. Although the sediment is not known to be classified as California hazardous material, it will be tested upon removal and prior to disposal. It is assumed for the purposes of this PEIR that up to 15 percent of the material will require transport to a hazardous waste facility (a Class I facility), which will most likely be the Kettleman Hills Landfill in Kings County, California, near Bakersfield."*

Comment: Please include a description of the basis for the determination that 85 percent of the dredged material would be disposed of at Otay landfill, while 15 percent would be disposed of at the Kettleman Hills landfill. What is the assurance that only 15 percent of the dredged material would be disposed of at the Kettleman Hills landfill? Please also note that the Kettleman Hills landfill is near Hanford, not Bakersfield.

A-2-27

Chapter 4.1 Transportation and Traffic

A. Page 4.1-12, Section 4.1.4.2, Potentially Significant Impacts.

EIR: *"Once the dredge materials have been dried and tested, they will be loaded onto trucks for disposal at an approved landfill. For purposes of this project, it is assumed that 85 percent of the material will be transported from the staging area to Otay Landfill, approximately 15 miles southeast of the Shipyard Sediment Site. Although the sediment is not known to be classified as California hazardous material, it will be tested upon removal and prior to disposal. It is assumed for the purposes of this PEIR that up to 15 percent of the material will require transport to a hazardous waste facility (a Class I facility), which will most likely be the Kettleman Hills Landfill in Kings County, California, near Bakersfield. Based on the excavation quantity of 143,400 cubic yards (cy) and accounting for an additional 15 percent of bulk material due to the dewatering and treatment process, it is estimated that up to 250 truck trips per week could be required over an approximately 12.5-month period to remove the material. These estimates are a worst-case scenario and will be finalized during the design phase."*

Comment: Please describe the traffic scenario that would occur in the event less or more than 15 percent of sediment would require disposal at the Kettleman Hills landfill and how it would affect the analysis of the project in the EIR. Please also note that the Kettleman Hills landfill is near Hanford, not Bakersfield.

A-2-28

B. Page 4.1-12, Section 4.1.4.2, Potentially Significant Impacts.

EIR: *"The most direct route to Otay Landfill is via I-5 south to State Route 54 (SR-54) east, to I-805 south. The most direct truck route to I-5 south, assumed for the proposed project condition, from potential Staging Areas 1 through 4 would be via East Harbor Drive and 28th Street. Trucks departing from Staging Area 5 would access I-5 south either directly from 24th Street-Bay Marina Drive or from West 32nd Street to 24th Street-Marina Way to Bay Marina Drive. Although the sediment is not known to be classified as California hazardous material, it will be tested upon removal and prior to disposal."* A-2-28

Comment: Please describe the most direct route to the Kettleman Hills landfill.

Chapter 4.3 Hazards

A. Page 4.3-20, Section 4.3.4.1, Potentially Significant Impacts.

EIR: *"Once a sediment stockpile meets the analytical and strength requirements, the material would be certified for disposal, manifested, loaded into on-road trucks (typically using a largewheeled front-end loader), weighed to document compliance with U.S. DOT regulations, transported, and deposited at the selected disposal facility."* A-2-29

Comment: Please provide a detailed description of the analytical and strength requirements that will be used to determine the appropriate landfill disposal location, including the protocol that would be followed, the criteria upon which this protocol is based, and the thresholds that would require disposal at the Kettleman Hills landfill rather than Otay landfill. Please also provide a reference for the U.S DOT weighting regulation.

AIR QUALITY AND GREENHOUSE GAS EMISSION ANALYSIS

The following comments are provided for the air quality and greenhouse gas sections of the Draft EIR. The comments are organized by section and page number.

Chapter 4.6 Air Quality

A. Section 4.6.3.1, Thresholds for Construction Emissions, Page 4.6-8; Section 4.6.3.2, Thresholds for Operational Emissions, Page 4.6-8; and Section 4.6.4.1, Less Than Significant Impacts, Fugitive Dust, Page 4.6-11. A-2-30

Comment: Thresholds for construction and operational emissions in Sections 4.6.3.1 and 4.6.3.2 do not include a threshold for emissions of fine particulate matter ($PM_{2.5}$). However, the discussion of fugitive dust impacts on page 4.6-11 states that emissions of $PM_{2.5}$ are less than significant because emissions are relatively small and do not exceed the significance threshold for $PM_{2.5}$. How was it determined that $PM_{2.5}$ emissions do not exceed a significance threshold, when no threshold is identified? We suggest revising this section to include a quantitative threshold for $PM_{2.5}$, particularly because the San Diego Air Basin is a state non-attainment area for $PM_{2.5}$. Furthermore, we would suggest using the U.S. Environmental Protection Agency's "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" threshold of 55 pounds per day (published September 2005).

B. Section 4.6.4.1, Less than Significant Impacts, Regional Air Quality Strategy, Page 4.6-10. A-2-31

EIR: *"Although the proposed project would exceed the construction threshold for NOX, the proposed project does not obstruct implementation of the RAQS."*

Comment: Please explain the rationale for the conclusion quoted above, which appears to be internally inconsistent. A-2-31

C. Section 4.6.4.1, Less than Significant Impacts, Fugitive Dust, Page 4.6-11.

Comment: This EIR section does not include a summary of the methodology for the analysis, including construction assumptions, the source of the emissions factors, and any models used in the analysis. The methodology for the analysis, construction assumptions, and model descriptions are provided in the air quality technical report in Appendix G. It would helpful for the reader to have a description of this information provided in this section of the EIR. In addition, neither the Draft EIR nor the air quality technical report provides the source for the emissions factors used to determine criteria pollutant emissions, which should be included. A-2-32

Comment: Please identify why CO_2 emissions are included in Table 4.6-3, Daily Construction Emissions by Phase (lbs/day), and Table 4.6-4, Peak Daily Construction Emissions (lbs/day). This section of the EIR does not include any analysis related to emissions of CO_2. It may be appropriate to delete this information from this section of the EIR. A-2-33

Comment: In Table 4.6-3, a list of construction equipment is only provided for the 'Covering of Sediment Near Structure Phase.' Please provide the equipment assumptions for all construction phases. A-2-34

Comment: The construction phases listed in Table 4.6-4, Peak Daily Construction Emissions (lbs/day) and Table 4.6-3, Daily Construction Emissions by Phase (lbs/day), are inconsistent. Table 4.6-4, Peak Daily Construction Emissions (lbs/day), includes a Dredging Operations phase that is not included in Table 4.6-3, Daily Construction Emissions by Phase (lbs/day). It is unclear which construction activities would occur during the Dredging Operations phase and are contributing to the peak daily construction emissions. We suggest identifying construction phases listed in Table 4.6-3 that are included in the Dredging Operations phase. A-2-35

D. Section 4.6.4.1, Less than Significant Impacts, Health Risk Assessment, Pages 4.6-11 through 4.6-15.

Comment: We would suggest including a figure that identifies the truck routes and location of the residences included in the HRA to clarify the analysis. A-2-36

EIR: *"Perkins Elementary School is located within 0.25 mile of Staging Areas 1 and 2. Significant health risks are not expected to result from the operation of equipment at the staging areas. Assuming the peak daily emissions shown in Table 4.6-4 occur continuously for 2.5 years (a conservative assumption) results in lifetime cancer risk levels below 1.5 in a million at Perkins Elementary School."*

Comment: The text prior to the EIR text quoted above includes an analysis and methodology that only discusses truck trips and therefore it appears as though the operation of construction equipment at the staging areas was not included in the HRA. Please clarify, and if the analysis only includes truck trips, explain the basis for determining that construction equipment would not contribute to an exceedence of the lifetime cancer risk threshold. We would suggest including the construction equipment operation in the HRA analysis, if it is not included already. A-2-37

E. Section 4.6.4.2, Potentially Significant Impacts, Equipment Exhaust and Related Construction Activities, Pages 4.6-16.

EIR: *"In addition, Mitigation Measures 4.6.8 through 4.6.14 would also reduce the generation of NOX emissions in the area through the use of retrofitted diesel powered equipment, low-NOX diesel fuel, and alternative fuel sources. However, there is no reasonable way to ensure that that retrofitted diesel-powered equipment, low-NOX diesel fuel, and alternative fuel sources would be available during the construction period; therefore, it is not possible to quantify reductions in NOX emissions that would result from implementation of Mitigation Measures 4.6.8 through 4.6.14."* A-2-38

Comment: An emissions reduction estimate can be made for some of the mitigation measures as written. The URBEMIS 2007 model and South Coast Air Quality Management District's CEQA Air Quality Handbook provide emission reduction estimates for construction mitigation measures. We suggest providing estimates for the listed mitigation measures, assuming that they would be implemented. Include any additional feasible mitigation measures from these sources that may apply to the proposed project. Furthermore, please explain why there is no reasonable way to ensure that the required equipment and technology would be available, and include this as a reason why this impact is significant and unavoidable. Please also explain why the EIR cannot require the use of retrofitted diesel powered equipment, low-NOX diesel fuel, and alternative fuel sources as mitigation measures, since these measures ordinarily are feasible and available. A-2-39

F. Section 4.6.4.2, Potentially Significant Impacts, Odors, Pages 4.6-16.

EIR: *"Adherence to the mitigation measures identified for equipment would reduce impacts associated with objectionable odors from the operation of diesel-powered construction equipment."*

Comment: Please explain why the mitigation measures proposed to reduce emissions of criteria pollutants would also reduce odors related to construction equipment to a less than significant level. Additionally, the discussion of impacts for criteria pollutants determined that it cannot be ensured that these mitigation measures would be fully implemented; therefore, impacts related to NOx emissions are significant and unavoidable. If these measures cannot be fully implemented, why wouldn't odor emissions also be significant and unavoidable? A-2-40

G. Section 4.6.4.2, Potentially Significant Impacts, Odors, Pages 4.6-16 and 4.6-17.

EIR: *"With implementation of this measure, and given the distance between the active areas within the potential Staging Areas and the nearest sensitive receptors, it is anticipated that odor impacts would be reduced to less than significant with the adherence to identified mitigation measures (Threshold 4.6.5)."* A-2-41

Comment: Please identify the nearby sensitive receptors and the distance between these receptors and the staging areas. Also, please identify the evidence that supports this conclusion.

H. Section 4.6.4.3, Mitigation Measures, Pages 4.6-17 through 4.6-21.

Comment: Mitigation measures are included for fugitive dust emissions because of San Diego Air Pollution Control District requirements. However, the analysis identifies no significant impacts. Generally, it is inappropriate to identify mitigation measures for non-significant impacts. We would suggest moving these mitigation measures to the impact analysis and stating that compliance with these measures would occur, rather than listing them as mitigation. A-2-42

I. Section 4.6.5, Cumulative Impacts, Pages 4.6-21 and 4.6-22. A-2-43

Comment: The cumulative analysis discusses ozone and ozone precursors. However, the SDAB is also in non-attainment for PM_{10} and $PM_{2.5}$. Even though the proposed project would not result in direct impacts related to these pollutants, a cumulative impact may still occur. Therefore, we suggest revising this analysis to address cumulative impacts related to PM_{10} and $PM_{2.5}$. This revision would potentially result in the identification of a new significant cumulative impact. A-2-43

<u>Chapter 4.7 Climate Change and Greenhouse Gas Emissions</u>

A. Section 4.7.4.1, Less than Significant Impacts, GHG Emissions, Page 4.7-11.

EIR: *"To date there is insufficient information to establish formal, permanent thresholds by which to classify projects with relatively small, incremental contributions to the State's total GHG emissions as cumulatively considerable or not."*

Comment: The Bay Area Air Quality Management District has adopted a quantitative threshold for annual project-level GHG emissions, and several other districts and jurisdictions have proposed interim quantitative thresholds, including the County of San Diego and South Coast Air Quality Management District. In addition, in August 2010, the City of San Diego issued a memorandum to the Environmental Analysis Section titled "Updated – Addressing Greenhouse Gas Emissions from Projects Subject to CEQA." This memorandum proposes a 900 metric ton CO_2 equivalent screening level threshold for determining when potential project-level GHG impacts may occur. The GHG significance threshold discussion should be revised to identify a significance threshold for GHG project emissions. An Air Resources Board (ARB) threshold is discussed, but it is stated on Page 4.7-13 that the significance conclusions of the analysis do not rely upon the ARB's proposed draft guidance. We suggest that the analysis use the County of San Diego's screening level threshold for annual emissions of 900 metric tons CO_2 equivalent published in the Interim Approach to Addressing Climate Change in CEQA Documents, consistent with the approach used for determining potential impacts related to the Convair Lagoon Confined Disposal Facility Alternative found in Section 5.10.7, Greenhouse Gas Emissions/Climate Change of the EIR. Please also note that the assertion that "insufficient information to establish formal, permanent thresholds by which to classify projects with relatively small, incremental contributions to the State's total GHG emissions as cumulatively considerable or not" is inconsistent with recent judicial decisions, which identify satisfactory thresholds of significance and methodologies for analyzing and mitigating potential impacts associated with GHG emissions. See, e.g., *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) __ Cal.App.4th __, 2011 DJDAR 10267 (July 12, 2011); *Santa Clarita Organization for Planning the Environment v. City of Santa Clarita* (2011) __ Cal.App.4th __, 2011 DJDAR 11239 (July 28, 2011). A-2-44

B. Section 4.7.4.1, Less than Significant Impacts, GHG Emissions, Pages 4.7-11 through 4.7-13.

Comment: We disagree with the conclusion that because construction emission are a single-event contribution limited to a short period of time, these emissions are not considered to impede or interfere with achieving the state's emission reduction objectives in AB 32 and are inherently less than significant. As stated on Page 4.17-12 of the EIR, CO_2 emissions persist in the atmosphere for a substantially longer period of time than criteria pollutant emissions. Therefore, CO_2 emissions from construction emissions would not settle out following the completion of construction. These emissions would contribute to the state and global GHG inventory. Therefore, additional analysis is required in order to provide substantial evidence of a less than significant related to construction emissions. We suggest amortizing the construction emissions over a given time period to determine the contribution of construction emissions to annual GHG emissions, and comparing annual GHG emissions to a quantitative threshold. This approach is consistent with the recommendations of the County of San Diego, the South Coast Air A-2-45

Pollution Control District, and the County of San Luis Obispo Air Pollution Control District. We suggest amortizing construction emissions over a 30-year time period, consistent with the guidance of the County of San Diego and the approach used for determining potential impacts related to the Convair Lagoon Confined Disposal Facility Alternative found in Section 5.10.7, Greenhouse Gas Emissions/Climate Change of the EIR. A-2-45

C. Section 4.7.4.1, Less than Significant Impacts, GHG Emissions, Pages 4.7-11 through 4.7-13.

Comment: Please explain why only CO_2 emissions are quantified for the proposed project. Emissions from construction equipment would also result in emissions of methane (CH_4) and nitrogen dioxide (N_2O). A-2-46

Appendix G Air Quality Analysis

A. Section 2.6.1, Dredging and Capping Operations, Page 14.

EIR: *"Contaminated areas under piers and pilings will be remediated through subaqueous, or in-situ, capping. In-situ capping is the placement of clean material on top of the contaminated sediment."* A-2-47

Comment: The importation of clean material would require truck trips. Were these truck trips included in the calculation of construction emissions? They are not identified in the Total Construction Emissions tables provided in Appendix A of the Draft EIR. If they were not included, please revise the analysis to include them. Additional truck trips would result in increased emissions of criteria pollutants.

B. Section 4.2, Greenhouse Gas Emissions/Global Climate Change, Pages 41 and 42.

EIR: *"Therefore, for this analysis, CO2, CH4, and N2O are considered due to the relatively large contribution of these gases in comparison to other GHGs produced during the project construction and operation phases."* A-2-48

Comment: Only CO_2 emissions are provided in Table F. Please revise the analysis to include the projected emissions of CH_4 and N_2O. Identifying emissions of CH_4 and N_2O would result in additional emissions of CO_2 equivalent.

C. Section 4.2, Greenhouse Gas Emissions/Global Climate Change, Page 42.

EIR: *"The GHG emissions resulting from increased electricity demand are modeled using GHG emissions factors from the United States Energy Information Administration. The GHG emissions resulting from the energy used for water delivery, treatment, and use are modeled using GHG emissions factors from the California Energy Commission (CEC). The GHG emissions resulting from solid waste disposal are modeled using GHG emissions factors from the California Integrated Waste Management Board, recently renamed the Department of Resources Recycling and Recovery, or CalRecycle."* A-2-49

Comment: Only quantified construction emission are provided in the report. We suggest deleting this statement or providing the calculated emissions related to electricity, water, and solid waste. These GHG sources would result in additional emissions of CO_2 equivalent.

MITIGATION MEASURE REVISIONS FOR THE CONVAIR LAGOON ALTERNATIVE

The following comments are provided for the mitigation measures identified within Section 5.7, Convair Lagoon Alternative to ensure that the mitigation language for this alternative is consistent with the proposed project. The comments are organized by section and page number and shown in strikeout/underline. A-2-49

Section 5.10.3 Air Quality, Page 5-94

Threshold 5.10.3.2: Conformance to Federal and State Ambient Air Quality Standards. Mitigation Measure 4.6.1 through Mitigation Measure ~~9~~ 4.6.15 described in section 4.6, Air Quality, of this EIR ~~the Air Quality Analysis for the Shipyard Sediment Project (Appendix G)~~ would ~~also~~ be required for the Convair Lagoon Alternative. Under this alternative, these mitigation measures would apply to all construction activities associated with the Convair Lagoon Alternative and would not be limited to dredging and dewatering activities at the Shipyard Sediment Project Site. Additionally, mitigation measure 5.10.3.1 would reduce impacts related to emissions of nitrogen oxides during the barge transfer of shipyard sediment to the CDF. The Convair Lagoon Alternative would not exceed the significant thresholds during any other phase of construction, or during operation; therefore, no mitigation measures are required for the other phases of construction or operational emissions.

Mitigation Measure 5.10.3.1: **Prohibit Tug Boat Idling**. The ~~applicant~~ contractor responsible for the tug boat operation shall ensure that tug boats not be allowed to idle during any barge loading and unloading activities, unless the tug boat is actively engaged in operations. Contract specifications shall be included in the construction documents, which shall be reviewed by the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) prior to issuance of a construction permit. The San Diego Water board shall verify implementation of this measure. A-2-50

Threshold 5.10.3.4: Objectionable Odors. Implementation of Shipyard Sediment Site Mitigation Measure 4.6.15 ~~10~~ described in ~~the~~ section 4.6, Air Quality, of this EIR ~~Analysis for the Shipyard Sediment Project (Appendix G)~~ would require the application of a mixture of Simple Green and water (a ratio of 10:1) to the excavated sediment as part of odor management to accelerate the decomposition process and shorten the duration of odor emissions. Dewatering would take place in the same location as the Proposed Project; therefore, potential odor impacts as a result of the Convair Lagoon Alternative are also expected to be less than significant due to the distance between the proposed dewatering pad areas from the nearest sensitive receptors (see Section 4.6, Air Quality for information about the proposed project). However, similar to the Proposed Project, this impact would remain a temporary significant and unavoidable impact because it is difficult to predict the nature and duration of odor emissions from decomposition.

Section 5.10.4 Biological Resources, Pages 5-119 through 5-123

Mitigation Measures

The following mitigation measures are required to reduce significant direct and indirect impacts to the California least tern, eelgrass habitats, jurisdictional waters and San Diego Bay surface water to a level below significance. The measures are organized to correlate to the various significant impacts identified above by issue area. In addition to the mitigation measures identified below, the Convair Lagoon Alternative would be required to implement mitigation measures 4.5.1 through 4.5.11, listed in section 4.5, Biological Resources, listed in the Shipyard Sediment Site EIR. Under this alternative, mitigation measures 4.5.2 through 4.5.9 would be applied to all construction activities associated with the Convair Lagoon Alternative and would not be limited to the dredging and dewatering activities at the Shipyard Sediment Project Site.

Mitigation Measure 5.10.4.2: Prior to the start of any phase of construction, a pre-construction survey for the invasive alga, *Caulerpa taxifolia*, shall be performed by a ~~qualified biologist~~ certified Caulerpa surveyor, retained by the construction contractor. The survey shall be completed during the high growth period of *Caulerpa taxifolia* , March 1st though October 31st. Surveys outside the high growth period shall be allowed on a case-by-case basis by the appropriate regulatory agency in consultation with NMFS and CDFG. ~~This~~ The survey shall be conducted in conformance with the Caulerpa Control Protocol version 3 (National Marine Fisheries Service 2007), prior to any bottom disturbing events, and shall be submitted to the National Oceanic and Atmospheric Administration (NOAA) Fisheries/CDFG Contacts within 15 days of survey completion. The following survey conditions shall be followed, but not limited to: A-2-50

a) Prior to initiation of any permitted Disturbing Activity , a pre-construction survey of the project Area of Potential Effect (APE) shall be conducted to determine the presence or absence of *Caulerpa*. Survey work shall be completed not earlier than 90 days prior to construction and not later than 30 days prior to construction.

b) In the event that *Caulerpa* is detected, construction shall not be conducted until such time as the infestation has been isolated, treated or the risk of spread from the proposed construction is eliminated in accordance with *Caulerpa* Control Protocol version 3 (National Marine Fisheries Service 2007).

If *Caulerpa taxifolia* is not found during the above survey, then construction can proceed, as approved by NOAA Fisheries/CDFG Contacts. If *Caulerpa taxifolia* is found during the survey, the following measures shall be followed:

a) NOAA Fisheries/CDFG Contacts shall be notified within 24 hours of the discovery.

b) All *Caulerpa taxifolia* assessment and treatment shall be conducted under the auspices of the CDFG and NOAA Fisheries as the state and federal lead agencies for implementation of *Caulerpa* eradication in California.

c) Within 96 hours of NOAA Fisheries/CDFG Contact notification, the extent of the *Caulerpa* infestation within the project site shall be fully documented. *Caulerpa taxifolia* eradication activities shall be undertaken using the best available technologies at the time and will depend upon the specific circumstances of the infestation. Eradication activities may include in situ treatment using contained chlorine applications, and may also incorporate mechanical removal methods. The eradication technique is subject to change at the discretion of NOAA Fisheries and CDFG and as technologies are refined.

d) The efficacy of treatment shall be determined prior to proceeding with permitted activities. To determine effectiveness of the treatment efforts, a written Sampling and Analysis Plan (SAP) shall be prepared. The plan shall be developed in conjunction with the CDFG and NOAA Fisheries and shall be approved by these agencies prior to implementation.

The San Diego Water Board shall verify implementation of this mitigation measure.

~~If Caulerpa taxifolia is not found, then construction can proceed. If it is found, then the following shall be undertaken by the project applicant to eradicate this species in the construction area prior to beginning any bottom disturbing activities, including but not limited to:~~

~~a) The disturbing activity shall not be conducted until such time as the infestation has been isolated, treated or the risk of spread from the proposed disturbing activity is eliminated;~~

~~b) National Oceanic and Atmospheric Administration (NOAA) Fisheries/CDFG Contacts shall be notified within 24 hours of the discovery;~~

~~c) Within 96 hours of notification, the extent of the Caulerpa infestation within the site APE shall be fully documented. Caulerpa eradication activities shall be undertaken using the best available technologies at the time and will depend upon the specific circumstances ofthe infestation. This activity may include in situ treatment using contained chlorine applications, and may also incorporate mechanical removal methods. The eradication technique is subject to change at the discretion of NOAA Fisheries and CDFG and as technologies are refined.~~

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Mitigation Measure 5.10.4.3: **Eelgrass and Local Policy Conflicts.** For direct and indirect eelgrass impacts at Convair Lagoon, and in ~~In~~ accordance with the current Southern California Eelgrass Mitigation Policy (SCEMP), approximately 7.22 acres of eelgrass shall be replaced by the construction contractor and a qualified biologist through a transplant method to achieve a 1.2:1 replacement ratio for the loss of 6.01 acres of existing eelgrass, through the following methods. Prior to implementation of these methods, a pre- and post-construction survey shall be conducted by a qualified biologist, retained by the construction contractor~~, within 30 days of project commencement and completion~~. The pre-construction eelgrass habitat mapping survey for the Convair Lagoon Site shall be completed by the applicant within 120 days of the proposed start dates of each construction phase in accordance with the SCEMP to document the amount of eelgrass that will likely be affected by construction activity. The post-construction survey shall be completed by the applicant within 30 days of the completion of construction. These surveys shall be used to determine specific mitigation:

a) A final eelgrass mitigation plan shall be prepared and approved by the ACOE, acting in conjunction with the resource agencies, including the San Diego Water Board, NMFS, USFWS, EPA, and the CDFG. The results of the pre-construction survey shall be integrated into a final Eelgrass Mitigation Plan for the project and used to calculate the amount of eelgrass to be mitigated. The plan shall include details and descriptions regarding the chosen mitigation site, transplant methods, program schedule, 5-year monitoring program, success criteria, and actions to undertake for failed mitigation goals, consistent with the SCEMP. Transplantation of eelgrass shall occur only with the written approval of the CDFG.

b) Mitigation methods for eelgrass shall include creating eelgrass habitat at one or more locations within the San Diego Bay by raising the bay floor elevation to approximately -5 ft MLLW with dredged materials and planting eelgrass on the elevated plateau. Replacement mitigation for eelgrass may occur in one or more of the following locations, as approved by the resource agencies NMFS, USFWS, EPA, CDFG and ACOE: 1) Naval Training Center (NTC) channel; 2) Harbor Island – West Basin; 3) Adjacent to Convair Lagoon; 4) A-8 Anchorage; 4) South Bay Borrow Site; 5) South Bay Power Plant Channel; 6) South Bay Power Plant; and 7) Emory Cove Channel. Brief descriptions of these potential mitigation sites are described in Table 5-25 below.

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c) The post-construction eelgrass survey shall be submitted to the NMFS, USFWS, CDFG, and the Executive Director of the CCC, as well as the San Diego Water Board. ~~An eelgrass mitigation plan shall be prepared and approved by the ACOE, acting in conjunction with the resource agencies, including NMFS, USFWS, EPA, and the CDFG. The plan shall include details and descriptions regarding the chosen mitigation site, transplant methods, program schedule, 5-year monitoring program, success criteria, and actions to undertake for failed mitigation goals, consistent with the Southern California Eelgrass Mitigation Policy. Transplantation of eelgrass shall occur only with the written approval of the CDFG.~~

d) Criteria for determination of transplant success at the selected mitigation site shall be based upon a comparison of vegetation coverage (area) and density (turions[1] per square meter) between the adjusted impact area (original impact area multiplied by 1.2 or the amount of eelgrass habitat to be successfully mitigated at the end of 5 years) and the mitigation site(s). The extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than 1 meter between individual turion clusters. Density of shoots is defined by the number of turions per area present in representative samples within the original impact area, control or transplant bed. Specific criteria are as follows:

[1] A turion is a specialized overwintering bud produced by aquatic herbs.

- The mitigation site shall achieve a minimum of 70 percent area of eelgrass and 30 percent density as compared to the adjusted project impact area after the first year.
- The mitigation site shall achieve a minimum of 85 percent area of eelgrass and 70 percent density as compared to the adjusted project impact area after the second year.
- The mitigation site shall achieve a sustained 100 percent area of eelgrass bed and at least 85 percent density as compared to the adjusted project impact area for the third, fourth, and fifth years.
- The final determined amount of eelgrass to be transplanted shall be based upon the guidelines in the SCEMP. If remedial transplants at the project site are unsuccessful, then eelgrass mitigation shall be pursued at the secondary eelgrass transplant location.

The San Diego Water Board shall verify implementation of this mitigation measure.

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Mitigation Measure 5.10.4.4: **Jurisdictional Waters and San Diego Bay Surface Loss.** New bay habitat shall be created within an alternative location of the San Diego Bay via excavation of shoreline and creation of tidal influence in previously non-tidal areas. The mitigation ratio for the loss of 8.5 acres of intertidal and subtidal habitats would occur at a 1:1 ratio. The coastal salt marsh habitat shall be mitigated at a 4:1 ratio (i.e., creation of 0.44 acres of salt marsh habitat for 0.11 acres impact). This shall include:

a)~~.~~ The removal and disposal or reuse of historic fills;

b)~~.~~ Grading the site to a desired hydrologic condition of channels, subtidal basins, and intertidal flats in order to support desired compensatory habitat; and

c)~~.~~ Planting pilot vegetation plots to allow for natural expansion of marshland vegetation.

The creation of new bay surface water habitat may occur in one or more of the following locations, as approved by the resource agencies NMFS, USFWS, EPA, CDFG and ACOE: 1) Grand Caribe Isle in the Coronado Cays; 2) D Street Fill just across the Sweetwater Channel from the National City Marine Terminal; 3) the South Bay Power Plant; 4) the Salt Works; and/or; 5) Pond 20 adjacent to the Salt Works. The approved mitigation site shall be lowered from upland elevations to create intertidal and subtidal habitats, except for the South Bay Power Plant, which would require filling the existing intake and discharge channels of the power plant to create tidal lands. The mitigation ratio for intertidal and subtidal habitats would occur at a 1:1 ratio; however, the coastal salt marsh habitat would have to be mitigated at a 4:1 ratio. These ratios would require the replacement of approximately 3.9 acres of intertidal habitat, 4.49 acres of shallow subtidal habitat, 0.31 acres of moderately deep and deep subtidal habitat (which would most likely be replaced as intertidal habitat due to habitat value) and 0.44 acres of coastal salt marsh habitat. Brief descriptions of the potential mitigation locations for jurisdictional and San Diego Bay surface loss impacts are described Table 5-26. The San Diego Water Board shall verify implementation of this measure.

Section 5.10.6 Geology and Soils, pages 5-167 and 5-168

Mitigation Measure 5.10.6.1: **Detailed Site-specific Geotechnical Investigation.** Prior to construction of the Convair Lagoon Alternative, a detailed site-specific geotechnical investigation will be conducted by a qualified geologist retained by the applicant to determine specific geologic recommendations for the development of the containment barrier and storm drains. Areas of hydro-collapse, soft ground, expansive soils, compressible soils, liquefaction, shallow groundwater, and corrosive soils will be identified as part of the geotechnical investigation. The investigation will specifically address the proposed containment barrier, storm drains, and asphalt improvement stability in these identified geologic hazard areas. The geotechnical investigation shall be submitted to the San Diego Water Board for review and approval, prior to the issuance of a construction permit. The geotechnical investigation will comply with the specifications provided in the Naval Facilities Engineering Command (NAVFAC), DM-7.2, Foundations and Earth Structures, dated September, as well as the City of San Diego Building Division plans and the City of San Diego Engineering Department local grading ordinances. Recommendations made in conjunction with the geotechnical investigations will be implemented during construction. The qualified geologist shall periodically confirm that these measures are being implemented, including (as appropriate) but not necessarily limited to the following actions: A-2-50

1. Over-excavate unsuitable materials associated with the confinement structure and replace them with imported engineered fill.
2. Confine unstable soils to deeper fill areas of the site.
3. Perform densification of soils in the area beneath the proposed containment structure through geotechnical engineering methods such as stone columns, compaction grouting, or deep dynamic compaction.
4. Select an engineering foundation design to accommodate the expected effects of liquefaction. Examples of types of foundation design that might be appropriate given the soil conditions include gravel bedding for the storm drain pipes and a pipe bell with flexibility to accommodate differential settlement.
5. Consider potential corrosion issues related to storm drain pipe degradation in the design of this improvement where it would contact corrosive soils or be subject to other corrosive forces.
6. Establish and implement a long-term monitoring and repair program to monitor the integrity of the asphalt, containment barrier and storm drains. Key features of the program include determination of the periodic review, the type of review, identification of potential

problems that may occur in the future, and the methods that would be used to rectify any problems discovered.

The San Diego Water Board shall verify implementation of this mitigation measure.

Section 5.10.8 Hazards and Hazardous Materials, Page 5-212

Mitigation Measures

The Convair Lagoon Alternative is required to implement Mitigation Measures 4.3.1 through 4.3.8, listed in the Shipyard Sediment Site EIR, Section 4.3, Hazards and Hazardous Materials. These measures require the implementation of: secondary containment, a dredging management plan, a contingency plan, a health and safety plan, a communication plan, a sediment management plan, and a hazardous materials transportation plan and traffic control plan. Under this alternative, mitigation measures 4.3.1 through 4.3.8 would be applied to all construction activities associated with the Convair Lagoon Alternative and would not be limited to dredging and dewatering activities at the Shipyard Sediment Project Site.

Section 5.10.9 Hydrology and Water Quality. Pages 5-227 to 5-230

Mitigation Measures

In addition to the following mitigation measures, the Convair Lagoon Alternative is required to implement mitigation measures 4.2.1 through 4.2.13, listed in the Shipyard Sediment Site EIR, Section 4.2, Water Quality. Under this alternative, mitigation measures 4.2.1 through 4.2.9 would apply to all construction activities associated with the Convair Lagoon Alternative and would not be limited to dredging and dewatering activities at the Shipyard Sediment Project Site. A-2-50

Threshold 5.10.9.1: Water Quality, All Phases Construction

Mitigation Measure 5.7.9.1: **Construction Equipment Spills/Leaks.** Prior to construction, t~~T~~he ~~contractor/operator for~~ construction contractor ~~of the Convair Lagoon Alternative~~ shall create and implement a Spill Prevention, Control and Countermeasure Plan, which shall apply to oil and hazardous material spills into waters of the U.S., in quantities that may be harmful. The contractor/operator shall submit the Spill Prevention, Control and Countermeasure Plan to the San Diego Water Board for review. The Spill Prevention, Control and Countermeasure Plan shall identify the contractor's responsible parties, precautionary measures to reduce the likelihood of spills, and the spill response and reporting procedures in case a spill occurs, in compliance with the requirements of the Clean Water Act.

~~During operations, personnel shall perform visual monitoring of equipment for spills or leaks.~~ If a spill/leak is observed, the equipment shall be immediately shut down, the source of the spill/leak shall be identified, and the spill/leak shall be contained, in accordance with the measures identified in the Spill Prevention, Control and Countermeasure Plan.

In the event of a spill of materials from a barge, an oil boom shall be deployed in the vicinity of the barge to facilitate the containment of the spill/leaks. An oil boom shall be located on site during all construction activities so that it is readily available in the event of a spill. Oil retrieval and disposal shall be conducted in accordance with the alternative's Spill

Prevention, Control and Countermeasure Plan. The San Diego Water Board shall be responsible for ensuring adherence to the requirements of this measure.

~~The following BMPs shall be implemented to minimize the potential for accidental spills/leaks to occur and to minimize fluids entering the bay:~~
~~Oils and fuels shall be housed in secondary containment structures.~~
~~Spill cleanup kits shall be available at various locations on site.~~
~~Personnel shall be trained on the locations of the kits and their proper use and disposal.~~
~~Personnel shall be trained on the potential hazards from accidental spills and leaks to increase awareness of the materials being handled and the potential impacts.~~
~~Routine maintenance and inspections of equipment containing oil, fuel, or other hazardous fluids shall be performed to identify worn or faulty parts and needed repairs.~~
~~The contractor/operator for construction of the Convair Lagoon Alternative shall create and implement a Spill Prevention, Control and Countermeasure Plan, which shall apply to oil and hazardous material spills into waters of the U.S., in quantities that may be harmful. The Spill Prevention, Control and Countermeasure Plan shall identify the contractor's responsible parties, precautionary measures to reduce the likelihood of spills, and the spill response and reporting procedures in case a spill occurs, in compliance with the requirements of the Clean Water Act.~~
~~During operations, personnel shall perform visual monitoring of equipment for spills or leaks. If a spill/leak is observed, the equipment shall be immediately shut down, the source of the spill/leak shall be identified, and the spill/leak shall be contained, in accordance with the measures identified in the Spill Prevention, Control and Countermeasure Plan.~~
~~In the event of a spill of materials from a barge, an oil boom shall be deployed in the vicinity of the barge to facilitate the containment of the spill/leaks. An oil boom shall be located on site during all construction activities so that it is readily available in the event of a spill. Oil retrieval and disposal shall be conducted in accordance with the alternative's Spill Prevention, Control and Countermeasure Plan.~~

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Mitigation Measure 5.10.9.2: **Water Quality Monitoring**. Water quality monitoring shall be performed during in-water activities (e.g., demolition, dredging, rock placement, dredge placement) to obtain real-time data so that potential impacts to water quality can be quickly detected and activities modified to avoid impairing or degrading water quality. A system for monitoring of turbidity in the water column in the vicinity of dredging and excavation activities shall be used to assist the operator in adjusting or modifying operations to reduce temporary water quality impacts. Prior to commencement of demolition activities on the project site, the construction contractor shall prepare ~~and implement~~ a water quality monitoring plan which shall include the evaluation of turbidity levels. The construction contractor shall submit the water quality monitoring plan to the San Diego Water Board for review and approval. Upon approval by the San Diego Water Board, the construction contractor shall implement the water quality monitoring plan. Monitoring shall be performed in at least three locations. The monitoring stations shall be located: 1) approximately 500 feet upstream of the work area, 2) immediately inside the work area, 3) approximately 250 feet downstream from the work area. The station immediately inside the work area shall be visually monitored. If a turbidity plume is observed, then monitoring of the 250-foot and 500-foot stations shall begin. Samples collected at the 250-foot station are intended to be a screening tool to warn of potential impacts that may reach the 500-foot station. If the water quality samples downstream from the work area are 20 percent greater than the upstream samples, then work shall be halted, the cause of the exceedance shall be identified and additional BMPs, depending on the particular activity (demolition, rock placement or sediment placement) shall be implemented and monitored for effectiveness. Additional BMPs may require modifications to the activity (duration, frequency, location, equipment, and sequencing). The San Diego Water Board shall be responsible for ensuring adherence to the requirements of this measure.

Threshold 5.10.9.1: Water Quality, Phase 1 Construction

Mitigation Measure 5.10.9.3: **Low Tide Demolition.** Demolition activities for submerged structures during Phase 1 of construction shall be scheduled during low tides to expose as much of the submerged structures as possible and to reduce disturbance of sediments or a silt curtain shall be used to control turbidity. The San Diego Water Board shall be responsible for ensuring adherence to the requirements of this measure.

Threshold 5.10.9.1: Water Quality, Phase 4 Construction

Mitigation Measure 5.10.9.4: **Dredging Equipment Selection.** The dredge bucket shall be enclosed to reduce re-suspension caused by dredge spoils falling back into the bay. The San Diego Water Board shall be responsible for ensuring adherence to the requirements of this measure.

Mitigation Measure 5.10.9.5: **Dredging Placement BMPs.** The following BMPs shall be implemented to minimize the re-suspension or spillage of sediments during the placement of dredged materials:

~~1. Dredged soils shall not be stockpiled on the floor of the San Diego Bay;~~

~~2. The dredge bucket shall be fully closed before withdrawing from loading activities;~~

~~3. The dredge bucket and barge shall not be overfilled. This shall occur by visual monitoring and visual markings on the barge to indicate limits of fill;~~

~~4. A spill plate shall be placed between the barge and the landside to prevent spillage from falling into the bay water;~~

1~~5~~. A weir shall be constructed on or near the containment jetty to provide a method to release site water displaced during the placement of fill in CDF. The weir may consist of a low crest in the

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containment jetty or a pipe in the structural fill of the barrier. The weir outflow will be monitored as described in mitigation measure 5.10.9.2. If an exceedance occurs, a filter fabric barrier or floating silt curtain shall be installed across or just outside of the weir outflow to minimize the potential for suspended sediments to enter the water outside of the CDF. A-2-50

2~~6~~. Multiple bites with the dredge bucket shall be prohibited;

3~~7~~. Dredged material shall be placed carefully and the bucket drop height shall be limited to minimize splashing or sloshing, based on crane operator observations and water quality turbidity;

4~~8~~. Barge movement and speed shall be in conformance with safe practices.

The San Diego Water Board shall be responsible for ensuring adherence to the requirements of this measure.

Table 1. Cost Estimate Project Assumptions and Draft EIR Project Assumptions Consistency Analysis
(Revised Tentative Cleanup and Abatement Order and Draft Technical Report: Table A32-26, Supporting Calculations for Section 32.7.1 Technological and Economical Feasibility)

ID No.	Cost Estimate Item	Cost Estimate Project Assumption	Draft EIR Project Description Inconsistency	Applicable Environmental Issues
Construction Preparation				
C1	Mobilizations and Demobilizations	Estimate assumes work is completed in 3 construction seasons.	Construction schedule identified in the Draft EIR Project Description on page 3-5. Page 3-5 states: *"There are two scheduling options for completion of the remedial action. The first scheduling option is expected to take 2 to 2.5 years to complete. Under this option, the dredging operations would occur for 7 months of the year and would cease from April through August during the endangered California least tern breeding season.* *The second option is to implement the remedial plan with continuous dredging operations, which would be expected to take approximately 12.5 months to complete. This scenario assumes that the dewatering, solidification, and stockpiling of the materials would occur simultaneously and continuously with the dredging. Also assumed under this compressed schedule option is that dredging operations could proceed year-round, including during the breeding season of the endangered California least tern (April through August)."*	Air Quality
C2	Demolition	Includes demolition of dormant BAE pier.	Demolition of the BAE pier is not included in Chapter 3, Project Description, of the Draft EIR.	Air Quality / Transportation and Circulation
Dredging				
D1	Dredging Surface/Subsurface debris	Unknown quantity. Estimates assume 5% of dredge volume. Pricing includes landfill disposal.	Chapter 3, Project Description, of the Draft EIR states landfill disposal will occur at Kettleman Hills Landfill in Kings County (15%) and Otay Landfill in San Diego County (85%).	Air Quality / Transportation and Circulation
D2	Engineering controls (silt curtain, oil boom)	Estimate assumes work is completed in 3 construction seasons.	Three construction seasons is not consistent with construction schedule identified in the Draft EIR Project Description on page 3-5.	Air Quality
D3	Additional dredging	28,100 cy from two feet of dredging over one half of the remedial area. Same unit costs as for constrained dredging from inner shipyard.	Chapter 3, Project Description, of the Draft EIR does not include two feet of additional dredging. Total dredge volume is identified as 143,400 cy on page 3-6.	Air Quality / Transportation and Circulation

A-2-51

ID No.	Cost Estimate Item	Cost Estimate Project Assumption	Draft EIR Project Description Inconsistency	Applicable Environmental Issues
Marine Structures				
M1	Placement of quarry run rock for protection of marine structures	21,887 tons. No structural retrofit of structures is assumed to be necessary. Estimated costs assume setback of dredging from marine structures and revetments, and placement of quarry run blankets or berms to reinstate lateral resistance.	Chapter 3, Project Description, has no mention of quarry run rock for protection of marine structures.	Air Quality / Transportation and Circulation
Sediment Offloading and Disposal				
S1	Acquisition/lease of sediment offloading area	An off-site sediment staging area will be needed in the vicinity of the project area. Location is unknown at this time. Costs assume a three year construction period.	Three year construction period is not consistent with construction schedule identified in the Draft EIR Project Description on page 3-5.	Air Quality
S2	Rehandling and Dewatering	Assumes stockpiling of sediments prior to transport to landfill and addition of lime or cement mixture to facilitate dewatering. Based on 171,500 CY estimate.	Chapter 3, Project Description, states 164,910 CY, including cement-based reagent for dewatering quantity.	Air Quality / Transportation and Circulation
S3	Transportation and Disposal at Landfill	Assumes disposal at regional hazardous waste landfill outside of San Diego County (Copper Mountain in Nevada). Assuming 257,250 tons.	Landfill disposal will occur at Kettleman Hills Landfill in Kings County (15%) and Otay Landfill in San Diego County (85%). 39,579 tons disposed of at Kettleman Hills Landfill & 224,278 tons disposed of at Otay landfill (page 3-9).	Air Quality / Transportation and Circulation
Underpier Remediation				
U1	Placement of clean sand cover	Assumes ½ of dredged area receives 1-3 feet of sand.	Chapter 3, Project Description, assumes only contaminated soils under the pier and pilings will receive sand cover.	Air Quality / Transportation and Circulation
U2	Construction Management	Estimate assumes work is completed in 3 construction seasons.	Three construction seasons is not consistent with construction schedule identified in the Draft EIR Project Description on page 3-5.	Air Quality

A-2-51

GW

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

SAN DIEGO REGIONAL
WATER QUALITY
CONTROL BOARD

A-3

July 1, 2011 2011 JUL -5 P 2:58

Mr. Vincente Rodriguez
California Water Quality Control Board – San Diego Region
9174 Sky Park Ct., Suite 100
San Diego, CA 92123

Re: SCH#2009111098; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the **"Shipyard Sediment Remediation Project"** located in San Diego Bay; San Diego County, California

Dear Mr. Rodriguez:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources. The NAHC wishes to comment on the above-referenced proposed Project.

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law. State law also addresses the freedom of Native American Religious Expression in Public Resources Code §5097.9.

The California Environmental Quality Act (CEQA – CA Public Resources Code 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. The NAHC Sacred Lands File (SLF) search resulted in; **Native American cultural resources were not identified** within the 'area of potential effect (APE), based on the USGS coordinates of the project location provided. The absence of archaeological items at the surface level does not preclude their existence at the subsurface level once ground-breaking activity is underway. A-3-1

The NAHC "Sacred Sites,' as defined by the Native American Heritage Commission and the California Legislature in California Public Resources Code §§5097.94(a) and 5097.96. Items in the NAHC Sacred Lands Inventory are confidential and exempt from the Public Records Act pursuant to California Government Code §6254.10.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries of cultural resources or burial sites once a project is underway. Culturally affiliated tribes and individuals may have knowledge of the religious and cultural A-3-2 significance of the historic properties in the project area (e.g. APE). We strongly urge that you make contact with the list of Native American Contacts on the attached list of Native American contacts, to see if your proposed project might impact Native American cultural resources and to obtain their recommendations concerning the proposed project. Pursuant to C"A Public Resources Code § 5097.95, the NAHC requests that the Native American consulting parties be provided pertinent project information. Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). Pursuant to CA Public Resources Code §5097.95, the NAHC requests that pertinent project information be provided consulting tribal parties. The NAHC recommends *avoidance* as defined by CEQA Guidelines §15370(a) to pursuing a project that would damage or destroy Native American cultural resources and Section 2183.2 that requires documentation, data recovery of cultural resources. A-3-2

Furthermore we recommend, also, that you contact the California Historic Resources Information System (CHRIS) California Office of Historic Preservation for pertinent archaeological data within or near the APE, at (916) 445-7000 for the nearest Information Center in order to learn what archaeological fixtures may have been recorded in the APE. A-3-3

Consultation with tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 *et seq*), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq.* and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. A-3-4

Furthermore, Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery'. A-3-5

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. Regarding tribal consultation, a relationship built around regular meetings and informal involvement with local tribes will lead to more qualitative consultation tribal input on specific projects. A-3-6

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code 5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code 6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places and there may be sites within the APE eligible for listing on the California Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious A-3-7 and/or cultural significance identified in or near the APEs and possibility threatened by proposed project activity. A-3-7

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251. A-3-8

Sincerely,

Dave Singleton
Program Analyst

Cc: State Clearinghouse

Attachment: Native American Contact List

California Native American Contact List
San Diego County
July 1, 2011

A-3

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road — Diegueno
Lakeside , CA 92040
sue@barona-nsn.gov
(619) 443-6612
619-443-0681

Sycuan Band of the Kumeyaay Nation
Danny Tucker, Chairperson
5459 Sycuan Road — Diegueno/Kumeyaay
El Cajon , CA 92021
ssilva@sycuan-nsn.gov
619 445-2613
619 445-1927 Fax

La Posta Band of Mission Indians
Gwendolyn Parada, Chairperson
PO Box 1120 — Diegueno/Kumeyaay
Boulevard , CA 91905
gparada@lapostacasino.
(619) 478-2113
619-478-2125

Viejas Band of Kumeyaay Indians
Anthony R. Pico, Chairperson
PO Box 908 — Diegueno/Kumeyaay
Alpine , CA 91903
jrothauff@viejas-nsn.gov
(619) 445-3810
(619) 445-5337 Fax

San Pasqual Band of Mission Indians
Allen E. Lawson, Chairperson
PO Box 365 — Diegueno
Valley Center, CA 92082
allenl@sanpasqualband.com
(760) 749-3200
(760) 749-3876 Fax

Kumeyaay Cultural Historic Committee
Ron Christman
56 Viejas Grade Road — Diegueno/Kumeyaay
Alpine , CA 92001
(619) 445-0385

Iipay Nation of Santa Ysabel
Virgil Perez, Spokesman
PO Box 130 — Diegueno
Santa Ysabel, CA 92070
brandietaylor@yahoo.com
(760) 765-0845
(760) 765-0320 Fax

Campo Kumeyaay Nation
Monique LaChappa, Chairperson
36190 Church Road, Suite 1 — Diegueno/Kumeyaay
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(619) 478-9046
miachappa@campo-nsn.gov
(619) 478-5818 Fax

This list is current only as of the date of this document.
Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2009111098; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Shipyard Sediment Remediation Project; located on San Diego Bay; San Diego County, California.

California Native American Contact List
San Diego County
July 1, 2011

A-3

Jamul Indian Village
Kenneth Meza, Chairperson
P.O. Box 612 Dieguenо/Kumeyaay
Jamul , CA 91935
jamulrez@sctdv.net
(619) 669-4785
(619) 669-48178 - Fax

Inaja Band of Mission Indians
Rebecca Osuna, Spokesperson
2005 S. Escondido Blvd. Dieguено
Escondido , CA 92025
(760) 737-7628
(760) 747-8568 Fax

Mesa Grande Band of Mission Indians
Mark Romero, Chairperson
P.O Box 270 Dieguено
Santa Ysabel, CA 92070
mesagrandeband@msn.com
(760) 782-3818
(760) 782-9092 Fax

Kumeyaay Cultural Repatriation Committee
Steve Banegas, Spokesperson
1095 Barona Road Dieguено/Kumeyaay
Lakeside , CA 92040
(619) 742-5587 - cell
(619) 742-5587
(619) 443-0681 FAX

Kumeyaay Cultural Heritage Preservation
Paul Cuero
36190 Church Road, Suite 5 Dieguено/ Kumeyaay
Campo , CA 91906
(619) 478-9046
(619) 478-9505
(619) 478-5818 Fax

Ewiiaapaayp Tribal Office
Will Micklin, Executive Director
4054 Willows Road Dieguено/Kumeyaay
Alpine , CA 91901
wmicklin@leaningrock.net
(619) 445-6315 - voice
(619) 445-9126 - fax

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas
P.O. Box 775 Dieguено -
Pine Valley , CA 91962
(619) 709-4207

Ewiiaapaayp Tribal Office
Michael Garcia, Vice Chairperson
4054 Willows Road Dieguено/Kumeyaay
Alpine , CA 91901
michaelg@leaningrock.net
(619) 445-6315 - voice
(619) 445-9126 - fax

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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2009111098; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Shipyard Sediment Remediation Project; located on San Diego Bay; San Diego County, California.

Ipai Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507 Dieguneo/Kumeyaay
Santa Ysabel, CA 92070
cjlinton73@aol.com
(760) 803-5694
cjlinton73@aol.com

Kumeyaay Cultural Repatriation Committee
Bernice Paipa, Vice Spokesperson
P.O. Box 1120 Dieguneo/Kumeyaay
Boulevard , CA 91905
(619) 478-2113

Manzanita Band of the Kumeyaay Nation
Leroy J. Elliott, Chairperson
P.O. Box 1302 Dieguneo/Kumeyaay
Boulevard , CA 91905
(619) 766-4930
(619) 766-4957 - FAX

Kumeyaay Diegueno Land Conservancy
M. Louis Guassac, Executive Director
P.O. Box 1992 Dieguneo/Kumeyaay
Alpine , CA 91903
guassacl@onebox.com
(619) 952-8430

Viejas Kumeyaay Indian Reservation
Frank Brown
240 Brown Road Dieguneo/Kumeyaay
Alpine , CA 91901
FIREFIGHTER69TFF@AOL.
619) 884-6437

This list is current only as of the date of this document.
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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2009111098; CEQA Notice of Completion; draft Environmental Impact Report (DEIR) for the Shipyard Sediment Remediation Project; located on San Diego Bay; San Diego County, California.

Department of Toxic Substances Control

Linda S. Adams
Acting Secretary for
Environmental Protection

Deborah O. Raphael, Director
5796 Corporate Avenue
Cypress, California 90630

Edmund G. Brown Jr.
Governor

SAN DIEGO REGIONAL
CONTROL BOARD
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A-4

July 28, 2011

Mr. Vicente Rodriguez
9174 Sky Park Court., Suite 100
San Diego, California 92123

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SHIPYARD SEDIMENT REMEDIATION PROJECT, (SCH #2009111098), SAN DIEGO COUNTY

Dear Mr. Rodriguez:

The Department of Toxic Substances Control (DTSC) has received your submitted draft Environmental Impact Report (EIR) for the above-mentioned project. The following project description is stated in your document: "The proposed Shipyard Sediment Remediation Project (proposed project) is the dredging of sediment adjacent to shipyards in the San Diego Bay; the dewatering, solidification of the dredged material (onshore or on a barge); the potential treatment of decanted water (anticipated disposal to the sanitary sewer system); and the transport of the removed material to an appropriate landfill for disposal. The project consists of marine sediments in the bottom bay waters that contain elevated levels of pollutants above San Diego bay background conditions. The purpose of the project is to implement a Tentative Cleanup and Abatement Order (CAO) issued by the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board). The sediment removal site is located along the eastern shore of central San Diego Bay, extending approximately from the Sampson Street Extension on the northwest to Chollas Creek on the southeast, and from the shoreline out to the San Diego Bay main shipping channel to the west. The Shipyard Sediment Site is more specifically bounded by the waters of R.E. Staite facility on the north, the 28th Street Pier on the south, the open waters and shipways of San Diego Bay on the west, and the shoreline of three leaseholds on the east". A-4-1

Based on the review of the submitted document DTSC has the following comments:

1) DTSC provided comments on the project Notice of Preparation (NOP) on December 22, 2009; some of those comments have been addressed in the A-4-2

submitted draft Environmental Impact Report. Please ensure that all those comments will be addressed in the final EIR. A-4-2

2) If it is determined that hazardous wastes are, or will be, generated by the proposed operations, the wastes must be managed in accordance with the California Hazardous Waste Control Law (California Health and Safety Code, Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (California Code of Regulations, Title 22, Division 4.5). Certain hazardous waste treatment processes or hazardous materials, handling, storage or uses may require authorization from the local Certified Unified Program Agency (CUPA), or DTSC. A-4-3

3) The Navy identified areas where munitions and ordnances have been found and areas with high potential of having munitions and ordnances in more than a hundred locations along the channels. There are at least two areas where munitions have been found at the project location referenced in the EIR and a few more such areas are located in close proximity to the project (see attached map). A-4-4

4) The Navy is currently conducting sonar and electromagnetic scans of the channel focused on the areas containing and potentially containing munitions, for possible response actions. This project is undertaken by the NAVFAC Southwest Division under the project reference: MRP Site 100 San Diego Bay Primary Ship Channels. Any projects within the San Diego Bay Ship Channels must be coordinated with the Navy NAVFAC Southwest Division in San Diego for munitions clearance. A-4-5

If you have any questions regarding this letter, please contact Rafiq Ahmed, Project Manager, at rahmed@dtsc.ca.gov, or by phone at (714) 484-5491. A-4-6

Sincerely,

Greg Holmes
Unit Chief
Brownfields and Environmental Restoration Program

Enclosure

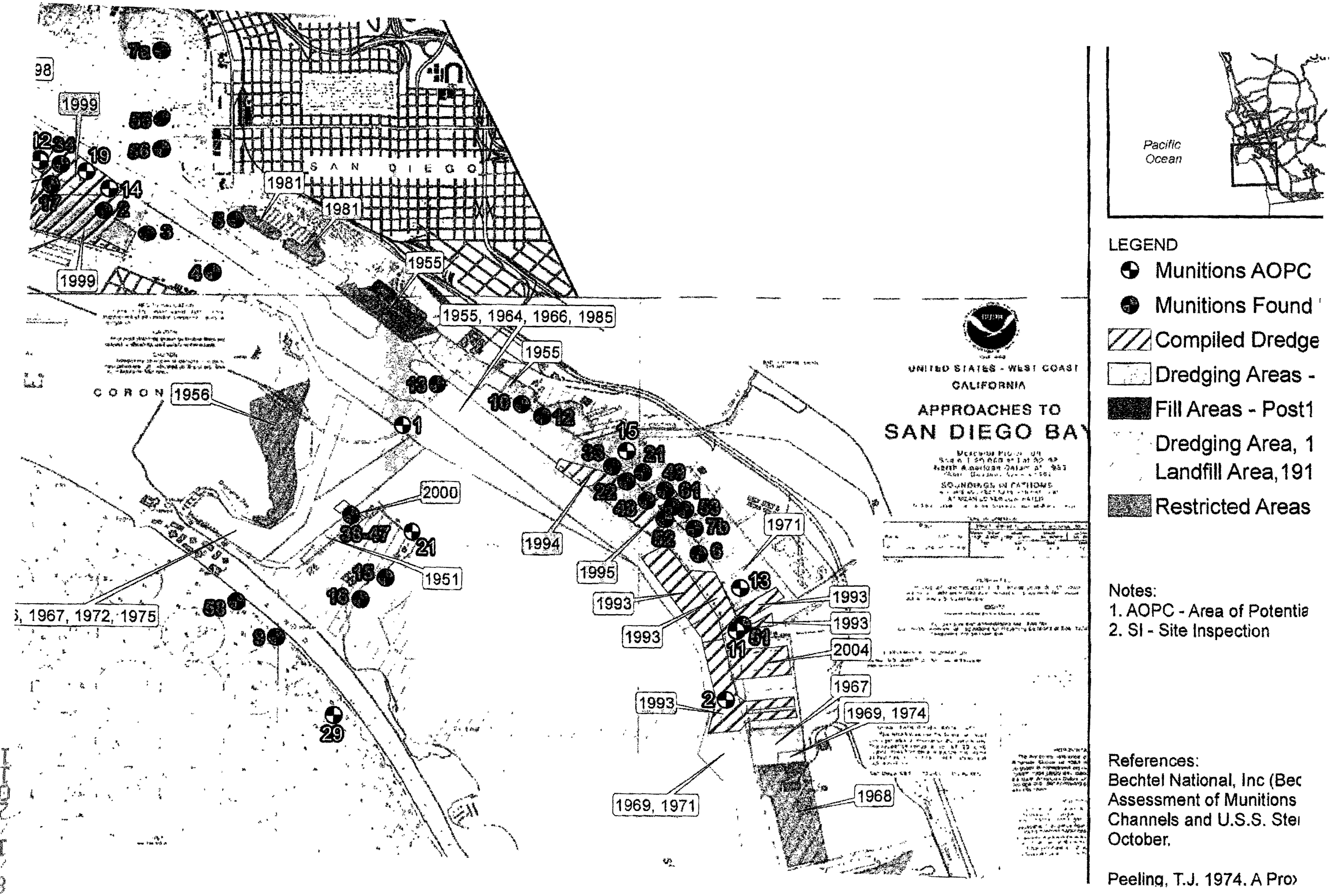
cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044
state.clearinghouse@opr.ca.gov

cc: CEQA Tracking Center
Department of Toxic Substances Control
Office of Environmental Planning and Analysis
P.O. Box 806
Sacramento, California 95812
Attn: Nancy Ritter
nritter@dtsc.ca.gov

Brian McDaniel, Engineering Geologist, M.S., PG 7272
California Environmental Protection Agency
California Water Quality Control Board - San Diego Region
9174 Sky Park Court, Ste 100
San Diego, CA 92123-4340

Terry Martin
EV Business Line Team Lead
Coastal Integrated Product Team
2730 McKean St. Bldg 291
San Diego, CA 92136

CEQA # 3253



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2. SI - Site Inspection
References:
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GW
V. Rodriguez

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

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California Relay Service From TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

***Contact Phone:* (916) 574-1890**
***Contact FAX:* (916) 574-1885**

2011 AUG -3 A 11:59

August 1, 2011

A-5

File Ref: **SCH# 2009111098**

California Regional Water Quality Control Board, San Diego Region
Attention: Vicente Rodriguez
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Subject: Draft Program Environmental Impact Report (PEIR) for the Shipyard Sediment Remediation Project, San Diego, San Diego County

Dear Mr. Rodriguez:

Staff of the California State Lands Commission (CSLC) has reviewed the subject draft PEIR for the Shipyard Sediment Remediation Project (Project) prepared by the California Regional Water Quality Control Board, San Diego Region (RWQCB) as the state lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code [PRC] § 21000 et seq.). The CSLC has prepared these comments as a trustee and responsible agency because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. A-5-1

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Background

CSLC Jurisdiction

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (PRC §6301 and §6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust. A-5-2

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway A-5-3 landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections. A-5-3

Proposed Project and Project Location

On September 15, 2010, the RWQCB released Tentative Cleanup and Abatement Order (TCAO) No. 2011-0001 and its associated draft technical report for discharges of metals and other pollutant wastes to San Diego Bay marine sediment and waters located within and adjacent to BAE Systems San Diego Ship Repair and National Steel and Shipbuilding Company leaseholds (the "Shipyard Sediment Site"). The Shipyard Sediment Site is located in San Diego Bay generally between Sampson Street extension and the mouth of Chollas Creek in the city of San Diego. A-5-4

Under the terms of the TCAO over 140,000 cubic yards of contaminated sediments will be removed from approximately 15.2 acres of the Shipyard Sediment Site with dredge buckets. Dredged materials will be disposed of at appropriate landfill facilities. In addition to the 15.2 acres targeted for dredging, approximately 2.3 acres of the Project site are inaccessible or under-pier areas that would be remediated by one or more methods other than dredging, most likely by sand cover. Removal of the marine sediments will require upland areas for dewatering, solidification, and stockpiling of the materials and potential treatment of decanted waters prior to off-site disposal. Therefore, in addition to the open waters of the Shipyard Sediment Site, five upland areas are identified by the RWQCB as potential sediment staging areas. A-5-5

Staging Area	Location	Potentially Usable Acres
1	10th Avenue Marine Terminal and Adjacent Parking	49.66
2	Commercial Berthing Pier and Parking Lots Adjacent to Coronado Bridge	11.66
3	SDG&E Leasehold/BAE Systems Leasehold/BAE Systems and NASSCO Parking Lots	7.27
4	NASSCO/NASSCO Parking and Parking Lot North of Harbor Drive (Staging Area 4 is not located adjacent to the waterfront; therefore, sediment transport from the barge to the staging area would be required)	3.85
5	24th Street Marine Terminal and Adjacent Parking Lots in the city of National City	145.31

Comments on the Draft PEIR

Agency Jurisdiction

1. Based on the information provided in the PEIR and a review of in-house records, the Project will involve: (1) ungranted sovereign lands under the leasing jurisdiction of the CSLC; and (2) sovereign lands legislatively granted originally to the city of San Diego and subsequently transferred to the San Diego Port District A-5-6

(District) pursuant to Chapter 67, Statutes of 1962, and as amended, minerals reserved. Dredging and remediation work on ungranted and granted sovereign lands, as specified in the proposed Project, will require a lease by the CSLC (please refer to www.slc.ca.gov for a lease application). Accordingly, please add the CSLC as a responsible and trustee agency in Table 3-1 of the PEIR. Specific information on the CSLC's jurisdiction is provided above. A-5-6

Program Environmental Review and Mitigation

2. Section 2.1.3 (Level of Review) discusses the "program-level" of review in the PEIR and states that CEQA permits the "Lead Agency" to use "tiering" to "defer analysis of certain details of later phases of long-term linked or complex projects until those phases are up for approval." However, to avoid the improper deferral of mitigation, a common flaw in program-level environmental documents, mitigation measures should either be presented as specific, feasible, enforceable obligations, or should be presented as formulas containing "performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way" (State CEQA Guidelines § 15126.4, subd. (b)).[1] A-5-7

3. Section 2.1.4 (Intended Uses of the PEIR) states "Future decisions and implementing actions following certification of the PEIR and approval of the Project will be subject to subsequent environmental review pursuant to CEQA." The PEIR should make an effort to distinguish what activities and their mitigation measures are being analyzed in sufficient detail to be covered under the PEIR without additional project specific environmental review, and what activities will trigger the need for additional environmental analysis (see State CEQA Guidelines § 15168, subd. (c)). A-5-8

4. For example, Mitigation Measure (MM) 4.5.11 on page 4.5-60, related to sensitive biological resources in the vicinity of Staging Area 5, does not appear to prescribe specific, enforceable measures that would avoid or lessen the potential impact. Instead, MM 4.5.11 defers the formulation and analysis of specific measures to future consultation with the California Department of Fish and Game. The PEIR should either provide specific, stand-alone measures and analyze their effectiveness in reducing potential effects, or should clearly state that those impacts and any required mitigation would be disclosed and analyzed in a subsequent tiered document. A-5-9

Cultural Resources

The Initial Study (IS) for the Project (1) found no impact to cultural resources because the Project does not entail grading undisturbed areas on the site, and the area proposed for dredging consists of recently deposited material and undisturbed subtidal material A-5-10

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[1] The "State CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

below the depth that would include cultural resources, and (2) states that standard Best Management Practices (BMPs) will be employed as part of the Project in the event that an archaeological or paleontological resource is found during implementation. A-5-10

5. The latter statement provides for the possibility of an unanticipated cultural resource find. Therefore, the PEIR should discuss and evaluate potential impacts to submerged cultural resources in the Project area. The CSLC maintains a shipwrecks database that can assist with this analysis (see http://shipwrecks.slc.ca.gov); please contact Pam Griggs of this office (contact information below) to obtain results from a search of the shipwrecks database that may contain confidential archaeological site information. The database includes known and potential vessels located on the State's tide and submerged lands; however, the locations of many shipwrecks remain unknown. Please note that any submerged archaeological site or submerged historic resource that has remained in state waters for more than 50 years is presumed to be significant. A-5-11

6. To address any potential impacts to submerged cultural resources and any unanticipated discoveries during the Project's construction, the BMPs should be developed into mitigation measures in the PEIR and included in the Mitigation Monitoring and Reporting Program (MMRP). A-5-12

7. The PEIR should also clearly state that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. The CSLC requests that the RWQCB consult with CSLC staff, should any cultural resources be discovered during construction of the proposed Project. A-5-13

Climate Change and Greenhouse Gas (GHG) Emissions

Section 4.7 of the PEIR provides a lengthy discussion of the existing setting, regulatory setting and thresholds of significance. In Section 4.7.4, the PEIR estimates that the proposed Project would generate up to 7,750 metric tons of carbon dioxide (CO_2) per year. However, the PEIR then concludes that the proposed Project's contribution to Global Climate Change (GCC) in the form of GHG emissions is less than significant (individually and cumulatively) because the emissions generated are short-term versus ongoing (permanent). The PEIR also notes that the air quality mitigation measures that would reduce emissions from construction-related vehicles and equipment would also reduce CO_2 emissions. A-5-14

8. The PEIR does not present substantial evidence to support the "less than significant impact" conclusion for GHGs. CSLC staff suggests that 7,750 metric tons of CO_2 emissions per year be considered a significant impact that requires mitigation (see California Air Resources Board, "Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act," Attachment A, Preliminary Draft Proposal for Industrial Projects; see http://www.arb.ca.gov/cc/localgov/ceqa/ceqa.htm). Alternatively, CSLC staff A-5-15

requests that more information be added in the PEIR justifying that 7,750 metric tons of CO_2 emissions per year is less than significant, when the presumption is that emissions of over 7,000 metric tons per year for industrial projects are a significant impact to climate change. A-5-15

9. Similarly, CSLC staff requests that the PEIR reanalyze the appropriateness of the PEIR's conclusion that the cumulative impacts to GCC are less than significant with mitigation incorporation or potentially significant with mitigation incorporation. A-5-16

Thank you for the opportunity to comment on the Draft PEIR. It is anticipated that the CSLC will need to rely on this CEQA document for issuance of a dredging lease; therefore, we request that you consider our comments prior to adoption of the Final PEIR.

A-5-17

Please send copies of future Project-related CEQA documents or refer questions concerning environmental review to Sarah Mongano, Staff Environmental Scientist, at (916) 574-1889 or via e-mail at Sarah.Mongano@slc.ca.gov. Please contact Michelle Andersen at (916) 574-0200 (e-mail: Michelle.Andersen@slc.ca.gov) if you have questions concerning CSLC jurisdiction or leases, or Senior Staff Counsel Pam Griggs at (916) 574-1854 (e-mail: Pamela.Griggs@slc.ca.gov) if you have questions concerning archaeological or historic resources under CSLC jurisdiction.

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
M. Andersen, LMD, CSLC
S. Mongano, DEPM, CSLC
P. Griggs, Legal, CSLC

ENVIRON

August 1, 2011

Via Electronic Mail (in PDF)

Ms. Jill Tracy
Senior Environmental Counsel
San Diego Gas & Electric
101 Ash Street, HQ13
San Diego, CA 92101

Re: Draft EIR for the San Diego Shipyard Sediment Site Proposed Remediation

Dear Ms. Tracy:

At the request of San Diego Gas & Electric (SDG&E), ENVIRON International Corporation (ENVIRON) has prepared this letter to highlight potential critical issues associated with draft documents supporting the Environmental Impact Report (EIR) for the proposed San Diego Shipyard Sediment Site (Site) remediation. Although four documents were reviewed[1], the primary focus of ENVIRON's comments concerns the March 31, 2011 *Draft Water Quality Technical Report, Shipyards Sediment Site, San Diego Bay, San Diego, CA* by Geosyntec Consultants (Geosyntec, 2011).

ENVIRON notes the following critical issues:

1. **The proposed water column turbidity monitoring plan is insufficient to characterize the potential migration of contaminated sediment to areas adjacent to the Site remedial footprint.** On page 19 of Geosyntec (2011), it is noted that turbidity samples will be collected from the water column at locations 250 and 500 feet from active dredging operations. This monitoring will be conducted to evaluate the effects on water quality due to contaminated sediment suspended during dredging. However, this data will be insufficient for characterizing the deposition of contaminated footprint sediment to areas directly adjacent to the footprint.

   For example, at the northwestern end of the footprint, the nearest turbidity monitoring station is located 100 feet beyond the boundary of the non-footprint polygon SW29. There will be no data available to evaluate potential contamination with suspended footprint sediments that deposit to SW29. Although the CRWQCB found in the September 15, 2010 version of the DTR that SW29 did not exhibit Beneficial Use Impairment and did not warrant remedial action, SW29 may be investigated in future CRWQCB action, as noted by David Barker (Chief of the Water Resource Protection Branch of San Diego Regional Water Quality Control Board) during his March 3, 2011 deposition (Barker, 2011 – statements starting at 11:49 AM [2]). Additionally, data will

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[1] 1) *Draft Water Quality Technical Report, Shipyards Sediment Site, San Diego Bay, San Diego, CA*; 2) *Draft Marine Biological Resources Assessment Technical Report, Shipyard Sediment Site, National Steel and Shipbuilding Company (NASSCO), BAE Systems San Diego Ship Repair, Inc.;* 3) *Draft Hazards and Hazardous Materials Technical Report, Shipyards Sediment Site, San Diego Bay, San Diego, CA*; and 4) *Draft Traffic Impact Analysis, Shipyard Sediment Project.*

[2] Barker, D. 2011. Deposition of David Barker, March 3, 2011, San Diego, California.

O-1-2 O-1-1

be unavailable for the area 100 feet to the northwest of SW29, which may be included in a potential SW29 investigation.

As the area to the northwest of the footprint may incur future sediment investigations by CRWQCB, ENVIRON recommends that the potential contamination of surface sediments in these areas by the proposed Site dredging activities be better characterized by relocating the turbidity monitoring locations proposed by Geosyntec (2011) to stations closer to the immediate vicinity of the footprint boundary. Further safeguards may include the use of additional turbidity monitoring locations. Either option should include placement of a monitoring station not more than 50 feet from the northwest boundary of the footprint (approximately in the middle of polygon SW29). Additionally, ENVIRON recommends a pre- and post-dredging survey of concentrations of chemicals in surface sediment in SW29 and potentially-relevant areas to the northwest of SW29. Although the currently-proposed turbidity monitoring is a useful line of evidence, it is flawed as proposed and a comparison of pre- and post-dredging concentrations of COCs in surface sediment would serve as a much stronger line of evidence for evaluating the deposition of suspended footprint sediments to this area.

2. **Stated post-remedy sediment action levels are incorrect.** On page 20, Geosyntec (2011) notes:

   > *"Sediment concentrations in a horizon that represents the first undisturbed depth beneath the dredge depth will be measured. COCs that will be monitored and compared to background sediment chemistry levels include copper, mercury, HPAHs, TBT, and PCBs. The background sediment chemistry levels are presented in Table 1."*

   This passage is incorrect. Concentrations of the COCs in surface sediment sampled immediately following dredging are to be compared to values corresponding to 120% of the concentrations in background sediment, as discussed on page 34-3 of the CRWQCB's September 15, 2010 version of the DTR. This passage and Table 1 of Geosyntec (2011) should be revised to reflect the approach detailed on page 34-3 of the DTR.

3. **Recent investigations by BAE Systems do not appear to have been considered.** Recent Site investigations conducted by BAE Systems (BAE) in support of their late 2010/early 2011 dry dock dredging project do not appear to have been incorporated into the draft EIR materials. During this time period, BAE conducted an investigation of surface and subsurface sediment chemistry in and adjacent to the proposed footprint area. This data is useful for multiple technical aspects of the EIR, including evaluating the likelihood that the dredged materials would be classified as hazardous waste and predicting potential impacts to water quality as a result of chemical releases from sediment. Waste characterization is a key factor in remedial cost allocation, and it is necessary to obtain a clear accounting of this remedial cost element (as well as the remainder of the remedial cost assumptions). Additionally, updated bathymetry in the BAE portion of the Site would likely improve engineering plans for the various remedial approaches. Turbidity and water quality data collected during BAE's dry dock dredging events should also be incorporated in the monitoring and mitigation plans, as they may offer a better understanding of the Site-specific performance of silt curtains and other efforts related to controlling the migration of suspended sediments.

O-1-5 O-1-4 O-1-3

4. **Additional engineering and feasibility detail is needed regarding the proposed remedial activity.** There is a paucity of supporting information regarding technical engineering information used to derive the proposed remediation plan. For example, on page 12 of Geosyntec (2011), Geosyntec states that “Under pier capping operations will likely be performed after sediment removal operations are fully completed”. Due to the creation of slopes adjacent to the piers (due to dredging), under-pier sediment may slough off into the adjacent dredged areas, causing a potential persistent recontamination of these areas. This likelihood should be evaluated via modeling or other engineering information, and results should be incorporated into the overall project planning and made available for review. Additionally, supporting material is needed to fully understand why hydraulic dredging of under-pier sediment was excluded as a remedial option (currently, only capping of under-pier sediment is proposed). It is possible that hydraulic dredging may address under-pier contamination issues and protect against sloughing of under-pier sediment to adjacent areas. However, these options can only be fully explored by a thorough engineering feasibility evaluation.

Please let us know if you have any concerns or questions regarding the above comments. We look forward to reviewing future drafts of the EIR materials and continuing to provide technical assistance as needed.

Sincerely,

Jason Conder

Jason M. Conder, PhD
Manager

O-1-7

O-1-6

CERTIFICATION

STATE OF CALIFORNIA)
)
COUNTY OF SAN DIEGO)

I, the undersigned, declare:

That I am Senior Counsel for San Diego Gas & Electric Company, a Designated Party in the within action.

I hereby certify that true and accurate copies of the following documents were electronically submitted to all Designated Parties in this matter:

1. Comments to the Draft EIR for the San Diego Shipyard Sediment Site Proposed Remediation.

Executed on this 1st day of August, 2011, at San Diego, California.

Jill A. Tracy
Senior Counsel
San Diego Gas & Electric Company

255347

O-1-8

SAN DIEGO COASTKEEPER

ENVIRONMENTAL HEALTH COALITION
EMPOWERING PEOPLE. ORGANIZING COMMUNITIES. ACHIEVING JUSTICE.

July 27, 2011

Mr. Vincente Rodriguez
Regional Water Quality Control Board
9174 Sky Park Court, Suite 100
San Diego, CA 92123
vrodriguez@waterboards.ca.gov

RE: San Diego Coastkeeper's and Environmental Health Coalition's Comments on the Shipyard Sediment Cleanup Draft Environmental Impact Report

Dear Mr. Rodriquez:

San Diego Coastkeeper and Environmental Health Coalition ("Environmental Parties") have reviewed the Draft EIR for the Shipyard Sediment Cleanup. The Environmental Parties remain concerned about the inadequacies of the remedial and post-remedial monitoring plans, detailed in our comments submitted on May 26, 2011. Notwithstanding these comments, with a few additions and clarifications, the Draft Environmental Impact Report will be adequate. It is imperative that the toxic sediments—too toxic for the Ocean Dump site—be removed from the Bay as soon as possible. O-2-1

The Environmental Parties submit the following comments and recommendations to ensure that the Draft EIR fully reflects the conditions and measures needed to reduce environmental impacts from the project. The Environmental Parties reserve the right to rely on other comments submitted. O-2-2

I. The Draft EIR should include and adopt a new, environmentally preferable sediment barging option.

The current proposal involves two legs of truck traffic related to the project: (1) to truck the dredge spoils to the treatment staging area and (2) to haul the treated sediment to the appropriate landfill. Any remedial option that achieves the cleanup goals while also (1) reducing the number of trucks and truck trips, (2) reducing greenhouse gas emissions, and (3) avoiding from parking impacts on local communities, should be viewed as environmentally preferable. O-2-3

The Environmental Parties request that the Draft EIR include and adopt a new option of barging the sediments bound for Otay Landfill to Staging Area 5 on the National City Marine Terminal for treatment. This option could reduce the number of trucks and truck trips, reduce greenhouse gas emissions, and avoid additional parking impacts on local communities. Northern areas of the proposed Staging Area 5 would reduce or eliminate potential impacts on the Sweetwater Marsh

O-2

wildlife refuge and should be identified. No areas on the National City Marine Terminal near the parks or commercial areas should be considered for staging. O-2-3

Similarly, the Naval Station should be evaluated as an additional staging area because it has many piers that are easily accessible by water and the Navy is a potentially responsible party. Further, Naval Station areas north of the National City Marine Terminal are good potential locations that would also support use of barges. O-2-4

II. New relevant studies should be included in the Draft EIR.

The State Water Resources Control Board Surface Water Ambient Monitoring Program's (SWAMP) 2009 Coast Survey, "Contaminants in Fish from the California Coast," (Attached as Exhibit A) should be included in the Draft EIR. The Coast Survey is California's largest-ever statewide survey of contaminants in sport fish from coastal locations, and it evaluates the extent of chemical contamination in sport fish from California's coastal waters. Results from the first year of the two-year survey reveal that San Diego Bay stands out as having elevated concentrations of mercury and PCBs.[1] The survey sets further data collection and analysis of contamination levels in San Diego Bay as a high priority.[2] O-2-5

Likewise, the recent "Final Report to the Port of San Diego Chemical Analysis of threatened and Endangered Species in San Diego: The San Diego Bay Trophic Transfer Project," by Dr. Rebecca Lewison (Attached as Exhibit B) should be included in the Draft EIR. This study demonstrated that turtles, a long-lived species in the Bay, have had both chronic and acute exposures to toxic chemicals linked to bay sediment contamination through their food sources.[3] O-2-6

These studies should be included in the Draft EIR because they further demonstrate the adverse effects of sediment contamination on wildlife in the bay.

III. The Draft EIR fails to assess and address impacts of filling the Convair Lagoon, which should not be considered a viable alternative.

The Draft EIR fails to adequately address the impacts of filling Convair Lagoon. When originally conceived and permitted, the existing underwater cap was to be replanted with eelgrass and restored as a habitat. If the lagoon is filled, the loss of habitat area and of open water would need to be mitigated. However, two projects listed as potentials (intake/discharge channels of the power plant and fixing a failed previous mitigation) would not be appropriate and would, in fact, constitute 'double-dipping.' Thus, these two projects should not be considered as mitigation options. The Port is very limited on mitigation options in the bay, so a major effort must be made to find adequate and appropriate mitigation for this option. O-2-7

---

[1] J.A. Davis et al., Contaminants in Fish from the California Coast, 2009: Summary Report on Year One of a Two-Year Screening Survey, A Report of the Surface Water Ambient Monitoring Program (SWAMP), California State Water Resources Control Board, Sacramento, CA (2011).
[2] *Id.*
[3] Lewison et al., Chemical Analysis of Threatened and Endangered Species in San Diego (2011).

IV. New mitigation measures must be added to the Draft EIR, and current measures must be strengthened.

Mitigation measures must be added to the Draft EIR. As written, the Draft EIR fails to provide adequate and appropriate mitigation with respect to impacts on the community, air quality, and on endangered species and habitats. O-2-8

a. The staging areas will adversely affect the community and must be mitigated.

Displaced parking is already a major issue in the community, thus any parking impacts must be mitigated. Staging Areas 1-4, if used, will have significant impacts on the entire community, and Staging Area 5, if used, will have impacts on areas of west Old Town National City. Mitigation fees to offset impacts should be paid to the Port's Capital Improvement Fund for projects in Barrio Logan and Old Town National city in proportion to the amount of traffic and impacts that accrue in those neighborhoods.

Further, trucks parked in neighborhoods while waiting for pick-ups and drop-offs would negatively impact the community. The Draft EIR should designate a truck staging area to address this issue. O-2-9

b. Current mitigation measures for air quality impacts must be strengthened to ensure that the cleanup protects the environment and does not contribute to existing air pollution.

Mitigation Measures 4.6.8 and 4.6.9 should be strengthened to require all that trucks used be hybrid or cleaner alternative fuel trucks and tugs. Further, electric powered dredging equipment should be required for all dredging. For a project of this magnitude and duration, it will be cost-effective to utilize this new technology. O-2-10

The Environmental Parties suggest that Mitigation Measure 4.6.10 should be required without limitation or, at a minimum, the Draft EIR should define what "cost-effective" means. Without this requirement, the dischargers will not use hybrid or cleaner alternative fuel trucks and tugs. Further, for air emissions that cannot be eliminated, the dischargers must acquire NOx and ozone offsets for the emissions from the project, as the area is currently in "non-attainment" for these air pollutants. O-2-11

In addition to reducing air pollution in local communities, a requirement for hybrid tugs and trucks would also help reduce the impacts on global climate change. This option is clearly feasible, as the Ports of Los Angeles and Long Beach are using a zero-emission heavy-duty rig that runs on electric batteries powered by a hydrogen fuel cell to transport cargo between the ports and Inland Empire warehouses and distribution centers. *See* Los Angeles Times, "Seaport complex takes delivery of zero-emission hauling truck," July 23, 2011, Attached as Exhibit C. O-2-12

 O-2

c. The Draft EIR must adopt more stringent measures to mitigate impacts on endangered species and of habitat loss in the bay.

The Draft EIR should recommend that dredging should not be allowed to occur during the California Least Tern nesting season. The Tern colonies in the region are already suffering under existing pressures, such as the Big Bay fireworks show and budget cuts reducing predator management. The Cleanup would place additional pressure on the already strained Tern population. Thus, if dredging is allowed during nesting season, mitigation of impacts to the Terns must be required. O-2-13

The economic analyses included in the Draft Technical Report assume that dredging will not occur during the California Least Tern nesting season. If this limitation is not required, the Cleanup Team must re-calculate dredging costs to reflect this changed assumption. O-2-14

Further, the Draft EIR should require mitigation if any open water or bay bottom is permanently lost to fills or confined disposal facilities. O-2-15

Thank you for the opportunity to comment on this document. We look forward to the hearing on the CEQA analysis and the merits of the cleanup by the end of the year. O-2-16

Sincerely,

Jill Witkowski
Staff Attorney, San Diego Coastkeeper

On behalf of San Diego Coastkeeper and
Environmental Health Coalition

SWAMP
Surface Water Ambient Monitoring Program

CONTAMINANTS IN SPORT FISH FROM THE CALIFORNIA COAST, 2009: SUMMARY REPORT ON YEAR ONE OF A TWO-YEAR SCREENING SURVEY

J.A. Davis
K. Schiff
A.R. Melwani
S.N. Bezalel
J.A. Hunt
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D. Crane
S. Swenson
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Prepared for the Surface Water Ambient Monitoring Program

May 25, 2011

California Water Boards

www.waterboards.ca.gov/swamp

THIS REPORT SHOULD BE CITED AS:

Davis, J.A., K. Schiff, A.R. Melwani, S.N. Bezalel, J.A. Hunt, R.M. Allen, G. Ichikawa, A. Bonnema, W.A. Heim, D. Crane, S. Swenson, C. Lamerdin, and M. Stephenson. 2011. Contaminants in Fish from the California Coast, 2009: Summary Report on Year One of a Two-Year Screening Survey. A Report of the Surface Water Ambient Monitoring Program (SWAMP). California State Water Resources Control Board, Sacramento, CA.

ACKNOWLEDGEMENTS

This report and the SWAMP bioaccumulation monitoring element are the result of a very large team effort. The contributions of all of the following colleagues are very gratefully acknowledged.

The Bioaccumulation Oversight Group (BOG)

Terry Fleming, USEPA
Bob Brodberg, OEHHA
Michael Lyons, Region 4 Water Board
Karen Taberski, Region 2 Water Board
Chris Foe, Region 5 Water Board
Michelle Wood, Region 5 Water Board
Patrick Morris, Region 5 Water Board
Mary Adams, Region 3 Water Board
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Mark Stephenson, CDFG
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Cassandra Lamerdin, MLML
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Gail Cho, CDFG
Gary Ichikawa, CDFG
Marco Sigala, MLML
Ken Schiff, SCCWRP

SWAMP Bioaccumulation Peer Review Panel

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Chris Schmitt, USGS, Columbia, Missouri
Ross Norstrom, Canadian Wildlife Service (retired); Carleton University, Ottawa, Canada

RMP Sport Fish Workgroup

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Moss Landing Marine Laboratories

Contract Management: Rusty Fairey
Fish Collection: Gary Ichikawa, Billy Jakl, Dylan Service, Bryan Frueh, Sean Mundell, John Negrey

Dissection: Stephen Martenuk, Kelsey James, Duncan Fry, Jason Whitney, Brynn Hooton, Kim Smelker, Chandler Ichikawa, and Sean Goetzl
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SWAMP Data Management Team: Cassandra Lamerdin, Mark Pranger, Stacey Swenson, Susan Mason, Marco Sigala, George Radojevic, Brian Thompson, Kyle Reynolds
SWAMP Quality Assurance Team: Beverly van Buuren, Eric von der Geest

California Department of Fish and Game Water Pollution Control Laboratory

Sample prep: Laurie Smith, David Gilman, Rafia Mohammed
Sample analysis: Kathleen Regalado, Gary Munoz
Data entry and QA: Loc Nguyen

SWAMP Staff

Karen Larsen, Jennifer Doherty, Adam Ballard, and Dawit Tadesse of the State Water Resources Control Board guided the project on behalf of SWAMP.

A draft of this document was reviewed and much improved thanks to comments received from Ross Norstrom, Chris Schmitt, Jim Wiener, Terry Fleming, Bob Brodberg, Margy Gassel, Jennifer Doherty, and Susan Monheit.

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Appendices

EXECUTIVE SUMMARY E

This summary report presents results from the first year of a coordinated two-year screening survey of contaminants in sport fish in California coastal waters. This survey was performed as part of the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP), in close collaboration with the Southern California Bight Regional Monitoring Program (Bight Program) and the Regional Monitoring Program for Water Quality in the San Francisco Estuary (RMP). This statewide screening study is an initial step in an effort to evaluate the extent of chemical contamination in sport fish from California's coastal waters. This Coast Survey is one element of a new, long-term, statewide, comprehensive bioaccumulation monitoring program for California surface waters. This report provides a concise technical summary of the findings from the first year of the Coast Survey. This report is intended for agency staff charged with managing water quality issues related to bioaccumulation of contaminants in California coastal waters.

The array of species selected for sampling included the species known to accumulate high concentrations of contaminants and therefore serve as informative indicators of potential contamination problems. Contaminant concentrations in fish tissue were compared to thresholds developed by the California Office of Environmental Health Hazard Assessment (OEHHA) for methylmercury, polychlorinated biphenyls (PCBs), dieldrin, dichlorodiphenyltrichloroethanes (DDTs), chlordanes, and selenium, and a State Water Resources Control Board threshold for methylmercury in tissue that is being used for identification of impaired water bodies. Total Maximum Daily Load (TMDL) targets developed by the San Francisco Bay Regional Water Quality Control Board for San Francisco Bay also provided a basis for assessment.

The Coast Survey is a preliminary screening of contamination in sport fish. This screening study did not provide enough information for consumption guidelines – this would require a larger and more focused monitoring effort that would include a broader array of species and larger numbers of fish. Sampling in year one focused on the most urbanized regions on the coast near Los Angeles and San Francisco. Sources of contamination are generally more prevalent in urban regions, so the preliminary results from year one reflect a bias toward higher contaminant concentrations.

The Coast Survey represents a major step forward in understanding the extent of chemical contamination in sport fish in California coastal waters, and the impact of this contamination on the fishing beneficial use. In the first year of this statewide screening study, 2291 fish from 36 species were collected from 42 locations on the California coast. The survey identified high concentrations of contaminants in a few areas, and widespread moderate contamination throughout the urban coastal regions sampled. Methylmercury and PCBs are the pollutants that pose the most widespread potential health concerns to consumers of fish caught on the California coast. None of the locations had all sampled fish species below all the OEHHA thresholds. The high degree of variation observed among species within locations indicates that fish consumers can significantly reduce their exposure, and still attain the substantial nutritional benefits that fish provide, by selectively targeting species with lower concentrations of methylmercury.

At several locations, methylmercury reached concentrations high enough that OEHHA would consider recommending no consumption of the contaminated species (0.44 ppm wet weight). Overall, eight of the 42 locations surveyed had a species with an average concentration exceeding 0.44 ppm. At all but one of the locations these were sharks, which have a tendency to accumulate high levels of methylmercury worldwide. Striped bass, a very popular species sampled in San Francisco Bay, was the one other species that had an average methylmercury concentration (0.45 ppm) above 0.44 ppm. Most of the locations sampled (33 of 42) were in the moderate contamination categories (above the lowest threshold of 0.07 ppm and below 0.44 ppm). Several species had average methylmercury concentrations below all thresholds, most notably chub mackerel, which is one of the most popular sport fish species on the southern California coast.

PCB contamination was moderate but widespread. Six of the 42 locations surveyed had a species with an average concentration exceeding OEHHA's no consumption threshold of 120 ppb. San Francisco Bay and San Diego Bay stood out as having elevated concentrations. Most of the locations sampled (74%) fell in the moderate contamination categories between the lowest threshold of 3.6 ppb and the 120 ppb no consumption threshold. Only five locations from more remote areas had concentrations lower than the lowest threshold. Eleven species, including all of the rockfish species sampled, had average PCB concentrations below all thresholds. Safe eating guidelines have been in place for many years in San Francisco Bay, but guidelines for San Diego Bay have not been developed.

OEHHA has developed thresholds for four other pollutants that were analyzed in this survey: dieldrin, DDT, chlordane, and selenium. Concentrations of these contaminants in fish tissue sampled rarely exceeded any of the OEHHA Advisory Tissue Levels. The legacy pesticides, however, did frequently exceed the Fish Contaminant Goals established by OEHHA.

San Francisco Bay samples were also analyzed for dioxins, polybrominated diphenyl ethers (PBDEs), and perfluorinated chemicals (PFCs). Dioxin toxic equivalent concentrations in the Bay are several times higher than a San Francisco Bay Regional Water Board screening value and do not show obvious signs of decline. A lack of accepted thresholds constrains assessment of the concerns posed by PFCs for consumers of Bay sport fish. Only four samples had detectable perfluorooctanesulfonate (PFOS) concentrations. PBDEs were well below the newly established FCG and ATLs for PBDEs. A study performed with white croaker from San Francisco Bay found that removal of skin reduced concentrations of organic contaminants such as PCBs by 65%.

Chapter 3 of this report provides more information on the statewide results. Chapters 4 and 5 provide detailed presentations of the results from Southern California and San Francisco Bay.

SECTION 1 INTRODUCTION

This summary report presents results from the first year of a two-year statewide screening survey of contaminants in sport fish on the California coast. The survey is being performed as part of the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP). This effort marks the beginning of a new long-term, statewide, comprehensive bioaccumulation monitoring program for California surface waters.

This report provides a concise technical summary of the findings of the survey. It is intended for agency scientists that are charged with managing water quality issues related to bioaccumulation of contaminants in California surface waters.

Oversight for this project is being provided by the SWAMP Roundtable. The Roundtable is composed of State and Regional Board staff and representatives from other agencies and organizations including US Environmental Protection Agency (USEPA), the California Department of Fish and Game, and the California Office of Environmental Health Hazard Assessment (OEHHA). Interested parties, including members of other agencies, consultants, or other stakeholders also participate.

The Roundtable has formed a subcommittee, the Bioaccumulation Oversight Group (BOG) that specifically guides SWAMP bioaccumulation monitoring. The BOG is composed of representatives from each of the Roundtable groups, and in addition the Southern California Coastal Waters Research Project, and the San Francisco Estuary Institute. The members of the BOG possess extensive experience with bioaccumulation monitoring.

The BOG has also convened a Bioaccumulation Peer Review Panel that is providing evaluation and review of the bioaccumulation program. The members of the Panel are internationally-recognized authorities on bioaccumulation monitoring.

The BOG has developed and begun implementing a plan to evaluate bioaccumulation impacts on the fishing beneficial use in all California water bodies. Sampling of sport fish in lakes and reservoirs was conducted in the first two years of monitoring (2007 and 2008). In 2009 and 2010, sport fish from the California coast, including bays and estuaries were sampled. Sport fish from rivers and streams will be sampled in 2011.

THE COAST SURVEY

Management Questions for This Survey

Three management questions were articulated to guide the design of the Coast Survey. These management questions are specific to this initial screening survey; different sets of management questions will be established to guide later efforts.

Management Question 1 (MQ1)

Status of the Fishing Beneficial Use

For popular fish species, what percentage of popular fishing areas have low enough concentrations of contaminants that fish can be safely consumed?

Answering this question is critical to determining the degree of impairment of the fishing beneficial use across the state due to bioaccumulation. This question places emphasis on characterizing the status of the fishing beneficial use through monitoring of the predominant pathways of exposure – ingestion of popular fish species from popular fishing areas. This focus is also anticipated to enhance public and political support of the program by assessing the resources that people care most about. The determination of percentages mentioned in the question captures the need to perform a statewide assessment of the entire California coast. Past monitoring of contamination in sport fish on the California coast has been patchy (reviewed in Davis et al. [2007]), and a systematic statewide survey has never been performed. The emphasis on safe consumption calls for an accurate message on the status of the fishing beneficial use and evaluation of the data using thresholds for safe consumption.

The data needed to answer this question are average concentrations in popular fish species from popular fishing locations. Inclusion of as many popular species as possible is important to understanding the nature of impairment in any areas with concentrations above thresholds. In some areas, some fish may be safe for consumption while others are not, and this is valuable information for anglers. Monitoring species that accumulate high concentrations of contaminants ("indicator species") is valuable in answering this question: if concentrations in these species are below thresholds, this is a strong indication that an area has low concentrations.

Management Question 2 (MQ2)

Regional Distribution

What is the spatial distribution of contaminant concentrations in fish within regions?

Answering this question will provide information that is valuable in formulating management strategies for observed contamination problems. This information will allow managers to prioritize their efforts and focus attention on the areas with the most severe problems. Information on spatial distribution within regions will also provide information on sources and fate of contaminants of concern that will be useful to managers.

This question can be answered with different levels of certainty. For a higher and quantified level of certainty, a statistical approach is needed that includes replicate observations in the spatial units to be compared. In some cases, managers can attain an adequate level of understanding for their needs with a non-statistical, non-replicated approach. With either approach, reliable estimates of average concentrations within each spatial unit are needed.

Management Question 3 (MQ3)

Need for Further Sampling

Should additional sampling of contaminants in sport fish (e.g., more species or larger sample size) in specific areas be conducted for the purpose of developing comprehensive consumption guidelines?

This screening survey of the entire California coast will provide a preliminary indication as to whether many areas that have not been sampled thoroughly to date may require consumption guidelines. Consumption guidelines provide a mechanism for reducing human exposure in the near-term. The California Office of Environmental Health Hazard Assessment (OEHHA), the agency responsible for issuing consumption guidelines, considers a sample of 9 or more fish from a variety of species abundant in a water body to be the minimum needed in order to issue guidance. It is valuable to have information not only on the species with high concentrations, but also the species with low concentrations so anglers can be encouraged to target the less-contaminated species. The diversity of species on the coast demands a relatively large effort to characterize interspecific variation. Answering this question is essential as a first step in determining the need for more thorough sampling in support of developing consumption guidelines.

Overall Approach

The overall approach to be taken to answer these three questions is to perform a statewide screening study of bioaccumulation in sport fish on the California coast. Answering these questions will provide a basis for decision-makers to understand the scope of the bioaccumulation problem and will provide regulators with information needed to establish priorities for both cleanup actions and development of consumption guidelines.

It is anticipated that the screening study may lead to more detailed followup investigations of areas where the need for consumption guidelines and cleanup actions is indicated.

Through coordination with other programs, SWAMP funds for this survey were highly leveraged to achieve a much more thorough statewide assessment than could be achieved by SWAMP alone.

First, this effort was closely coordinated with bioaccumulation monitoring for the Southern California Bight Regional Monitoring Program. Every five years, dischargers in the Bight collaborate to perform this regional monitoring. Bioaccumulation monitoring is one element of the Bight Program. Before the present survey, however, the Bight Program had not performed regional monitoring of contaminants in sport fish. Most of the work for this most recent round of Bight monitoring was performed in 2008. The bioaccumulation element, however, was delayed to 2009 in order to allow coordination with the SWAMP survey. The Bight group wanted to conduct sport fish sampling, but lacks the infrastructure to perform sample collection. The Bight group therefore contributed approximately $240,000 worth of analytical work (analysis of PCBs and organochlorine pesticides in 225 samples) to the joint effort. This allowed more intensive sampling of the Bight region than either program could achieve independently.

The SWAMP survey was also coordinated with intensive sampling in San Francisco Bay by the Regional Monitoring Program for Water Quality in the San Francisco Estuary (RMP). The RMP conducts thorough sampling of contaminants in sport fish in the Bay on a triennial basis (see Hunt et al. [2008] for the latest results). This sampling has been conducted since 1994. To coordinate with the SWAMP effort, the RMP analyzed additional species to allow for more extensive comparisons of the Bay with coastal areas and bays in other parts of the state. The RMP benefitted from this collaboration by SWAMP contributing: 1) a statewide dataset that will help in interpretation of RMP data and 2) the present statewide report that includes an assessment and reporting of Bay data and makes production of a separate report by the RMP unnecessary. The RMP effort represents $215,000 of sampling and analysis.

In addition, the Region 4 Water Board supplemented the statewide survey with another $110,000 to provide for more thorough coverage of the Southern California Bight.

In all, these collaborations more than doubled the total amount of SWAMP funding available for sampling and analysis in year 1 of the coastal waters survey. Each of the collaborating programs will benefit from the consistent statewide assessment, increased information due to sharing of resources, and efforts to ensure consistency in the data generated by the programs (e.g., analytical intercalibration).

SECTION 2
METHODS

SAMPLING DESIGN

The sampling plan was developed to address the three management questions for the project (Bioaccumulation Oversight Group 2009). In 2009, sampling was conducted at 42 locations in the San Francisco Bay region and in the Southern California Bight (Figures 2-1, 2-2, 2-3). Fish were collected from June through November. Cruise reports with detailed information on locations are available at www.waterboards.ca.gov/water_issues/programs/swamp/coast_study.shtml.

California has over 3000 miles of coastline that spans a diversity of habitats and fish populations, and dense human population centers with a multitude of popular fishing locations. Sampling this vast area with a limited budget is a challenge. The approach employed to sample this vast area was to divide the coast into 69 spatial units called "zones". The use of this zone concept is consistent with the direction that OEHHA will take in the future in development of consumption guidelines for coastal areas. Advice has been issued on a pier-by-pier basis in the past in Southern California, and this approach has proven to be unsatisfactory. All of these zones were sampled (in other words, a complete census was performed), making a probabilistic sampling design unnecessary. The sampling focused on nearshore areas, including bays and estuaries, in waters not exceeding 200 m in depth, and mostly less than 60 m deep. These are the coastal waters where most of the sport fishing occurs. Popular fishing locations were identified from Jones (2004) and discussions with stakeholders. Zones were developed in consultation with Water Board staff from each of the nine regions, Bight Group stakeholders, and the BOG. Within each zone, sample collection was directed toward the most popular fishing locations. Locations shown in the map figures indicate the weighted polygon centroids to represent the latitudes and longitudes where the fish were actually collected (see cruise reports for details on each location).

The Sampling Plan (Bioaccumulation Oversight Group 2009) provides more details on the design (www.waterboards.ca.gov/water_issues/programs/swamp/coast_study.shtml).

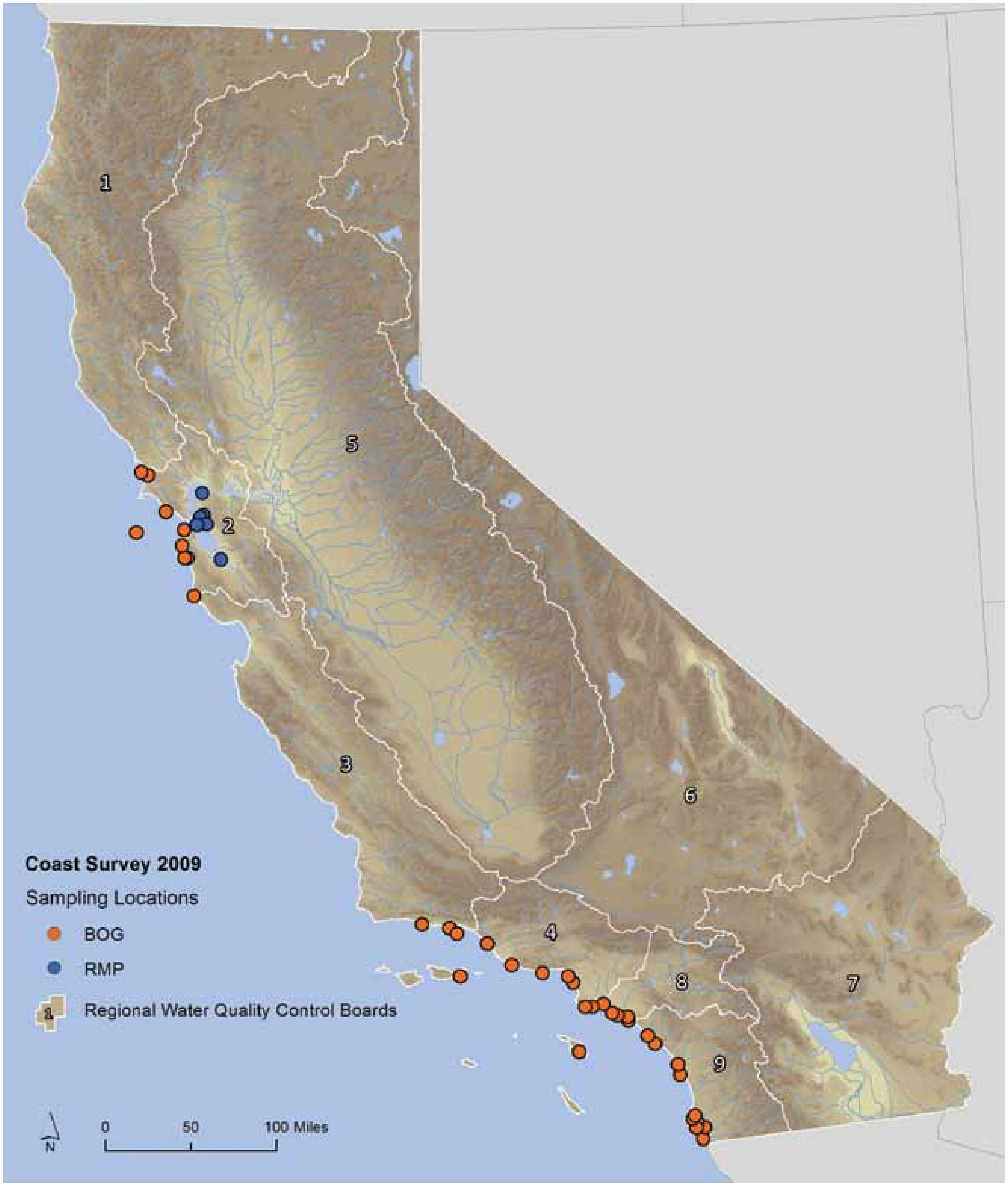


Figure 2-1. Locations sampled in 2009, the first year of the Coast Survey.

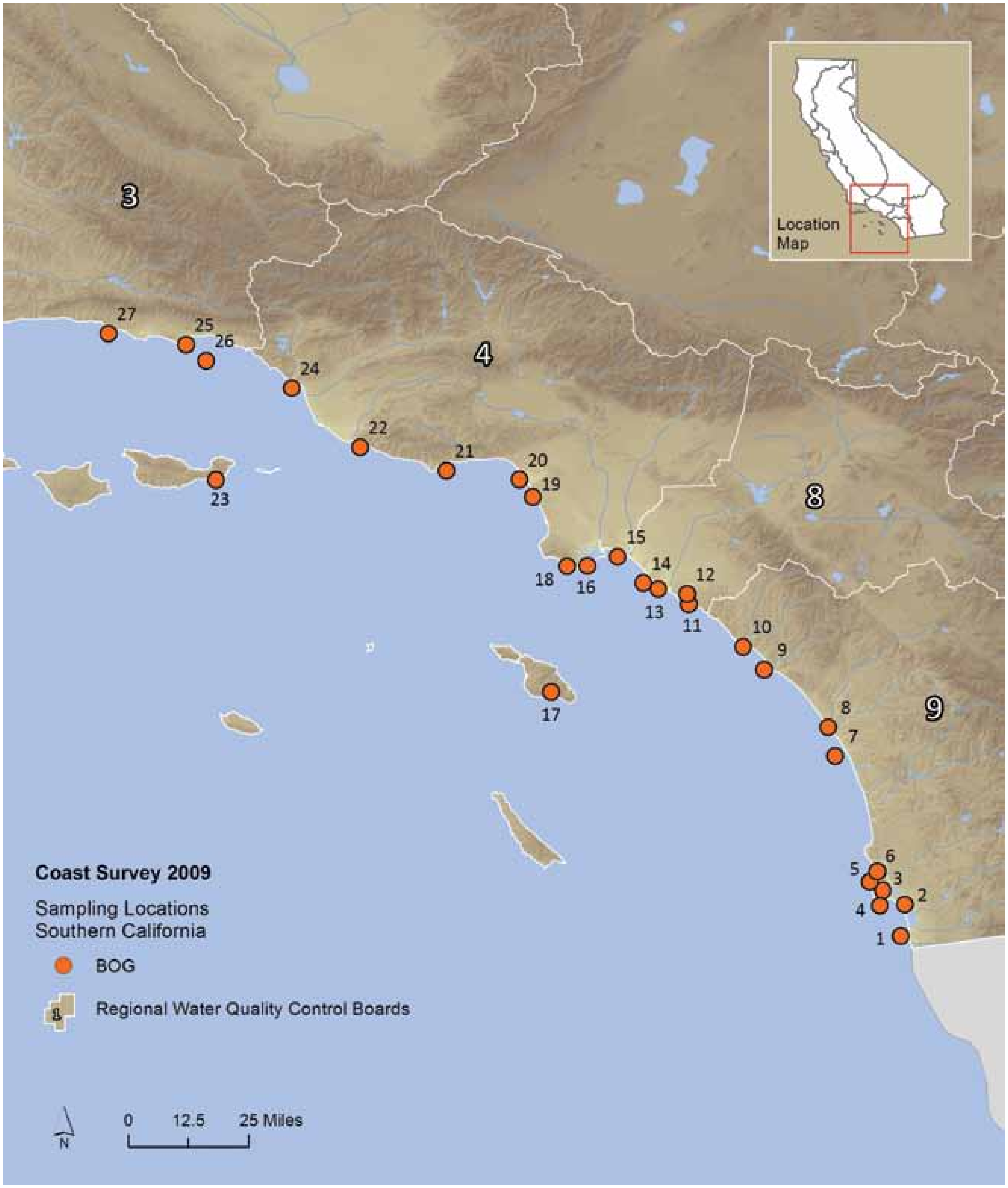


Figure 2-2. Locations sampled in 2009, the first year of the Coast Survey: Southern California. Location names are provided in Appendix 2.

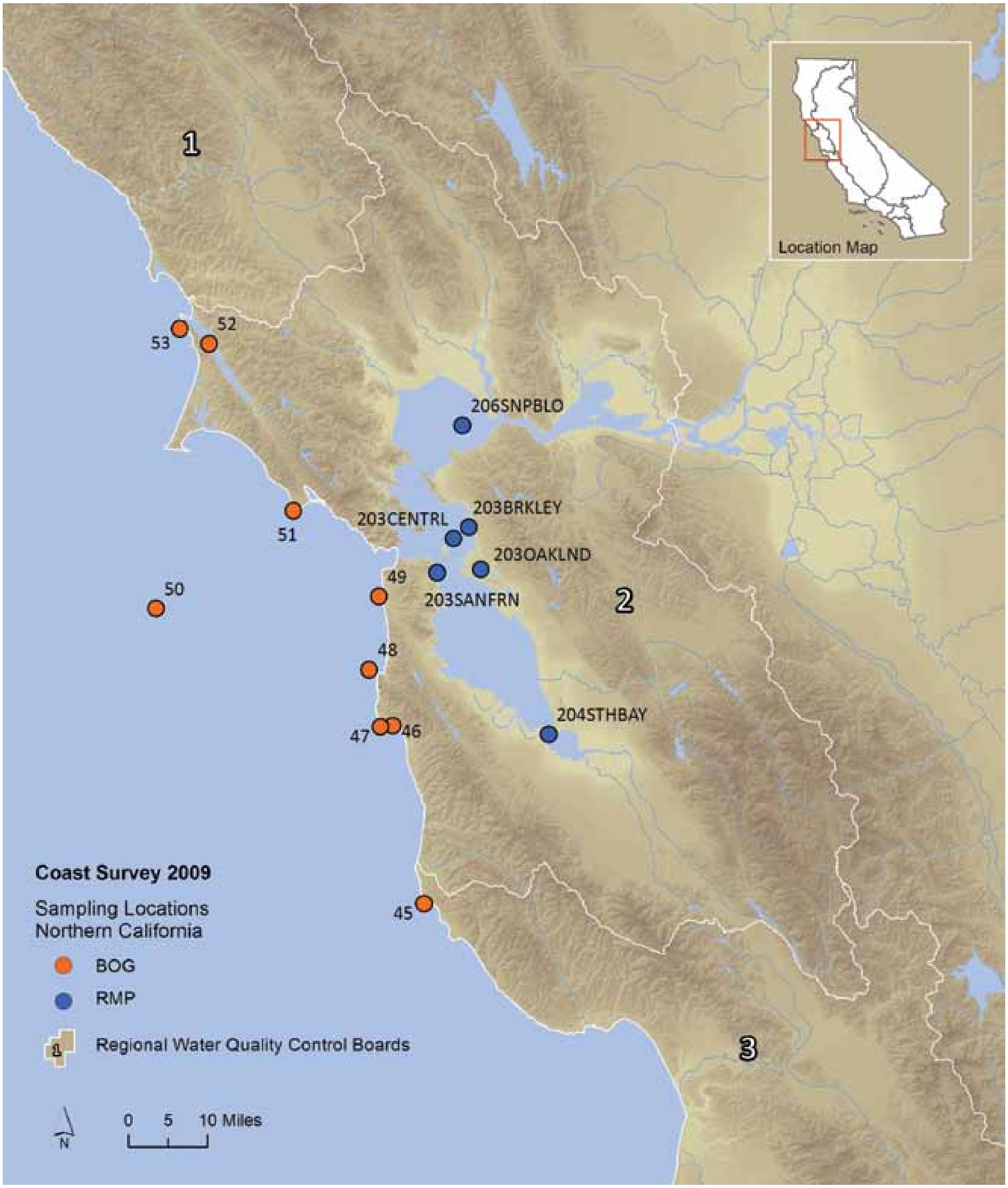


Figure 2-3. Locations sampled in 2009, the first year of the Coast Survey: Northern California. Location names are provided in Appendix 2.

TARGET SPECIES

Selecting fish species to monitor on the California coast is a complicated task due to the high diversity of species, regional variation over the considerable expanse of the state from north to south, variation in habitat and contamination between coastal waters and enclosed bays and harbors, and the varying ecological attributes of potential indicator species. The list of possibilities was narrowed down by considering the following criteria, listed in order of importance.

1. Popular for consumption
2. Sensitive indicators of problems (accumulating relatively high concentrations of contaminants)
3. Widely distributed
4. Species that accumulate relatively low concentrations of contaminants
5. Represent different exposure pathways (benthic vs pelagic)
6. Continuity with past sampling

Information relating to these criteria was presented in the Sampling Plan.

The BOG elected not to include shellfish in this survey due to the limited budget available for the survey and the lower consumption rate and concern for human health. Shellfish sampling may occur in the future if the SWAMP bioaccumulation budget is sufficient.

As recommended by USEPA (2000) in their document "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories," the primary factor considered in selecting species to monitor was a high rate of human consumption. Fortunately, good information on recreational fish catch is available from the Recreational Fisheries Information Network (RecFIN), a product of the Pacific States Marine Fisheries Commission (PSMFC). Many different taxonomic groups of fish are found on the coast (e.g., rockfish, surfperch, or sharks) and some of these groups consist of quite a diversity of species. The sampling design was based on coverage of a representative of selected groups within each zone. The popular groups varied among the three regions of the state (south, central, and north) and between coastal waters and bays and harbors.

While catch data were the primary determinant of the list of target species, some adjustments were made to ensure an appropriate degree of emphasis on sensitive indicators of contamination. Including these species is useful in assessing the issue of safe consumption (contained in MQ1) – if the sensitive indicator species in an area are below thresholds of concern then this provides an indication that all species in that area are likely to be below thresholds. Consequently, target species in this study included both high lipid species such as croaker and surfperch that are strong accumulators of organics, and predators that accumulate mercury such as sharks. A summary of basic ecological attributes of the target species was provided in the Sampling Plan.

Table 2-1
Scientific and common names of fish species collected, the number of locations in which they were sampled, their minimum, median, and maximum total lengths (mm), and whether they were analyzed as composites or individuals. Species marked as "analyzed for individuals" were analyzed as individuals for mercury only.

Family	Species Name	Common Name	Number of Fish	Number of Samples	Number of Locations Sampled	Min Length (mm)	Median Length (mm)	Max Length (mm)	Analyzed As Composite	Analyzed As Individual
Anchovies (Engraulidae)	*Engraulis mordax*	Northern Anchovy	337	9	2	65	89	126	X	
Barracudas (Sphyraenidae)	*Sphyraena argentea*	Pacific Barracuda	4	1	1	450	479	590	X	
Basses (Serranidae)	*Paralabrax nebulifer*	Barred Sand Bass	113	21	14	257	346	590	X	X
Basses (Serranidae)	*Paralabrax clathratus*	Kelp Bass	261	49	18	185	316	512	X	X
Basses (Serranidae)	*Paralabrax maculatofasciatus*	Spotted Sand Bass	63	12	4	195	327	430	X	X
Croaker (Sciaenidae)	*Cheilotrema saturnum*	Black Croaker	3	1	1	234	242	261	X	
Croaker (Sciaenidae)	*Seriphus politus*	Queenfish	4	1	1	156	165	174	X	
Croaker (Sciaenidae)	*Roncador stearnsii*	Spotfin Croaker	15	3	3	138	221	372	X	
Croaker (Sciaenidae)	*Genyonemus lineatus*	White Croaker	283	69	22	164	218	300	X	
Croaker (Sciaenidae)	*Umbrina roncador*	Yellowfin Croaker	50	10	4	121	195	376	X	
Dogfish Sharks (Squalidae)	*Squalus acanthias*	Spiny dogfish	3	1	1	995	1011	1140	X	
Hound Sharks (Triakidae)	*Mustelus henlei*	Brown Smooth-hound Shark	12	4	4	826	978	1144	X	
Hound Sharks (Triakidae)	*Mustelus californicus*	Gray Smoothhound Shark	6	2	2	616	630	685	X	
Hound Sharks (Triakidae)	*Triakis semifasciata*	Leopard shark	12	5	4	930	1153	1230	X	X
Lingcod (Hexagrammidae)	*Ophiodon elongatus*	Lingcod	7	2	2	610	671	822	X	
Mackerels (Scombridae)	*Scomber japonicus*	Chub Mackerel	290	58	20	199	240	335	X	

Family	*Species Name*	Common Name	Number of Fish	Number of Samples	Number of Locations Sampled	Min Length (mm)	Median Length (mm)	Max Length (mm)	Analyzed As Composite	Analyzed As Individual
New World Silversides (Atherinopsidae)	*Atherinops affinis*	Topsmelt	135	6	6	101	136	377	X	
Rockfish (Scorpaenidae)	*Sebastes melanops*	Black Rockfish	5	2	1	302	325	368	X	X
Rockfish (Scorpaenidae)	*Sebastes mystinus*	Blue Rockfish	23	6	5	215	270	395	X	X
Rockfish (Scorpaenidae)	*Sebastes auriculatus*	Brown Rockfish	28	6	6	205	287	392	X	
Rockfish (Scorpaenidae)	*Sebastes carnatus*	Gopher Rockfish	49	10	10	147	239	323	X	
Rockfish (Scorpaenidae)	*Sebastes atrovirens*	Kelp Rockfish	5	1	1	281	291	294	X	
Rockfish (Scorpaenidae)	*Sebastes serranoides*	Olive Rockfish	24	5	4	208	305	405	X	X
Rockfish (Scorpaenidae)	*Sebastes rosaceus*	Rosy Rockfish	5	1	1	175	196	202	X	
Rockfish (Scorpaenidae)	*Scorpaena plumieri*	Spotted Scorpionfish	10	2	2	200	290	322	X	
Rockfish (Scorpaenidae)	*Sebastes flavidus*	Yellowtail Rockfish	3	1	1	296	311	323	X	
Sand Flounder (Paralichthyidae)	*Paralichthys californicus*	California Halibut	9	3	3	580	680	730	X	
Sea Chubs (Kyphosidae)	*Girella nigricans*	Opaleye	5	1	1	194	221	230	X	
Sturgeons (Acipenseridae)	*Acipenser transmontanus*	White Sturgeon	12	5	2	1170	1270	1560	X	X
Surfperch (Embiotocidae)	*Amphistichus argenteus*	Barred Surfperch	51	8	7	122	193	363	X	X
Surfperch (Embiotocidae)	*Embiotoca jacksoni*	Black Perch	85	11	10	152	232	316	X	X
Surfperch (Embiotocidae)	*Cymatogaster aggregata*	Shiner Surfperch	478	25	15	51	111	199	X	X
Surfperch (Embiotocidae)	*Phanerodon furcatus*	White Surfperch	69	8	7	99	202	345	X	X
Temperate Basses (Moronidae)	*Morone saxatilis*	Striped Bass	18	7	2	460	600	790	X	X
Tilefishes (Malacanthidae)	*Caulolatilus princeps*	Ocean Whitefish	5	1	1	270	279	286	X	

A list of the species collected in year one of the Coast Survey is provided in Table 2-1. Table 2-1 also includes information on the number of locations sampled, fish sizes, and how the fish were processed. Statewide maps showing the locations sampled (as well as the concentrations measured) for each species can be obtained from the My Water Quality portal (www.swrcb.ca.gov/mywaterquality/safe_to_eat/data_and_trends/).

SAMPLE PROCESSING

Dissection and compositing of muscle tissue samples were performed following USEPA guidance (USEPA 2000). In general, fish were dissected skin-off, and only the fillet muscle tissue was used for analysis. Some species (e.g., shiner surfperch) were too small to be filleted and were processed whole but with head, tail, and viscera removed. Other exceptions are noted in the discussion of results in Sections 3 through 5.

CHEMICAL ANALYSIS

Mercury and Selenium

Nearly all (>95%) of the mercury present in fish is methylmercury (Wiener et al. 2007). Consequently, monitoring programs usually analyze total mercury as a proxy for methylmercury, as was done in this study. USEPA (2000) recommends this approach, and the conservative assumption be made that all mercury is present as methylmercury to be most protective of human health. Total mercury and selenium in all samples were measured by Moss Landing Marine Laboratory (Moss Landing, CA). Detection limits for total mercury and all of the other analytes are presented in Table 2-2. Analytical methods for mercury and the other contaminants were described in the Sampling Plan (Bioaccumulation Oversight Group 2009). Mercury was analyzed according to EPA 7473, “Mercury in Solids and Solutions by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry” using a Direct Mercury Analyzer. Selenium was digested according to EPA 3052M, “Microwave Assisted Acid Digestion of Siliceous and Organically Based Matrices”, modified, and analyzed according to EPA 200.8, “Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry.” Mercury and selenium results were reportable for 99% of the samples analyzed.

Organics

PCBs and legacy pesticides in the Bay were analyzed by the California Department of Fish and Game Water Pollution Control Laboratory (Rancho Cordova, CA). Organochlorine pesticides were analyzed according to EPA 8081AM, “Organochlorine Pesticides by Gas Chromatography.” PCBs were analyzed according to EPA 8082M, “Polychlorinated Biphenyls (PCBs) by Gas Chromatography”.

PCBs are reported as the sum of 55 congeners (Table 2-2). Concentrations in many locations were near or

Table 2-2
Analytes included in the study, detection limits, number of observations, and frequencies of detection and reporting. Frequency of detection includes all results above detection limits. Frequency of reporting includes all results that were reportable (above the detection limit and passing all QA review). Units for the MDLs are ppm for mercury and selenium, parts per trillion for dioxins and furans, and ppb for the other organics.

Laboratory	Class	Analyte	Method Detection Limit	Number of Observations	Frequency of Detection (%)	Frequency of Reporting (%)
MPSL-DFG	MERCURY	Mercury	0.01	905	99%	99%
MPSL-DFG	SELENIUM	Selenium	0.15	343	99%	99%
DFG-WPCL	CHLORDANE	Chlordane, trans-	0.45	235	34%	29%
DFG-WPCL	CHLORDANE	Oxychlordane	0.47	235	6%	6%
DFG-WPCL	CHLORDANE	Chlordane, cis-	0.40	235	41%	41%
DFG-WPCL	CHLORDANE	Nonachlor, cis-	0.31	235	39%	39%
DFG-WPCL	CHLORDANE	Nonachlor, trans-	0.19	235	77%	77%
DFG-WPCL	DDT	DDT(p,p')	0.15	235	50%	50%
DFG-WPCL	DDT	DDT(o,p')	0.21	235	4%	4%
DFG-WPCL	DDT	DDE(p,p')	0.60	235	100%	99%
DFG-WPCL	DDT	DDE(o,p')	0.18	235	30%	30%
DFG-WPCL	DDT	DDD(o,p')	0.10	235	30%	30%
DFG-WPCL	DDT	DDD(p,p')	0.12	235	78%	78%
DFG-WPCL	DIELDRIN	Dieldrin	0.43	235	31%	25%
DFG-WPCL	PCB	PCB 008	0.20	235	0%	0%
DFG-WPCL	PCB	PCB 018	0.20	235	6%	6%
DFG-WPCL	PCB	PCB 027	0.20	235	0%	0%
DFG-WPCL	PCB	PCB 028	0.20	235	37%	37%
DFG-WPCL	PCB	PCB 029	0.20	235	0%	0%
DFG-WPCL	PCB	PCB 031	0.20	235	16%	16%
DFG-WPCL	PCB	PCB 033	0.20	235	2%	2%
DFG-WPCL	PCB	PCB 044	0.20	235	41%	41%
DFG-WPCL	PCB	PCB 049	0.20	235	52%	52%
DFG-WPCL	PCB	PCB 052	0.20	235	70%	70%
DFG-WPCL	PCB	PCB 056	0.20	235	6%	6%
DFG-WPCL	PCB	PCB 060	0.20	235	9%	9%
DFG-WPCL	PCB	PCB 064	0.20	235	10%	10%

Laboratory	Class	Analyte	Method Detection Limit	Number of Observations	Frequency of Detection (%)	Frequency of Reporting (%)
DFG-WPCL	PCB	PCB 066	0.20	235	61%	61%
DFG-WPCL	PCB	PCB 070	0.30	235	40%	40%
DFG-WPCL	PCB	PCB 074	0.20	235	44%	44%
DFG-WPCL	PCB	PCB 077	0.20	235	3%	3%
DFG-WPCL	PCB	PCB 087	0.30	235	43%	43%
DFG-WPCL	PCB	PCB 095	0.30	235	58%	58%
DFG-WPCL	PCB	PCB 097	0.20	235	50%	50%
DFG-WPCL	PCB	PCB 099	0.20	235	82%	81%
DFG-WPCL	PCB	PCB 101	0.34	235	82%	81%
DFG-WPCL	PCB	PCB 105	0.20	235	71%	71%
DFG-WPCL	PCB	PCB 110	0.30	235	71%	71%
DFG-WPCL	PCB	PCB 114	0.20	235	2%	2%
DFG-WPCL	PCB	PCB 118	0.32	235	82%	80%
DFG-WPCL	PCB	PCB 126	0.20	235	0%	0%
DFG-WPCL	PCB	PCB 128	0.20	235	59%	59%
DFG-WPCL	PCB	PCB 132	0.20	68	97%	97%
DFG-WPCL	PCB	PCB 137	0.20	235	20%	20%
DFG-WPCL	PCB	PCB 138	0.24	235	91%	90%
DFG-WPCL	PCB	PCB 141	0.20	235	40%	40%
DFG-WPCL	PCB	PCB 146	0.20	235	54%	54%
DFG-WPCL	PCB	PCB 149	0.20	235	77%	76%
DFG-WPCL	PCB	PCB 151	0.20	235	53%	53%
DFG-WPCL	PCB	PCB 153	0.38	235	94%	94%
DFG-WPCL	PCB	PCB 156	0.20	235	39%	39%
DFG-WPCL	PCB	PCB 157	0.20	235	9%	9%
DFG-WPCL	PCB	PCB 158	0.20	235	41%	41%
DFG-WPCL	PCB	PCB 169	0.20	235	0%	0%
DFG-WPCL	PCB	PCB 170	0.20	235	59%	59%
DFG-WPCL	PCB	PCB 174	0.20	235	40%	40%
DFG-WPCL	PCB	PCB 177	0.20	235	49%	49%
DFG-WPCL	PCB	PCB 180	0.20	235	77%	77%
DFG-WPCL	PCB	PCB 183	0.20	235	57%	57%
DFG-WPCL	PCB	PCB 187	0.20	235	76%	75%
DFG-WPCL	PCB	PCB 189	0.20	235	2%	2%

Laboratory	Class	Analyte	Method Detection Limit	Number of Observations	Frequency of Detection (%)	Frequency of Reporting (%)
DFG-WPCL	PCB	PCB 194	0.20	235	46%	46%
DFG-WPCL	PCB	PCB 195	0.20	235	19%	19%
DFG-WPCL	PCB	PCB 198	0.20	68	100%	100%
DFG-WPCL	PCB	PCB 198/199	0.20	167	1%	1%
DFG-WPCL	PCB	PCB 199	0.20	68	3%	3%
DFG-WPCL	PCB	PCB 200	0.20	235	19%	19%
DFG-WPCL	PCB	PCB 201	0.20	235	54%	54%
DFG-WPCL	PCB	PCB 203	0.20	235	41%	41%
DFG-WPCL	PCB	PCB 206	0.20	235	33%	33%
DFG-WPCL	PCB	PCB 209	0.20	235	16%	16%
AXYS	DIOXIN	TCDD, 2,3,7,8-	0.05	34	100%	100%
AXYS	DIOXIN	TCDF, 2,3,7,8-	0.06	34	100%	100%
AXYS	DIOXIN	PeCDD, 1,2,3,7,8-	0.05	34	100%	100%
AXYS	DIOXIN	PeCDF, 1,2,3,7,8-	0.05	34	91%	91%
AXYS	DIOXIN	PeCDF, 2,3,4,7,8-	0.05	34	97%	97%
AXYS	DIOXIN	HxCDD, 1,2,3,4,7,8-	0.05	34	50%	50%
AXYS	DIOXIN	HxCDD, 1,2,3,6,7,8-	0.05	34	91%	91%
AXYS	DIOXIN	HxCDD, 1,2,3,7,8,9-	0.05	34	32%	32%
AXYS	DIOXIN	HxCDF, 1,2,3,4,7,8-	0.05	34	21%	21%
AXYS	DIOXIN	HxCDF, 1,2,3,6,7,8-	0.05	34	26%	26%
AXYS	DIOXIN	HxCDF, 1,2,3,7,8,9-	0.05	34	6%	6%
AXYS	DIOXIN	HxCDF, 2,3,4,6,7,8-	0.05	34	21%	21%
AXYS	DIOXIN	HpCDD, 1,2,3,4,6,7,8-	0.05	34	94%	94%
AXYS	DIOXIN	HpCDF, 1,2,3,4,6,7,8-	0.05	34	32%	32%
AXYS	DIOXIN	HpCDF, 1,2,3,4,7,8,9-	0.05	34	3%	3%
AXYS	DIOXIN	OCDD, 1,2,3,4,6,7,8,9-	0.05	34	97%	9%
AXYS	DIOXIN	OCDF, 1,2,3,4,6,7,8,9-	0.05	34	21%	21%
AXYS	PFC	Perfluorooctanesulfonamide	2.47	21	10%	10%
AXYS	PFC	Perfluorononanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorooctanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorohexanoate	2.47	21	0%	0%
AXYS	PFC	Perfluoropentanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorohexanesulfonate	4.93	21	0%	0%

Laboratory	Class	Analyte	Method Detection Limit	Number of Observations	Frequency of Detection (%)	Frequency of Reporting (%)
AXYS	PFC	Perfluoroheptanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorooctanesulfonate	4.93	21	19%	19%
AXYS	PFC	Perfluorobutanesulfonate	4.93	21	0%	0%
AXYS	PFC	Perfluoroundecanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorododecanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorodecanoate	2.47	21	0%	0%
AXYS	PFC	Perfluorobutanoate	2.47	21	0%	0%

below limits of detection (Table 2-2). The congeners contributing most to sum of PCBs were detected in 70-94% of the 235 samples analyzed for PCBs. Frequencies of detection and reporting were lower for the less abundant PCB congeners that have a smaller influence on sum of PCBs. For PCBs and all of the organics presented as "sums," the sums were calculated with values for samples with concentrations below the limit of detection set to zero.

DDTs are reported as the sum of six isomers (Table 2-2). Chlordanes are reported as the sum of five compounds (Table 2-2).

Dioxins and perfluorinated chemicals (PFCs) in muscle tissue were measured by AXYS Analytical (Sidney, British Columbia, Canada). Dioxins and furans were analyzed using EPA method 1613B Mod using a high-resolution mass spectrometer coupled to a high-resolution gas chromatograph. Perfluorinated compounds were analyzed using MLA-043 Revision 07 on a high performance liquid chromatograph coupled to a triple quadrupole mass spectrometer. Dioxins are reported as dioxin toxic equivalents (TEQs) based on analysis of 17 dioxin and furan congeners (Table 2-2). Derivation of toxic equivalents is described in Section 5. The congeners contributing most to TEQs were detected in 90-100% of the 34 samples analyzed for dioxins. Frequencies of detection and reporting were lower for the less abundant congeners.

Frequencies of detection for the PFCs were low, with only one compound (perfluorooctanesulfonate) detected, and this compound was detected in only four of the 21 samples analyzed.

QUALITY ASSURANCE

The samples were analyzed in multiple batches. QAQC analyses for SWAMP Data Quality Objectives (DQOs) (precision, accuracy, recovery, completeness, and sensitivity) were performed for each batch as required by the SWAMP BOG QAPP (Bonnema 2009).

Data that meet all measurement quality objectives (MQOs) as specified in the QAPP are classified as "compliant" and considered usable without further evaluation. Data that fail to meet all program MQOs specified in the Coastal QAPP were classified as qualified but considered usable for the intended purpose. Data that are > 2X MQO requirements or the result of blank contamination were classified as "rejected" and considered unusable. Data batches where results were not reported and therefore not validated were classified as not applicable.

For the SWAMP labs (Moss Landing Marine Laboratory and the Water Pollution Control Laboratory), there were 20,946 sample results for individual constituents including tissue composites and laboratory QA/QC samples. Of these:

- 20,448 (98%) were classified as "compliant"
- 346 (1.6%) were classified as "qualified"
- 22 (0.1%) were classified as "rejected"; and
- 130 (0.6%) were classified as "NA", since the results were not reported due to high native concentrations greater than spike concentrations and could not be validated.

Classification of this dataset is summarized as follows:

- 4 results were classified as "rejected" and 10 results were classified as "qualified" due to blank contamination values.
- 6 results were classified as "qualified" due to surrogate recovery exceedances presented in Table 2 (Appendix 1).
- All results were classified as "qualified" due to recovery exceedances presented in Tables 3 and 4 (Appendix 1).
- 324 results were classified as "qualified" and 18 results were classified as "rejected" due to the precision (RPD) exceedances presented in Tables 3 and 5 (Appendix 1).
- 6 results were classified as "qualified" due to holding time exceedances.

Overall, all data with the exception of the 22 rejected results were considered usable for the intended purpose. A 99% completeness level was attained which met the 90% project completeness goal specified in the Coastal QAPP. Additional details are provided in Appendix 1.

ASSESSMENT THRESHOLDS

This report compares fish tissue concentrations to two types of thresholds for concern for pollutants in sport fish that were developed by OEHHA (Klasing and Brodberg 2008): Fish Contaminant Goals (FCGs) and Advisory Tissue Levels (ATLs) (Table 2-3).

FCGs, as described by Klasing and Brodberg (2008), are "estimates of contaminant levels in fish that pose no significant health risk to humans consuming sport fish at a standard consumption rate of one serving per

Table 2-3
Thresholds for concern based on an assessment of human health risk from these pollutants by OEHHA (Klasing and Brodberg, 2008). All values given in ng/g (ppb) wet weight. The lowest available threshold for each pollutant is in bold font. One serving is defined as 8 ounces (227 g) prior to cooking. The FCG and ATLs for mercury are for the most sensitive population (i.e., women aged 18 to 45 years and children aged 1 to 17 years).

Pollutant	Fish Contaminant Goal	Advisory Tissue Level (3 servings/week)	Advisory Tissue Level (2 servings/week)	Advisory Tissue Level (No Consumption)
Chlordanes	**5.6**	190	280	560
DDTs	**21**	520	1000	2100
Dieldrin	**0.46**	15	23	46
Mercury	220	**70**	150	440
PCBs	**3.6**	21	42	120
Selenium	7400	**2500**	4900	15000
PBDEs	310	100	210	630

week (or eight ounces [before cooking] per week, or 32 g/day), prior to cooking, over a lifetime and can provide a starting point for OEHHA to assist other agencies that wish to develop fish tissue-based criteria with a goal toward pollution mitigation or elimination. FCGs prevent consumers from being exposed to more than the daily reference dose for non-carcinogens or to a risk level greater than $1x10^{-6}$ for carcinogens (not more than one additional cancer case in a population of 1,000,000 people consuming fish at the given consumption rate over a lifetime). FCGs are based solely on public health considerations without regard to economic considerations, technical feasibility, or the counterbalancing benefits of fish consumption." For organic pollutants, FCGs are lower than ATLs.

ATLs, as described by Klasing and Brodberg (2008), "while still conferring no significant health risk to individuals consuming sport fish in the quantities shown over a lifetime, were developed with the recognition that there are unique health benefits associated with fish consumption and that the advisory process should be expanded beyond a simple risk paradigm in order to best promote the overall health of the fish consumer. ATLs provide numbers of recommended fish servings that correspond to the range of contaminant concentrations found in fish and are used to provide consumption advice to prevent consumers from being exposed to more than the average daily reference dose for non-carcinogens or to a risk level greater than $1x10^{-4}$ for carcinogens (not more than one additional cancer case in a population of 10,000 people consuming fish at the given consumption rate over a lifetime). ATLs are designed to encourage consumption of fish that can be eaten in quantities likely to provide significant health benefits, while discouraging consumption of fish that, because of contaminant concentrations, should not be eaten or cannot be eaten in amounts recommended for improving overall health (eight ounces total, prior to cooking, per week). ATLs are but one component of a complex process of data evaluation and interpretation used by OEHHA in the assessment and communication of fish consumption risks. The nature of the contaminant data or omega-3 fatty acid concentrations in a given species in a water body, as well as risk communication needs, may alter strict application of ATLs when developing site-specific advisories. For example, OEHHA may recommend that consumers eat fish containing low levels of omega-3 fatty acids less often than the ATL table would suggest based solely on contaminant concentrations. OEHHA uses ATLs as a framework, along with best professional judgment, to provide fish consumption guidance on an ad hoc basis that best combines the needs for health protection and ease of communication for each site." For methylmercury and selenium, the 3 serving and 2 serving ATLs are lower than the FCGs.

Consistent with the description of ATLs above, the assessments presented in this report are not intended to represent consumption advice.

For methylmercury, results were also compared to a 0.3 ppm threshold that was used by the State and Regional Water Boards in the most recent round of 303(d) listing.

The results for San Francisco Bay were also compared to thresholds developed for the Bay by the San Francisco Bay Regional Water Quality Control Board. These thresholds are described in Section 5.

SECTION 3
STATEWIDE ASSESSMENT

In 2009, the first year of this statewide screening study, 2291 fish from 36 species were collected from 42 locations on the California coast (Figures 2-1, 2-2, 2-3, Table 2-1). A concise tabulated summary of the data for each location is provided in Appendix 2. Data in an untabulated format are provided in Appendices 3-5. Excel files containing these tables are available from SFEI (contact Jay Davis, jay@sfei.org). All data collected for this study are maintained in the SWAMP database, which is managed by the data management team at Moss Landing Marine Laboratories (http://swamp.mpsl.mlml.calstate.edu/). The complete dataset includes QA data (quality control samples and blind duplicates) and additional ancillary information (specific location information, fish sex, weights, etc). The complete dataset from this study will also be available on the web at http://www.ceden.org/. Finally, data from this study are available on the web through the California Water Quality Monitoring Council's "My Water Quality" portal (http://www.waterboards.ca.gov/mywaterquality/). This site is designed to present data on contaminants in fish and shellfish from SWAMP and other programs to the public in a nontechnical manner, and allows mapping and viewing of summary data from each fishing location.

This section presents a preliminary statewide assessment of the year one results, which represent the most urbanized portions of the California coast. A more thorough analysis and discussion of results for the entire coast will be presented in the report on the complete dataset, including the less urbanized stretches of coast sampled in 2010, which will be available in spring of 2012.

METHYLMERCURY

Comparison to Thresholds

Based on results from the first year of the statewide survey, methylmercury and PCBs are the pollutants that pose the most widespread potential health concerns to consumers of fish caught in urbanized regions of the California coast.

Considering the complete dataset (including shark species) for the year one sampling, methylmercury occasionally reached concentrations high enough that OEHHA would consider recommending no consumption of the contaminated species (0.44 ppm wet weight). Overall, eight of the 42 locations surveyed (19%) had a species with an average concentration exceeding 0.44 ppm (Figures 3-1 and 3-2). The 95% confidence interval for this estimate was 7 – 31% (Figure 3-2). Most of the locations sampled (33 of 42, or 79%) were in the moderate contamination categories (above 0.07 ppm and below 0.44 ppm). Thirteen of 42 locations had a species with an average above the State Board's 0.30 ppm 303(d) listing threshold.

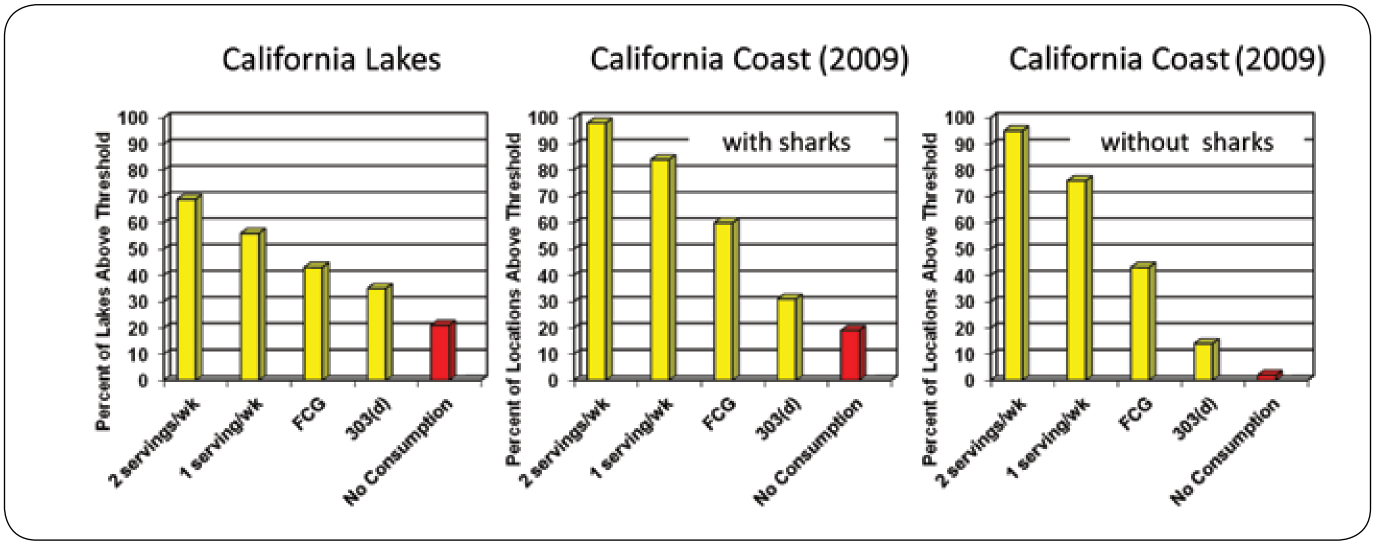


Figure 3-1. Percentages of lakes or coastal sampling locations above various methylmercury thresholds. Based on the highest species average concentration for each lake or location.

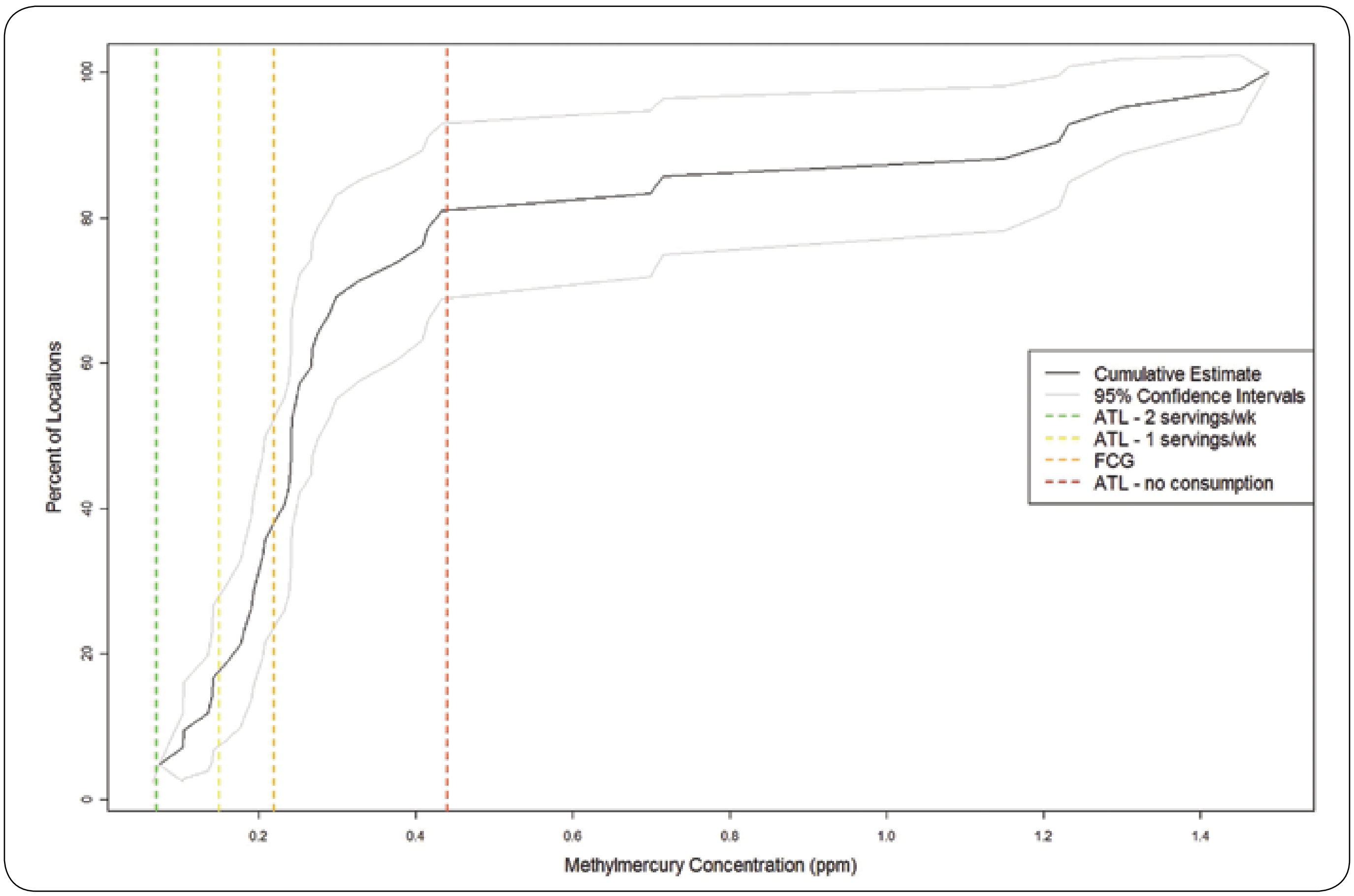


Figure 3-2. Cumulative distribution function (CDF) plot for mercury at locations sampled in 2009, shown as percent of locations sampled. Based on the highest species average concentration (ppm) for each location. Vertical lines are threshold values.

The degree of methylmercury contamination observed in the urban coastal areas sampled in 2009 was comparable to that observed in the two-year Lakes Survey (Davis et al. 2010) (Figure 3-1). Relative to the lakes results, the year one coast sampling found higher proportions of locations exceeding the lower OEHHA thresholds (the FCG of 0.22 ppm, the 1 serving per week ATL of 0.15 ppm, and the 2 serving per week ATL of 0.07 ppm). Another way of expressing this is that there was a higher proportion of water bodies below all thresholds for lakes (32%) than for the year one coast locations (2%).

One major factor behind this difference between the lakes results and the year one coast results is the focus of the initial coastal sampling on urban areas. Another important factor is the significant proportion of lakes where trout were the most abundant predator species. Trout generally occupy a lower trophic position than predatory fish species in other California water bodies (such as the coastal locations sampled in this survey), and also tend to have lower methylmercury concentrations due to the widespread presence of hatchery transplants that have been shown to have lower concentrations in previous studies (Grenier et al. 2007). Another factor was the broader spectrum of species present in coastal waters and sampled in this survey, which made it more likely to include a higher trophic level representative with higher concentrations. Finally, the urban focus of the 2009 sampling may have also been a factor.

Shark species in California and in other parts of the world often accumulate exceptionally high concentrations of methylmercury (Davis et al. 2006) (Figure 3-3). The reason for the unusually high concentrations observed in some shark species is not known. Trophic position is an important factor explaining variation among some shark species, but trophic position does not explain why some shark species have much higher concentrations than other co-located species with a similar or higher trophic position. A prime example of this is with leopard shark and striped bass in San Francisco Bay (discussed further in Section 5). Most of the year one locations with methylmercury concentrations above 0.44 ppm fell in that category because of a shark species. If the shark data are excluded, the apparent severity of methylmercury problem on the coast is considerably less (Figure 3-1), with only 2% (one of 42 locations) exceeding 0.44 ppm. Excluding shark species did not greatly affect the percentages in the lower concentration categories.

Variation Among Species

Several shark species accumulated higher methylmercury concentrations than other species sampled in year one of the survey (Figure 3-3). Average concentrations above 0.44 ppm were observed for three shark species: spiny dogfish (1.30 ppm), leopard shark (1.28 ppm), and brown smoothhound shark (0.92 ppm). The fourth shark species sampled, gray smoothhound, had a lower average of 0.29 ppm.

Striped bass, collected only in San Francisco Bay, was the one other species that had an average methylmercury concentration (0.45 ppm) above 0.44 ppm. Other species with relatively high methylmercury concentrations included black croaker (0.41 ppm), California halibut (0.22 ppm), gopher rockfish (0.25

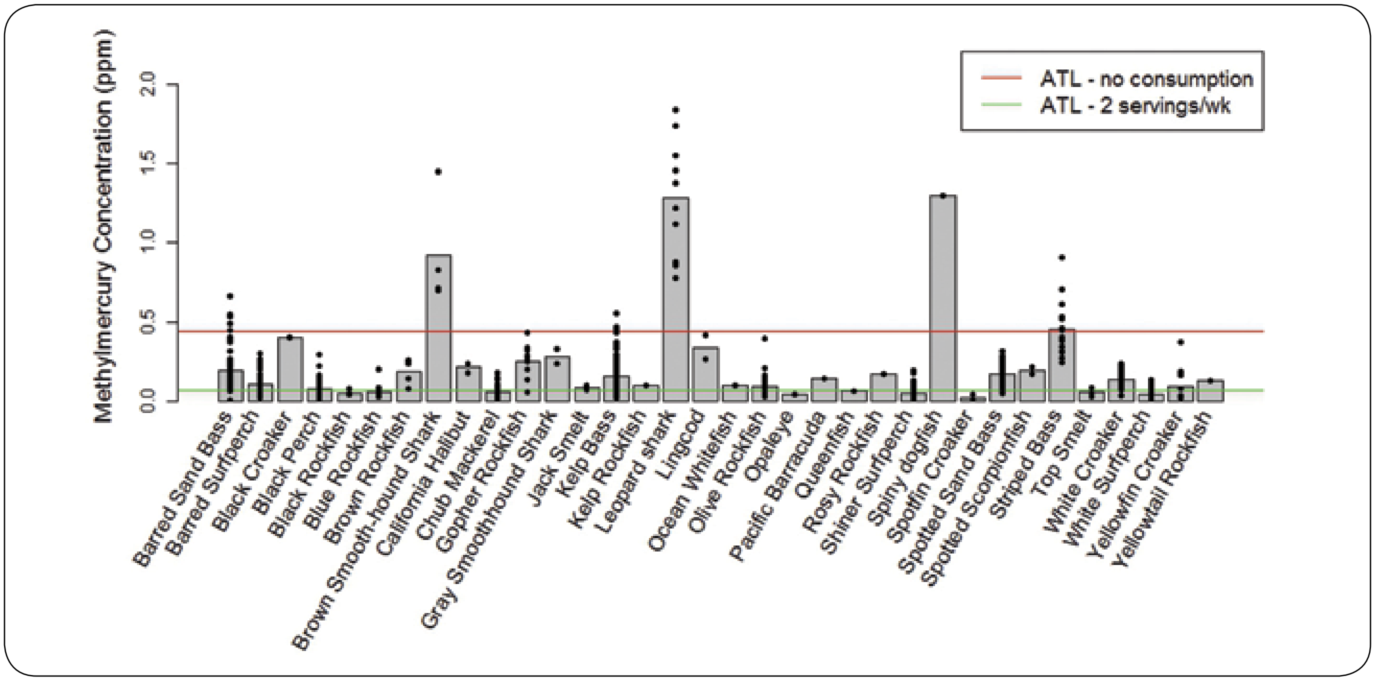


Figure 3-3. Methylmercury concentrations (ppm) in sport fish species on the California coast, 2009. Bars indicate average concentration. Points represent individual samples (either composites or individual fish). Note that the averages for some species (e.g., spiny dogfish) are based on only one sample.

ppm), and lingcod (0.34 ppm). However, the number of samples analyzed for these species was small, except for gopher rockfish (n = 10 composites).

Several species had average methylmercury concentrations below all thresholds, including black rockfish (0.05 ppm), blue rockfish (0.06 ppm), chub mackerel (0.06 ppm), opaleye (0.05 ppm), queenfish (0.07 ppm), shiner surfperch (0.05 ppm), spotfin croaker (0.02 ppm), topsmelt (0.05 ppm), and white surfperch (0.04 ppm). The estimate for chub mackerel is particularly robust, based on measurements in 58 composite samples. This is a positive outcome as chub mackerel is one of the most popular sport fish species on the southern California coast.

Spatial Patterns

Methylmercury concentrations at locations sampled in year one did not exhibit distinct variation on a regional scale (Figure 3-4). For the complete dataset (including sharks), the distribution of locations in the highest concentration category (above 0.44 ppm) was primarily a function of whether sharks were obtained. Seven of the locations in this category had a shark species with an average concentration above 0.44 ppm.

Excluding the shark species highlights spatial patterns among the other species (Figure 3-5). The one location with a species average above 0.44 ppm was San Pablo Bay in northern San Francisco Bay (striped bass at 0.47 ppm). Five locations had a species average between 0.30 ppm and 0.44 ppm, including (from

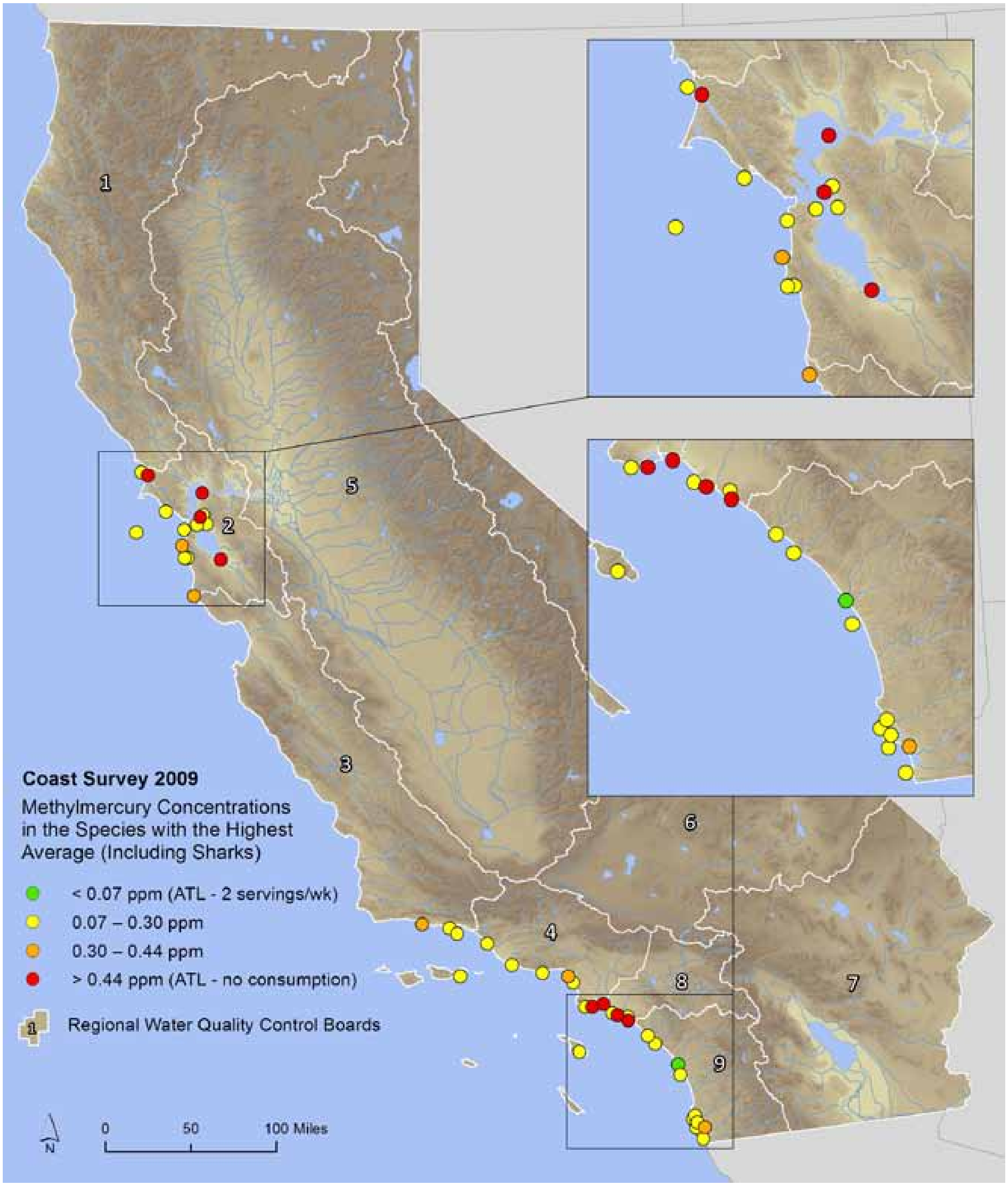


Figure 3-4. Spatial patterns in methylmercury concentrations (ng/g wet weight) among locations sampled in the Coast Survey, 2009. Each point represents the highest average methylmercury concentration among the species sampled at each location (including sharks). Concentrations based on location composites and individual fish.

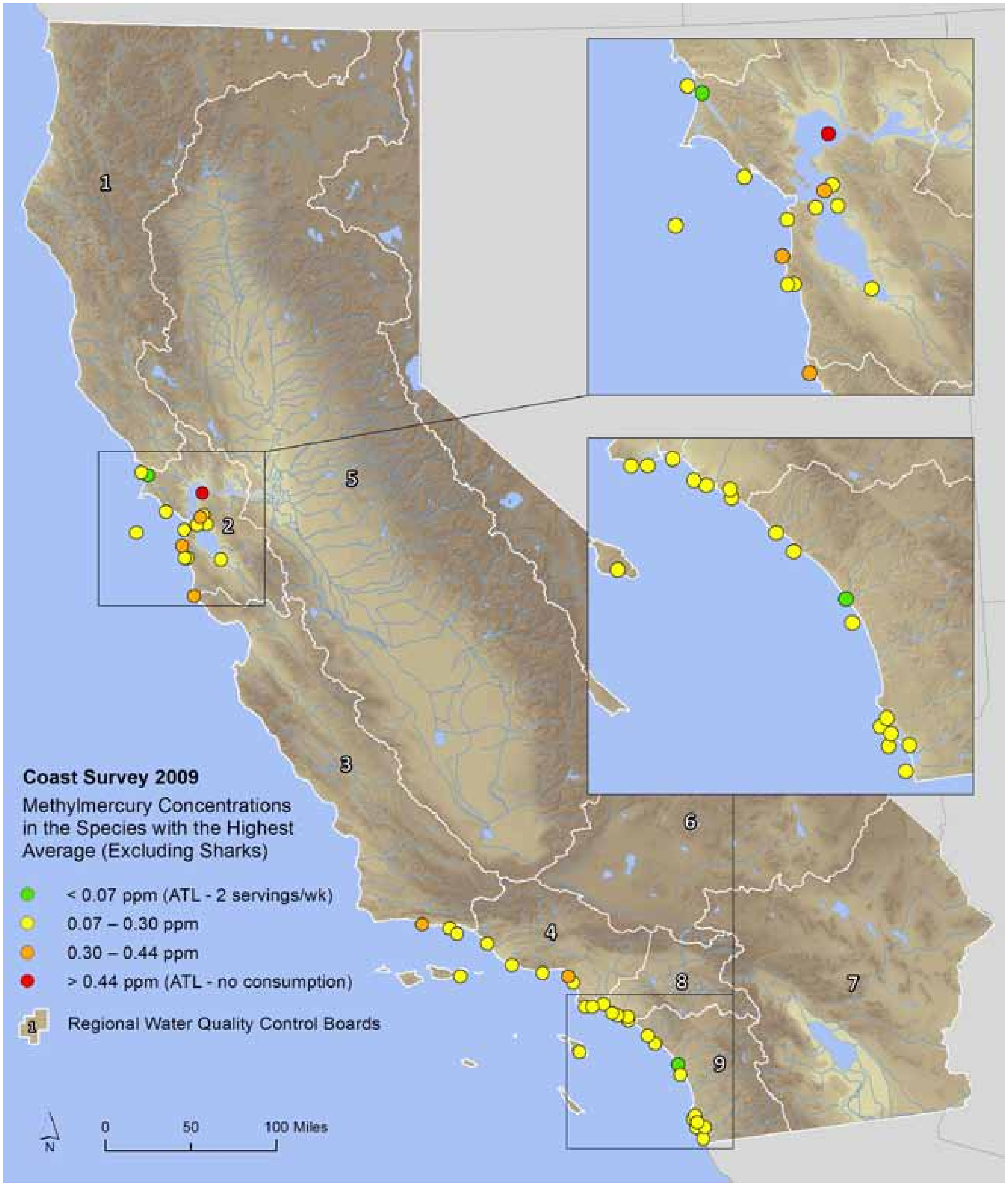


Figure 3-5. Spatial patterns in methylmercury concentrations (ng/g wet weight) in locations sampled in the Coast Survey, 2009. Each point represents the highest average methylmercury concentration among the species sampled at each location (excluding sharks). Concentrations based on location composites and individual fish.

north to south) Central Bay in San Francisco Bay (striped bass at 0.43 ppm), Pacifica Coast on the west side of the San Francisco Peninsula (lingcod at 0.42 ppm and gopher rockfish at 0.34 ppm), San Mateo Coast at the boundary between Water Board regions 2 and 3 (gopher rockfish at 0.43 ppm), near Goleta in the southern end of Region 3 (gopher rockfish at 0.33 ppm), and Middle Santa Monica Bay in Region 4 (black croaker at 0.41 ppm). Only two locations had average mercury concentrations below all thresholds: Tomales Bay, where the highest non-shark species had an average of 0.068 ppm (shiner surfperch), and Oceanside Harbor in Region 9, where the highest species (queenfish) had an average of 0.065 ppm. It should be noted that when sharks were included Tomales Bay fell into the greater than 0.44 ppm category due to concentrations of 1.22 ppm in leopard shark and 0.83 ppm in brown smoothhound shark.

Overall, whether the sharks are included or not, the magnitude of contamination was similar in the northern and southern regions sampled in year one of the Survey. In both regions, concentrations in fish from most locations were between 0.07 ppm and 0.30 ppm. Both regions had a few locations above 0.44 ppm (with sharks included), a few locations between 0.30 and 0.44 pppm, and only one location below 0.07 ppm.

Priorities for Further Assessment

One location, San Francisco Bay, stands out as having high concentrations that are not driven by the apparently anomalous high values observed in sharks. However, San Francisco Bay is being routinely and thoroughly assessed every three years under the Regional Monitoring Program, and the consumption guidelines for the Bay are being updated in 2011. This situation is in contrast to that observed for lakes, where many water bodies were found to have concentrations above 0.44 ppm and advisories are not currently in place. This highlights the need for sufficient monitoring of methylmercury in lakes to support development of safe eating guidelines and cleanup plans.

PCBs

Comparison to Thresholds

PCBs (measured as the sum of 55 congeners – Table 2-2) were comparable to methylmercury in reaching fish tissue concentrations posing potential health concerns to consumers of fish caught from the locations sampled in year one of the Coast Survey.

Similar to methylmercury, PCBs at several locations reached concentrations high enough that OEHHA would consider recommending no consumption of the contaminated species (120 ppb wet weight). Overall, six of the 42 locations surveyed (14%) had a species with an average concentration exceeding 120 ppb (Figures 3-6 and 3-7). The 95% confidence interval for this estimate was 2 – 24% (Figure 3-7). Another nine locations (21%) were between the 1 serving ATL of 42 ppb and 120 ppb. Most of the locations sampled (53%) fell in the moderate contamination categories between the FCG of 3.6 ppb and the 1 serving ATL of 42 ppb.

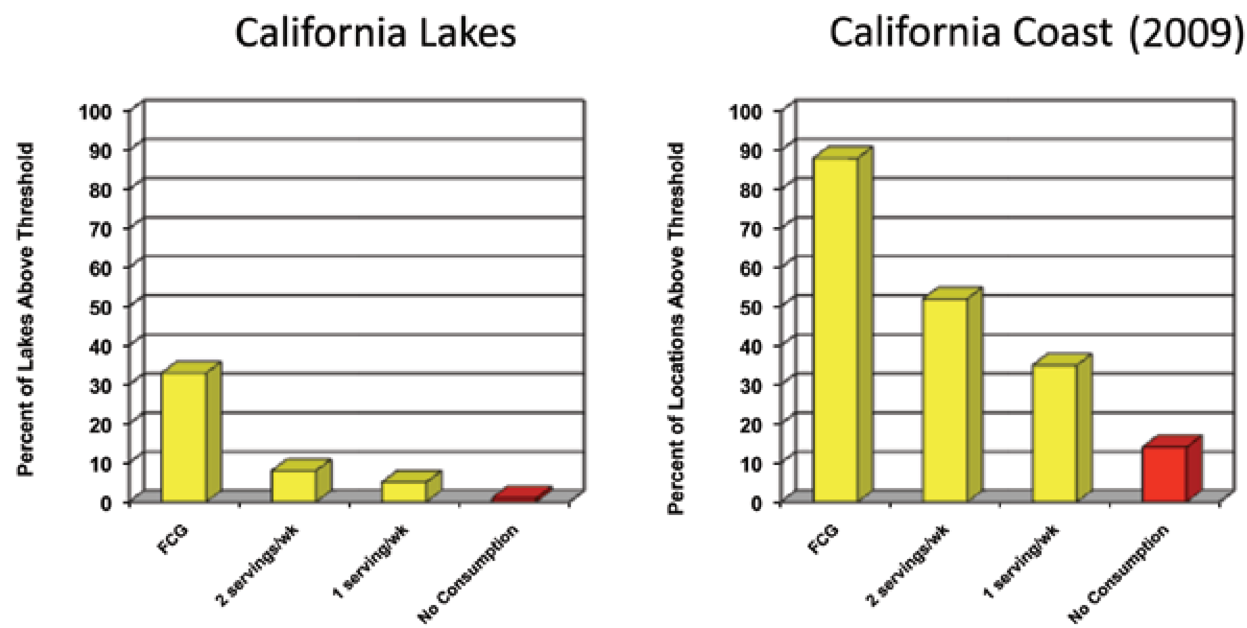


Figure 3-6. Percentages of lakes or coastal sampling locations above various PCB thresholds. Based on the highest species average concentration for each lake or location.

The degree of PCB contamination at the locations sampled in year one of the Coast Survey was substantially greater than that observed in the two-year Lakes Survey (Davis et al. 2010) (Figure 3-6). Much higher proportions of the year one coastal locations fell into each threshold category. For example, 37 of 42 locations (88%) were above the lowest PCB threshold (the 3.6 ppb FCG), in contrast to only 33% of the 272 lakes found to be above this value. One primary cause of this difference is likely the geographic focus on the major urban areas of the state in the year one coast sampling. The lakes survey concluded that PCB concentrations were higher around the urbanized regions in Los Angeles and the San Francisco Bay Area (Davis et al. 2010). Another factor contributing to this difference, as for methylmercury, is the prevalence of lakes where trout species were the primary bioaccumulation indicators. The generally lower trophic position of trout and the possibly the abundance of hatchery fish are factors that could lead to lower PCB concentrations as seems likely for methylmercury. It will be interesting to reevaluate the PCB frequency distribution when the complete two-year coastal dataset is available.

Variation Among Species

Spiny dogfish was the only species in the year one sampling that had an average PCB concentration (296 ppb) above the 120 ppb no consumption ATL (Figure 3-8). Only one sample was collected for this species though (from San Pedro Bay), so this value may not be representative for the species more generally.

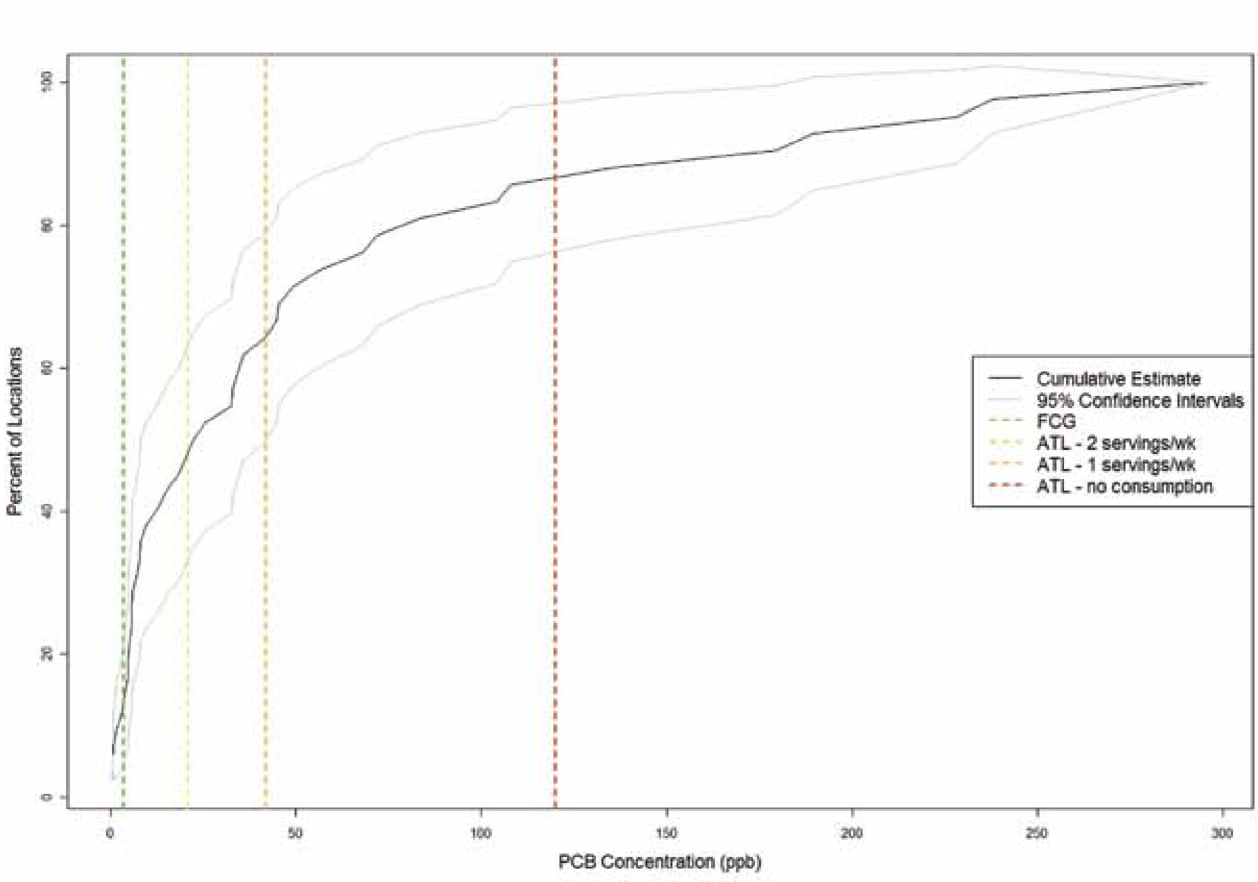


Figure 3-7. Cumulative distribution function (CDF) plot for PCBs at locations sampled in 2009, shown as percent of locations sampled. Based on the highest species average concentration (ppb) for each location. Vertical lines are threshold values.

Overall, 24 of 36 species (66%) had an average PCB concentration between the FCG of 3.6 ppb and the no consumption ATL of 120 ppb.

San Francisco Bay suffers from a relatively high degree of PCB contamination. Two species sampled extensively in the Bay, northern anchovy and shiner surfperch, had average concentrations approaching 120 ppb. Northern anchovy are a species sampled by the RMP that are not a target for human consumption, but they are collected in the sport fish trawls and analyzed as an indicator of wildlife exposure. They accumulate high concentrations of PCBs and other organic contaminants in spite of their small size (9 cm, or 3.5 in) and low trophic position. Their high lipid content and their analysis as whole body samples (including high lipid internal organs) are factors contributing to the high accumulation. The nine composite samples of northern anchovy (all from the Bay) averaged 118 ppb.

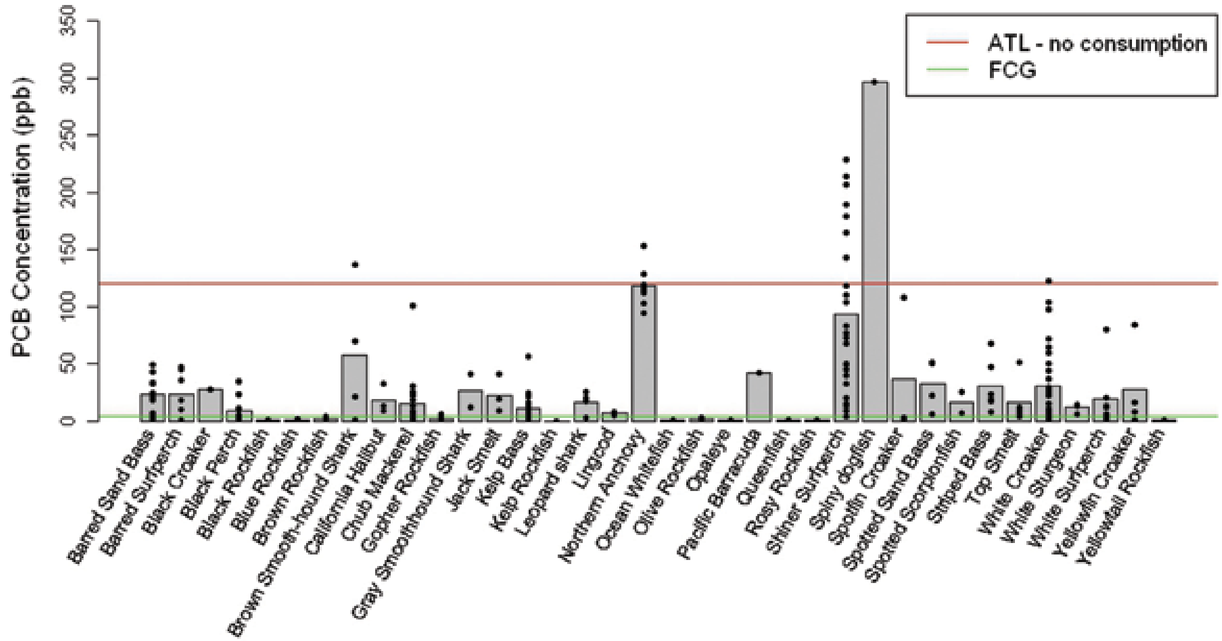


Figure 3-8. PCB concentrations (ppb) in sport fish species on the California coast, 2009. Bars indicate average concentration. Points represent individual samples (either composites or individual fish). Note that the averages for some species (e.g., spiny dogfish) are based on only one sample. Also note that northern anchovy are not a sport fish species – they are an important wildlife prey species that is collected in the surveys in San Francisco Bay and analyzed as whole fish.

Shiner surfperch are a species that are also not processed as fillets (they are processed whole with head, viscera, and tail removed due to their small size - typically 11 cm, or 4.3 in), but these fish are caught and consumed by anglers. Shiner surfperch had a year one statewide average PCB concentration of 93 ppb. Three locations (two in San Francisco Bay and one in San Diego Bay) had average concentrations in shiner that were above 120 ppb (discussed further below). Shiner surfperch have high site fidelity and are an excellent indicator of spatial patterns. Their sensitivity as a spatial indicator is evident from the 70-fold range in average concentrations observed – from a high of 216 ppb in Oakland Harbor to a low of 3 ppb in Tomales Bay.

Average PCB concentrations in other species were considerably lower. The only other species with an average concentration above the 42 ppb 1 serving ATL was brown smoothhound (57 ppb).

Eleven species had average PCB concentrations below all thresholds, including black rockfish (0.3 ppb), blue rockfish (0.3 ppb), brown rockfish (1.4 ppb), gopher rockfish (1.2 ppb), kelp rockfish (not detected), ocean whitefish (0.7 ppb), olive rockfish (1.4 ppb), opaleye (0.2 ppb), queenfish (0.8 ppb), rosy rockfish (0.7 ppb), and yellowtail rockfish (0.5 ppb). All of the rockfish species sampled were below all thresholds; however, these averages were generally based on very small sample sizes (Table 2-1).

Spatial Patterns

PCB concentrations at locations sampled in year one had a similar spatial distribution in the north and south (Figure 3-9). Five locations had a species averaging greater than 120 ppb. Three of these locations were in urban embayments with the average observed in shiner surfperch (San Francisco – 162 ppb, Oakland – 216 ppb, and San Diego South – 190 ppb) (Figure 3-10). This species has high site fidelity and is a reliable indicator of the degree of contamination at these locations. Two of the five locations fell into the greater than 120 ppb category due to concentrations measured in shark species: the spiny dogfish sample from San Pedro Bay (296 ppb) and a brown smoothhound sample from the area between Crystal Cove and the Santa Ana River (136 ppb). These shark species are mobile and may not be representative of the precise locations where they were collected.

Five locations had average PCB concentrations lower than the lowest PCB threshold – the 3.6 ppb FCG. These five locations were all in more remote, less urbanized areas, including three offshore locations.

The remaining 32 locations had concentrations between the FCG and the no consumption ATL. Overall, PCB contamination at the year one sampling locations was moderate but widespread, and this pattern was observed both in the north and the south.

A clearer picture of spatial variation can be obtained by examining spatial patterns in two species that accumulate high PCB concentrations and that were collected across multiple locations in the north and south. As mentioned above, shiner surfperch can accumulate high PCB concentrations and is a reliable indicator of spatial patterns. This species was collected at 14 locations, from Tomales Bay in the north to San Diego Bay in the south (Figure 3-10), with concentrations ranging from 216 ppb at Oakland to 3 ppb in Tomales Bay. The shiner surfperch results highlight the relatively high degree of PCB contamination in San Francisco Bay and San Diego Bay, as well as other locations with moderate contamination at San Pedro Bay (50 ppb) and Dana Point Harbor (49 ppb). On the other hand, the shiner surfperch data indicate that Tomales Bay was quite low in PCBs.

White croaker is another species that accumulates relatively high PCB concentrations and that was collected across much of the area sampled in 2009. Concentrations in white croaker were not as high as in shiner surfperch, but spatial variation in this species was also quite distinct (Figure 3-11). Long Beach had the highest average concentration in white croaker (104 ppb). Other species collected at this location also had relatively high concentrations, including topsmelt (51 ppb) and barred sand bass (49 ppb). White croaker from Oakland (63 ppb) and South Bay (36 ppb) in San Francisco Bay had the second and third highest average concentrations. Other areas with moderately elevated concentrations included three other locations near Long Beach (South Santa Monica Bay – 29 ppb; Palos Verdes – 22 ppb; and San Pedro Bay – 29 ppb) and two locations in the San Diego region (Point Loma – 25 ppb, and near Tijuana – 23 ppb). The white croaker results indicate that many other locations (Southern Marin Coast, Pillar Point Harbor, Santa Barbara Channel Oil Platform, Point Dume to Oxnard, Dana Point Harbor, and Oceanside Harbor) were quite low in PCBs (all below the 3.6 ppb FCG).

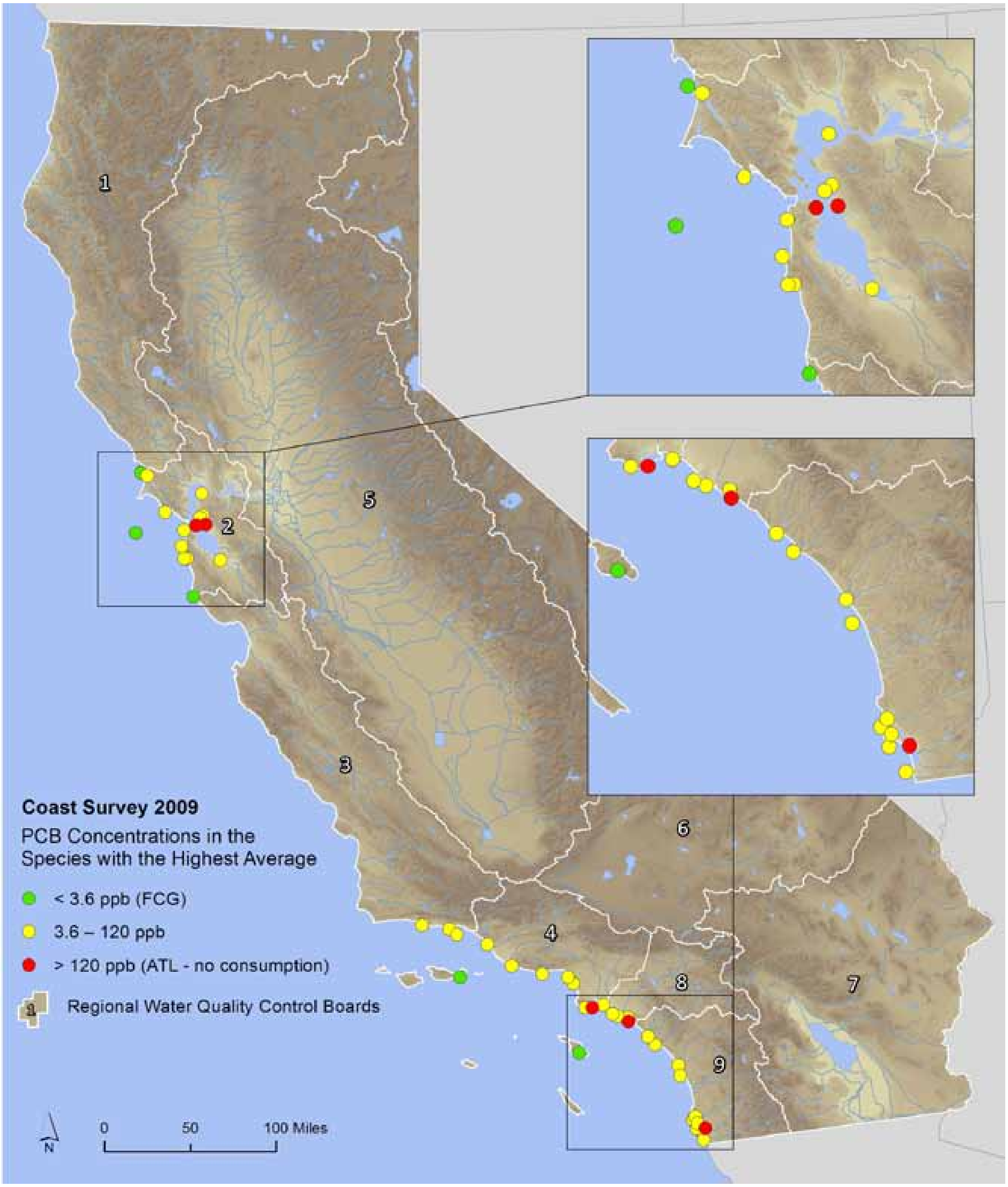


Figure 3-9. Spatial patterns in PCB concentrations (ppb) among locations sampled in the Coast Survey, 2009. Each point represents the highest average PCB concentration among the species sampled at each location. Concentrations were measured in composite samples.

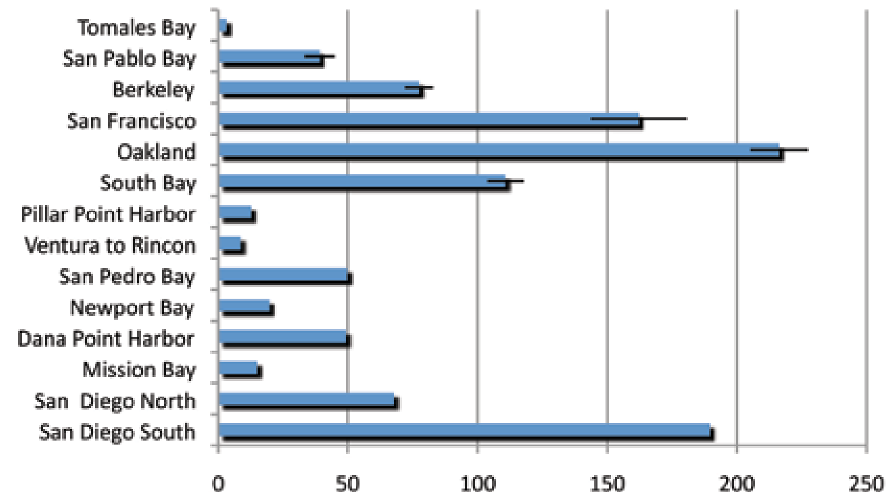


Figure 3-10. Average PCB concentrations in shiner surfperch samples on the California coast, 2009. Standard error is shown where replicate samples were analyzed.

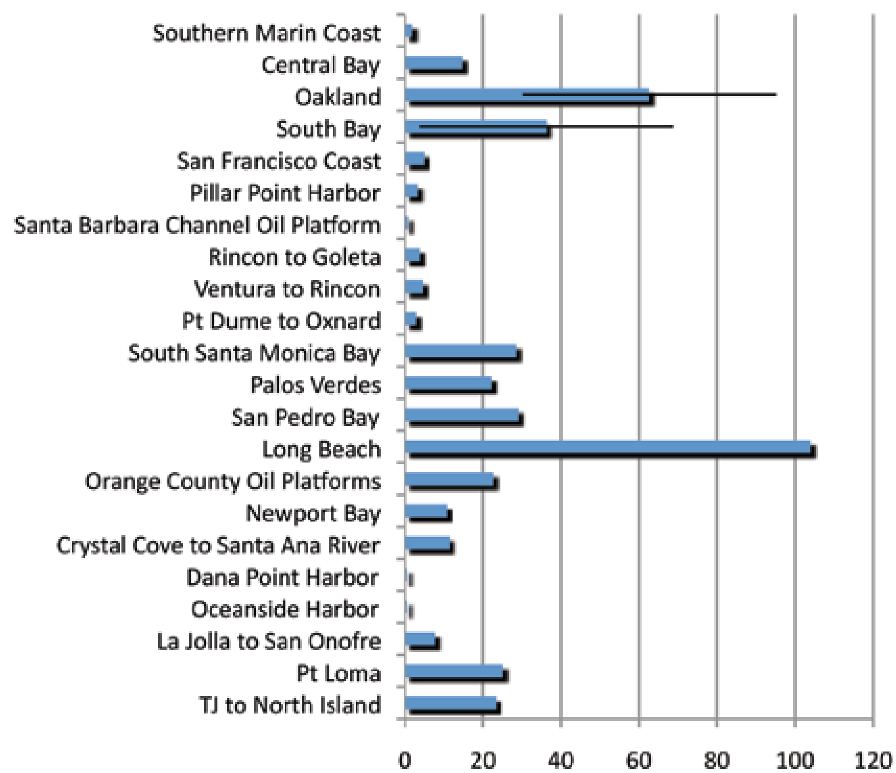


Figure 3-11. PCB concentrations in white croaker samples on the California coast, 2009. Standard error is shown where replicate samples were analyzed.

Priorities for Further Assessment

San Francisco Bay and San Diego Bay stand out as having high PCB concentrations. As mentioned above in the methylmercury section, San Francisco Bay is being routinely and thoroughly assessed every three years under the Regional Monitoring Program, and the consumption guidelines for the Bay are being updated in 2011. Consumption guidelines are in place for the region with moderately elevated PCB concentrations around Long Beach. Consumption guidelines for San Diego Bay have not been developed. Acquiring the data needed to support development of consumption guidelines for San Diego Bay appears to be a high priority.

OTHER POLLUTANTS WITH THRESHOLDS

OEHHA (Klasing and Brodberg 2008) has developed thresholds for four other pollutants that were analyzed in this survey: dieldrin, DDT, chlordane, and selenium. Concentrations of these pollutants did not exceed any of the no consumption ATLs, and rarely exceeded any ATL. The organic pollutants, however, did frequently exceed the FCGs.

Results for these pollutants are briefly summarized below.

DDTs

The maximum species averages for DDTs were below the lowest threshold (the 21 ppb FCG) in 50% of the 42 locations sampled (Figure 3-12). Twenty of the locations fell between the FCG and the next lowest threshold (the 520 ppb 2 serving ATL). One location was above 520 ppb: San Pedro Bay with the spiny dogfish sample at 1077 ppb. The highest concentrations were found primarily in three regions: San Francisco Bay, near the Palos Verdes Peninsula, and near San Diego and the Mexican border.

Dieldrin

The maximum species averages for dieldrin were below the lowest threshold (the 0.46 ppb FCG) in 63% of the 42 locations sampled (Figure 3-13). Fifteen of the locations fell between the FCG and the next lowest threshold (the 15 ppb 2 serving ATL). The highest concentration measured was 3.0 ppb in a shiner surfperch sample from Dana Point Harbor. As for DDTs, the highest concentrations were found primarily in three regions: San Francisco Bay, near the Palos Verdes Peninsula, and near San Diego and the Mexican border.

Chlordanes

The maximum species averages for chlordanes were below the lowest threshold (the 5.6 ppb FCG) in 76% of the 42 locations sampled (Figure 3-14). Ten of the locations fell between the FCG and the next lowest threshold (the 190 ppb 3 serving ATL). The highest concentration measured was 42 ppb in the spiny dogfish sample from San Pedro Bay. The highest concentrations were found in San Francisco Bay and near the Palos Verdes Peninsula.

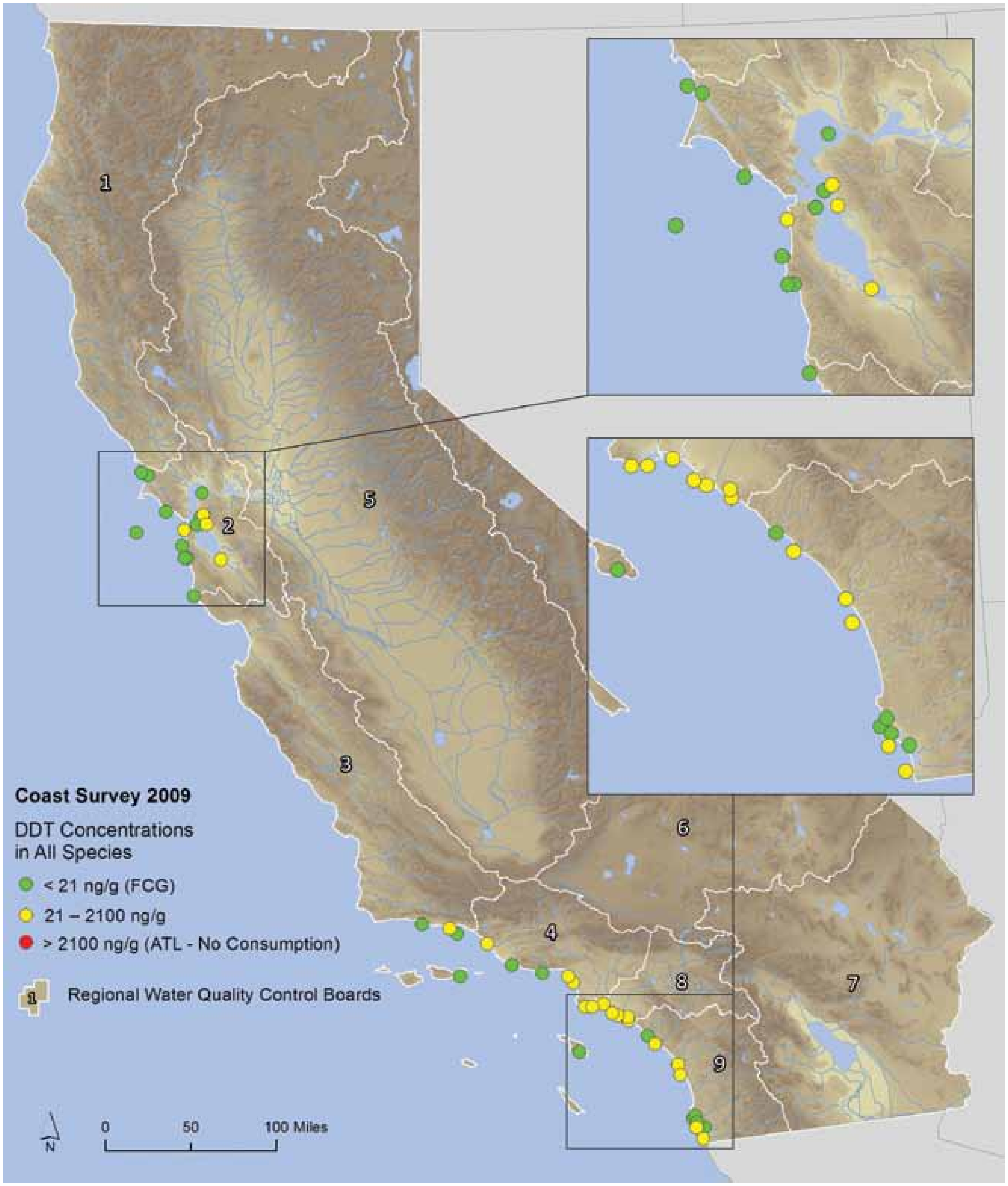


Figure 3-12. Spatial patterns in DDT concentrations (ppb) among locations sampled in the Coast Survey, 2009. Each point represents the highest average DDT concentration among the species sampled at each location. Concentrations were measured in composite samples.

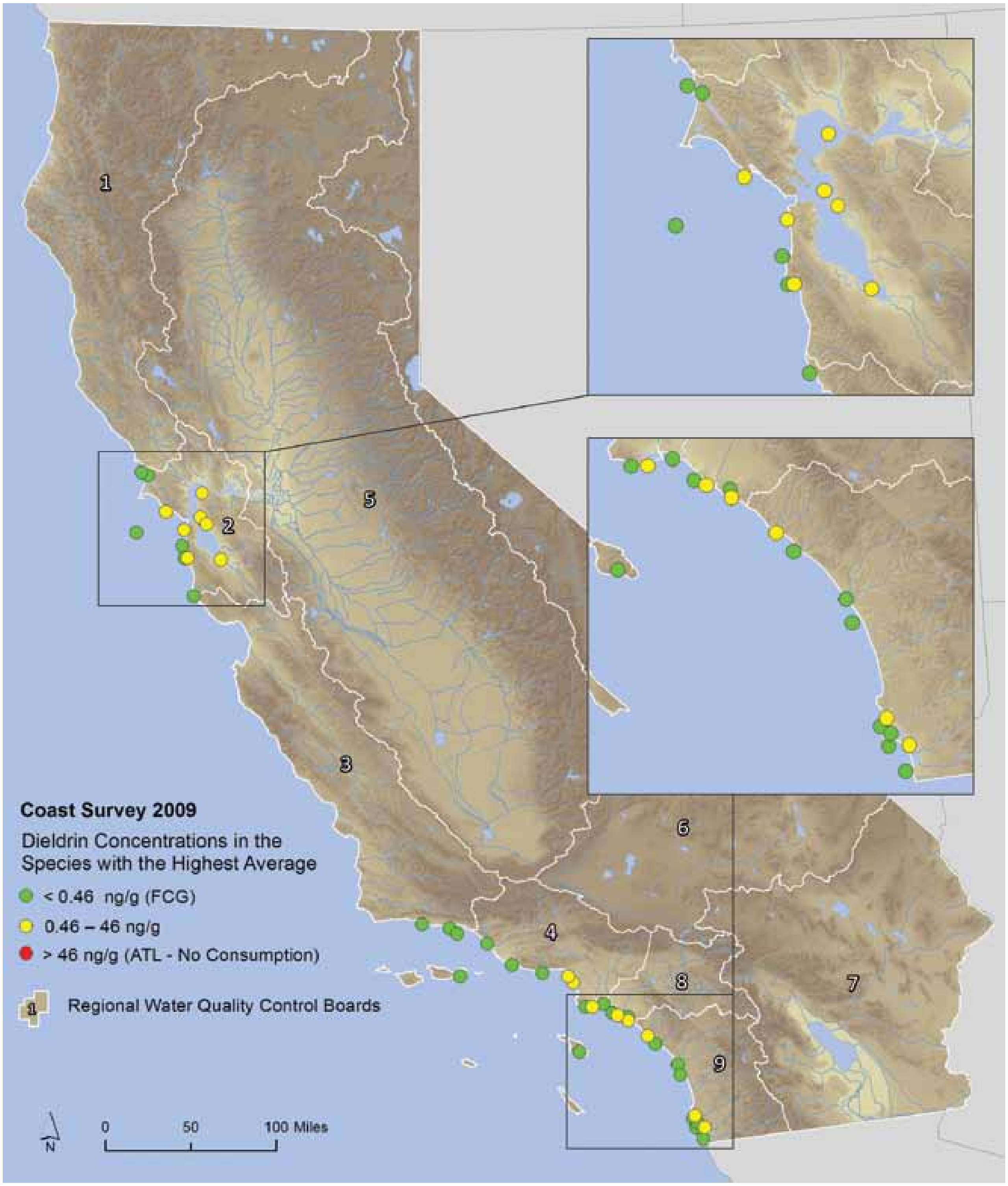


Figure 3-13. Spatial patterns in dieldrin concentrations (ppb) among locations sampled in the Coast Survey, 2009. Each point represents the highest average dieldrin concentration among the species sampled at each location. Concentrations were measured in composite samples.

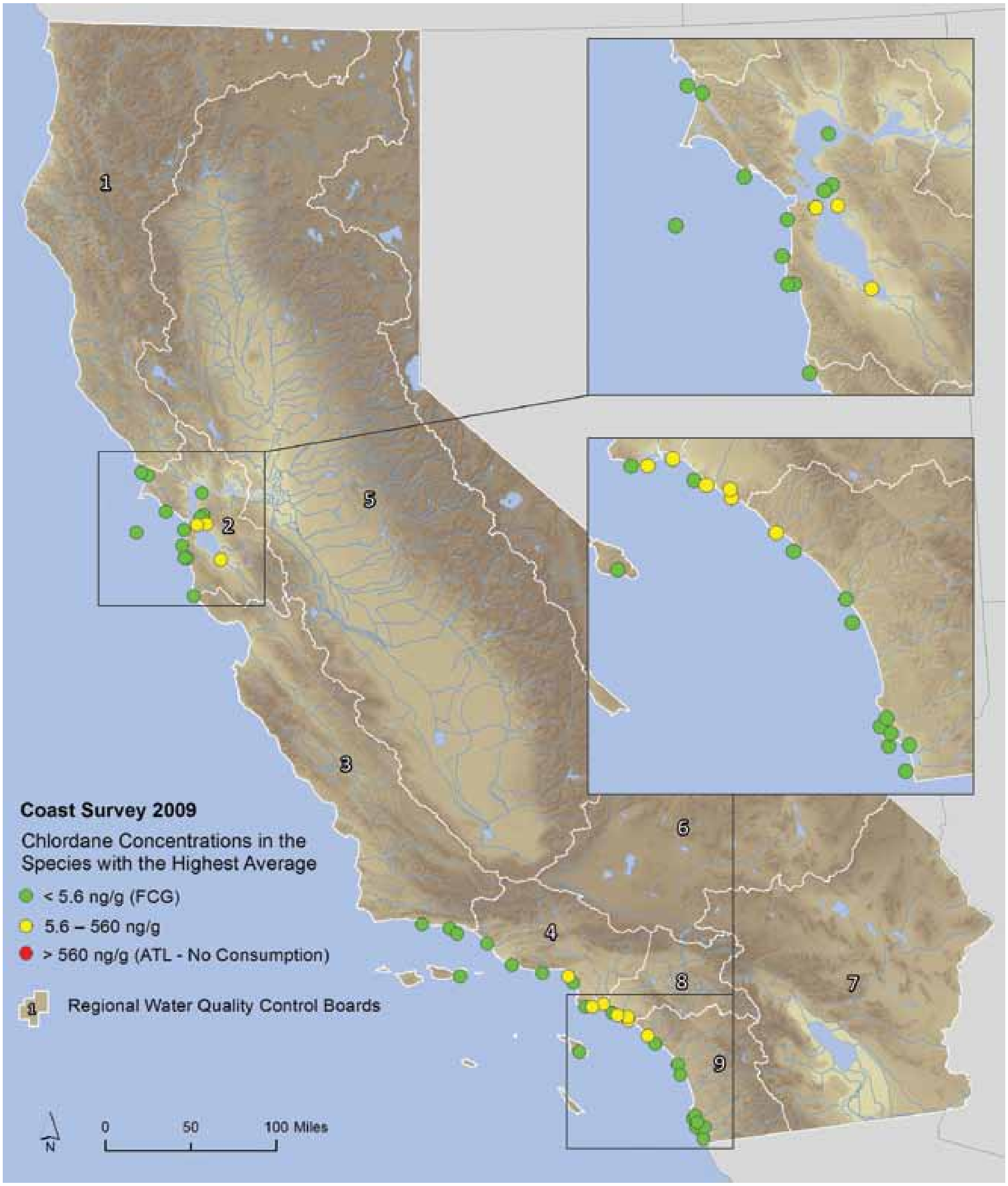


Figure 3-14. Spatial patterns in chlordane concentrations (ppb) among locations sampled in the Coast Survey, 2009. Each point represents the highest average chlordane concentration among the species sampled at each location. Concentrations were measured in composite samples.

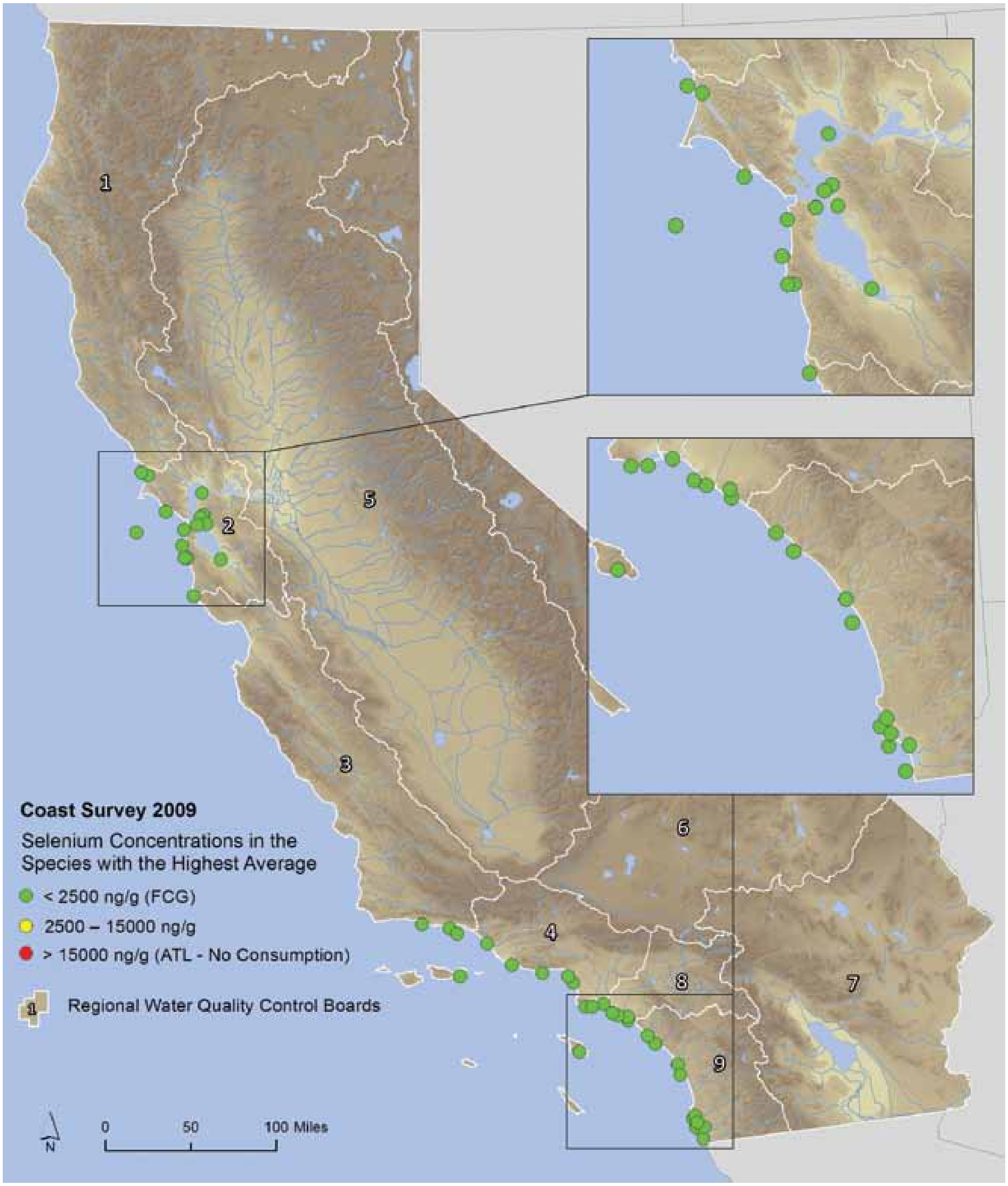


Figure 3-15. Spatial patterns in selenium concentrations (ppb) among locations sampled in the Coast Survey, 2009. Each point represents the highest average selenium concentration among the species sampled at each location. Concentrations were measured in composite samples.

Selenium

The maximum species averages for selenium were below the lowest threshold (the 2.5 ppm 3 serving ATL) in 100% of the 42 locations sampled (Figure 3-15). The highest average or composite concentration measured was 2.4 ppm in a barred sand bass sample from San Pedro Bay.

SECTION 4 THE SOUTHERN CALIFORNIA BIGHT

INTRODUCTION

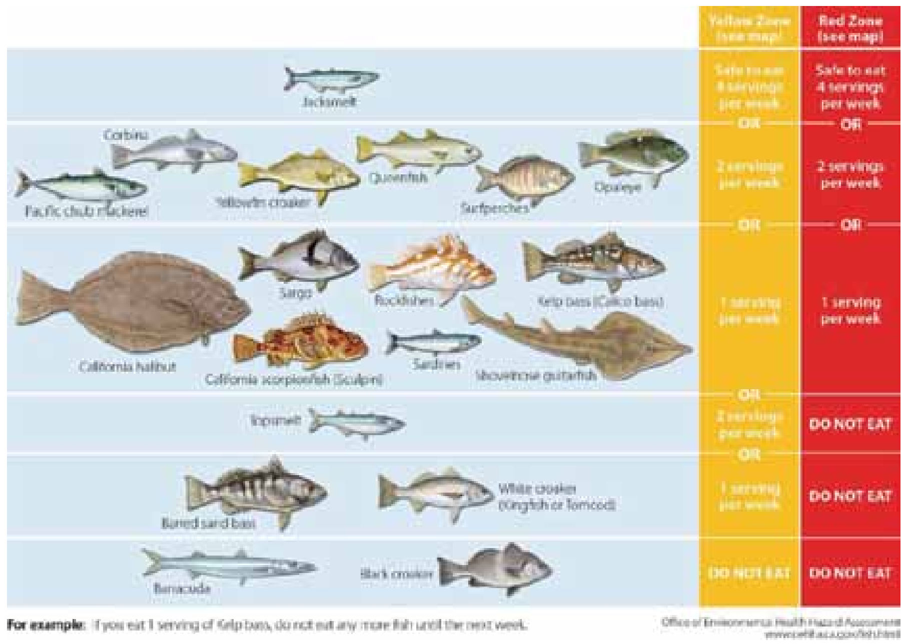
The Office of Environmental Health and Hazard Assessment (OEHHA) has developed a health advisory and safe eating guidelines for fish from the Southern California Bight (Figure 4-1) (Klasing et al. 2009). The advisory, which extends from Ventura Harbor to San Mateo Point, warns fishers against eating specific species from some or all locations. OEHHA's safe eating guidelines also identifies fish species with low contaminant levels that are safe to eat frequently (once a week or more). Sufficient numbers of fish were collected to provide consumption advice for barracuda, barred sand bass, black croaker, corbina, California halibut, California scorpionfish (also known as "sculpin"), jacksmelt, kelp bass, opaleye, Pacific chub mackerel, queenfish, rockfishes, sardines, sargo, shovelnose guitarfish, surfperches, topsmelt, white croaker, and yellowfin croaker. Because sport fish were collected from such a large geographic area, OEHHA divided the advisory and safe eating guidelines into regions based on highly variable contaminant levels found in some species: 1) Ventura Harbor to Santa Monica Pier, 2) Santa Monica Beach south of Santa Monica Pier to Seal Beach Pier, and 3) South of Seal Beach Pier to San Mateo Point.

This chapter on the Southern California Bight has a regional focus on a subset of species collected in the statewide survey. These species include kelp bass, Pacific chub mackerel, white croaker, yellowfin croaker, barred sand bass, and spotted sand bass. These species were most frequently caught in the Bight and provide our best opportunity to illustrate spatial comparisons across the region.

The five species selected for this region are all secondary or tertiary carnivores in the Southern California marine food web structure (Allen et al. 2006). Yellowfin and white croaker are benthic secondary carnivores, feeding largely on invertebrates (i.e., clams, worms, crustaceans) living in or on sea bottom sediments. The primary difference between the croakers is their preferred benthic habitats; yellowfin croaker prefers embayment habitats, while white croaker can be found in large bays and near coastal open ocean habitats. Kelp bass are secondary carnivores that prefer rocky reef habitats, feeding on smaller kelp bed fishes (i.e., perch and wrasses). Pacific chub mackerel are pelagic secondary carnivores, meaning they prefer water column habitats either near or far from the coast, feeding on smaller midwater fishes (i.e., anchovy and sardine). Spotted sand bass are tertiary benthopelagivores. That is, spotted sand bass are near the top of the food web, preferring bay/estuarine habitats, feeding on a large variety of prey including flatfish (e.g., diamond turbot), baitfish (e.g., slough anchovy), perches (e.g., shiner surfperch), and other assorted benthic fishes (longjaw mudsuckers, Pacific staghorn sculpin, bay pipefish). Therefore, the combination of target species sampled during this study covers a wide variety of habitats ranging from bays to offshore, from the sea bottom to the surface, and focuses largely on the upper end of the food web.

A Guide to Eating Fish Caught from Vetura Harbor to San Mateo Point

Women 18-45, especially those who are pregnant or breastfeeding, and children 1-17



Map of Yellow and Red Zones for fish caught from Ventura Harbor to San Mateo Point

Figure 4-1. Current health advisories for fish consumption in the southern California Bight (OEHHA 2009).

METHYLMERCURY

Comparison to Thresholds

In the Southern California Bight, more samples exceeded fish contaminant thresholds for methylmercury than any other contaminant for the six species examined in this study (Figure 4-2). Average concentrations of fish caught in embayments, open coastal areas, and the Channel Islands all exceeded OEHHA's 1 serving ATL (0.15 ppm). Six samples (5%) exceeded OEHHA's no consumption ATL of 0.44 ppm.

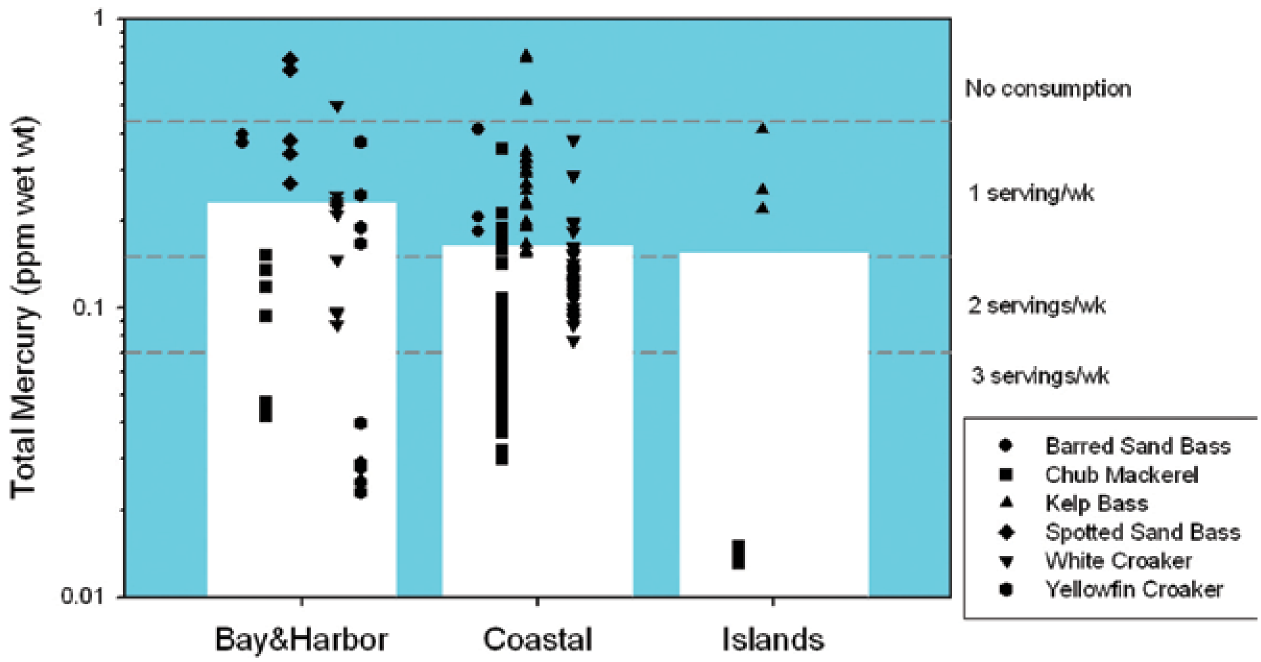


Figure 4-2. Concentrations of methylmercury (ppm) in fish composites from three different habitats in the Southern California Bight. Bars represent the average of all species for each habitat. Symbols represent the concentration of each composite sample arranged by species.

Variation Within and Among Species

The average concentration of methylmercury was greater in spotted sand bass (0.16 ± 0.04 ppm) than any other species from the Southern California Bight (Figure 4-2). This was followed by kelp bass (0.15 ± 0.05 ppm), white croaker (0.13 ± 0.05 ppm), yellowfin croaker (0.10 ± 0.10 ppm), and Pacific chub mackerel (0.06 ± 0.03 ppm). Spotted sand bass are the highest trophic position predator sampled in the Bight. In addition, spotted sand bass prefer embayment habitats known to have greater mercury concentrations in sediment than offshore habitats (Maruya and Schiff 2009). Kelp bass, which prefer open coastal habitats, are perhaps the longest-lived of the six species sampled (up to 30 yrs). The combination of high trophic position and long lifespan are known to contribute to methylmercury accumulation in fish (Wiener et al. 2007). This likely contributes to the increased average methylmercury concentrations in these species.

Spatial Patterns

There was no clear spatial trend in average methylmercury tissue concentrations along the open coast of the Southern California Bight (Figure 4-3). Average methylmercury concentrations exceeded OEHHA's 2 serving ATL (0.07 ppm) in every one of the 19 fishing locations for kelp bass. Five of the 19 fishing locations also exceeded OEHHA's 1 serving ATL (0.15 ppm) for kelp bass, but these were not the locations typically known

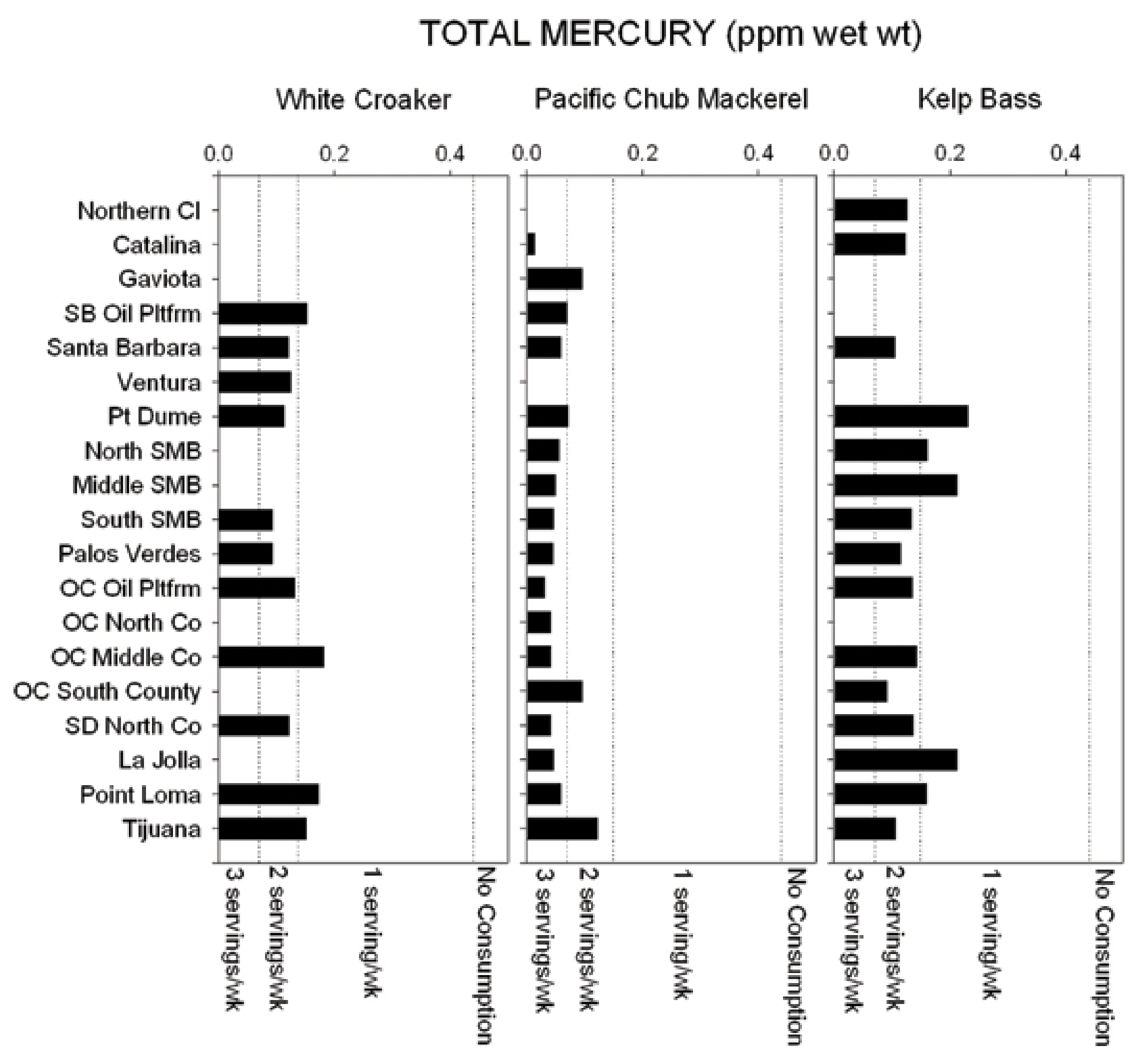


Figure 4-3. Average methylmercury concentrations (ppm) by fishing zone for three commonly occurring species in the Southern California Bight.

for mercury contamination sources. These five locations, which include Point Dume and Point La Jolla, are headlands with relatively robust kelp bass populations (Pondella et al. in press).

Pacific chub mackerel was the species with the lowest average methylmercury tissue concentrations in this study. In contrast to kelp bass, Pacific chub mackerel exceeded OEHHA's lowest threshold, the 2 serving ATL, in only four of the 19 fishing locations. Like the observations for kelp bass, the fishing locations with the highest Pacific chub mackerel tissue methylmercury concentrations, places like Gaviota and south Orange County, are not associated with known sources of mercury.

Temporal Trends

There have been few studies of methylmercury concentrations in recreationally-caught fishes from the Southern California Bight. The most prominent study available for comparison was conducted in 2002 and used for the existing fish advisory in the Los Angeles area (NOAA 2007). After constraining the samples from this study to the same geographic area as NOAA (2007), the ranges of methylmercury tissue concentrations between the two surveys were similar (Table 4-1). This implies that tissue concentrations have remained steady, at least on the Los Angeles margin, between 2002 and 2009.

Table 4-1
Comparison of methylmercury concentration ranges (ppm) among species from the Los Angeles margin.

Species	Methylmercury (range, ppm wet weight)	
	2009 (This Study)	2002 (NOAA 2007)
Kelp Bass	0.115-0.231	0.118-0.321
White Croaker	0.093-0.131	0.027-0.196
Pacific chub Mackerel	0.031-0.056	0.080-0.086

Management Implications

This is the first regional scale assessment of methylmercury in edible tissues of marine sport fishes of the entire Southern California Bight. The widespread exceedance of OEHHA's lowest 2 serving ATL for open coastal fish species such as kelp bass is new information. Less than a half-dozen composite kelp bass samples exceeded OEHHA's no consumption threshold of 0.44 ppm and no fishing location exceeded 0.44 ppm on average.

Local land-based sources of mercury appeared to have little impact on fish tissue concentrations in the Southern California Bight. For example, kelp bass tissue concentrations had no strong spatial gradient and did not peak near large urban centers where land-based inputs of mercury have historically been the greatest. The tissue concentrations of methylmercury were greater in embayments than open coastal habitats. This may be a reflection of localized land-based sources and in-situ biogeochemical cycling of mercury, but sample sizes were too limited to compare embayments for different levels of tissue contamination. Instead of spatial relationships, the fish species highest in the food web and with the longest life span appeared to have the greatest tissue concentrations of total mercury.

Priorities for Further Assessment

Fishing locations with samples greater than OEHHA's no consumption ATL should be prioritized for further assessment because many of these locations were not included in OEHHA's current fish tissue advisory. These investigations should focus on species higher in the food web and with the longest life spans, since these species tended to accumulate the greatest concentrations within a habitat.

A second consideration for further investigation would be deciphering sources of mercury that contribute to tissue contamination. There have been a number of studies documenting total mercury in sediments of the Southern California Bight (Maruya and Schiff 2009, Schiff 2000). However, two data gaps remain. First, too few tissue samples were collected in embayments where sediment processes might play a role in bioaccumulation. Embayments are particularly important since these habitats support some of the most intensive fishing pressure in the Southern California Bight. The second data gap is the role of additional mercury sources where sediments are not the primary source. These locations would include open coastal and offshore island habitats. Especially for heavily-fished species such as kelp bass that live in rocky habitat, non-sediment sources including atmospheric deposition may be implicated.

PCBs

Comparison to Thresholds

Approximately one-third (36%) of the samples from the Southern California Bight exceeded OEHHA's 2 serving ATL (21 ppb) for PCBs in this study (Figure 4-4). Average PCB concentrations of fish caught from embayments exceeded OEHHA's 1 serving ATL (42 ppb). Average PCB concentrations of fish caught from open coastal areas exceeded OEHHA's 2 serving ATL (21 ppb). Average PCB concentrations of fish caught from the Channel Islands were below the 1 serving ATL. Five samples (3%) exceeded OEHHA's no consumption ATL (120 ppb), all of which came from embayment habitats. No samples from the Channel Islands exceeded the 2 serving ATL (21 ppb).

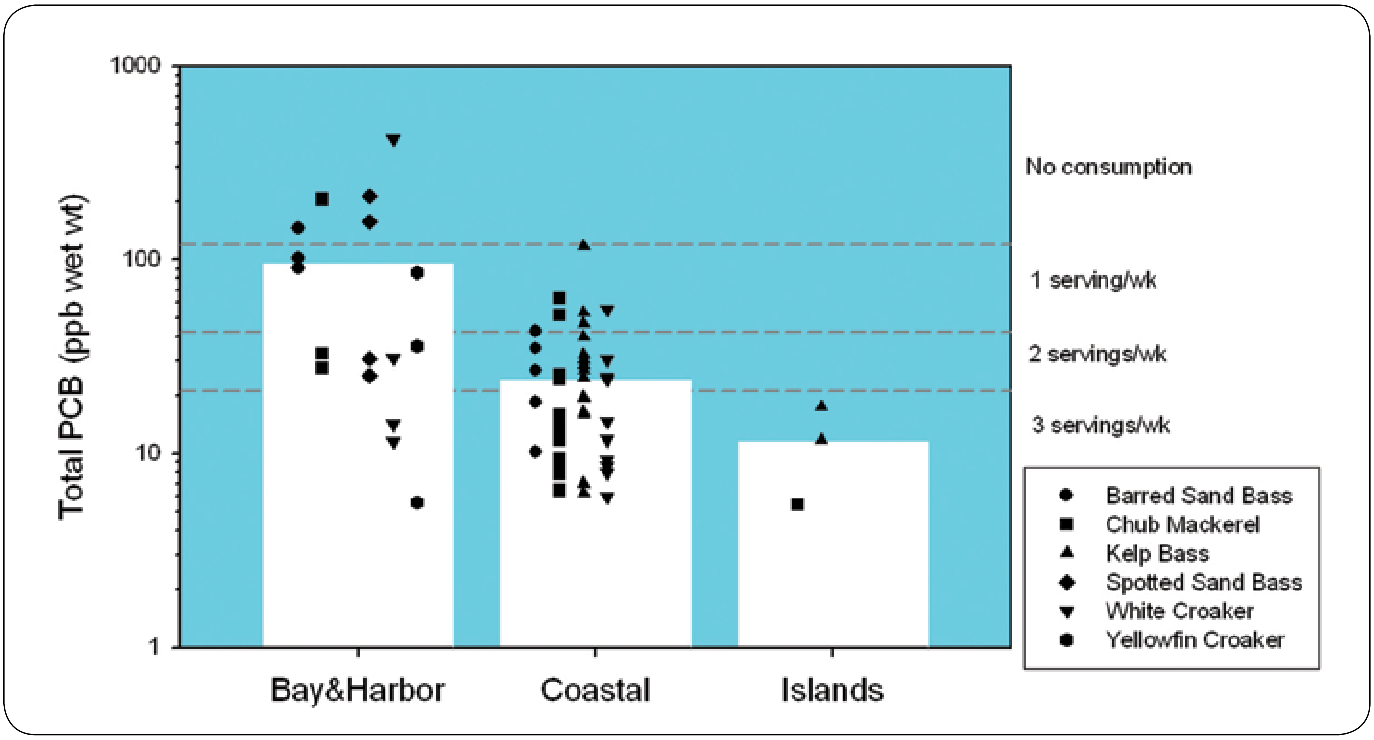


Figure 4-4. Concentrations of PCBs (ppb) in fish composites from three different habitats in the Southern California Bight. Bars represent the average of all species for each habitat. Symbols represent the concentration of each composite sample arranged by species.

Variation Among Species

The average concentration of PCBs was similar among species. Average concentrations varied by less than a factor of three among the five species sampled. The greatest average PCB concentration was measured in spotted sand bass (35 ± 21 ppb). The lowest average PCB concentration was measured in kelp bass (15 ± 13 ppb). Species that feed on or near sediments, especially those located in embayments (white croaker, yellowfin croaker, spotted sand bass), had greater concentrations than those species that feed in the water column along the open coast (kelp bass and Pacific chub mackerel).

Spatial Patterns

There was a clear spatial trend in PCB concentrations along the open coast of the Southern California Bight (Figure 4-5). Peak concentrations occurred in fishing locations near the urban centers of Los Angeles and San Diego. Minimum concentrations occurred in fishing locations distant from urban centers such as Santa Barbara/Gaviota or south Orange/north San Diego Counties. Four of the 18 fishing locations with kelp bass samples exceeded OEHHA's 2 serving ATL (21 ppb); a single location located just north of the US-Mexico international border exceeded the 1 serving ATL (42 ppb). Five of the 11 fishing locations with white croaker samples exceeded the 2 serving ATL (21 ppb). Again, samples generally nearest the urban centers of Los

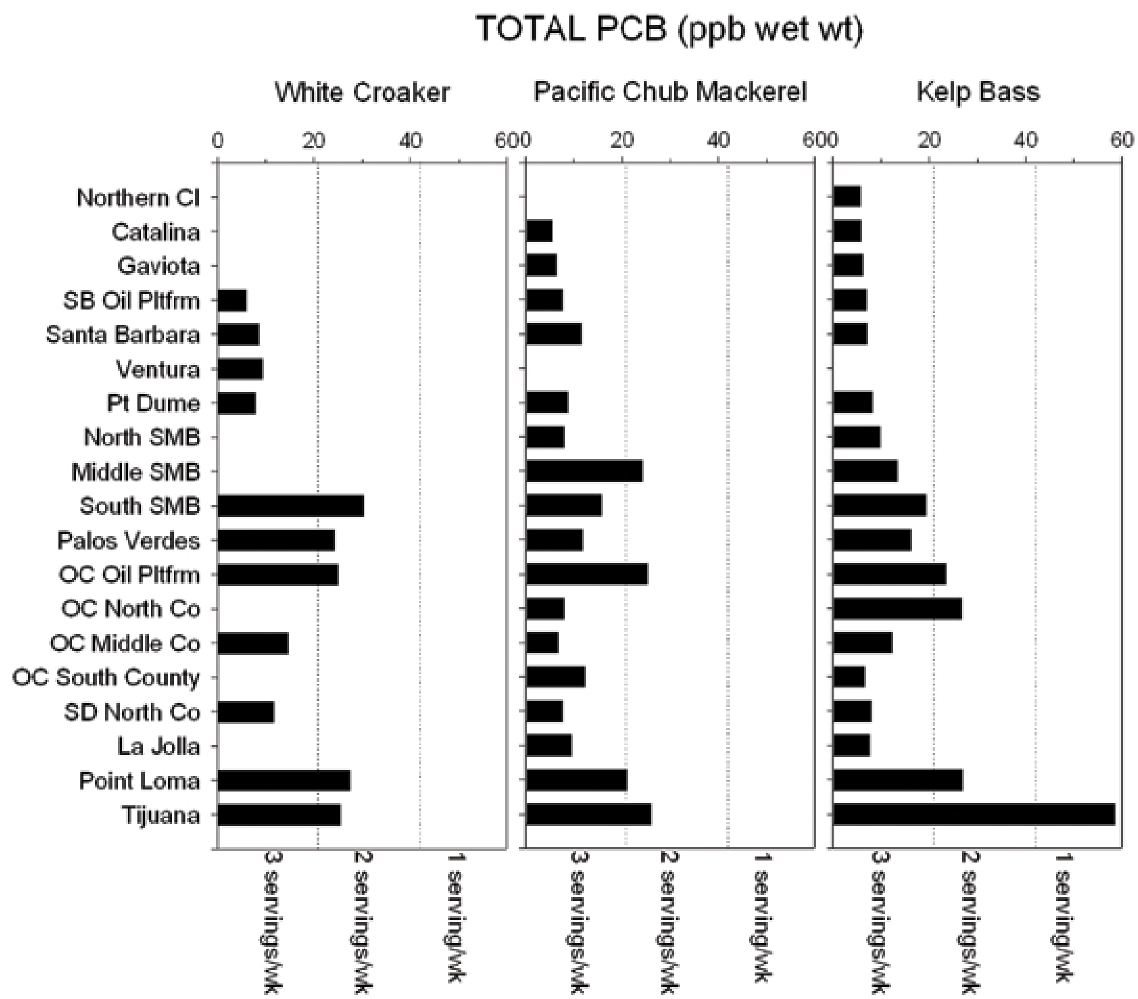


Figure 4-5. Average PCBs (ppb) by fishing zone for three commonly occurring species in the Southern California Bight.

Angeles and San Diego had the greatest PCB concentrations. Three of the 17 fishing locations with Pacific chub mackerel samples exceeded 21 ppb. Yet again, samples generally nearest the urban centers of Los Angeles and San Diego had the greatest PCB concentrations. Samples furthest from Los Angeles and San Diego had the lowest average PCB concentrations in Pacific chub mackerel.

The urban centers near Los Angeles and San Diego have the greatest sediment concentrations of PCBs found in the Southern California Bight (Maruya and Schiff 2009, Schiff 2000). PCBs are a known persistent bioaccumulative organic contaminant. Food web transfer of PCBs has been well-documented in the Southern California Bight (Young et al. 1976, 1977) and elsewhere (Suedel et al. 1994). In fact, sediment concentrations have been well correlated with tissue levels in sediment-associated fishes (Schiff and Allen 2001). Even pelagic (water column) forage fishes have been shown to contain higher concentrations of PCBs near to, compared to distant from, urban centers in the Southern California Bight (Jarvis et al. 2007).

Temporal Trends

No long-term studies of PCBs in sport fish have been conducted in the Southern California Bight.

Management Implications

While regional scale assessments of PCBs in marine fishes have been conducted previously in the Southern California Bight, they were focused on either liver or whole-body tissues rather than edible fillets consumed by most anglers. Livers, which typically have PCB concentrations 10-fold greater than muscle tissue, are good for projects addressing trends because higher concentrations enhance detection of differences over time. However, livers are not typically consumed by anglers. Similarly, whole-body samples may have greater concentrations than muscle tissue, but do not provide the best index of human exposure. Whole-body samples are valuable for studies focused on environmental risk since most predators consume their prey whole. Therefore, comparing studies that measure different tissue types (livers, whole-body, and muscle fillets) is problematic.

PCBs appear to be a problem nearest urban centers in the Southern California Bight. The inputs of PCBs near urban centers of the Southern California Bight have been well-studied (Schiff et al. 2001). The historical inputs of PCBs have been greatest (up to 98% of total emissions) from treated wastewater discharges. These inputs, estimated to be 9 metric tons/yr in 1971, have been below detection limits for the last two decades. However, large quantities still exist in sediments near outfalls and in embayments of the Southern California Bight, and it is this reservoir of historical residues that is thought to continually impact biota.

Priorities for Further Assessment

Fishing locations with samples greater than OEHHA's no consumption threshold should be prioritized for further assessment. These investigations should focus on sediment-associated species, since these species tended to accumulate the greatest concentrations within a habitat. While further work in the Los Angeles region is justified, the largest data gap would be for fishes in embayments of the San Diego region. Los Angeles already has a fish advisory in place; hence some protection of anglers currently exists. No such advisory has been developed for San Diego embayments and potentially harmful exposures may be occurring.

DDTs

Comparison to Thresholds

None of the samples from the Southern California Bight exceeded any of OEHHA's ATLs for DDTs in this study (Figure 4-6). Average DDT concentrations in fish caught from embayments, open coastal, and channel island habitats were at least five-fold below OEHHA's lowest, 2 serving ATL (520 ppb).

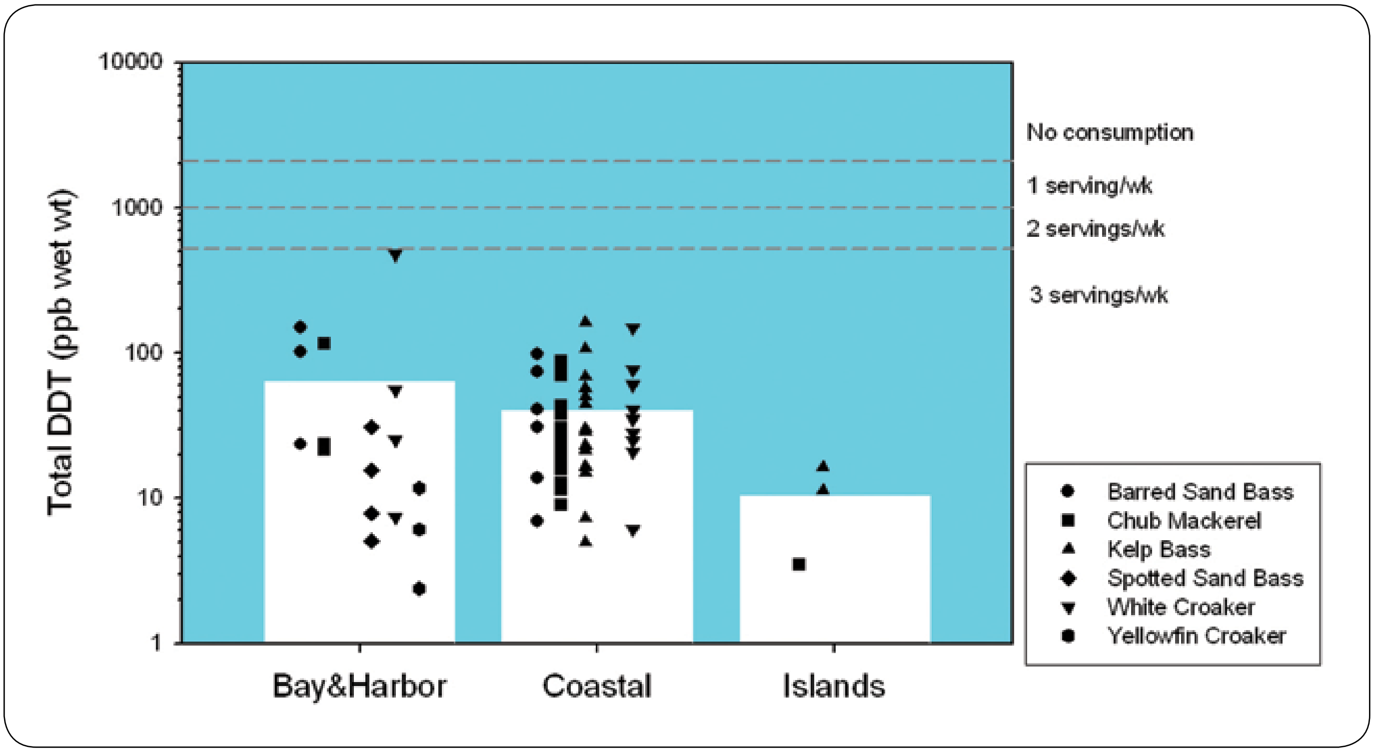


Figure 4-6. Concentrations of DDTs (ppb) in fish composites from three different habitats in the Southern California Bight. Bars represent the average of all species for each habitat. Symbols represent the concentration of each composite sample arranged by species.

Variation Among Species

Average DDT concentrations varied by a factor of four among species sampled. The greatest average DDT concentration was measured in white croaker (42 ± 42 ppb). The lowest average DDT concentration was measured in yellowfin croaker (10 ± 14 ppb) and spotted sand bass (10 ± 14 ppb). It is likely that the differences among species were driven, at least in part, by sampling location. Some samples of white croaker, Pacific chub mackerel, and kelp bass were collected from the Los Angeles margin. In contrast, no yellowfin croaker or spotted sand bass were collected near the Los Angeles margin. The yellowfin croaker and spotted sand bass were collected mostly south of Los Angeles.

Spatial Patterns

There was a clear spatial trend in DDT concentrations along the open coast of the Southern California Bight (Figure 4-7). Regardless of species, the greatest DDT concentrations occurred in fishing locations near the Los Angeles margin, peaking at Palos Verdes. Despite the tissue concentration maxima located near Los Angeles, none of the 19 fishing locations exceeded the 2 serving ATL. Like PCBs, minimum tissue concentrations of DDTs occurred in fishing locations furthest from Los Angeles such as Santa Barbara/Gaviota or south Orange/north San Diego counties.

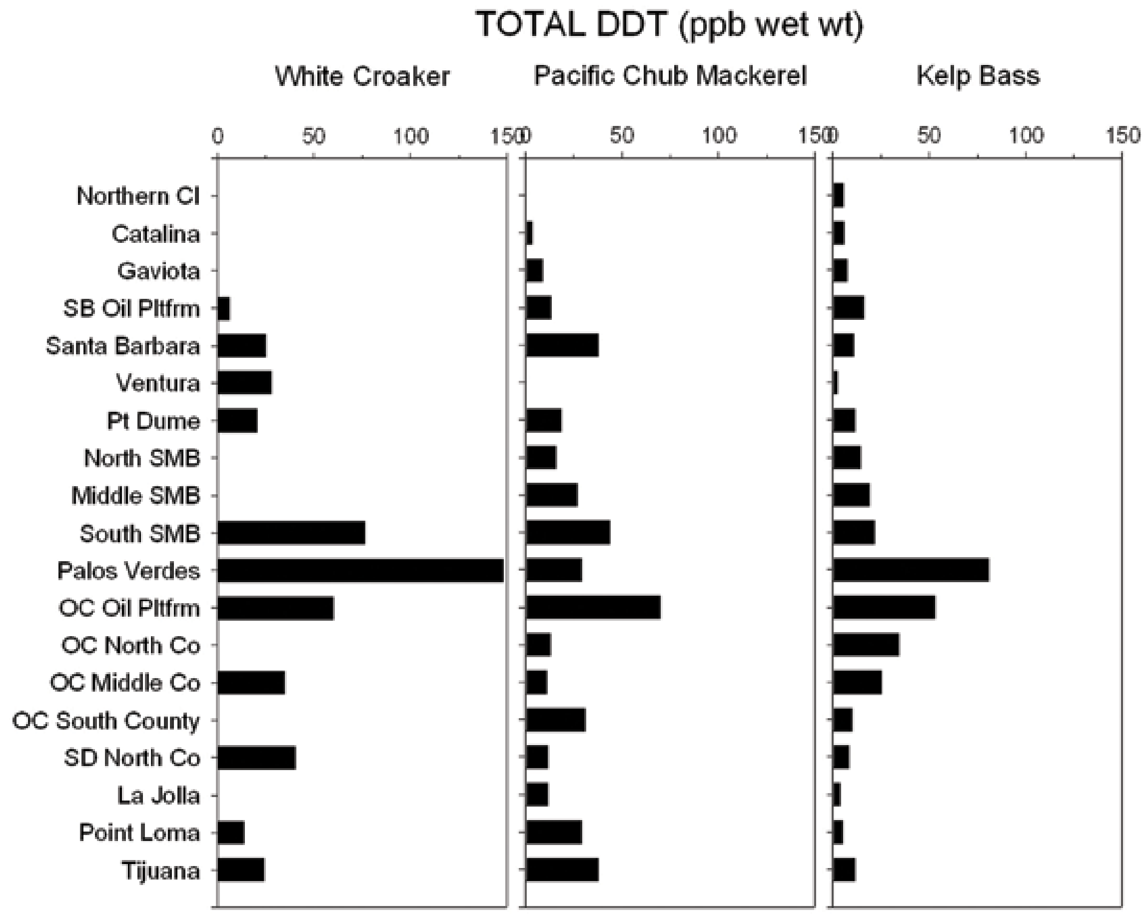


Figure 4-7. Average DDT concentrations (ppb) by fishing zone for three commonly occurring species in the Southern California Bight. The lowest ATL is 520 ppb, well above the highest average concentration measured in any zone for these three species during this study.

The sediments near Los Angeles have the greatest concentrations of DDTs found in the Southern California Bight (Maruya and Schiff 2009, Schiff 2000). In fact, Palos Verdes in the Los Angeles area is the location of a Superfund site, where up to 100 metric tons of DDTs are still found in offshore sediments (Lee et al. 2002). DDTs are a known persistent bioaccumulative organic contaminant. Food web transfer of DDTs has been well-documented in the Southern California Bight (Young et al. 1976, 1977) and elsewhere (Suedel et al. 1994). In fact, sediment concentrations have been well correlated with tissue levels in sediment-associated fishes (Schiff and Allen 2001). Even pelagic (water column) forage fishes have been shown to contain higher concentrations of DDTs near urban centers in the Southern California Bight (Jarvis et al. 2007).

Temporal Trends

Ongoing monitoring of DDTs in edible fish tissues is conducted by the Los Angeles County Sanitation Districts (LACSD). The LACSD has sampled white croaker and kelp bass fillets at several locations along Palos Verdes (Figure 4-8). Concentrations have declined in tissue composites from both species since

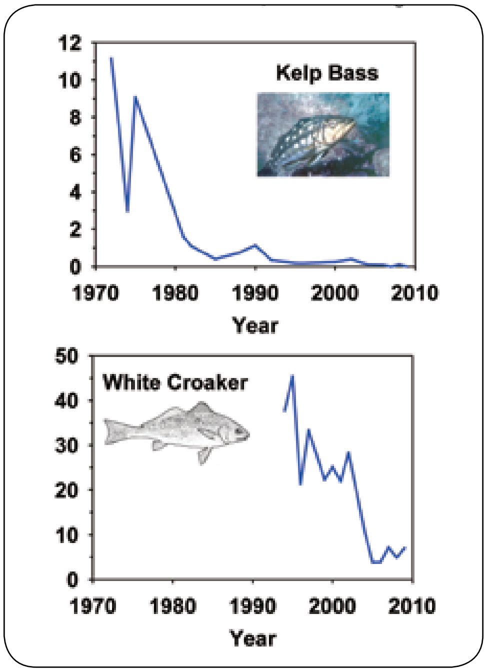


Figure 4-8. Median concentrations of DDTs (ppm) over time in muscle tissue from kelp bass and white croaker from Palos Verdes, California.

monitoring began in the 1970s. For kelp bass, DDT concentrations nearest the Superfund site have declined from 10 ppm in 1972 to below detection limits in 2009. For white croaker, DDT concentrations declined from 45 to 5 ppm between 1995 and 2009. This order-of-magnitude reduction now appears to have leveled off, with concentrations holding steady for the last four years. The NPDES monitoring data for kelp bass are consistent with the findings observed in the current study. The white croaker results from the NPDES monitoring, however, were much greater than the concentrations observed during the current study. Several explanations are available for this discontinuity, but the primary difference is presumed to be fishing location. The NPDES monitoring program collects white croaker at the Superfund site. The white croaker from the current study, while still collected from Palos Verdes, was collected kilometers away from the Superfund site.

Concentrations of DDTs, except for those fish on the Los Angeles margin, appear to be below OEHHA's ATLs. A fish advisory already exists along the Los Angeles margin. As a result, the primary management concerns are already being addressed. This includes ensuring public notification and education (http://www.pvsfish.org/; http://www.oehha.ca.gov/fish/so_cal/pdf_zip/SoCalFactsheet61809.pdf) as well as remediation activities to clean up the sediments responsible for the increased tissue levels (http://www.epa.gov/region9/superfund/pvshelf/index.html).

Priorities for Further Assessment

Since the Superfund site was subject to Natural Resource Damage Assessment (NRDA) actions, priorities and further assessments have been planned and are underway. Please visit the NRDA website for up to date information on these activities http://www.darrp.noaa.gov/southwest/montrose/msrphome.html

SECTION 5 SAN FRANCISCO BAY AND THE REGION 2 COAST

INTRODUCTION

Fish from San Francisco Bay contain concentrations of mercury, PCBs, and other chemical contaminants that are above thresholds of concern for human health. This problem was first documented in 1994 when the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) performed a pilot study to measure contaminant concentrations in Bay sport fish (Fairey et al. 1997). As a result of this pilot study the California Office of Environmental Health Hazard Assessment (OEHHA) issued an interim health advisory for consumption of fish from San Francisco Bay.

OEHHA issued an updated health advisory and safe eating guidelines for fish and shellfish caught from San Francisco Bay in 2011 (Gassel et al. 2011). The guidelines recommend avoiding shiner perch and other surfperch species from San Francisco Bay. Women ages 18-45 and children 1-17, who are most sensitive to mercury, should also avoid eating San Francisco Bay sharks, striped bass, or white sturgeon.

All segments of San Francisco Bay appear on the 303(d) List because the fish consumption advisory represents an impairment of the beneficial use of the Bay for sport fishing. The Clean Water Act also requires that Total Maximum Daily Load (TMDL), cleanup plans based on evaluation and reduction of contaminant loads, be developed in response to inclusion of a water body on the 303(d) List. Bay TMDLs for mercury and PCBs have been completed and Basin Plan Amendments adopted. In these TMDLs the emphasis has shifted away from enforcement of water quality objectives and toward enforcement of targets that are more directly linked with impairment, particularly methylmercury and PCB concentrations in sport fish and wildlife prey. Concentrations of mercury, PCBs, and other contaminants in sport fish are, therefore, fundamentally important indices of Bay water quality.

Sport fish monitoring in the Bay has been conducted on a three-year cycle since 1994 (Fairey et al. 1997). This section presents findings from the sixth round of sport fish sampling conducted in 2009 under the Regional Monitoring Program for Water Quality in the San Francisco Estuary (RMP) (Davis et al. 1999, Davis et al. 2002, Greenfield et al. 2003, Greenfield et al. 2005, Davis et al. 2006, Hunt et al. 2008). The monitoring program targets species that are frequently caught and consumed by Bay anglers at five popular fishing areas. This monitoring provides updates on the status of and long-term trends in contaminants of concern in Bay sport fish.

The objectives of the RMP fish contamination monitoring element are:

1. to produce the information needed for updating human health advisories and conducting human health risk assessments;
2. to measure contaminant levels in fish species over time to track temporal trends and to evaluate the effectiveness of management efforts;
3. to evaluate spatial patterns in contamination of sport fish and the Bay food web; and
4. to understand factors that influence contaminant accumulation in sport fish in order to better resolve signals of temporal and spatial trends.

The 2009 RMP sampling effort was supplemented substantially by coordination with SWAMP's statewide survey of contaminants in sport fish on the California coast. Coordination with SWAMP made it possible to sample a broader array of species and to generally invest more in sampling and analysis through savings achieved through joint reporting of the results. Coordination with SWAMP also made it possible to obtain data from coastal waters adjacent to the Bay, providing a much-needed update on the status of sport fish contamination in these areas, many of which had not been sampled since the Coastal Fish Contamination Program (CFCP) ended in 2003. The systematic and consistent statewide dataset being generated by SWAMP is also providing extremely valuable context for interpretation of coastal sport fish contamination.

This section also summarizes results for the Region 2 coast, including two sites of particular interest: Tomales Bay and Pillar Point Harbor. The CFCP and followup monitoring led to a consumption advisory and consideration of a TMDL for Tomales Bay due to methylmercury contamination, and to inclusion of Pillar Point Harbor on the 303(d) List due to methylmercury contamination.

SAN FRANCISCO BAY

Methylmercury

Methylmercury exposure is one of the primary concerns behind the sport fish consumption advisory for the Bay. The San Francisco Bay TMDL for mercury was approved by the U.S. EPA in February 2008. Continuing to monitor methylmercury in Bay sport fish will be crucial in assessing the effectiveness of the TMDL and tracking the additional reductions required to meet the target of 0.2 ppm that was established in the TMDL as the cleanup goal for protection of human health (SFBRWQCB 2006). The TMDL also established a 0.03 ppm target for small prey fish to protect piscivorous wildlife.

Comparison to Thresholds and Variation Among Species

Consistent with previous rounds of RMP sampling, methylmercury concentrations in Bay sport fish continue to exceed thresholds of concern (Figure 5-1, Tables 5-1 and 5-2). Two species, leopard shark and striped bass, had average concentrations (1.29 and 0.46 ppm, respectively) exceeding the no consumption ATL of

0.44 ppm. All leopard shark samples, ranging in concentration from a minimum of 0.78 ppm to a maximum of 1.84 ppm, exceeded 0.44 ppm. Concentrations in striped bass ranged from 0.25 ppm to 0.91 ppm. No samples of the other species approached 0.44 ppm.

The Mercury TMDL specifies that attainment of the target of 0.2 ppm is to be assessed using a grand mean of five popular species: striped bass, California halibut, white sturgeon, jacksmelt, and white croaker. Methylmercury was only analyzed in three of these species in 2009, precluding a precise assessment of status relative to the target. Average concentrations for the three species that were analyzed were 0.46 ppm for striped bass, 0.22 ppm for California halibut, and 0.08 ppm for jacksmelt.

None of the species sampled in the Bay had an average concentration, or even a single sample, below the lowest methylmercury threshold (the 2 serving ATL of 0.07 ppm). Jacksmelt had the lowest average (0.08 ppm). Shiner surfperch had the second lowest average concentration (0.12 ppm).

Spatial Patterns

Significant variation among the five Bay sampling locations for most of the species collected was not expected, due primarily to their wide movements, especially striped bass which are known to move throughout the entire Bay-Delta Estuary (Davis et al. 2003). Shiner surfperch, however, have proven to be a useful indicator of spatial variation in past sampling, and the collection of replicate samples in this sampling round allowed for examination of spatial patterns. This information is valuable in guiding efforts to identify and reduce the sources and pathways of methylmercury contamination. The high site fidelity of this species, coupled with the large numbers of fish going into each composite sample (typically 15-20 fish), yields a surprising degree of statistical power to detect spatial patterns even with only three composites per location.

Three replicate composite shiner surfperch samples were collected at each of the five Bay sampling locations. The observed variance within each location was very low (coefficients of variation for each site ranged between 2% and 10%), allowing detection of statistically significant differences among multiple locations (Figure 5-2). Oakland had the highest average concentration (0.19 ppm), significantly higher than all of the other locations. South Bay was second highest (0.13 ppm), and also significantly higher than Berkeley (0.10 ppm), San Francisco (0.09 ppm), and San Pablo Bay (0.08 ppm). The highest average at Oakland was 2.4 times higher than the lowest average at San Pablo Bay.

Temporal Trends

Methylmercury in striped bass is perhaps the most important indicator of mercury contamination in the Bay and Delta from a human health perspective. This is due to a combination of the high mercury concentrations that sometimes occur in their tissue, their abundance, and their popularity among anglers. Striped bass are high trophic level predators and therefore highly susceptible to accumulating high concentrations of methylmercury. Striped bass are also good integrative indicators of mercury contamination in the Bay-Delta

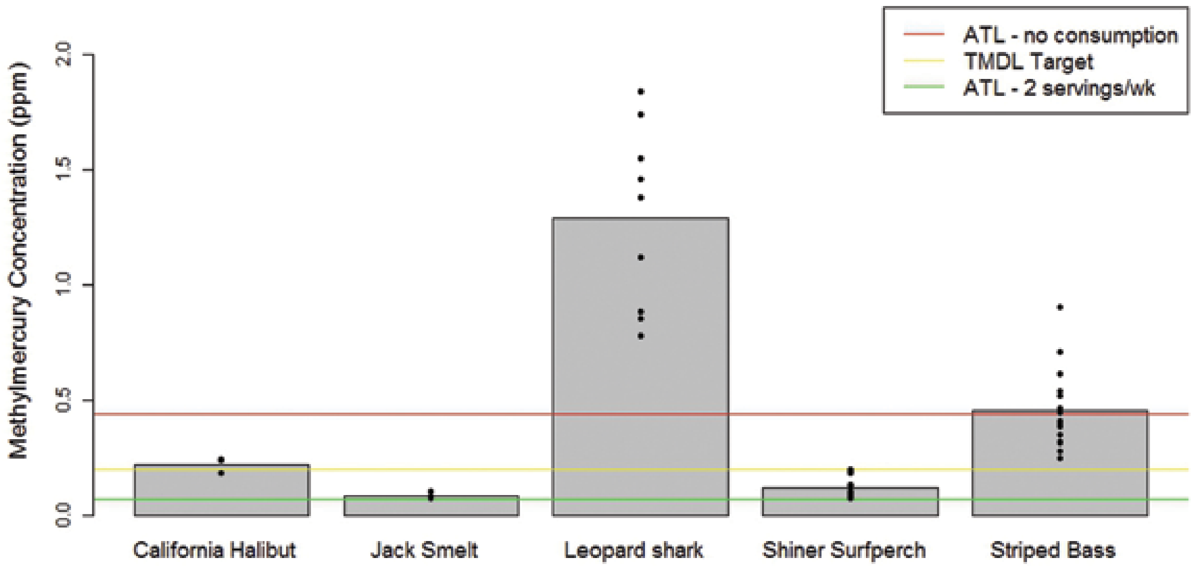


Figure 5-1. Methylmercury concentrations (ppm) in sport fish species in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent individual samples (either composites or individual fish).

Estuary because of their use of the entire ecosystem, including both fresh and saline waters. Striped bass spend most of their lives in San Francisco Bay, but also move into freshwater and the coastal ocean. Recent data have shown that individual striped bass are quite variable in their use of Bay, freshwater, and ocean habitats (Ostrach, D. unpublished data). While this extensive movement makes striped bass good integrative indicators of the estuarine ecosystem, it makes them poor indicators of small-scale spatial variation within the Bay-Delta and also may confound attempts to discern long-term trends.

A relatively extensive historical dataset exists for striped bass in the Bay, allowing evaluation of trends over 39 years from 1971-2009 (Figure 5-3). The data are presented as estimated concentrations of each striped bass at a standard length of 60 cm in order to remove any bias that might occur from sampling different-sized fish in different years. Greenfield et al. (2005) used this technique previously for Bay-Delta striped bass. Striped bass generally show a correlation with size, as seen for the 2009 data ($p = .07$) in Figure 5-4. The 0.44 ppm no consumption ATL provides a useful point of reference for examining fluctuations in annual average concentrations (Figure 5-3). Overall, intra-annual variance has been high and average concentrations in recent years are not significantly different from those measured in the early 1970s. A more rigorous analysis of this dataset is in preparation as a manuscript by Melwani and coauthors. Note that due to length-correction the average shown in Figure 5-3 is slightly different from that discussed previously.

Table 5-1
Summary statistics by species.

Common Name (Sample Type)		Average Number of Fish in Composites	Average Total Length (mm)	Average Percent Lipid	Average Mercury (ppm)	Average Selenium (ppm)	Average Sum of PCBs (ppb)	Average Sum of Dioxin TEQs (pptr)	Average Dieldrin (ppb)	Average Sum of DDTs (ppb)	Average Sum of Chlordanes (ppb)	Average Sum of PBDEs (ppb)	Average PFOS (ppb)
California Halibut (Composite)	average	3	663	0.23	0.22	0.40	18		0.0	3.1	0.3	1.8	0.0
	count		3	3	3	3	3		1	3	3	3	3
Jack Smelt (Composite)	average	5	263	0.69	0.08	0.32	22		0.5	12.5	1.8	1.5	
	count		4	4	4	4	4		2	4	4	4	
Leopard shark (Composite)	average	3	1095	0.38		0.30	21		0.2	7.3	1.1	4.9	6.0
	count		3	3		3	3		2	3	3	3	3
Leopard shark (Individual)	average	1	1095		1.29								
	count		9		9								
Northern Anchovy (Composite)	average	38	88	1.49		0.47	118		0.9	18.9	5.5	7.9	4.4
	count		9	9		9	9		9	9	9	9	3
Shiner Surfperch (Composite)	average	18	115	1.52	0.12	0.42	121	0.89	1.1	21.8	7.1	8.3	0.0
	count		15	15	15	15	15	10	7	15	15	15	3
Striped Bass (Composite)	average	3	609	0.60		0.46	30		0.3	11.1	1.5	5.0	0.0
	count		6	6		6	6		4	6	6	6	3
Striped Bass (Individual)	average	1	609		0.46								
	count		18		18								
White Croaker - skin off (Composite)	average	5	256	1.22		0.39	52	0.44	0.5	8.7	2.2	4.3	0.0
	count		12	12		12	12	12	11	12	12	12	3
White Croaker - skin on (Composite)	average	5	256	3.01			144		1.0	23.3	5.6	11.4	
	count		12	12			12		9	12	12	12	
White Sturgeon (Composite)	average	3	1322	0.50			11		0.2	5.5	1.2	2.8	3.2
	count		4	4			4		4	4	4	4	3
White Sturgeon (Individual)	average	1	1322			1.47							
	count		12			12							

Lipid percentages (and counts) for dioxin batches were 1.8 (10) and 1.19 (12) for shiner surfperch and white croaker (skin off), respectively.

Table 5-2
Counts of samples exceeding Regional Water Board TMDL targets (number of samples above target/total number of samples analyzed) for mercury and PCBs and calculated targets for other contaminants. Calculated targets were derived using the same assumptions that were used in deriving the TMDL targets: one extra cancer case for an exposed population of 100,000 over a 70-year lifetime, a mean body weight of 70 kg, and a mean daily consumption rate of 0.032 kg/day (the 95th percentile upper bound estimate of fish intake reported by all Bay fish-consuming anglers).

Common Name	Sample Type	Mercury (0.2 ppm)	Sum of PCBs (10 ppb)	Sum of Dioxin TEQs (0.14 pptr)	Dieldrin (1.4 ppb)	Sum of DDTs (64 ppb)	Sum of Chlordanes (17 ppb)
California Halibut	Composite	2/3	2/3		0/1	0/3	0/3
Jacksmelt	Composite	0/4	3/4		0/2	0/4	0/4
Leopard shark	Composite		3/3		0/2	0/3	0/3
Leopard shark	Individual	9/9					
Shiner Surfperch	Composite	0/15	15/15	10/10	0/7	0/15	0/15
Striped Bass	Composite		5/6		0/4	0/6	0/6
Striped Bass	Individual	18/18					
White Croaker - skin off	Composite		11/12	12/12	0/11	0/12	0/12
White Croaker - skin on	Composite		12/12		0/9	0/12	0/12
White Sturgeon	Composite		3/4		0/4	0/4	0/4

Management Implications and Priorities for Further Assessment

The 2009 data indicate that high methylmercury concentrations in the Bay persist and do not show obvious signs of decline. Striped bass and California halibut had average concentrations above the TMDL target of 0.2 ppm, while jacksmelt had an average lower than the target. The shiner surfperch data suggest that some locations, such as Oakland Harbor and South Bay, contribute more to methylmercury accumulation in the food web and may be a higher priority for efforts to reduce sources and pathways.

Future rounds of sampling should include all five species that are specified as targets in the Mercury TMDL. Measuring methylmercury in northern anchovy would also provide valuable information on wildlife exposure from this important prey species.

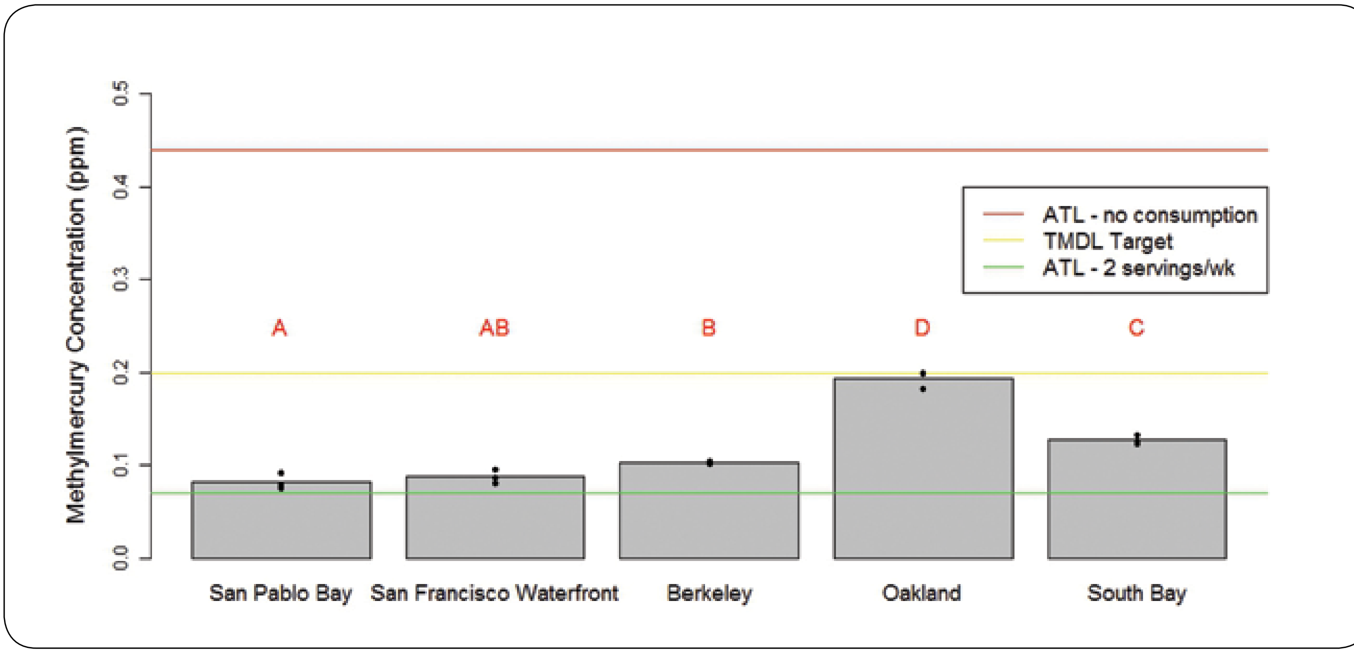


Figure 5-2. Methylmercury concentrations (ppm) in shiner surfperch in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent composite samples with 13-20 fish in each composite. Locations with the same letter were not significantly different from each other (p = .05).

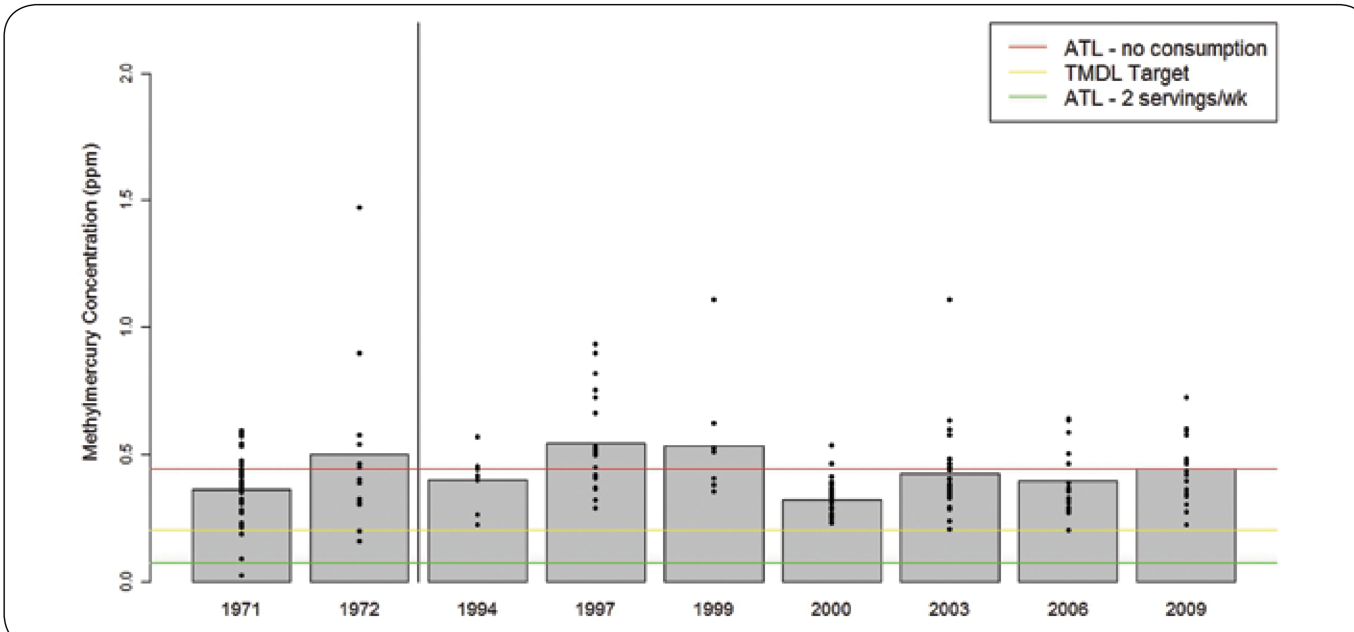


Figure 5-3. Methylmercury concentrations (ppm) in striped bass from San Francisco Bay, 1971-2009. Bars indicate average concentrations. Points represent individual fish. To correct for variation in fish length, all plotted data have been calculated for a 60-cm fish using the residuals of a length vs. log(Hg) relationship. Data were obtained from CDFG historical records (1971 – 1972), the Bay Protection and Toxic Cleanup Program (1994), a CalFed-funded collaborative study (1999 and 2000), and the Regional Monitoring Program (1997, 2000, 2003, 2006, and 2009).

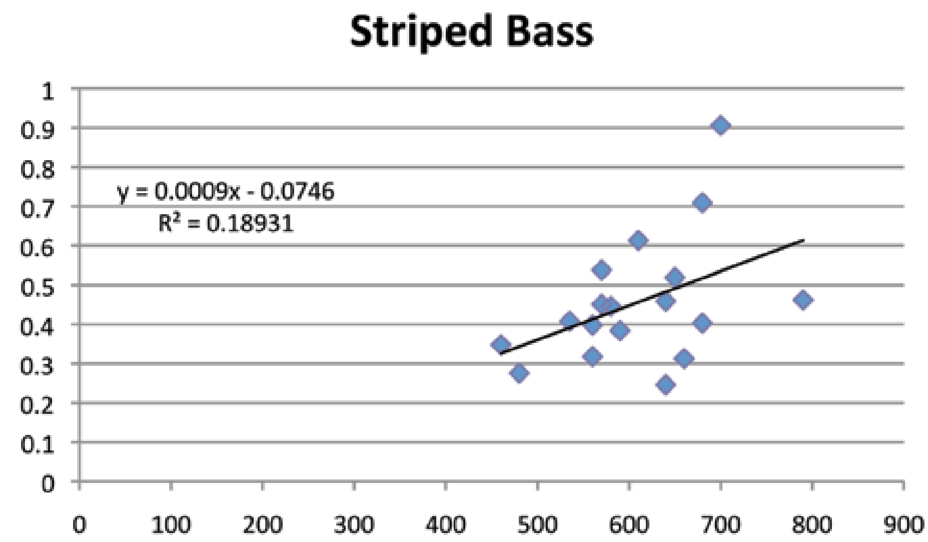


Figure 5-4. Methylmercury (ppm - vertical axis) versus length (mm - horizontal axis) in striped bass samples collected by the RMP in 2009. Each point represents an individual fish.

PCBs

PCB exposure is another primary concern behind the sport fish consumption advisory for the Bay. The San Francisco Bay TMDL for PCBs was approved by the U.S. EPA in February 2010. Continuing to monitor PCBs in Bay sport fish will be crucial in assessing the effectiveness of the TMDL and tracking the additional reductions required to meet the target of 10 ppb that was established as a cleanup goal for protection of human health in the TMDL (SFBRWQCB 2008). Attaining this target will require a substantial reduction in PCBs in the Bay food web that is anticipated to also result in protection of wildlife from risks due to PCB exposure.

White croaker and shiner surfperch are the two species identified in the PCBs TMDL as indicators for comparison to the 10 ppb TMDL target. White croaker traditionally have been analyzed as fillets with skin in the RMP, as some anglers consume these fish with skin and this represents a conservative approach for estimating exposure. On the other hand, drawbacks in using this approach are that it is inconsistent with the advice provided by OEHHA for preparation of fish fillets; it is inconsistent with how white croaker samples are processed in other parts of the state; and skin is difficult to homogenize, leading to higher variance in the results. In 2009 the RMP began a switch to using fillets without skin. To provide more information in support of this transition, white croaker fillets were analyzed for organics in both fillets with and without skin. Removing the skin was found to result in substantially lower concentrations (Figure 5-5). For PCBs, the average reduction was 65%. The reduction in PCBs and other organic contaminants was driven by a 60% average reduction in lipid in the fillets without skin (Table 5-1). Preparing white croaker fillets without skin is a very effective way to reduce exposure to organic contaminants. The graphs presented for PCBs and the other organics display the results for white croaker without skin.

Comparison to Thresholds and Variation Among Species

Consistent with past RMP sampling, PCB concentrations in Bay sport fish continue to exceed thresholds of concern (Figure 5-6, Tables 5-1 and 5-2). The degree of PCB contamination in the Bay was similar to that observed for methylmercury, with one key indicator species (shiner surfperch) having a Baywide average (121 ppb) just above the no consumption ATL (120 ppb), and other species exhibiting moderate levels of contamination.

Shiner surfperch are a species that are also not processed as fillets (they are processed whole with head, viscera, and tail removed due to their small size - typically 11 cm, or 4.3 in), but these fish are caught and consumed by anglers. Two locations in the Bay had average concentrations that were above 120 ppb (discussed further below).

Northern anchovy also had an average concentration (118 ppb) approaching 120 ppb (Figure 5-6). Northern anchovy are not a target species for human consumption, but they are collected in the RMP sport fish trawls and analyzed as an indicator of wildlife exposure. They accumulate high concentrations of PCBs and other organic contaminants in spite of their small size (9 cm, or 3.5 in) and low trophic position. Their analysis as whole body samples and consequent relatively high lipid content (averaging 1.5%) are factors contributing to the high accumulation.

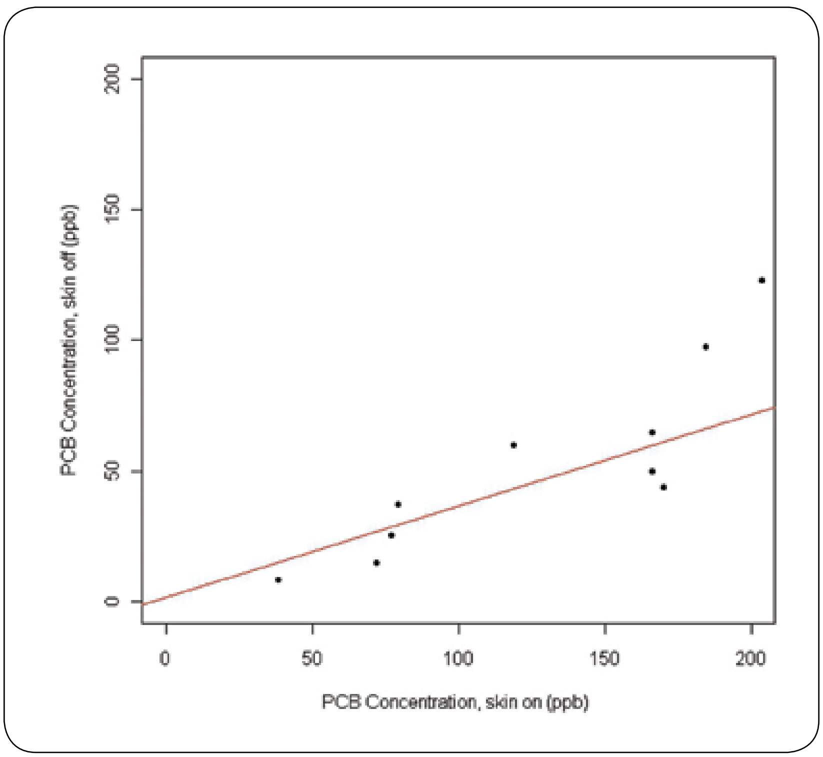


Figure 5-5. PCB concentrations (ppb) in paired samples of white croaker fillets with and without skin. The slope of the line is 0.35 (p = 0.02), indicating a 65% average reduction in concentration in the samples without skin.

White croaker had the third highest average PCB concentration (52 ppb – well below the no consumption ATL, but well above the 10 ppb TMDL target) (Figure 5-6). One white croaker sample (from Oakland) exceeded 120 ppb. PCB concentrations in the white croaker fillets with skin were much higher, averaging 144 ppb (Table 5-1).

Average PCB concentrations in other species were lower, ranging from 30 ppb in striped bass to the lowest average of 11 ppb in white sturgeon. All of the species sampled had an average above the 10 ppb TMDL target. Every Bay sample analyzed was higher than the FCG of 3.6 ppb.

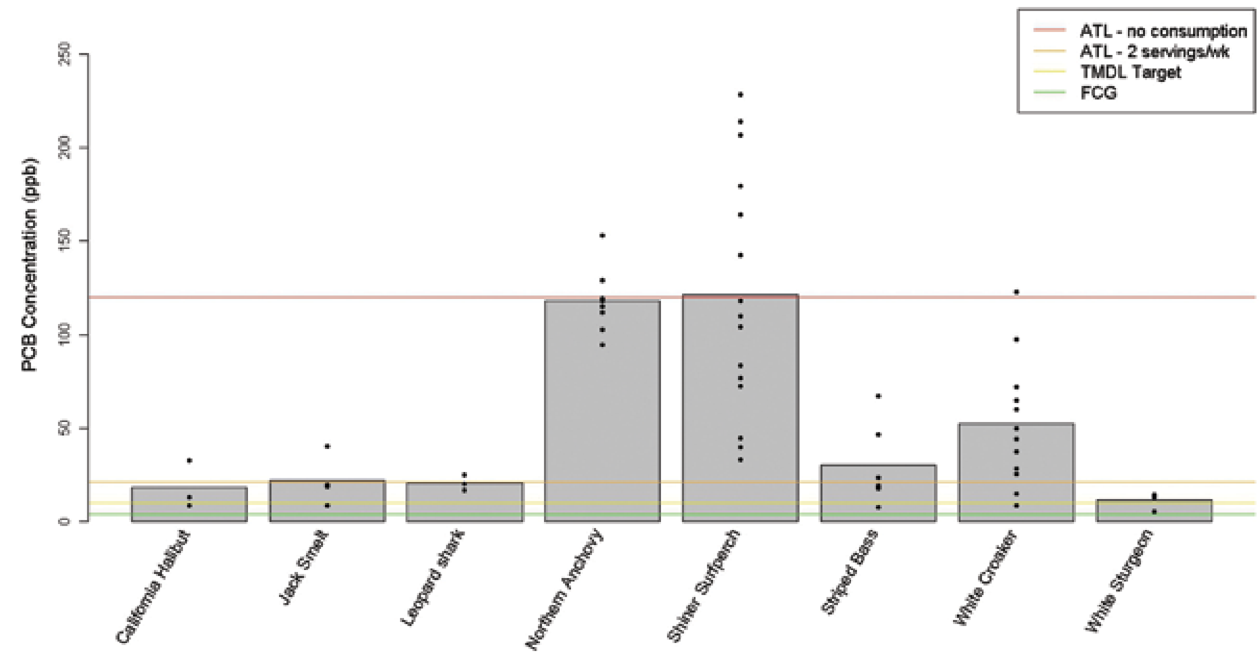


Figure 5-6. PCB concentrations (ppb) in sport fish species in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent composite samples. White croaker data are for the samples without skin. Note that northern anchovy are not a sport fish species – they are an important wildlife prey species that is collected in the surveys in San Francisco Bay and analyzed as whole fish.

Spatial Patterns

As described above, shiner surfperch have high site fidelity and are an excellent indicator of spatial patterns. Their sensitivity as a spatial indicator was particularly evident in the 2009 PCB results (Figure 5-7). As seen for methylmercury, the observed variance within each location was very low: coefficients of variation for each site ranged between 5% and 15%. For PCBs, this allowed for the unusual result that every sampling location was significantly different from every other sampling location. Two locations had average concentrations exceeding the no consumption ATL of 120 ppb: Oakland (216 ppb) and San Francisco (162 ppb). Average concentrations for the other locations were 111 ppb in South Bay, 77 ppb at Berkeley, and 39 ppb in San Pablo Bay. These data indicate the presence of strong spatial gradients in PCB concentrations in the Bay, which spanned over a five-fold difference between Oakland and San Pablo Bay. The availability of shiner surfperch data from other parts of the state (Section 3, Figure 3-10) provide additional context for interpreting these Bay data. The average concentration observed in San Pablo Bay was actually higher than many other coastal locations. The shiner surfperch data clearly illustrate that PCB concentrations in San Francisco Bay are generally elevated throughout the ecosystem, with distinct spatial gradients.

Temporal Trends

Shiner surfperch and white croaker are the key indicator species identified in the PCBs TMDL, and have been the focus of efforts to establish long-term time series in the RMP.

Examining time series of wet weight PCB concentrations provides information on trends in human exposure and in progress toward achieving the 10 ppb TMDL target (Figures 5-8 and 5-9). The Baywide average shiner surfperch concentration was lower in 2009 than in 1997, but not significantly different from 2000, 2003, or 2006. The spatial coherence observed in 2009 has also been evident in past sampling, with Oakland, San Francisco, and South Bay consistently higher than the other two locations. The high average concentration in 1997 was driven by exceptionally high concentrations measured at Oakland (over 500 ppb). Concentrations at Oakland appear to have declined markedly since 1997, although this pattern is largely due to variation in lipid and may also be partially due to small-scale spatial variation and fine-scale changes in sampling location within the Port of Oakland and San Leandro Bay. Overall, the wet weight shiner data indicate no decline over the last four rounds of sampling from 2000 to 2009.

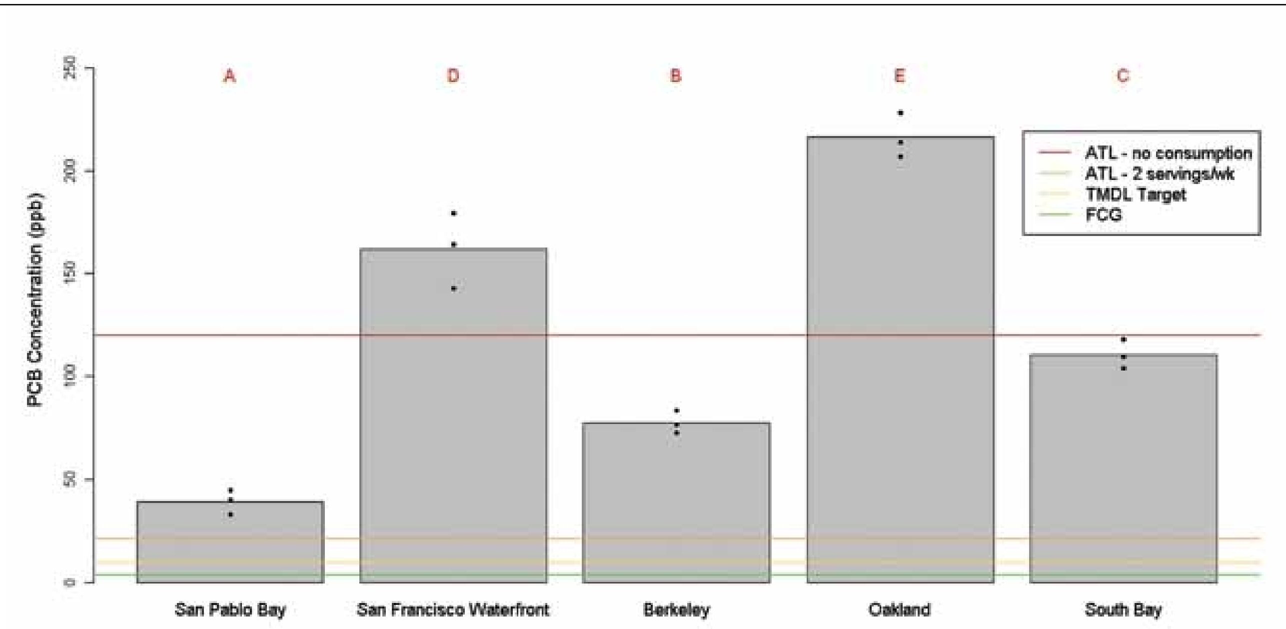


Figure 5-7. PCB concentrations (ppb wet weight) in shiner surfperch in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent composite samples with 13-20 fish in each composite. Locations with the same letter were not significantly different from each other ($p = .05$).

Wet weight PCB concentrations in white croaker were considerably lower in 2009 due primarily to the switch to fillets without skin (Figure 5-9). The switch to fillets without skin presents a significantly different picture of concerns due to consumption of white croaker. The average concentration in 2009 for fillets with skin (144 ppb) was also low relative to past years, though this difference was driven largely by lower lipid in the 2009 samples.

The long-term time series for shiner surfperch and white croaker can also be examined on a lipid weight basis to provide a better index of trends in ambient concentrations of PCBs in the Bay (Figures 5-10 and 5-11). The lipid-normalized trends are quite different from the wet weight trends. For shiner surfperch, no significant differences among years were detected, and the average concentration in 2009 was quite similar to averages observed in 1997 and 2000. The time series for Oakland is also quite different on a lipid weight basis, with the highest average concentration occurring in 2006, in contrast to the elevated wet weight concentrations occurring there in 1997 (Figure 5-8). The lipid weight data for white croaker (Figure 5-11) also do not suggest any long-term trend. It is noteworthy that when the PCB concentrations are expressed on a lipid weight basis, the skin off fillets are directly comparable to the skin on fillets from previous rounds, and the 2009 concentrations are very consistent with the earlier results (Figure 5-11). Overall, the lipid weight PCB data for shiner surfperch and white croaker suggest that ambient PCB concentrations in the Bay did not decline appreciably from 1997-2009.

Management Implications and Priorities for Further Assessment

The 2009 results indicate that high PCB concentrations in the Bay persist and do not show obvious signs of decline. The shiner surfperch data indicate that some locations, such as Oakland Harbor and San Francisco, contribute more to PCB accumulation in the food web and may be a higher priority for efforts to reduce sources and pathways. The spatial variation in shiner surfperch also has implications for human exposure, with two locations clearly exceeding the 120 ppb no consumption ATL. Removal of skin from white croaker fillets is a very effective way of reducing PCB exposure. Consistently high PCB concentrations in northern anchovy, an important prey species, pose a concern for piscivorous Bay wildlife.

DIOXINS

Polychlorinated dibenzodioxins and dibenzofurans (in this report the term “dioxins” will be used to refer collectively to all dioxins and furans) are classes of contaminants that are ubiquitous in the environment and are classified as human carcinogens. As part of the PCB TMDL, the SFBRWQCB has calculated a fish tissue target of 0.14 pptr (parts per trillion) for the assessment of risk to human health due to dioxins (SFBRWQCB 2008). This dioxin tissue target is not regulatory. The SFBRWQCB is in the early stages of developing a TMDL for dioxins. OEHHA has not developed ATLs or a FCG for dioxins.

Dioxin data are presented as toxic equivalents (TEQs). In calculating dioxin TEQs, the relative toxicity of a dioxin-like compound compared to dioxin (toxic equivalency factors, or TEF) is multiplied by the measured concentration of the chemical to derive a dioxin TEQ. For example, 2,3,7,8-tetrachorodibenzofuran (2,3,7,8-TCDF) is one-tenth as potent as dioxin and has a TEF of 0.1. If a sample contains 50 pptr of 2,3,7,8-TCDF, the dioxin TEQ attributable to 2,3,7,8-TCDF in that sample is 5 pptr. Dioxin TEQs for measured dioxin-like compounds with established TEFs can be added to calculate the total dioxin TEQs in a sample. The TEFs used in this report were from WHO (2005) (Appendix 6). The dioxin TEQs presented in this report are based

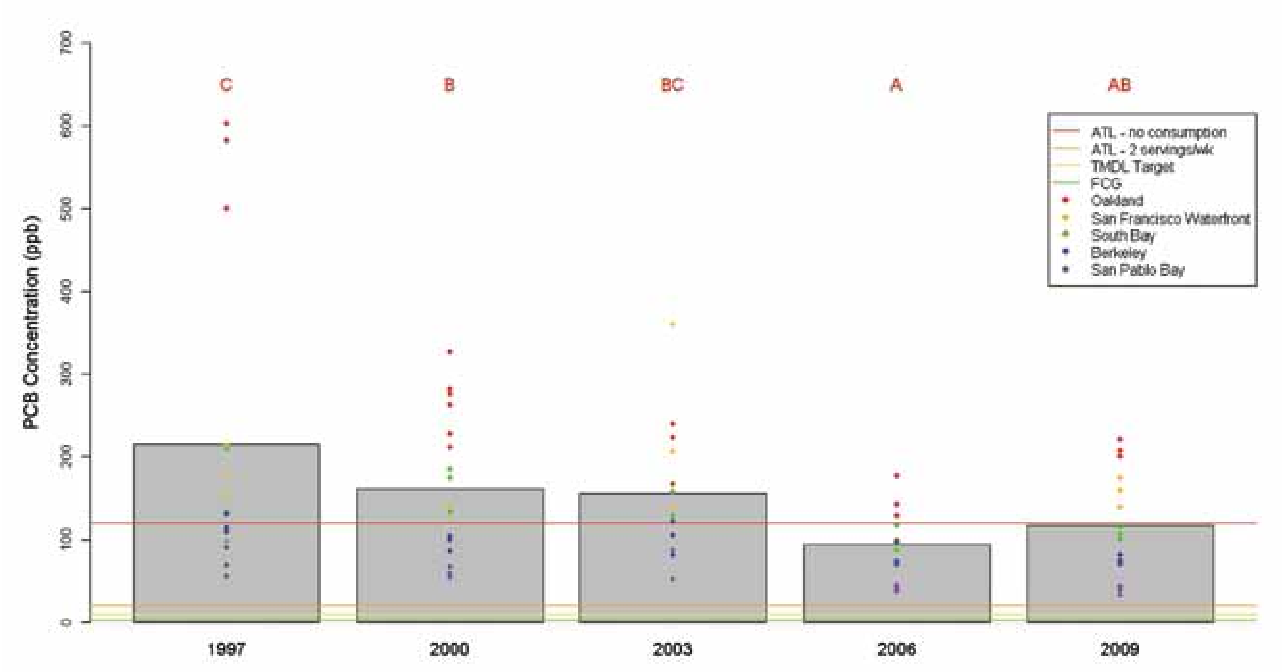


Figure 5-8. PCB concentrations (ppb wet weight) in shiner surfperch in San Francisco Bay, 1997-2009. Bars indicate average concentrations. Points represent composite samples. Years with the same letter were not significantly different from each other (p = .05).

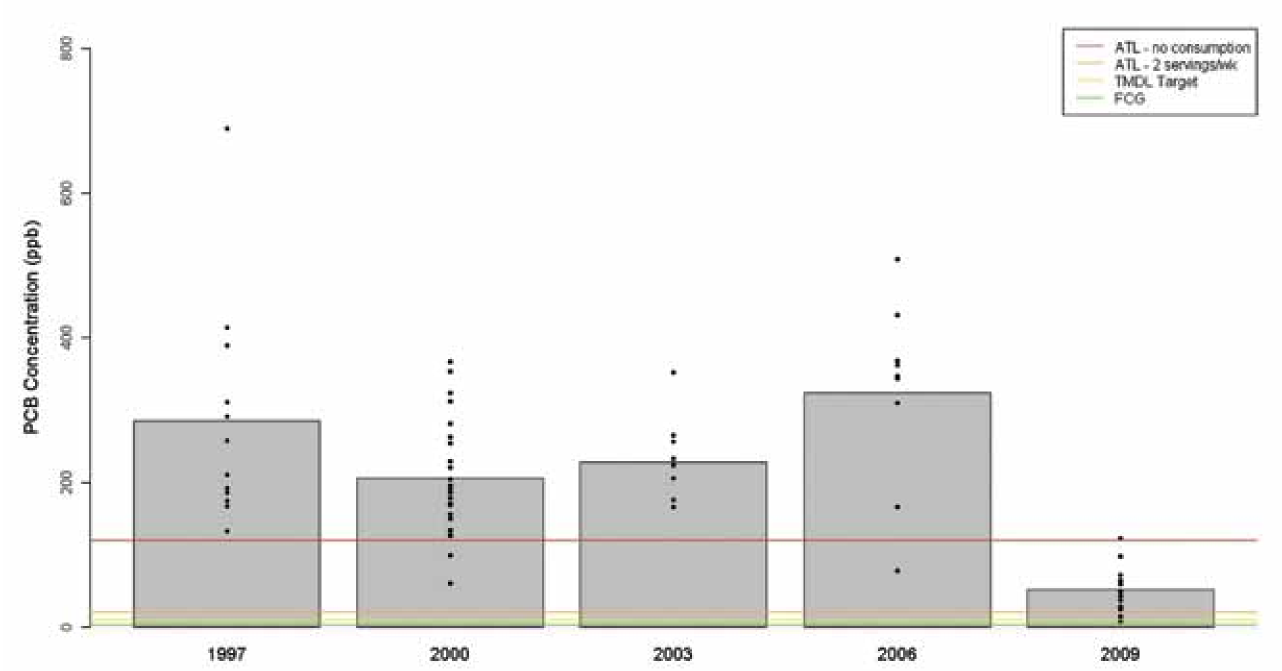


Figure 5-9. PCB concentrations (ppb wet weight) in white croaker in San Francisco Bay, 1997-2009. Bars indicate average concentrations. Points represent composite samples. Data from 2000-2006 are for fillets with skin, data from 2009 are for fillets without skin.

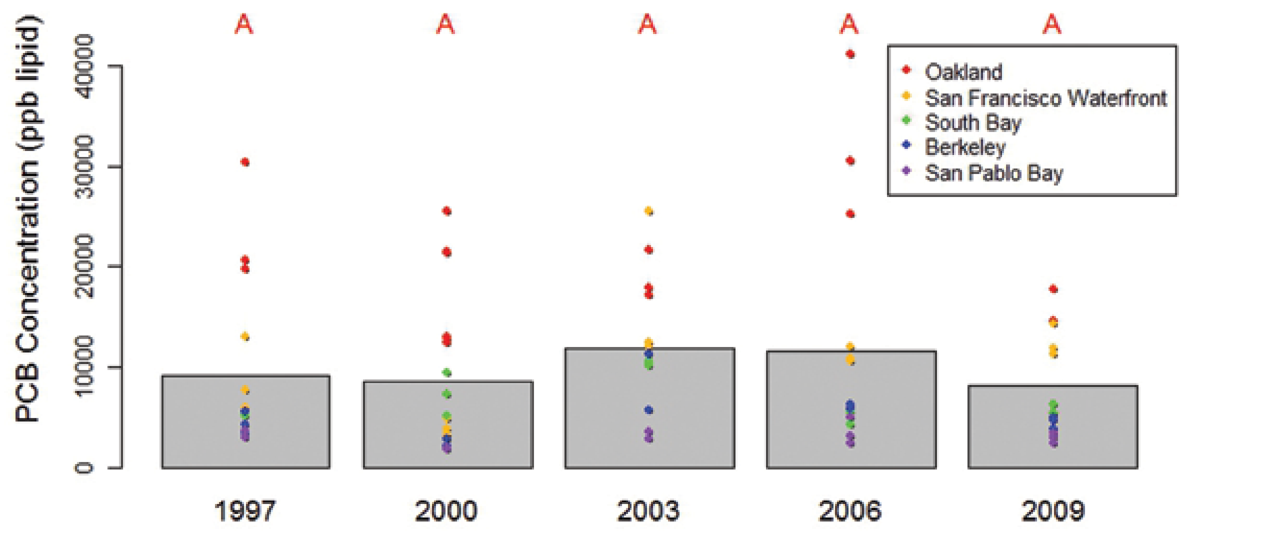


Figure 5-10.PCB concentrations (ppb lipid weight) in shiner surfperch in San Francisco Bay, 1997-2009. Bars indicate average concentrations. Points represent composite samples. Years with the same letter were not significantly different from each other (p = .05). Data for 2009 are expressed as the sum of 40 congeners that were also analyzed in earlier rounds of sampling (rather than a sum of the 55 congeners analyzed in the 2009 samples).

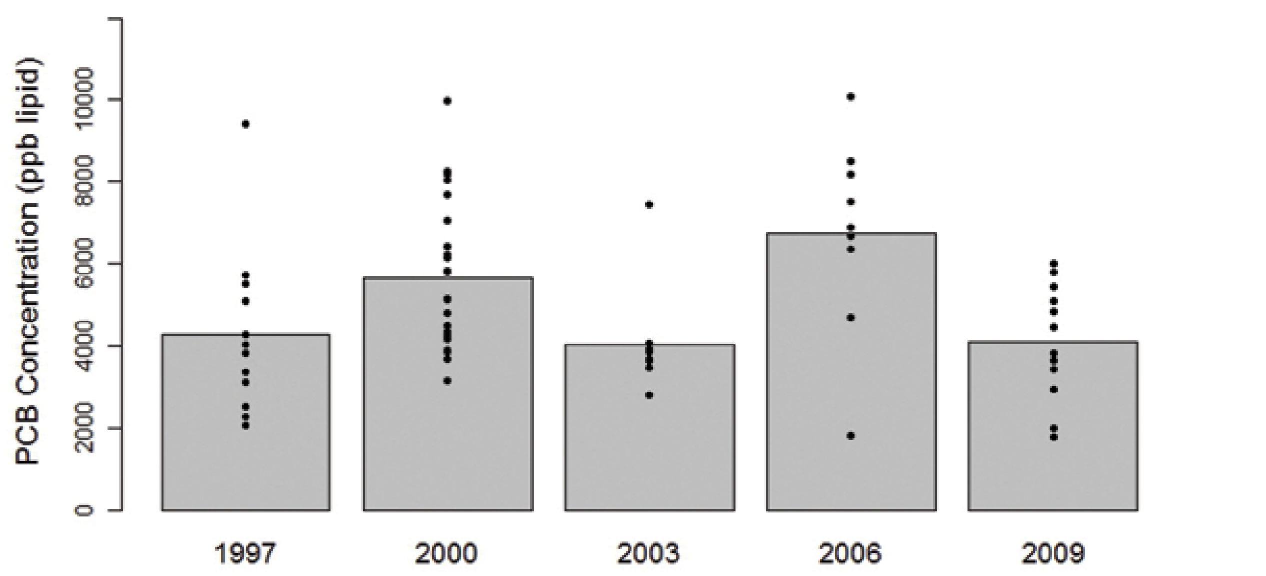


Figure 5-11. PCB concentrations (ppb lipid weight) in white croaker in San Francisco Bay, 1997-2009. Bars indicate average concentrations. Points represent composite samples. Data from 2000-2006 are for fillets with skin, data from 2009 are for fillets without skin. Data for 2009 are expressed as the sum of 40 congeners that were also analyzed in earlier rounds of sampling (rather than a sum of the 55 congeners analyzed in the 2009 samples).

on measurements of six dioxins and 10 dibenzofurans (Appendix 7); the notation TEQPCDD/PCDF is used to clearly indicate this distinction.

It should be noted that many other contaminants also have dioxin-like potency, most prominently the PCBs. Specifically, several coplanar PCBs (especially PCB 126) have significant dioxin-like potency that results in PCB TEQs that actually often exceed TEQPCDD/PCDF. The most potent coplanar PCBs are usually not quantified using analytical methods for PCBs (as was the case in this study) because they are present at concentrations that are much lower than the abundant congeners and require a more sensitive method. Past work that did measure the coplanar PCBs in Bay fish found that PCB TEQs were actually about five times greater than TEQPCDD/PCDF (Davis et al. 1999). The San Francisco Bay Water Board has chosen to regulate PCBs in the Bay on the basis of the sum of all PCBs, rather than on the basis of their dioxin-like potency. Achieving the 10 ppb target for sum of PCBs is anticipated to also reduce to dioxin-like PCBs to an acceptable level (SFBRWQCB 2008). It is important to recognize that, even though there are other significant sources of dioxin TEQs that contribute to the overall dioxin-like potency of residues in fish tissue, the TEQs attributable to dioxins and furans on their own exceed the existing threshold for concern by a considerable margin.

Dioxin analyses are relatively expensive, and therefore dioxin monitoring was limited in 2009, as in previous monitoring, to the high lipid species that accumulate the greatest concentrations of organic contaminants: shiner surfperch and white croaker.

Comparison to Thresholds and Variation Among Species

Consistent with past RMP sampling, TEQPCDD/PCDF concentrations in shiner surfperch and white croaker from the Bay continue to exceed the 0.14 pptr threshold of concern (Figure 5-12, Tables 5-1 and 5-2). The average TEQPCDD/PCDF concentration in shiner surfperch was 0.89 pptr, six times higher than the Water Board target. The average in white croaker was 0.44 pptr, three times higher than the target. All of the samples analyzed had concentrations greater than 0.14 pptr. The overall range of TEQPCDD/PCDF concentrations was from 0.20 to 1.59 pptr.

Spatial Patterns

Due to budget limitations, only two replicates of shiner surfperch were analyzed at each location. This limited the statistical power to detect spatial patterns. Nevertheless, the shiner surfperch data do suggest spatial variation that resembles the pattern seen for methylmercury and PCBs. Oakland had the highest average TEQPCDD/PCDF concentration (1.42 pptr) and San Pablo Bay had the lowest (0.53 pptr), a 2.7-fold difference. Other locations had similar concentrations of approximately 0.80 pptr.

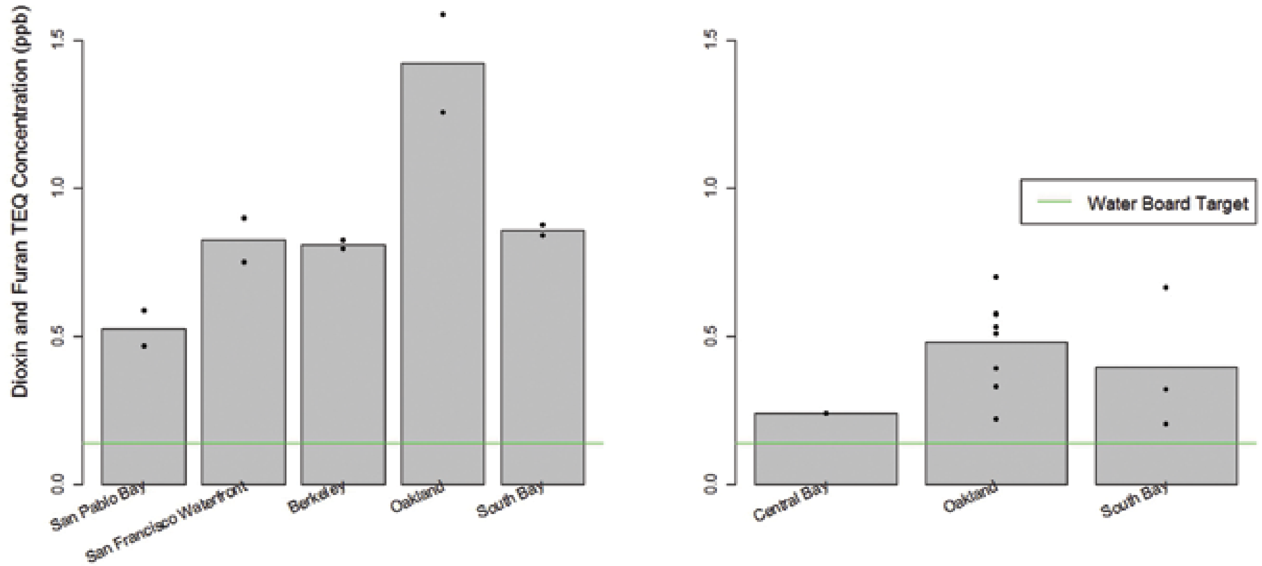


Figure 5-12. Dioxin TEQ concentrations (ppb) in shiner surfperch (left) and white croaker (right, without skin) in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent composite samples.

Temporal Trends

RMP assessment of long-term trends in dioxins has focused on white croaker. Examining time series of wet weight TEQPCDD/PCDF concentrations provides information on temporal variation in human exposure and in progress toward achieving the 0.14 pptr target (Figure 5-13). Wet weight TEQPCDD/PCDF concentrations in white croaker were considerably lower in 2009 due primarily to the switch to fillets without skin. The switch to fillets without skin presents a significantly different estimate of concern due to consumption of white croaker. TEQPCDD/PCDF were not measured in fillets with skin, but the lipid reduction observed in the fillets without skin certainly had a large influence on the lower concentrations observed in 2009.

The long-term time series for white croaker can also be examined on a lipid weight basis to provide a better index of trends in ambient concentrations of TEQPCDD/PCDF in the Bay (Figure 5-14). The lipid-normalized time series suggests that ambient concentrations were higher in 2000 than in 2003-2009. The average concentration in white croaker in 2009 was similar to those observed in 2003 and 2006. The cause of the higher concentrations observed in 2000 is unknown. Since 2003, concentrations appear to be holding relatively constant.

Management Implications and Priorities for Further Assessment

TEQPCDD/PCDF concentrations in the Bay are higher than the Water Board target and do not show obvious signs of decline. The shiner surfperch data indicate that Oakland Harbor has particularly high

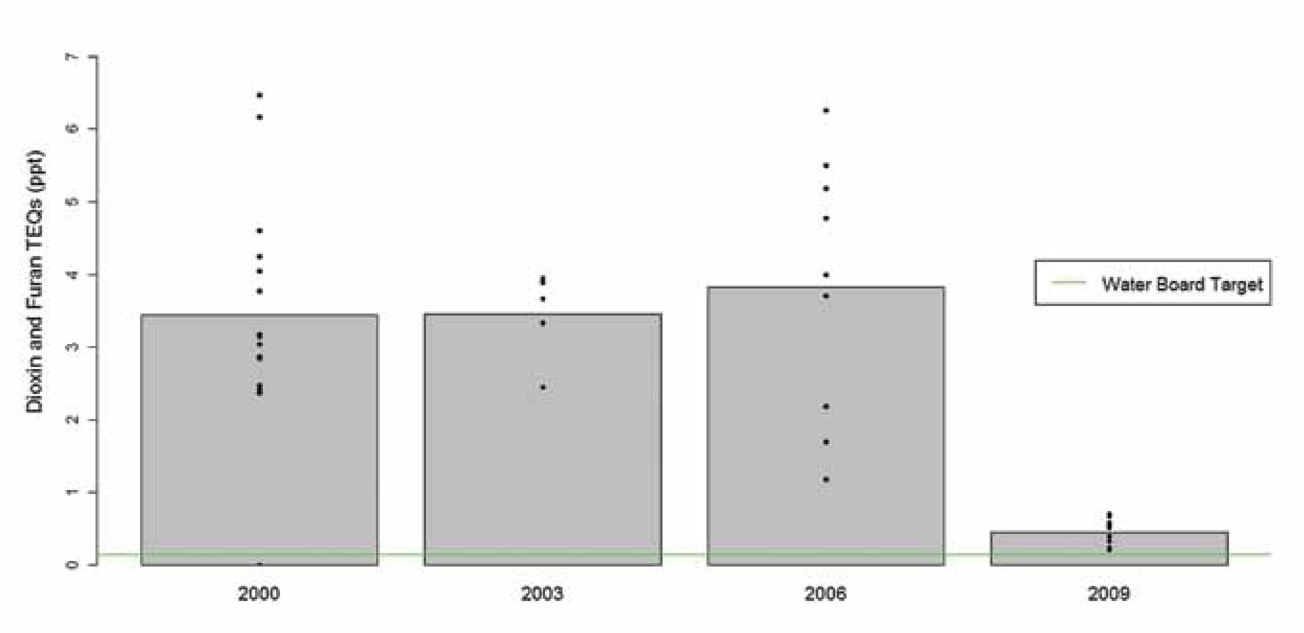


Figure 5-13. Dioxin TEQ concentrations (pptr wet weight) in white croaker in San Francisco Bay, 2000-2009. Bars indicate average concentrations. Points represent composite samples. Data from 2000-2006 are for fillets with skin, data from 2009 are for fillets without skin.

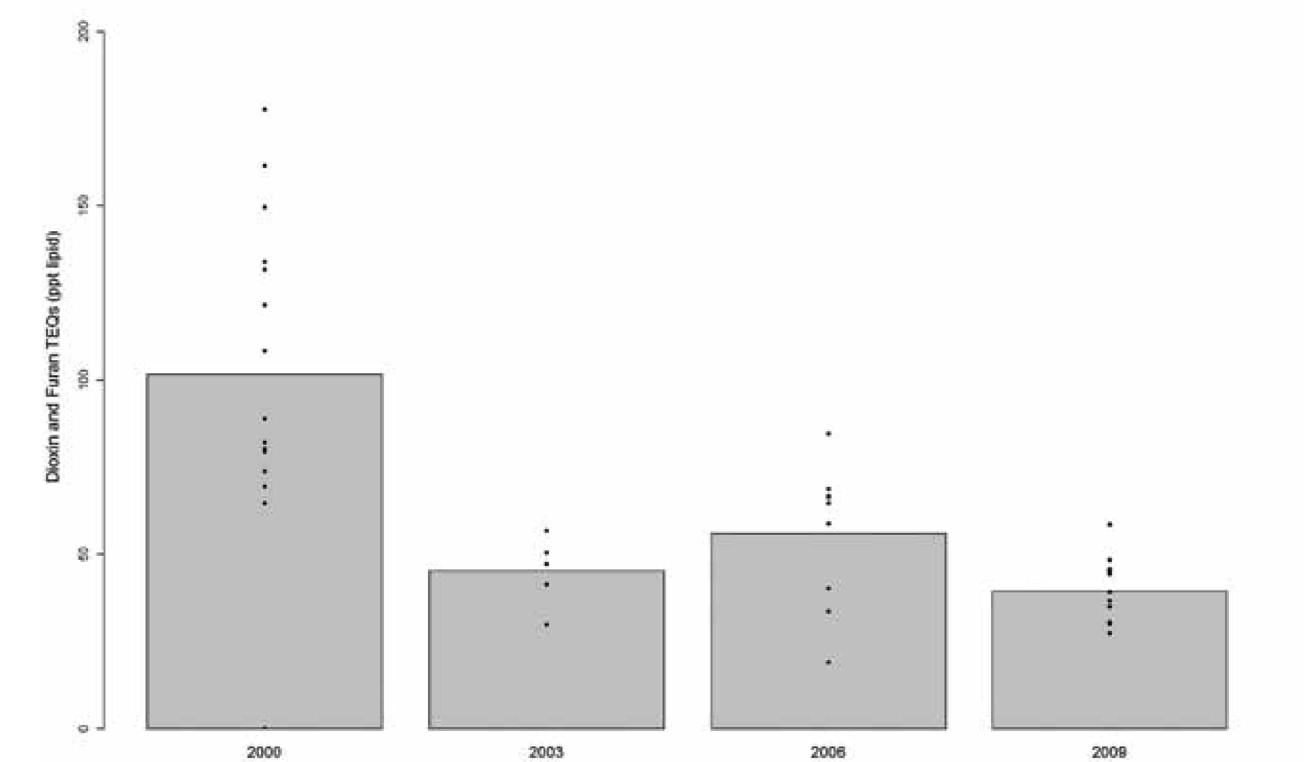


Figure 5-14. Dioxin TEQ concentrations (pptr lipid weight) in white croaker in San Francisco Bay, 2000-2009. Bars indicate average concentrations. Points represent composite samples. Data from 2000-2006 are for fillets with skin, data from 2009 are for fillets without skin.

concentrations. Removal of skin from white croaker fillets greatly reduced wet weight concentrations compared to past measurements of fillets with skin. Measuring TEQPCDD/PCDF in northern anchovy would also provide valuable information on wildlife exposure from this important prey species.

LEGACY PESTICIDES

San Francisco Bay is included on the 303(d) List due to impairment from the legacy pesticides DDTs, dieldrin, and chlordanes. A TMDL for these chemicals is in the early stage of development. These chemicals have occasionally exceeded applicable thresholds over the past several rounds of RMP fish sampling, but generally concentrations and concern for human health have been consistently low.

DDTs

All of the samples analyzed had DDT concentrations below the Water Board target of 64 ppb. The maximum concentration observed was 34 ppb in a shiner surfperch composite from Oakland. Shiner surfperch had the highest average concentration (22 ppb), just above the FCG of 21 ppb. Jacksmelt had the second highest average concentration (13 ppb), striped bass was third (11 ppb), and white croaker was fourth (9 ppb). Skin removal yielded a 61% reduction in DDT concentrations in white croaker fillets. DDT concentrations in white croaker in 2009 were lower than in past years (Figure 5-15) due to the switch to fillets without skin. Concentrations in shiner surfperch in 2009 were similar to past years, though concentrations were significantly higher in 1997 and 2000 than in other years (Figure 5-16).

Dieldrin

All of the samples analyzed had dieldrin concentrations below the Water Board target of 1.4 ppb. The maximum concentration observed was 1.3 ppb in a shiner surfperch composite from Oakland. Shiner surfperch had the highest average concentration (1.1 ppb), higher than the FCG of 0.46 ppb. Jacksmelt and white croaker also had average concentrations (both at 0.5 ppb) higher than the FCG. Skin removal yielded a 50% reduction in dieldrin concentrations in white croaker fillets. Dieldrin concentrations in white croaker in 2009 were lower than in past years (Figure 5-17) due to the switch to fillets without skin. Concentrations in shiner surfperch in 2009 were similar to past years (Figure 5-18).

Chlordanes

All samples analyzed had chlordane concentrations below the Water Board target of 17 ppb. The maximum concentration observed was 16 ppb in a shiner surfperch composite from Oakland. Shiner surfperch had the highest average concentration (7.1 ppb), higher than the FCG of 5.6 ppb. No other species had an average concentration higher than the FCG. Skin removal yielded a 61% reduction in chlordane concentrations in white croaker fillets.

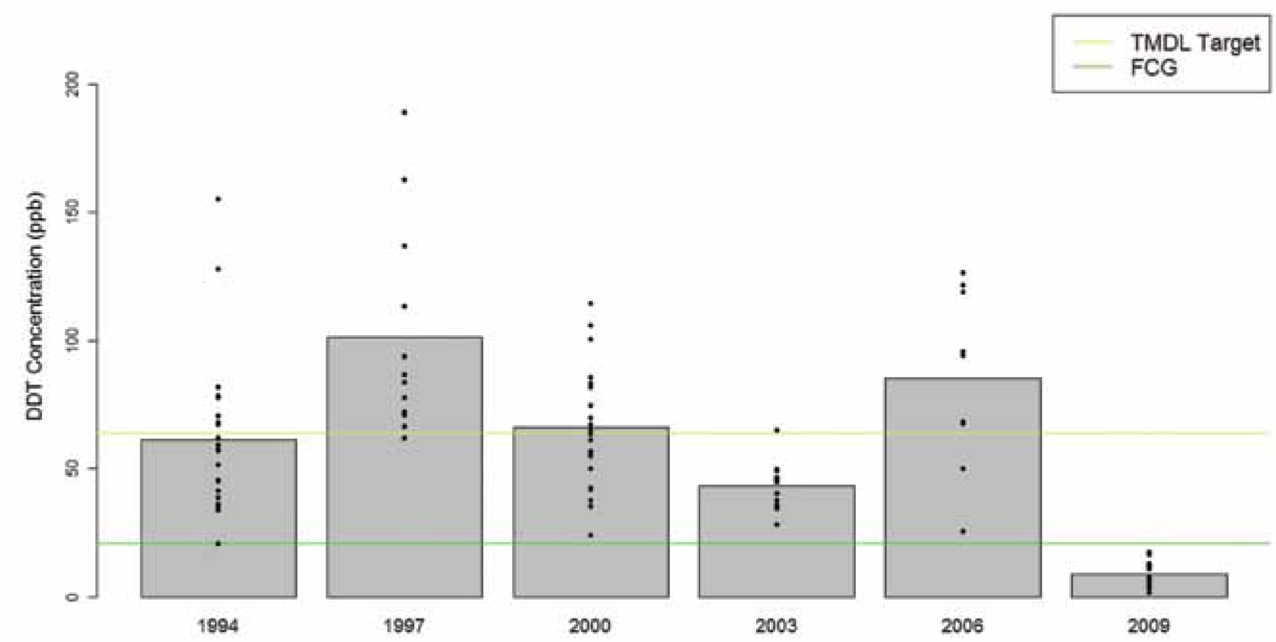


Figure 5-15. DDT concentrations (ppb wet weight) in white croaker in San Francisco Bay, 1994-2009. Bars indicate average concentrations. Points represent composite samples. Data from 2000-2006 are for fillets with skin, data from 2009 are for fillets without skin.

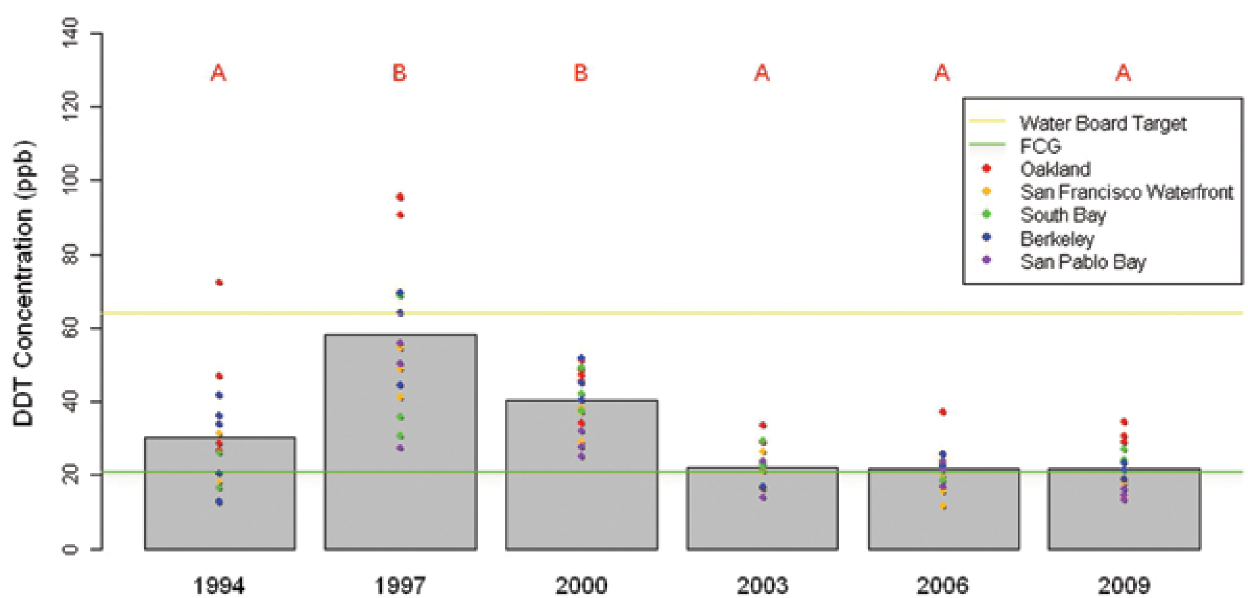


Figure 5-16. DDT concentrations (ppb wet weight) in shiner surfperch in San Francisco Bay, 1994-2009. Bars indicate average concentrations. Points represent composite samples. Years with the same letter were not significantly different from each other (p = .05).

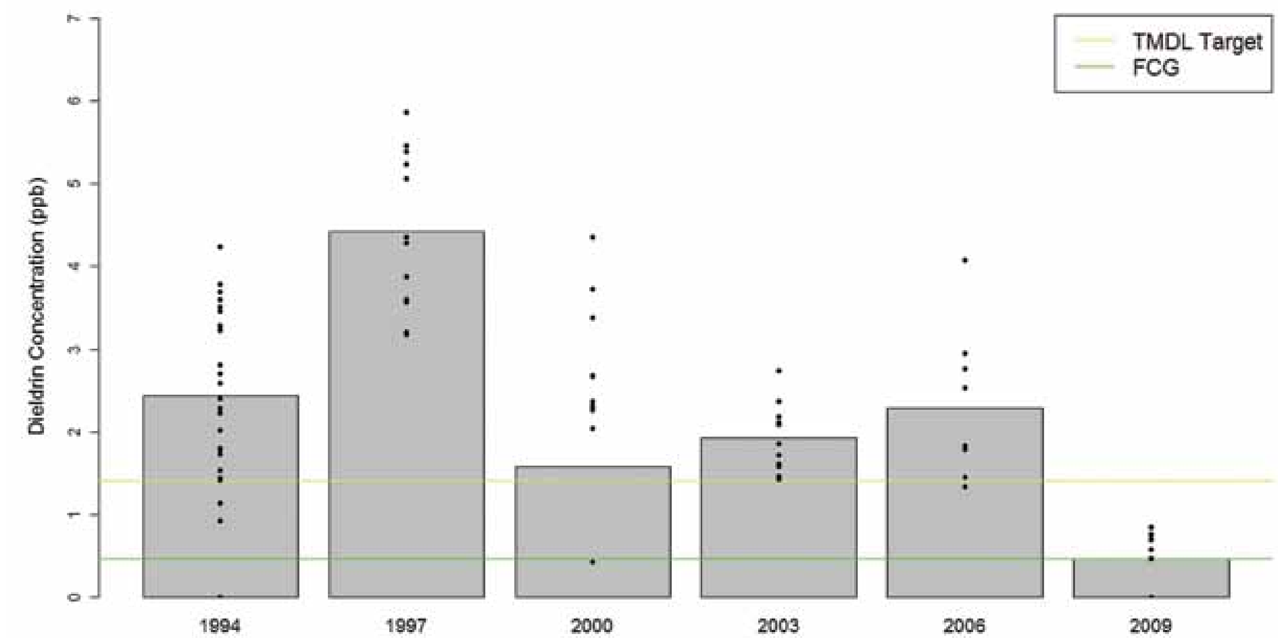


Figure 5-17. Dieldrin concentrations (ppb wet weight) in white croaker in San Francisco Bay, 1994-2009. Bars indicate average concentrations. Points represent composite samples. Data from 2000-2006 are for fillets with skin, data from 2009 are for fillets without skin.

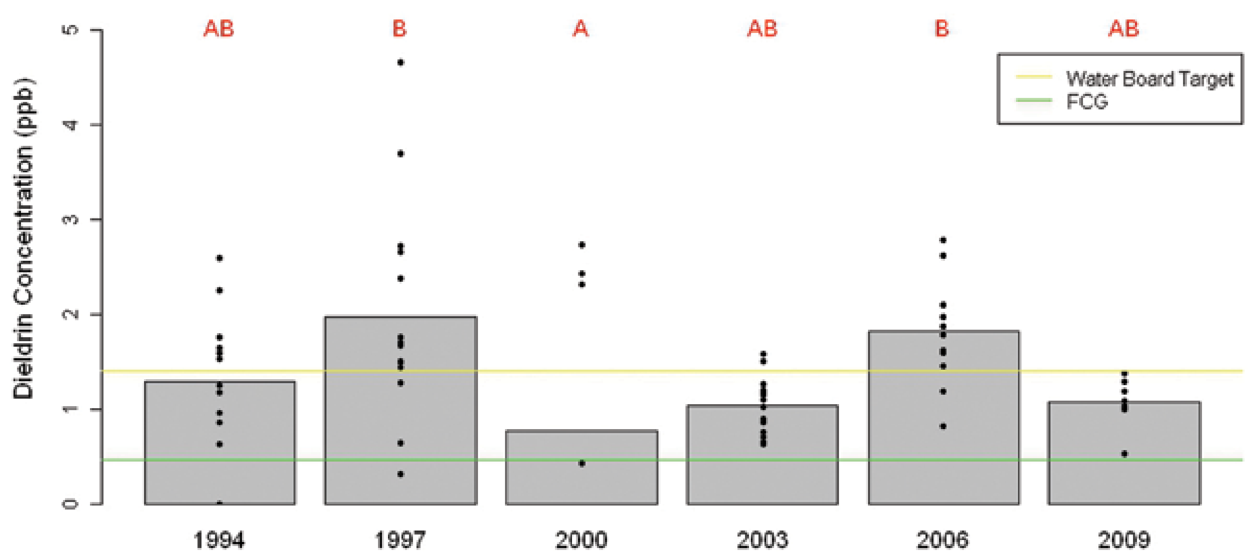


Figure 5-18. Dieldrin concentrations (ppb wet weight) in shiner surfperch in San Francisco Bay, 1994-2009. Bars indicate average concentrations. Points represent composite samples. Years with the same letter were not significantly different from each other (p = .05).

SELENIUM

San Francisco Bay has been on the 303(d) List since 1998 for selenium because bioaccumulation of this element has led to recurring health advisories for local hunters against consumption of diving ducks. Moreover, elevated selenium concentrations found in biota often exceed levels that can cause potential reproductive impacts in white sturgeon and are often higher than levels considered safe for fish and other wildlife species in the Estuary. Sources and pathways leading to the possible impairment in northern and southern segments of the Bay differ significantly and therefore a separate approach to addressing the problem in these segments is being followed. Thus, a TMDL is being developed for the North San Francisco Bay segments only, which include a portion of the Sacramento/San Joaquin Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, and Central Bay. This TMDL project was initiated in 2007 to assess the current state of impairment in the North Bay, identify pathways for bioaccumulation, enhance understanding of the relationship between sources of selenium and fish and wildlife exposure, and establish site-specific water quality targets protective of aquatic biota. In developing the TMDL, the Water Board, with support from stakeholders, is conducting a series of analysis to refine understanding of the behavior of selenium in the Estuary that will help formulate a strategy for attaining water quality standards. A Preliminary TMDL Project Report was published in January 2011 (SFBRWQCB 2011). As part of this information gathering effort, the RMP measured selenium concentrations in all eight species sampled in 2009.

The Preliminary TMDL Project Report compared selenium concentrations in Bay sport fish to the FCG of 7.4 ppm developed by OEHHA (Klasing and Brodberg 2008). OEHHA also developed a series of ATLs for selenium, the lowest being the 2 serving ATL of 2.5 ppm.

White sturgeon, the key sport fish selenium indicator species for the Bay, is the largest freshwater fish species in North America. It can live to be over 100 yr old and up to 6 m in length. The white sturgeon size range targeted for RMP is between 1170 mm (the legal minimum) and 1500 mm, which corresponds to an age of approximately 12-14 yr. Sacrificing these fish in the early phases of such a potentially long lifespan is clearly undesirable, especially since the population has been in decline in recent years. In 2009 a pilot study of a non-lethal sampling method using biopsies was performed to investigate whether lethal sampling can be discontinued.

Comparison to Thresholds and Variation Among Species

The latest round of RMP sampling indicated that average selenium concentrations in Bay sport fish remain well below thresholds for human health concern (Figure 5-19). White sturgeon had the highest average concentration by far (1.47 ppm), well below the 2 serving ATL of 2.5 ppm, and even further below the FCG of 7.4 ppm. Average concentrations for other species were all between 0.30 and 0.47 ppm). Only one white sturgeon sample was above the 2 serving ATL.

Plug Study

Selenium concentrations in 12 paired samples of muscle plugs and traditional fillets in white sturgeon showed reasonable agreement (Figure 5-20). A linear regression was highly significant ($p < .001$). The slope of the regression line indicated that the plugs were an average of 25% higher than the fillets. If these results are an accurate reflection of a true bias, this would imply that selenium is not homogeneously distributed in sturgeon muscle tissue. The regression was also highly influenced by two points with higher plug and fillet concentrations than the other samples. This dataset is not entirely definitive, with a small sample size, an apparent bias toward higher concentrations in the plugs, and a sparse distribution in the higher end of the concentration range. However, the results do indicate that plug concentrations provide reasonably accurate estimates of fillet concentrations. Furthermore, since selenium concentrations in white sturgeon are generally well below thresholds of concern for human health and given the unusual impact of sampling on the white sturgeon population, a switch to exclusive sampling of plugs is recommended for future sampling.

Temporal Trends

Long-term trend monitoring has focused on white sturgeon. The average concentration of 1.47 ppm in 2009 was very similar to average concentrations observed from 1997-2006 (Figure 5-21). There is no indication of an increase or decrease in these concentrations.

Management Implications and Priorities for Further Assessment

The 2009 selenium analyses documented the concentrations were similar to previous years and below human health thresholds, and that concentrations in other species were much lower still. Given these data, the focus of the North Bay Selenium TMDL on impacts on aquatic life is appropriate. A valuable time series of concentrations in white sturgeon has been established, indicating that concentrations in the North Bay food web have not declined since 1997. If extending this time series is a priority, consideration should be given to switching to non-lethal sampling using muscle plugs.

PBDEs

Polybrominated diphenyl ethers (PBDEs), a class of bromine-containing flame retardants that was practically unheard of in the early 1990s, increased rapidly in the Bay food web through the 1990s and are now pollutants of concern. They have not been placed on the 303(d) List, but information on them is lacking and they are being studied through the RMP to better understand their spatial distribution, temporal trends, and the concerns they pose to wildlife and humans. The California Legislature has banned the use of two types of PBDE mixtures ("penta" and "octa") in 2006, but one mixture remains in use ("deca"). Tracking the trends in these chemicals is critical to determining the effect of the ban and if further management actions are necessary. In 2011, OEHHA published a FCG and ATLs for PBDEs (Klasing and Brodberg 2011).

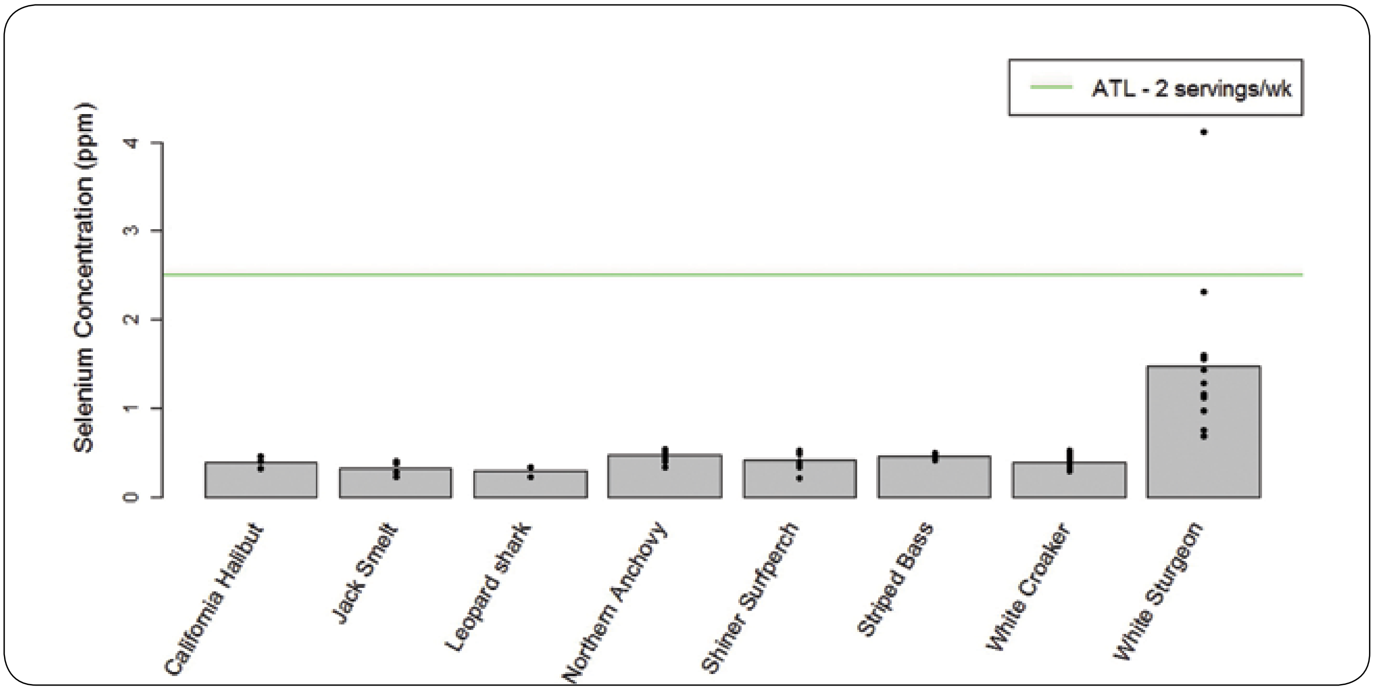


Figure 5-19. Selenium concentrations (ppm) in sport fish species in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent individual samples (either composites or individual fish). Note that northern anchovy are not a sport fish species – they are an important wildlife prey species that is collected in the surveys in San Francisco Bay and analyzed as whole fish.

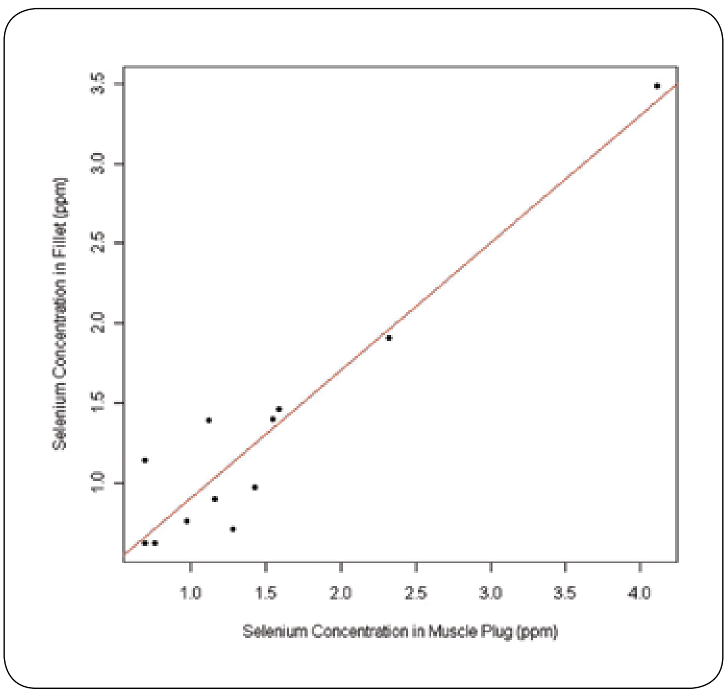


Figure 5-20. Selenium concentrations in paired samples of muscle plugs and fillets in white sturgeon from San Francisco Bay, 2009. Regression was significant ($p < .001$, Fillet = 0.80*plug + 0.10), but not when two highest points were excluded.

Variation Among Species

Like the other organic contaminants, average PBDE concentrations were highest in shiner surfperch and northern anchovy (both at 8 ppb) (Figure 5-22, Table 5-1). The highest concentration measured was 14 ppb in a shiner surfperch sample. Other species all averaged 5 ppb or less. Unlike PCBs, leopard shark and striped bass had slightly higher average concentrations than white croaker.

Spatial Patterns

Significant spatial variation was detected in shiner surfperch (Figure 5-23). As for all other contaminants, Oakland had the highest average concentration (13 ppb), significantly higher than Berkeley (8 ppb), San Francisco (6 ppb), and San Pablo Bay (5 ppb). South Bay had the second highest average (10 ppb), and

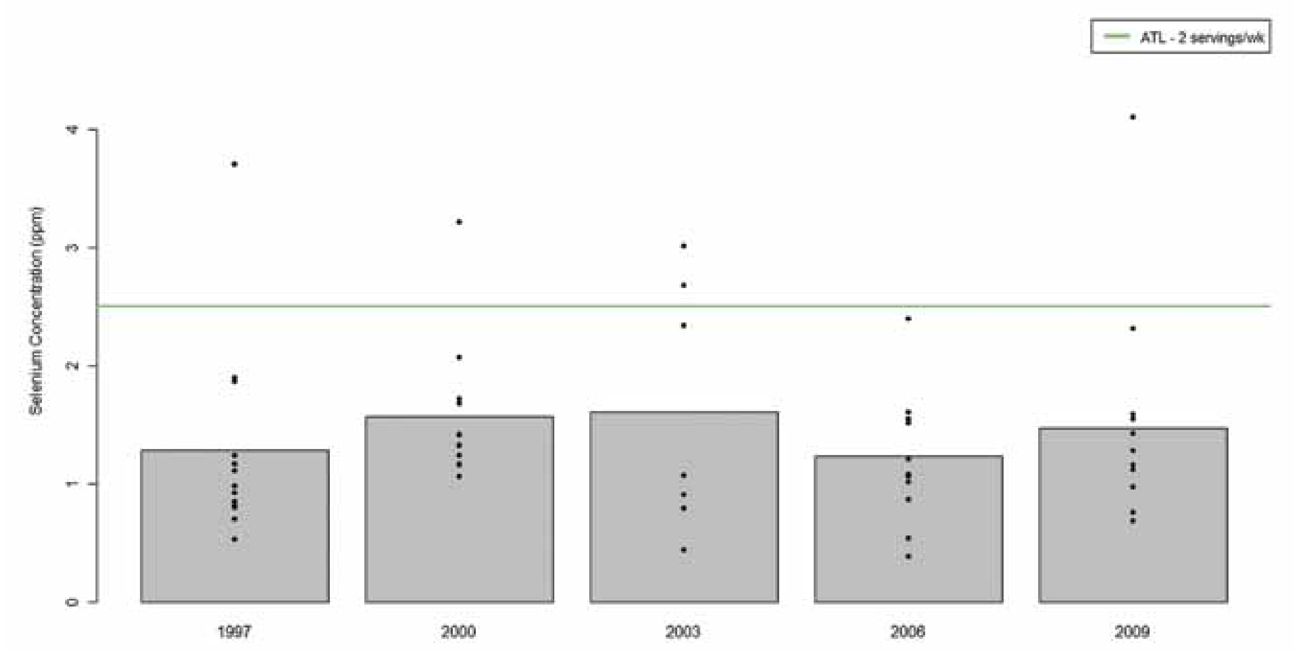


Figure 5-21. Selenium concentrations (ppm) in white sturgeon from San Francisco Bay, 1997-2009. Bars indicate average concentrations. Points represent individual fish. No significant differences among years were observed.

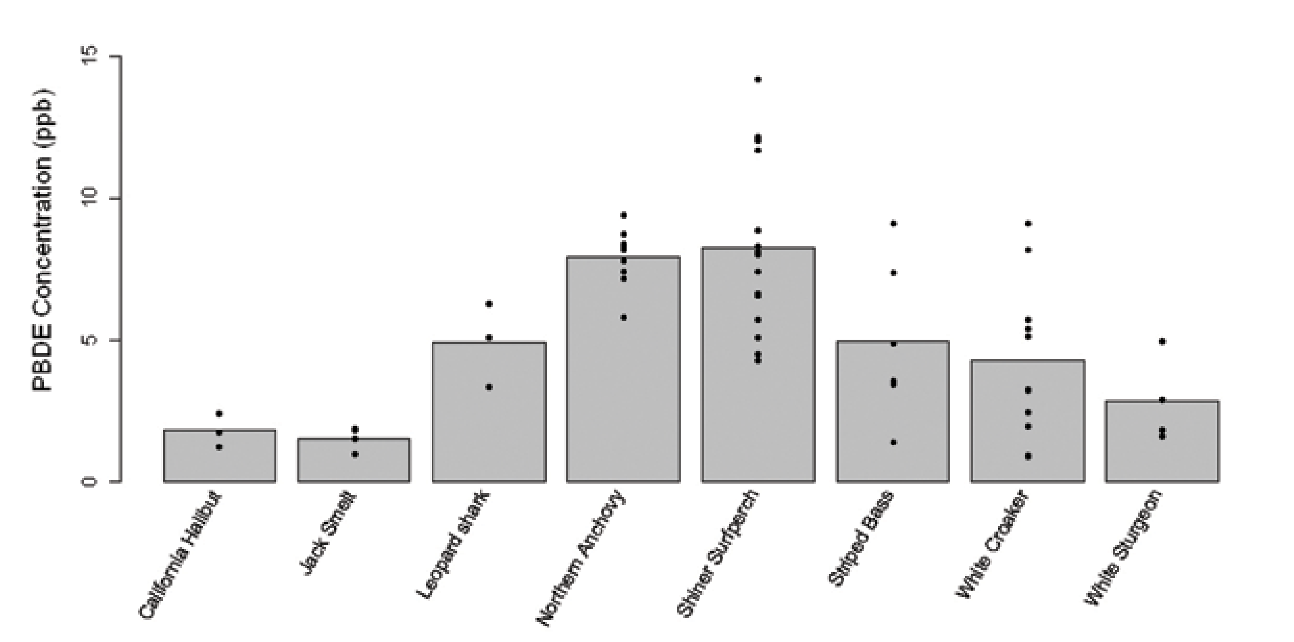


Figure 5-22. PBDE concentrations (ppb) in sport fish species in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent individual samples (either composites or individual fish). White croaker data are for fillets without skin. All samples were well below the lowest OEHHA threshold (the 100 ppb 2 serving ATL).

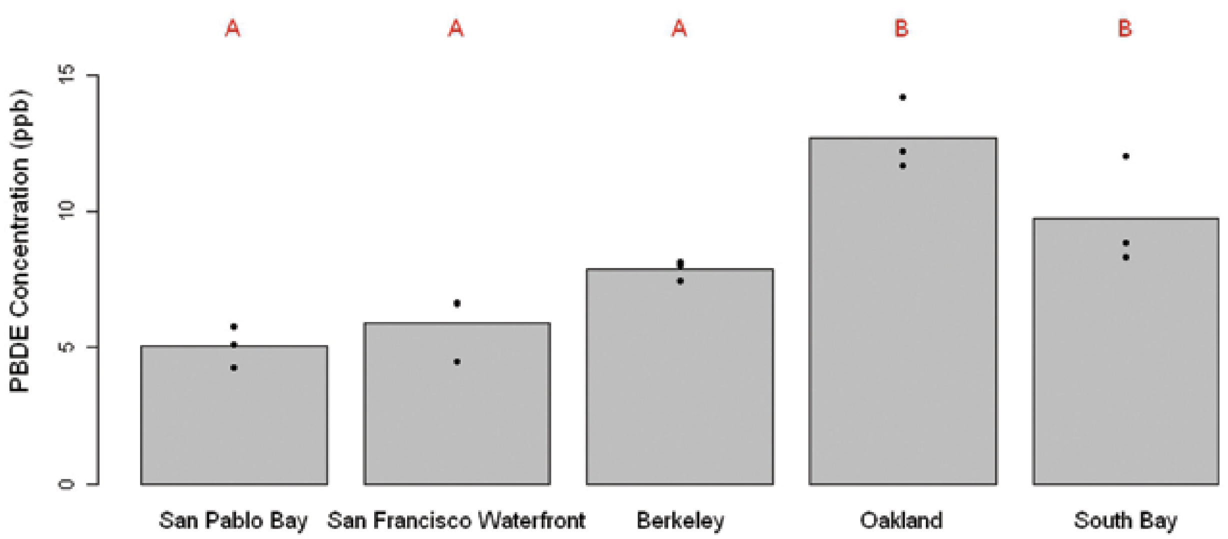


Figure 5-23. PBDE concentrations (ppb) in shiner surfperch in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent composite samples. Locations with the same letter were not significantly different from each other (p = .05).

was also significantly greater than Berkeley, San Francisco, and San Pablo Bay, but not significantly different from Oakland. Overall, these averages spanned a 2.6 fold range from Oakland to San Pablo Bay.

Temporal Trends

Measurement of PBDEs in Bay sport fish has been performed by the RMP and other groups for samples collected in 1997, 2000, 2002, 2003, and 2006. However, the early analyses of PBDEs (1997-2002) are not completely reliable or comparable to recent data due to issues with sample storage, quality assurance documentation, and the early analytical methods (Klosterhaus et al. 2010). Analysis of the 2003 and 2006 samples was performed with electron capture detection (GC-ECD), external standard calibration, and p,p-DDD as a surrogate recovery standard – these procedures are typically not recommended for the analysis of PBDEs in tissue. In spite of these issues, the 2003 and 2006 data are still considered reliable. The 2009 data were generated using a GC-MS method and isotopically-labelled PBDEs as internal standards – these data are considered highly reliable.

PBDE concentrations in white croaker were much lower in 2009 due to the analysis of fillets without skin. The combination of this switch in processing of the white croaker, and better spatial coherence and higher concentrations in shiner surfperch makes the latter a better indicator of trends through time. The Baywide average for shiner surfperch (8 ppb) was lower than the averages observed in 2003 and 2006 (Figure 5-24). A decline might be anticipated in response to the bans on the penta and octa mixes, but how quickly the decline would occur as the overall inventory in the watersheds is reduced is unknown. Given the short time series available and a potential lack of comparability due to the switch to a new method in 2009, it is unclear

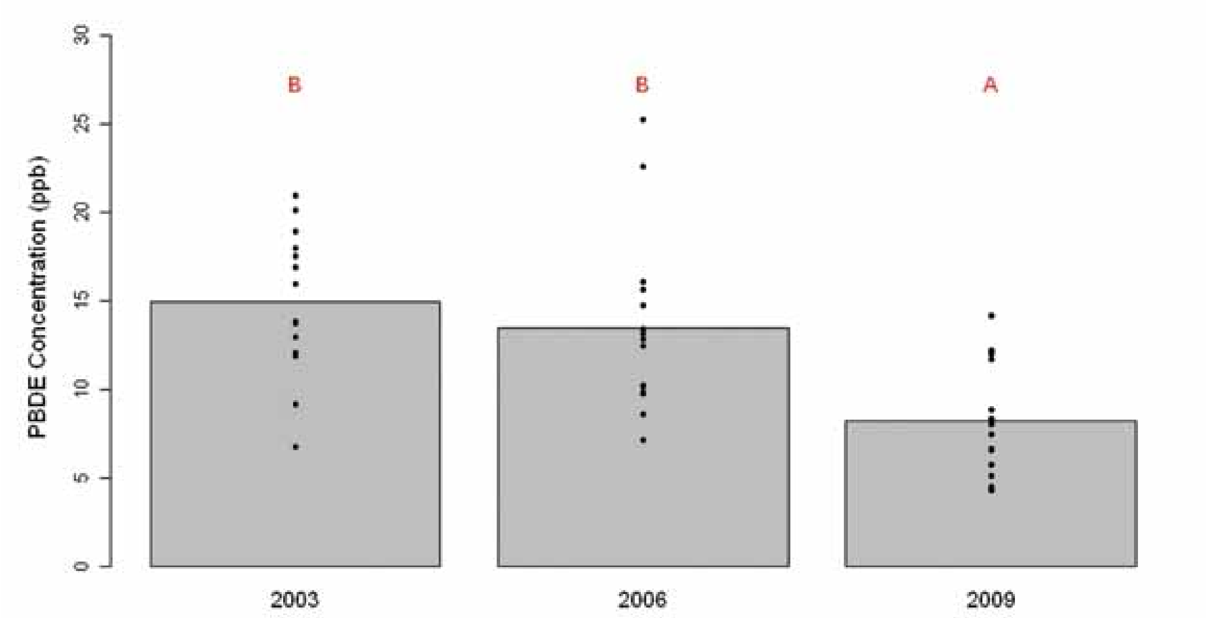


Figure 5-24. PBDE concentrations (ppb wet weight) in shiner surfperch in San Francisco Bay, 2003-2009. Bars indicate average concentrations. Points represent composite samples. Years with the same letter were not significantly different from each other (p = .05).

whether the lower concentrations in 2009 are a sign of a real decline or not. Continued monitoring of sport fish and other matrices in the Bay will be needed to determine whether the bans are indeed reducing PBDE concentrations in the Bay food web.

Management Implications and Priorities for Further Assessment

PBDE concentrations in all samples were far below the lowest OEHHA threshold (the 100 ppb 2 serving ATL), indicating that PBDE concentrations in Bay sport fish are not a concern with regard to human health. Continued monitoring of sport fish and other matrices in the Bay will be needed to determine whether the bans of the penta and octa mixtures are indeed reducing PBDE concentrations in the Bay food web.

PFCs

Perfluorinated chemicals (PFCs) have been used extensively over the last 50 years in a variety of products including textiles treated with stain-repellents, fire-fighting foams, refrigerants, and coatings for paper used in contact with food products. As a result of their chemical stability and widespread use, PFCs such as perfluorooctane sulfonate (PFOS) have been detected in the environment. PFOS and related PFCs have been associated with a variety of toxic effects including carcinogenity and abnormal development.

In 2006, the RMP began analyzing bird eggs for PFCs. PFOS concentrations in Double-crested Cormorant eggs were found to approach a published effect threshold. Consistent with studies elsewhere, PFOS was the dominant PFC detected in cormorant eggs. Concentrations of PFOS were highest in the South Bay, and higher than concentrations reported in other regions. PFCs have been detected in sport fish fillets in other studies. Sampling has been fairly extensive in Minnesota, where concentrations have been high enough that the state has established thresholds for issuing consumption guidelines (Delinsky et al. 2010). Neither OEHHA or the Water Board have developed thresholds for evaluating the risks to humans from consumption of contaminated sport fish from San Francisco Bay.

The 2009 results for PFCs were mostly below detection limits (Figure 5-25, Table 5-1). The only PFC detected was PFOS, and only four samples had detectable PFOS concentrations. The highest concentration was 18 ppb in a leopard shark composite. The other samples with reportable concentrations were from northern anchovy and white sturgeon. The available data are insufficient for assessing variation among species, over time, or among locations in the Bay. The state of Minnesota has established a threshold of 40 ppb associated with a consumption rate of 1 meal/wk. If higher rates of consumption are considered, as OEHHA has done for other chemicals, the highest concentration observed may be approaching a level where a low degree of concern is indicated.

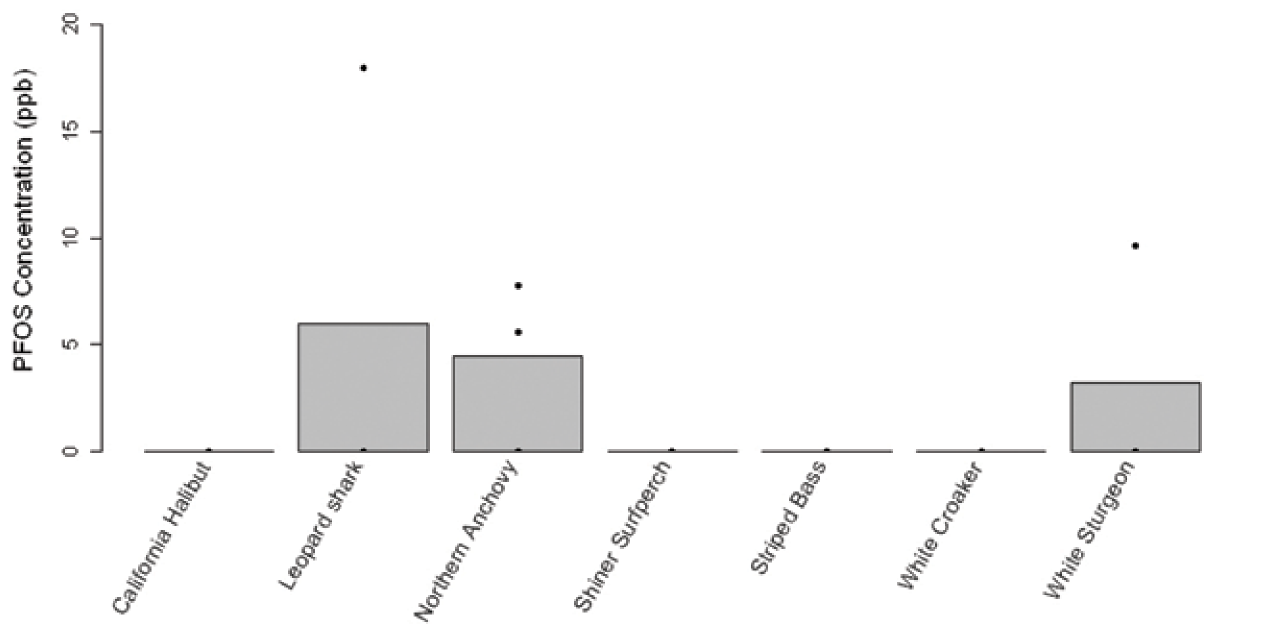


Figure 5-25. PFOS concentrations (ppb) in sport fish species in San Francisco Bay, 2009. Bars indicate average concentrations. Points represent individual samples (either composites or individual fish). White croaker data are for fillets without skin. Concentrations were below the detection limit in most samples.

THE REGION 2 COAST

General Assessment

Contaminant concentrations in sport fish from coastal locations in Region 2 were lower than in San Francisco Bay and were frequently below OEHHA thresholds (Figures 5-26 and 5-27).

Methylmercury concentrations in most species were at or below 0.07 ppm. Concentrations were above 0.44 ppm in the two shark samples (both from Tomales Bay). Other species with moderately elevated concentrations were lingcod (measuring 0.42 ppm at Pacifica and 0.27 ppm at Half Moon Bay) and gopher rockfish (ranging from 0.26 at Half Moon Bay to 0.43 off the San Mateo Coast). Gopher rockfish even accumulated 0.29 ppm at the Farallon Islands.

PCB concentrations were below the ATLs in all samples, and most were also below the FCG of 3.6 ppb. Even shiner surfperch were quite low. The highest concentration was 36 ppb in a barred surfperch sample offshore of San Francisco.

Concentrations of other contaminants in samples from the Region 2 coast were all low.

Specific Locations of Interest

Tomales Bay

The mouth of Walker Creek in Tomales Bay was subject to a considerable amount of mercury contamination from historic mining in the Walker Creek watershed. Past sport fish sampling under the CFCP and SWAMP regional monitoring found elevated concentrations, resulting in a consumption advisory (Gassel et al. 2004). The Water Board has established a TMDL for the Walker Creek watershed and a TMDL for Tomales Bay is underway. However, the Water Board considers that no further implementation actions are required for methylmercury – the actions needed are already completed or underway and the primary focus is now on monitoring the outcome. Results from this sampling support that conclusion. Methylmercury concentrations in the three non-shark species sampled (shiner surfperch, topsmelt, and white surfperch) were all below 0.07 ppm. Tomales Bay was actually one of the cleanest locations sampled in the state – it was one of only seven locations sampled in 2009 with fish samples that were below thresholds for all contaminants (shiner surfperch and white surfperch). While sport fish in Tomales Bay appear to be below thresholds for concern, recent sampling of small fish and crabs in Tomales Bay marshes indicates that concern for wildlife exposure in these habitats may be warranted.

Pillar Point Harbor

Pillar Point Harbor was placed on the 303(d) List as a result of methylmercury measurements in the CFCP. Pillar Point Harbor exhibited a low degree of contamination in this Survey. The highest methylmercury concentration was in the one white croaker sample analyzed (0.10 ppm). Four other species (shiner

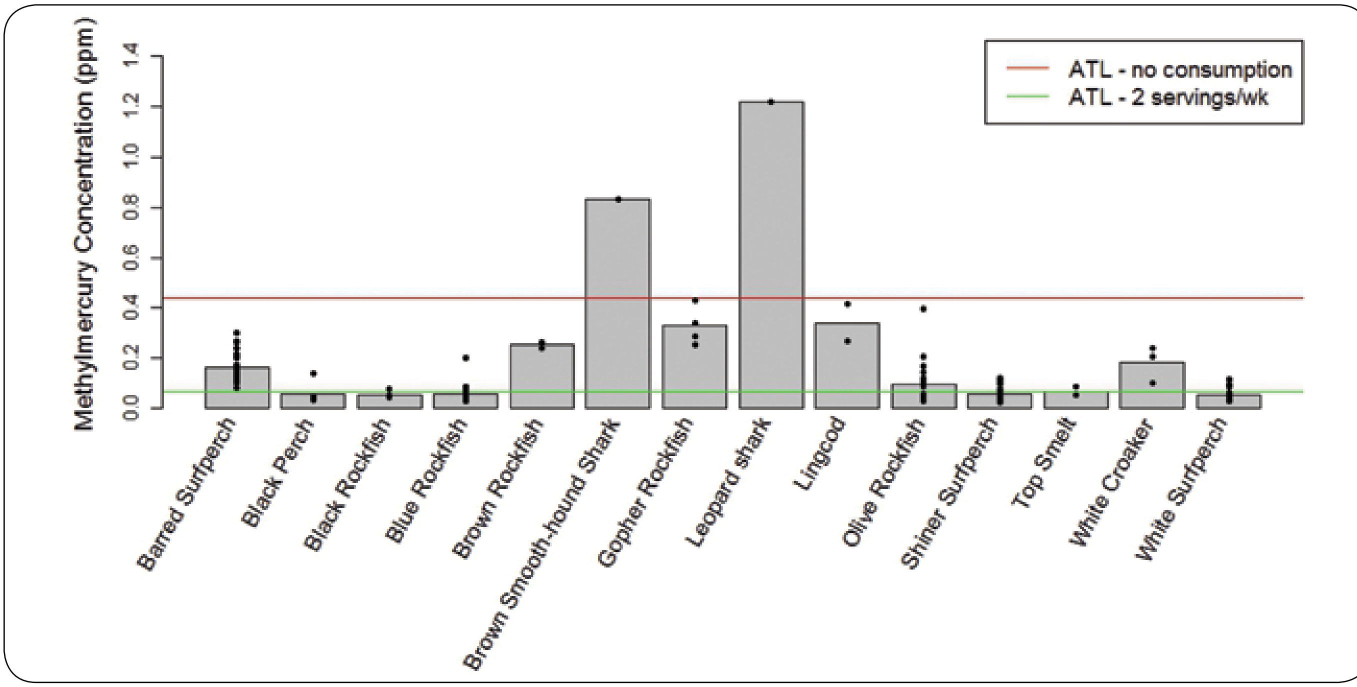


Figure 5-26. Methylmercury concentrations (ppm) in sport fish species on the Region 2 coast, 2009. Bars indicate average concentrations. Points represent individual samples (either composites or individual fish).

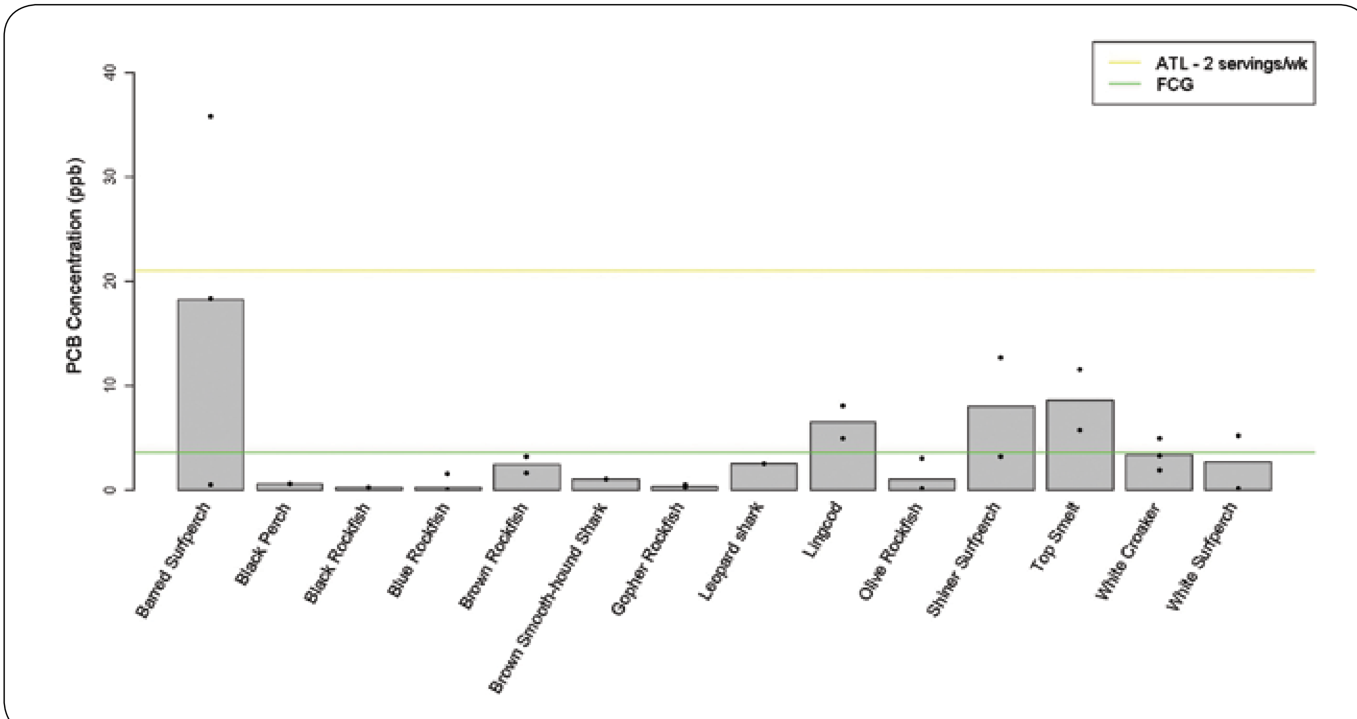


Figure 5-27. PCB concentrations (ppb) in sport fish species on the Region 2 coast, 2009. Bars indicate average concentrations. Points represent composite samples.

surfperch, white surfperch, black perch, and topsmelt) all had average concentrations below 0.07 ppm. PCBs reached a maximum of 13 ppb in shiner surfperch. Topsmelt was second at 12 ppb. White croaker, white surfperch, and black perch were at or below the FCG of 3.6 ppb.

Management Implications and Priorities for Further Assessment

Data from this Survey indicate that contaminant concentrations in sport fish on the Region 2 coast were generally low. A moderate degree of contamination observed for methylmercury in some species (lingcod and gopher rockfish) may warrant further investigation.

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Final Report to the Port of San Diego

Chemical analysis of threatened and endangered species in San Diego:

The San Diego Bay Trophic Transfer Project

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CHEMICAL ANALYSIS OF THREATENED AND ENDANGERED SPECIES IN SAN DIEGO BAY

THE SAN DIEGO BAY TROPHIC TRANSFER PROJECT

FINAL REPORT, JANUARY 31, 2011

Citation: Lewison et al. 2011. Chemical analysis of threatened and endangered species in San Diego

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EXECUTIVE SUMMARY

- The objective of this grant was to use isotope and element analysis to understand trophic structure, map isotopic variability (i.e. the isoscape) in San Diego Bay and to evaluate contaminant exposure and load in species of conservation concern in San Diego Bay, focusing specifically on East Pacific green turtle (EPGT) and California least terns (CLT). Led by Dr. Rebecca Lewison, the research team was composed of a SDSU faculty member (Dr. Lai), a senior NOAA scientist (Dr. Seminoff), a senior Scripps Institute scientist (Dr. Deheyn) and several SDSU graduate and undergraduate students.
- One key result from this project was the resolution of the diet composition of the endangered EPGT. This information is fundamental to effective protection of this species within San Diego Bay. Diet identification can also inform the identification of sources of contamination in this population. We applied two leading multisource stable isotope mixing models (Isosource and Stable Isotope Analysis in R, SIAR) to determine the main contributors to, and annual variation in, green turtle diet based on comparisons of isotope values of turtles and putative prey species.
- Isotope model outputs indicated that green turtles are omnivores, with mobile invertebrates having the greatest dietary input (62% with Isosource; 42% with SIAR) and seagrasses constituting the second most important diet item (16% with Isosource; 6% with SIAR). Green algae and sessile invertebrates were also identified as feasible prey species, although at reduced levels. Local seagrass pastures appear to be of high value to green turtles, serving both as a major food resource and by providing habitat for other green turtle prey.
- Based on significant inter-annual differences in the isotopic signal from discarded eggs across multiple CLT colonies, we found clear evidence of diet shifts in CLTs among years. These diet shifts may be linked to differences in prey species availability, spatial shifts in foraging areas or a combination of both factors. These shifts in food resources may be tied to observed variability in reproductive output.
- We had limited success in resolving CLT diet. Although we are able to differentiate isotopic signatures among prey items, limited information on the discrimination factor (also called fractionation factor), which determines how nutrients from the food sources are incorporated into the birds and their eggs, may explain why diet composition could not be resolved.
- Using isotope data from the most widely distributed species across the Bay *(Zostera marina*, *Gracilaria sp*. and *Ulva sp*.), we generated isoscapes for San Diego Bay, identifying locations of nitrogen enrichment in the South Bay. Nitrogen enrichment is likely the result of increased nutrient loading, likely anthropogenic in nature, in the Bay and is an indicator of degraded water quality. Nutrient inputs

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in the Bay are probably driven by non-point sources (e.g., surface runoff, groundwater, atmospheric deposition and shoreline erosion).

- We focused contaminant analyses on two classes of compounds, metals and organics in a wide range of sample types. Some turtle blood was re-screened for organic compounds with more sensitive instruments because of low detection limits. For turtle blood, we also completed a more in-depth exploration of the metal analyses to identify the potential cellular pathway by which toxic compounds may be impacting this species.
- A range of different metals were detected in the samples we analyzed. In EPGT, silver, cadmium, copper, manganese, selenium, strontium, vanadium, and zinc were the most prevalent bioaccumulating metals. Strong spatial trends of copper and manganese drove spatial differentiation in EGPT food items, while a different suite of metals were found to influence accumulation patterns in sediment across regions within the Bay. These results indicate that metal levels in biota (all plants and invertebrates) and sediment are highly dissimilar. This suggests that toxicity reference values based on localized sediment testing are likely to be less accurate for risk assessments of higher organisms like EPGT.
- In the CLT forage fish sampled, cadmium, copper, manganese, lead, selenium and vanadium were the most prevalent metals detected although there were some spatial variation in levels. Cadmium was detected at greater concentrations in topsmelt at Imperial Pier compared to all other sites. Copper, manganese and selenium were all detected at higher concentrations in topsmelt in the central part of the Bay. The majority of contaminant levels detected in the forage fish species did not exceed identified risk levels identified for birds, although the accumulation patterns and levels of these compounds in CLTs is unknown. However, levels of selenium detected may exceed threat thresholds.
- We focused organic analyses on EPGT samples. There were a number of organic compounds that were commonly detected in the EPGT samples analyzed: γ benzene hexachloride (BHC) was present in all plasma samples, and p'p'- DDE and γ chlordane were frequently detected. Using a more sensitive instrument array, PCBs were found at the highest level in all the blood and plasma samples among all organic compounds tested. These more sensitive analyses highlight the clear presence of PCBs and PBDEs in the San Diego Bay food web.
- The chemical analyses conducted during this project provide a robust baseline for future study of nitrogen enrichment and contaminant levels in sediment and a wide range of species in San Diego Bay.

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INTRODUCTION

San Diego Bay is a highly urbanized estuary that ranks as one of the most polluted coastal bodies of water in the United States (Long et al. 1996), but it also provides critical habitat for many sensitive species. Its shores are prime nesting ground for the Endangered California Least Tern (CLT) (*Sternula antillarum browni*), marshes and mudflats support thousands of shorebirds, and extensive eelgrass beds *(Zostera marina)* serve as nursery habitat for many fish species and key foraging grounds for the Endangered East Pacific green turtle (EPGT) *(Chelonia mydas)* (Zeeman 2004). Degradation of coastal habitats due to anthropogenic activities have been found to severely negatively affect species' health and success (Vitousek et al. 1997, Jackson et al. 2001b) and point and non-point pollution in the Bay from historical and contemporary sources has long been a standing issue of concern (USDoN 1999). San Diego Bay has experienced a long history of intense industrial and recreational use. Much of the Bay is impacted by industrial development, including numerous shipyards, two military bases, a major cruise ship terminal, and the South Bay Power Plant (SBPP), a once-through cooling power generating facility located in the extreme southern portion of this bay.

The widespread effects of pollution on sensitive wildlife and overall ecosystem health is a major issue of concern in San Diego Bay and similarly urbanized coastal ecosystems (Bryan and Langston 1992, USDoN 1999). To better understand how these pollutants enter and are transferred through the food web in the San Diego Bay, we compared isotopes, trace metal loads and contaminants in two of the sensitive species, EPGT and CLT, as well as a suite of forage species for both of these organisms throughout San Diego Bay. Here, we use isotopes to identify key food resources for EPGT and CLTs and also use these data to develop an isoscape for the Bay. Isoscapes provide data on resident organisms and environmental condition using their isotopic signatures. This project also directly analyzed bioaccumulation and spatial variability of contaminants in San Diego Bay food webs and in EPGT. This analytical approach provides fundamental information needed for more effective species management and more accurate risk assessments of habitats and higher-order species in the biodiverse, urbanized coastal environment of San Diego Bay.

METHODS

Field data collection

Over the course of this project, comprehensive field data collection occurred and representative samples were taken from multiple trophic levels for both isotope and contaminant analysis. Sampling began in June 2008 at nine permanent sampling sites and one reference site outside the Bay (Figure 1) that reflect the stratified ecoregions from the State of the Bay report (2007). Sampling was repeated in the spring/summer and fall/winter for all sites to allow for seasonal comparisons. For these analyses, we evaluated habitat, prey species as well as the two target species to understand the impact of trophic structure and contaminants on threatened and endangered species in San Diego Bay, specifically focusing on EPGT and CLT.

Scientific name	*Common Name*
Zostera marina	Eelgrass
Gracillaria spp	-
Ulva spp.	-
Zoobotryon verticillatum	-
Navanax inermis	California aglaja
Bulla gouldiana	California bubble snail
Ascidian spp.	Sponge/Tunicates
Aplysia californica	Sea hare
Ptilosarcus spp.	Sea pen
Antherinops affinis	Topsmelt
Engraulis mordax	Calif. anchovy
Cymatogaster aggregata	Surfperch

Table 1. Species sampled across sampling stations

To sample potential contaminant sources for EPGTs and CLTs, we collected at least five water, sediment, and eelgrass samples via SCUBA or with a light-weight grab at each site. For isotope analysis, potential prey items for EPGTs were collected at the identified sampling locations across San Diego Bay. Tissue from putative prey species (hereafter referred to as habitat samples) were collected during SCUBA line-transects at areas of interest throughout the Bay, as well as opportunistically during field efforts. We collected entire organisms (i.e. whole body) for all but eelgrass, for which only the blades were gathered. These habitat samples were cleaned with distilled water and frozen at −10°C. We collected samples of (*Zostera marina)*, red and green algae, and numerous invertebrates including sponges, bryozoans, tunicates and mollusks (Table 1). Less common species (*Navanax* and *B. gouldiana*) were collected opportunistically, as these species have variable spatial and temporal distributions. To resolve the key prey items in the CLT diet, we collected four species of fish prey from each sampling site with a surface purse seine net. These samples also were used to examine the potential heavy metal contaminant pathways for CLTs. Topsmelt (*Antherinops affinis*), California anchovy (*Engraulis mordax*), and surfperch (*Cymatogaster aggregata)* were among the species sampled and run through both trace metal and isotope analysis.

Database construction

All data have been organized into a comprehensive database that integrates the data collected from this project, related projects at SDSU, and data from the Southwest Fisheries Science Center. We have used this database to compare the results of our study to the findings from other investigations of contaminants in the Bay, such as those by SWFSC and the Department of Fish and Game.

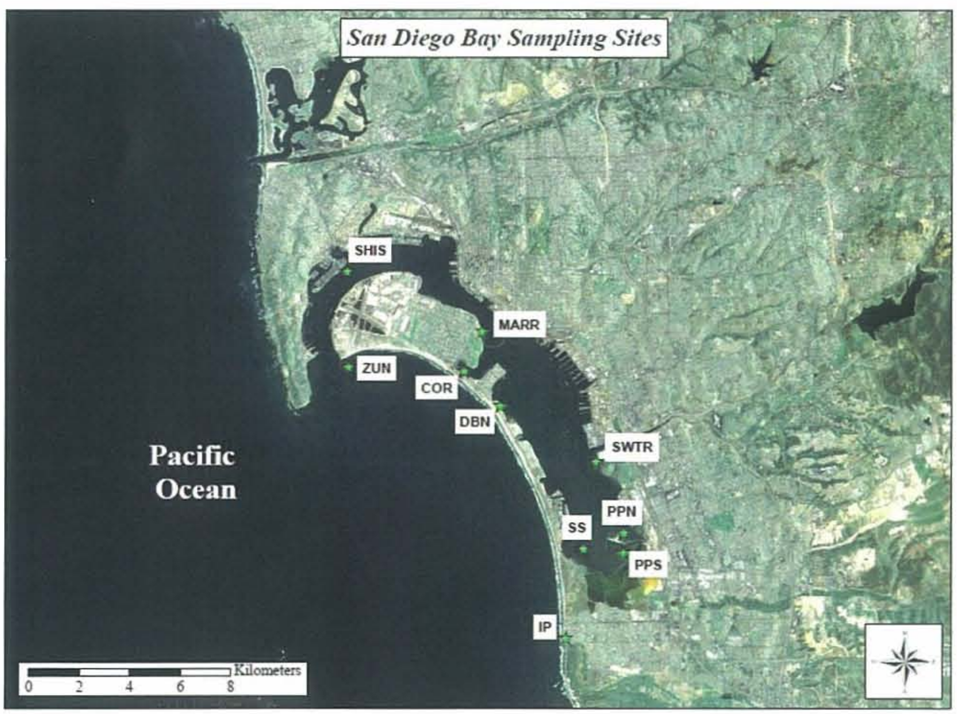

Figure 1. San Diego Bay Trophic Transfer Project Sampling Sites

Stable Isotopes

Over 500 samples were for analyzed for isotope composition. These samples include eelgrass and two other types of algae, invertebrates, fish, and EPGT blood and tissue as well as CLT egg shells. Prior to analysis, samples were thawed, weighed (wet weight), and dried at 60°C until sample weight remained constant (i.e. dry weight), then were homogenized into a fine powder using a mortar and pestle. Lipids were removed from skin samples and a portion of each habitat sample using a Soxhlet apparatus with a 1:1 solvent mixture of petroleum ether and ethyl ether for at least two 10-h cycles. Samples then were dried at 60ºC for 24 h to remove any residual solvent. For the EPGT samples, approximately 0.60 mg of diet and tissue samples were loaded into sterilized tin capsules and analyzed by a continuous-flow isotope-ratio mass spectrometer in the Stable Isotope Laboratory at the University of Florida, Gainesville USA. We used a Costech ECS 4010 elemental combustion system interfaced via a ConFlo III device (Finnigan MAT, Bremen, Germany) to a Deltaplus gas isotope-ratio mass spectrometer (Finnigan MAT, Bremen, Germany). Analysis of forage fish and CLT eggs was conducted at the San Diego State University Ecology Analytical Facility with a CarboErba NCS 2500 elemental analyzer to obtain relative concentrations of carbon and nitrogen. The resulting CO_2 and N_2 from combustion were then run through a Thermo Finnigan Delta Plus mass spectrometer to obtain isotopic ratios of each element. We also ran samples at the University of Florida Light Stable Isotope Mass Spec Laboratory because of equipment repair needs at SDSU.

Contaminants: Metals and Organic Compounds

We conducted trace metal analyses at Scripps Institution of Oceanography (University of California at San Diego), using nitric acid and hydrogen peroxide digestion followed by simultaneous quantification of 15 trace metals with an Inductively Coupled Plasma Optical Emission Spectrum (ICP-OES) spectrometer. These analyses were used to compare trace metal levels across samples. For the fish sampled, whole fish were tested to establish concentration levels and point to metal sources across the sampled species.

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Together with colleagues as CSU, Long Beach, we completed a second component to the trace metal termed metal speciation analyses. Metal speciation is a process by which the specific form of an element can be determined and can be used to identify particular cellular pathways a trace metal may be affecting and helps identify the potential mechanism by which toxic compounds may be impacting turtles in the Bay.

EPGT blood plasma was analyzed for persistent organic pollutants (POPs) by Mississippi State Chemical Laboratory (Mississippi State, MS). We analyzed samples using these methods for a panel of 28 POPs including polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane (DDTs), polybrominated diphenyl ethers (PBDEs), and other common pesticides. As many samples fell below detectable levels, blood and plasma from 22 individuals were run through testing with a new equipment array in the analytical laboratory of SDSUs School of Public Health's Division of Environmental Health using an Agilent GC/MS in Electron Capture Negative Ion (ECNI) mode, which is more sensitive equipment that has a higher probability of detection.

Data analyses

$\delta^{13}C$ and $\delta^{15}N$ isotope values for all habitat and prey species were averaged by site. We then used these values to create an isoscape map of San Diego Bay for the most widely distributed species: *Zostera marina*, *Gracilaria* spp. and *Ulva* spp. Isoscapes were developed in GIS through kriging interpolation. The $\delta^{13}C$ and $\delta^{15}N$ values for green turtle tissues were compared among all years using ANOVA to gauge the consistency in isotopic values through time. To establish the probable dietary groups consumed and assimilated by green turtles in San Diego Bay, we used the isotope mixing model programs Isosource (Phillips et. al., 2003) and SIAR (Inger et al., 2010b). We used both programs to take advantage their respective strengths and to examine the variation in output values of two leading mixing models. Using Isosource, we created a mixing polygon that produced an intuitive graphical relationship among $\delta^{13}C$ and $\delta^{15}N$ of green turtle skin and potential diet items. With SIAR we generated a series of prey contribution distributions, which 11 integrated the variance of green turtle and habitat isotope values, and represented the probability distributions for each potential group's feasible contribution to green turtle diet.

For CLTs, we used abandoned eggs from multiple colonies in and around San Diego Bay from 2003-2009. We specifically targeted the egg membrane as our sample tissue because this tissue represents most recent diet choices, i.e. approx. 2 weeks. We analyzed for $\delta^{15}N$ and $\delta^{13}C$ values after verifying there was no significant difference between $\delta^{15}N$ and $\delta^{13}C$ values of hatched and unhatched eggs. We used a general linear model with year and site as predictors to test for significant temporal or spatial variation in $\delta^{15}N$ levels. We also used SIAR to identify diet composition for CLTs based on values from egg membranes and the documented CLT prey items.

EPGT habitat and prey species sample replicates for metal analysis were averaged by sample, and we calculated means and medians for each sample type per sampling event. We calculated enrichment and bioaccumulation factors to evaluate patterns among sites and used paired t-tests to detect overall bioaccumulation patterns for each forage type. Subsequently, to examine regional patterns of accumulation within and between each forage type, we calculated bioconcentration factors (BCF) defined as:

$$\frac{\textit{metal concentration}_{biota}}{\textit{metal concentration}_{sediment}}$$

To distinguish spatial relationships, we employed main effects Analysis of Variance (ANOVA) models by forage type for each metal and deconstructed the variance to determine the percentage of variability explained by each predictor. We compared the Bayesian Information Criterion (BIC) between fine (i.e. site and season) and coarse (i.e. region and season) models to identify if spatial differences were dependant on local "hotspot" site metal levels, or exhibited larger scale regional patterns. Principal Components Analysis was used to describe overall correlation patterns for sediment and biota and to create multivariate metal factors. In EPGT plasma samples tested for organic compounds, concentration values were averaged and the number of independent samples above level of detection for the instruments (LOD) was calculated.

Tissue concentrations in parts per million (ppm) of all metals tested for forage fish in the CLT food web were averaged by species, site and metal tested. Kruskal-Wallis one-way analysis of variance tests were used to determine if concentrations of arsenic, cadmium, copper, manganese, lead, selenium or vanadium differed between sites in topsmelt samples, the species with representative samples at the most sites. Metals that displayed significant differences in concentrations across sites were then utilized for kriging interpolation to determine if there were regional patterns of metal concentrations.

RESULTS

Stable Isotopes

The examination of our isotope data point to some interesting patterns, as can be seen in an isoscape map of $\delta^{15}N$ values for *Zostera marina*, *Gracilaria* spp. and *Ulva* spp. (Figure 2). Although some of the other sampled species showed little variability among sites, data from these species point to important geographic differences in isotope signatures, with higher nitrogen levels detected at several sites in the South Bay. However, the specific locations of high nitrogen hotspots were different among species.

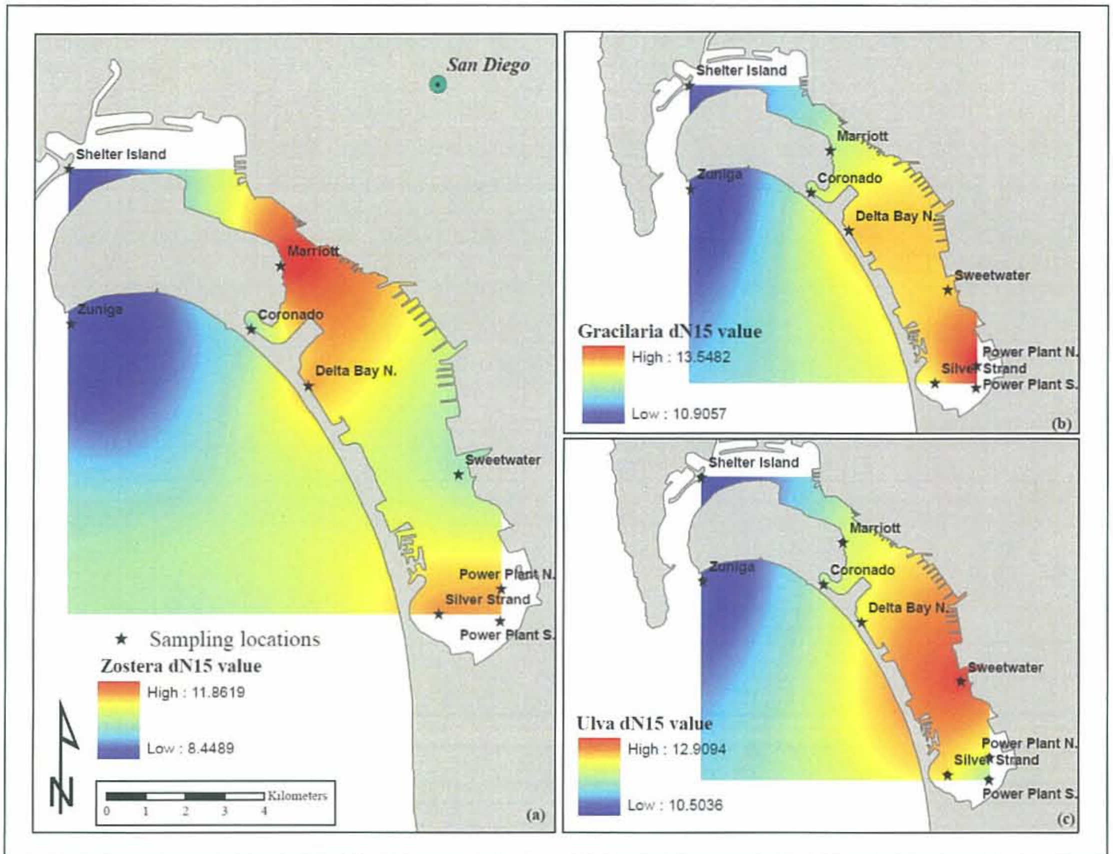

Figure 2. Bay isoscape of $\delta^{15}N$ for (a) *Zostera marina*; (b) *Gracilaria* spp.; and (c) *Ulva* spp.

All EPGT prey items sampled had varying isotopic signatures compared to each other with the exception of the two types of algae whose nitrogen signature similarities can be attributed to their similar composition and life histories (Figure 3). Our two mobile invertebrates revealed an interesting correlation as they not only had the highest nitrogen value of all our prey items (15.83 ± 1.04) but also a nitrogen value that by simple observation has a similar signature to that of the green turtles nitrogen value. Furthermore, the mobile invertebrates produced carbon isotopic signature (-16.56 ± 1.21) very similar to our turtle carbon signature (-16.03 ± 1.52). When these data were incorporated into the multisource isotope mixing model (Isosource and SIAR) for EPGTs, they revealed an omnivorous diet, with invertebrates constituting up to 65% (isosource) and

80% (SIAR) of the green turtle diet (Figure 4). We determined the relative importance of eelgrass to the green turtle's diet while also showing the highest level of invertebrate consumption yet reported.

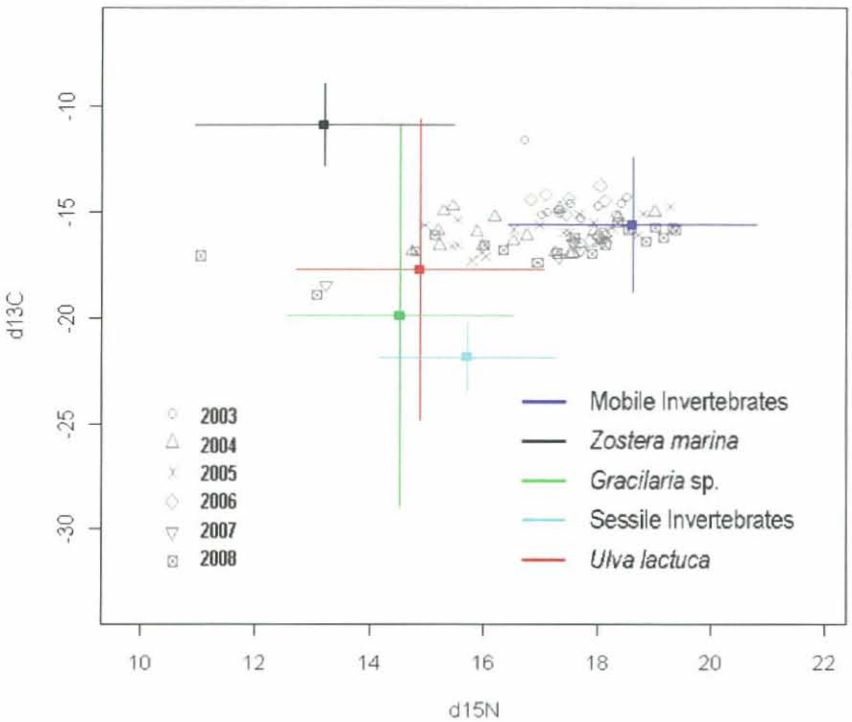

Figure 3. Isotopic signatures for EPGT prey items sampled between 2003 and 2008.

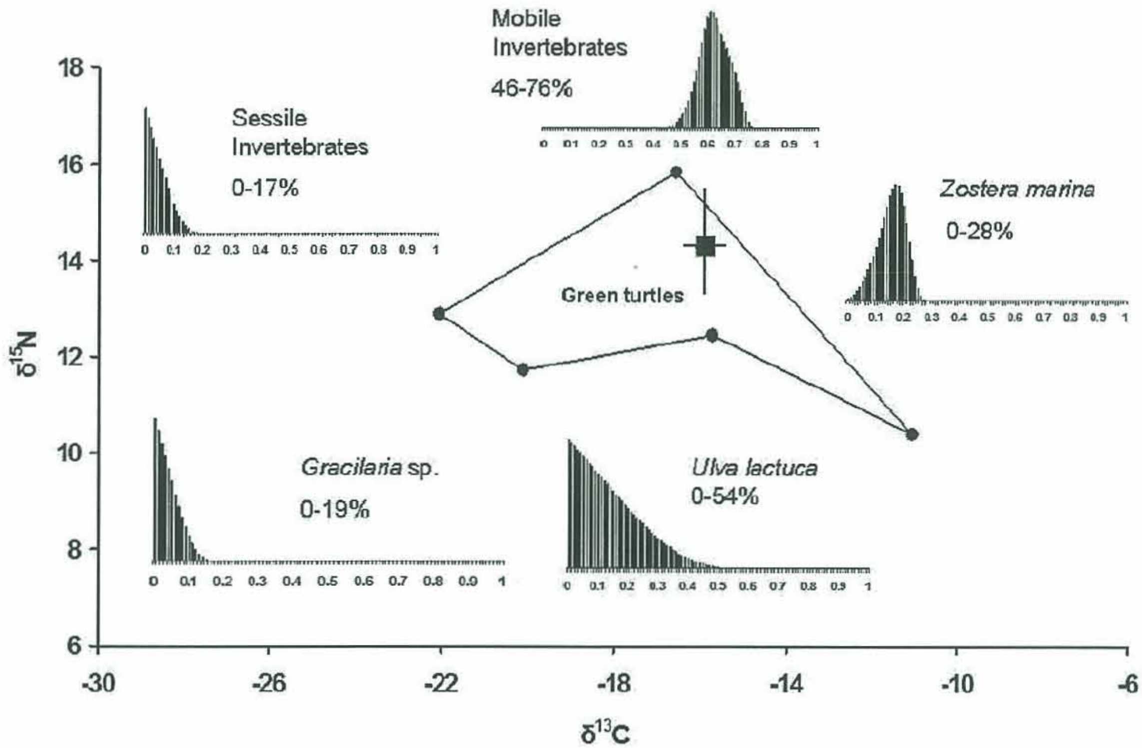

Figure 4. Isosource polygon with 5 aggregated groups. (Phillips et.al. 2005). Histograms next to each food item show distribution curves of the percent contribution to the turtle's diet.

For CLT egg membranes samples, student's t-test showed that there were no significant differences in average $\delta^{15}N$ measurements between the hatched (14.697 ‰) and unhatched (14.592 ‰) membranes ($t = 1.001$, $p = 0.323$) or average $\delta^{13}C$ values ($t = 1.600$, $p = 0.118$) between hatch (-18.370‰) and unhatched (-18.216‰) membranes. We did find clear evidence of significant inter-annual differences in $\delta^{15}N$ (Figure 5), with year as the most influential predictor variable ($r^2 = 30.4$, $F_{df,5} = 20.68$, < 0.001, BIC = 597.3).

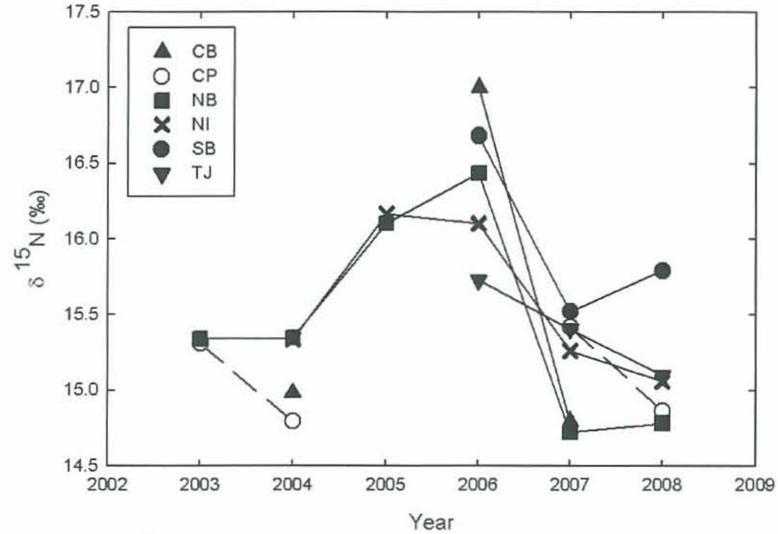

Figure 5. δ^{15}N measurements from abandoned CLT eggs from 2003-2008 at six sites in and around San Diego Bay. CB= Central Bay, CP= Camp Pendleton, NB= Naval Amphib. Base, NI=North Island, SB=South bay, TJ= Tijuana River.

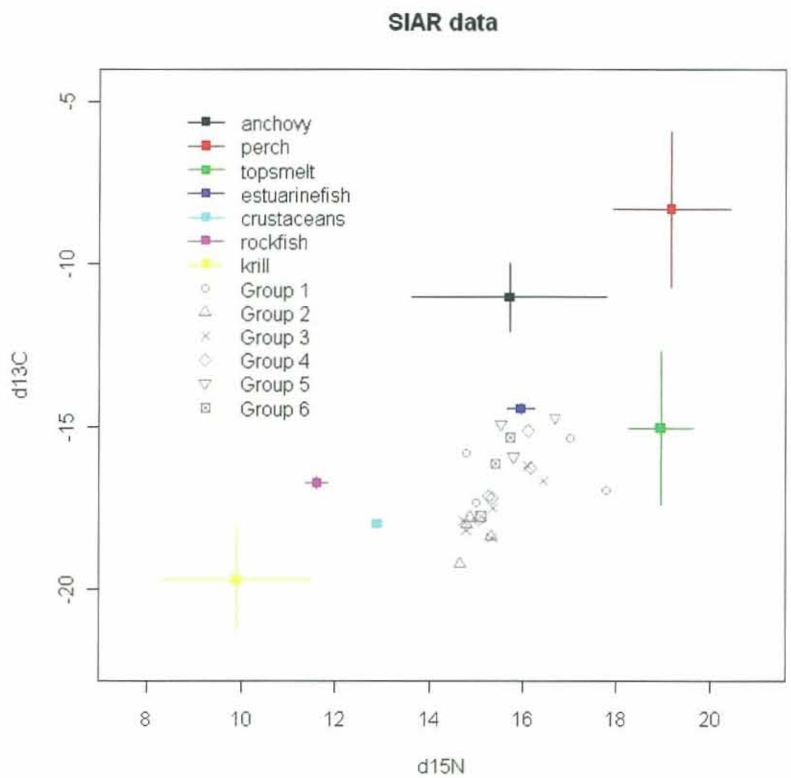

Figure 6. Isotopic signatures for CLT and their prey items.

Using the egg membrane data and all known prey CLT prey items, we were unable to definitively identify the species that contributed to the CLT diet. As seen in Figure 6, the bird values (shown as Group 1-6) are not closely linked to the food items we analyzed. This lack of resolution may be due to limited data on how prey nutrients are integrated into CLT tissue (termed the discrimination factor). It also may point to a missing prey item, although no other prey item has been documented for this species to date.

Metal Contaminants

Bioaccumulation patterns varied spatially and among samples representing the EPGT food web, with silver, cadmium, copper, manganese, selenium, strontium, vanadium, and zinc being the strongest bioaccumulating metals (Figure 7). Strong spatial trends of copper and manganese drove spatial differentiation in EGPT food items, while a different suite of metals were found to influence accumulation patterns in sediment across regions within the Bay. These results indicate that metal levels in biota and sediment are highly dissimilar. This suggests that toxicity reference values based on localized sediment and invertebrate testing ex-situ are likely to be less accurate for risk assessments of higher organisms like EPGT. Beyond looking at site specific differences, we also considered whether there were accumulation patterns among the different regions of the Bay. Regional bioaccumulation patterns varied among trace metals. Certain metals exhibited BCF differences between forage types, but were generally consistent across regions. In contrast, other metals showed little BCF variation between forage type and Bay regions, while some were influenced by a combination of both factors.

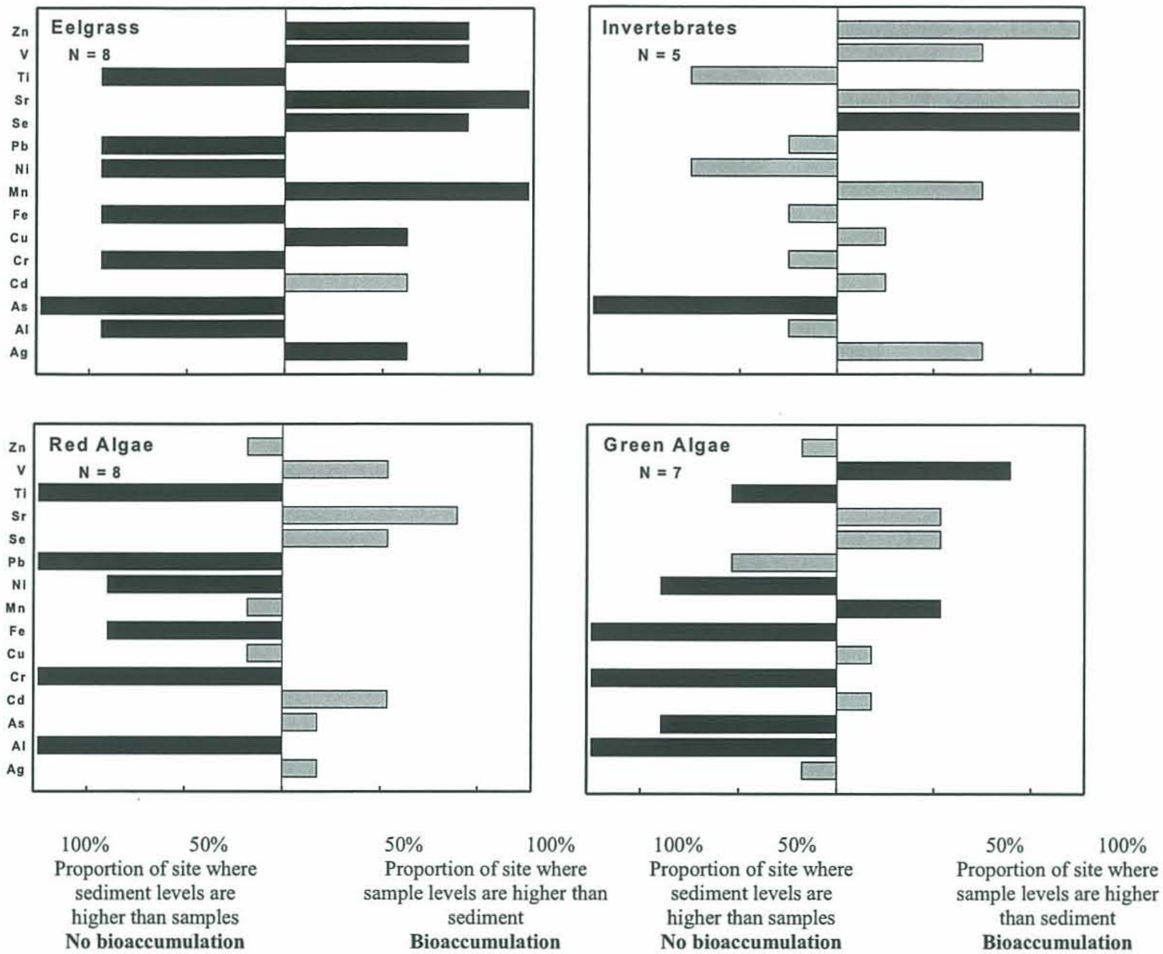

Figure 7. Percentage of sites exhibiting bioaccumulation in eelgrass, invertebrates, red algae, green algae relative to sediment. Values are averaged across seasons. Metals are listed on the Y axis. Bars to the right of the central X axis line indicate the proportion of sites at which metals were higher in biota samples than sediment. Bars to the left of the central X-axes indicate the proportion of sites at which sediment values were higher than biota, indicating no accumulation. Metals with significant relationships ($\alpha=0.05$, paired t-tests) are indicated by black bar coloration.

The metal speciation work on EPGT plasma detected evidence of numerous metals and the coincident presence of distinct absorption peaks. These absorption peaks suggest that most of the metal binding species probably represent native metalloenzymes and other metal-binding proteins. This evidence of coincident absorption peaks points to co-eluting elements, i.e. elements that have similar profiles. This is indicative of competitive binding of multiple metals to a common ligand. In the case of non-essential metals, such as cadmium, the likelihood of competitive binding may represent a pathway of molecular toxicity, whereby non-essential metals at high levels, such as cadmium or lead are more likely to bind with cellular proteins.

Metal concentrations in the fish sampled showed both spatial and seasonal variation that differed by metal and fish species analyzed. Kruskal-Wallis tests of tissue concentration of cadmium, copper, manganese, lead, selenium and vanadium by site in topsmelt all showed significant (α=0.05) variation by site (Figure 8). Through kriging interpolation, regional patterns of some metal concentrations were detected for cadmium, copper, manganese and selenium (Figure 9). Cadmium was detected at greater concentrations in topsmelt at Imperial Pier compared to all other sites. In comparison, copper, manganese and selenium were all detected at higher concentrations in topsmelt in the central part of the bay based on samples at the Coronado and Delta Bay North sites.

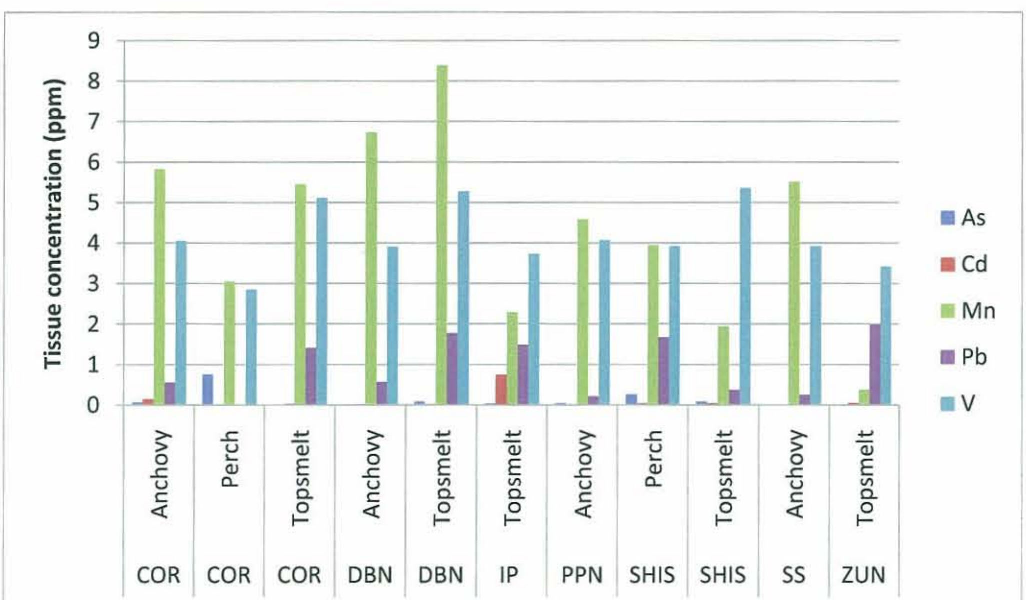

Figure 8. Tissue concentrations of select metals show differentiation by site and species.

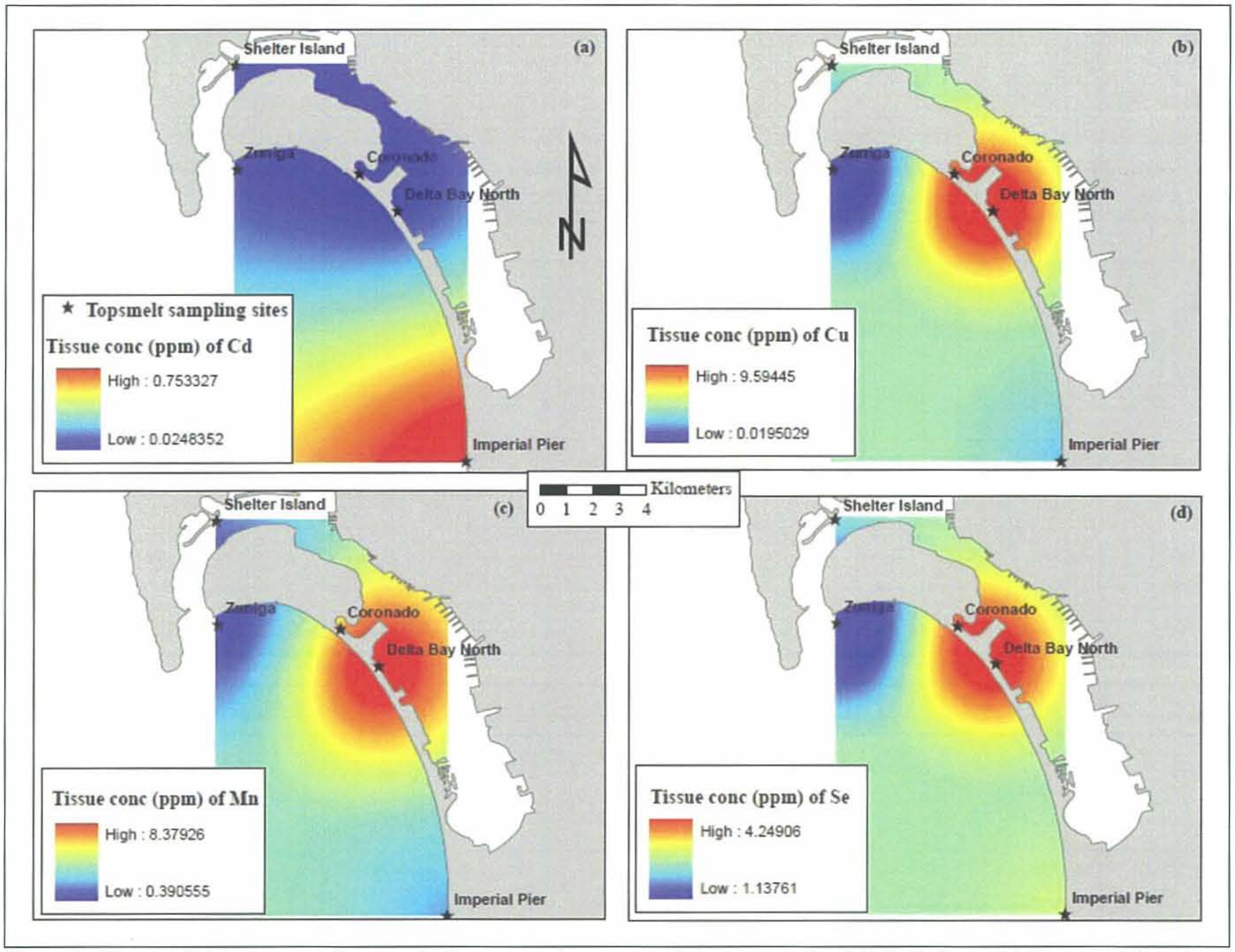

Figure 9. Geographic patterns of topsmelt tissue metal concentrations in ppm for (a) Cadmium; (b) Copper; (c) Manganese; (d) Selenium, based on kriging interpolation.

Organic compounds

There were a number of organic compounds that were commonly detected in the EPGT samples analyzed. γ benzene hexachloride (BHC) was present in all plasma samples, and p'p'- DDE and γ chlordane were frequently detected. Several other chemicals were detected in only a few individuals, including four congeners of polybrominated diphenylethers (PBDEs) detected in two individuals (Table 2). When blood and plasma were run through SDSU's new equipment array to validate results and establish values for samples that had been below the limit of detection for the equipment (Table 3), PCBs were found at the highest level in all the blood and plasma samples among all POPs tested. These more sensitive analyses highlight the clear presence of PCBs and PBDEs in the San Diego Bay food web.

		Blood Plasma			
Contaminant	*N> LOD*	*Mean SE*			*Range*
γ BHC	20	0.915	±	0.092	0.460 - 2.45
Heptachlor epoxide	1	0.516	±	n/a	< LOD - 0.516
α Chlordane	1	0.620	±	n/a	< LOD - 0.620
γ Chlordane	12	0.790	±	0.051	< LOD - 1.16
p'p'-DDE	14	0.965	±	0.078	< LOD - 1.56
PBDE #47	2	0.565	±	n/a	< LOD - 0.760
PBDE #99	2	0.480	±	n/a	< LOD - 0.730
PBDE #153	1	0.220	±	n/a	< LOD - 0.220
PBDE #154	1	0.230	±	n/a	< LOD - 0.230
Moisture (%)	20	92.5	±	0.425	86.3 - 94.6
Lipid (%)	20	0.462	±	0.135	0.126 - 2.77

Table 2. Organic compounds concentration values in EPGT (mean ± SE) rounded to three significant digits (ng•g^{-1} wet weight). N represents number of independent samples above level of detection for the instruments (LOD).

Sample (Turtle)	Collection date	blood wt. (g)	Chlordanes	p,p'-DDE	PCBs	PBDE
X105	1/8/2009	4.13	0.017	0.000	0.897	0.171
X110	3/25/2009	4.53	0.030	0.054	1.723	0.058
	3/25/2009	5.5	0.044	0.000	2.240	0.596
X143	12/17/2007	6.71	0.091	0.045	2.965	0.009
	12/17/2007	6.71	0.111	0.072	4.058	0.144
	2/27/2008	4.35	0.039	0.025	1.231	0.039
	2/27/2008	5.34	0.190	0.056	5.388	0.071
	3/27/2008	2.73	0.064	0.000	2.134	0.000
	4/3/2008	2.5	0.156	0.103	4.217	0.224
	4/3/2008	2.63	0.144	0.060	3.598	0.042
	4/3/2008	4.9	0.192	0.054	4.731	0.075
X161	1/30/2008	3.46	0.076	0.042	1.952	0.035
X169	12/17/2007	5.25	0.025	0.037	0.875	0.032
LB315	2/26/2009	3.65	0.016	0.135	1.908	0.063
	2/26/2009	5	0.028	0.091	1.336	0.081
LB319	2/15/2008	3.98	0.017	0.088	0.920	0.057
LB325	4/25/2008	4.05	0.015	0.054	0.527	0.159
	12/17/2007	5.93	0.011	0.141	0.521	0.174
	12/17/2007	5.94	0.018	0.120	0.678	0.252
LB326	3/27/2008	2.36	0.030	0.000	2.727	0.052
LB332	12/18/2008	3.48	0.010	0.000	0.569	0.073
LB342	2/15/2008	3.8	0.161	0.096	2.837	0.132
LB362	1/8/2009	5.16	0.011	0.095	0.574	0.105
	2/26/2008	3.32	0.028	0.096	0.967	0.105
76R	2/26/2009	4.3	0.006	0.132	0.773	0.050
	2/26/2009	3.42	0.014	0.000	0.773	0.064
	3/25/2009	3.99	0.018	0.130	0.800	0.107
126277750A	12/17/2007	5.48	0.006	0.000	0.082	0.029
132129225A	12/18/2008	4.56	0.012	0.095	0.472	0.157
132211311A	12/18/2008	2.64	0.019	0.051	0.459	0.124
26618298	3/12/2008	3.31	0.061	0.073	3.758	0.561
*O266182298	3/27/2008	3.83	0.067	0.039	4.118	0.466
126479146A	3/12/2008	6.64	0.014	0.055	0.262	0.028
126331466A	3/12/2008	4.1	0.005	0.054	0.120	0.083
HJ529	12/18/2008	4.45	0.036	0.073	2.971	0.166
Pappy	2/27/2008	2.43	0.040	0.141	1.083	0.702

Table 3. Results of more sensitive testing for organic compounds in EPGT conducted at SDSU. Concentration values (mean $\pm$ SE) rounded to three significant digits ($ng \cdot g^{-1}$ wet weight). Chlordanes represents sum of α- and γ- chlordanes and *trans-* and *cis*-nonachlors. *p,p'*-DDE is a main metabolite of DDT. PCBs represents sum of 35 PCB congeners. PBDEs represents sum of PBDE-47, 99, 100, 154, and 153. * indicates plasma.

Citation: Lewison et al. 2011. Chemical analysis of threatened and endangered species in San Diego

CONCLUSIONS

Stable Isotopes

In light of the highly urbanized nature of San Diego Bay, the elevated $\delta^{15}N$ of green turtle skin and habitat values depicted in the isoscape mapping suggest that this system is experience nitrogen enrichment, particularly in the southern portion of the bay. Indeed commercial shipyards, naval shipyards and storm drain runoffs have been documented to contain high levels of pollutants for this system (Fairey et al., 1998), and presuming these point sources of pollution are linked with sewage runoff, this could lead to an enrichment of ^{15}N in affected habitats. These suspected sources can be compared with the results of our isoscape mapping of nitrogen enrichment in eelgrass and algae species to inform potential management options for these sources.

Despite the spatial variation in ^{15}N, temporally, values appear to have remained stable. Kwak and Zedler (1997) profiled isotopic signatures of numerous marine species in the San Diego watershed, including most of the putative EPGT prey species included in this study, and in these instances, the 20 values reported therein were highly similar to our results, an encouraging similarity considering the decade between the two studies. With respect to $\delta^{13}C$, the results of Kwak and Zedler (1997) also indicate low isotopic variability. This consistency supports the temporal stability in isotope signatures of EPGT individuals over the past eight years.

This research effort yielded some surprising results regarding EPGT diet in San Diego Bay. While Hatase (2006) used SIA to show that green turtle in oceanic environments also consume an omnivorous diet, ours is the first study using SIA to show high levels of omnivory in a coastal neritic habitat. In addition to highlighting the importance of specific prey groups, our results underscore the need for eelgrass conservation in San Diego Bay, particularly in light of the nitrogen loading in this system. Seagrass beds in coastal waters provide habitat and shelter for invertebrates and fish including variety of marine snails (Orth, 1984; Kharlamenko et al., 2001), and it is likely that conservation of this habitat type would have broader value for many different species, including green turtles, in San Diego Bay.

Metal Contaminants

We detected several metals that are anthropogenically enriched in sediments of San Diego Bay eelgrass ecosystems, a finding that supports results from previous studies that attribute contamination to both historical and contemporary sources (Katz and Kaplan 1981, MacDonald 1994, Fairey et al. 1998, USDoN 1999). However, presence of anthropogenically enriched sediments did not uniformly correspond to bioaccumulation of trace metals in local biota, perhaps due to complex processes of bioavailability and physiological functions. Eelgrass was the strongest accumulator of metals across sites, likely because eelgrass accumulates metals via roots and blades, reflecting trace metals in the water column as well as in sediment (Coelho et al. 2009). Red and green algae exhibited weaker accumulation trends, which may be related to their lack of root systems. Soft-bodied invertebrates displayed the fewest accumulation trends although this may be the result of small sample sizes due to their patchy distributions. Given the differences in metal sources among sampled species, specific diet choice and foraging sites may be driving factors of metal exposure and bioaccumulation for EPGT. Thus, while sediment toxicity reference values are very useful for species in which bioaccumulation and toxicity are well documented and understood, they may not be representative or indicative of metal risks for higher order organisms that feed on multiple trophic levels, such as EPGT and CLT.

A review of metal concentrations in the CLT forage fish sampled revealed that the maximum concentrations of most metals tested fell below established risk levels for avian species (references in Zeeman 2004) with a few exceptions. However, maximum concentrations of lead, cadmium, selenium, vanadium and zinc exceeded levels associated with adverse effects in some bird species. Selenium in particular, has been associated with negative effects to bird fecundity (Beyer et al. 1996). Most interestingly, when compared with a previous seabird study conducted in the Salt Works region of the Bay (Zeeman et al. 2008), results from our study differed somewhat from tissue concentrations of iron, nickel and strontium and were very different for arsenic, cadmium, manganese, lead and vanadium. The differences observed in these values may be explained by the variability we detected per site and Bay region and likely point towards more localized sources of these elements in the San Diego Bay ecosystem. Similar to what was observed in the EPGT food web, bioaccumulation in the CLT food sources may be location-dependent and may also be influenced by shifts in prey availability. We expect that for many species at higher trophic levels in the Bay food web, bioaccumulation is driven by both spatial and species forage preferences. However, because metal accumulation was not studied directly in CLTs, this assertion is untested. Direct testing of CLT tissue is necessary to confirm that metals are accumulating in this species of conservation concern.

Organic Compounds

The presence of POPs serves as a clear signal of anthropogenic contamination because they are derived exclusively from manufactured man-made chemicals, while trace metals occur naturally but are toxic above certain thresholds (Bryan 1984). These pollutants can exert lethal and sublethal toxic effects in wildlife, including alteration of neurological and immune function, growth, and reproduction (Beyer et al. 1996). Compared to existing literature (Keller et al. 2004; Carlson 2006; Hermanussen et al. 2008; Swarthout et al. 2010; van de Merwe et al. 2010a,b), San Diego turtles had higher mean levels of chlordanes and p'p' DDE relative to all previous studies examined except for Kemp's Ridley's on the US Southeastern coast and one study of loggerheads in North Carolina (only the latter study was higher than San Diego for p'p' DDE). San Diego PBDEs were also higher than all other studies while PCBs fell within the range of values found in previous studies. The majority of these pollutants have already been identified as contaminants of concern for wildlife in San Diego Bay (Fairey et al. 1998), with DDT and possibly PBDEs linked to seabird reproductive failures (Zeeman et al. 2004). Many compounds detected in San Diego turtles have been banned in the United States for several decades, but remain as legacy pollutants in Bay sediments (Fairey et al. 1998; Deheyn and

Latz 2006). Of particular concern are PDBEs because they are still used prevalently in the U.S. as flame-retardants, despite a growing body of evidence that they have toxic and bioaccumulative effects (Hites 2004). Within this context, our results highlight the need for future monitoring of both contemporary and legacy pollutants in San Diego Bay wildlife.

The chemical analyses conducted during this project provide a robust baseline for future study of nitrogen enrichment and contaminant levels in sediment and a wide range of species in San Diego Bay. The isotope data was also a powerful technique to identify diet contributions and can be used to identify annual diet shifts. For EPGT, the data collected on this project provides the most accurate diet study for this species, to date. For CLTs, observed shifts in diet or foraging location may explain some of the variability in annual reproductive output. The contaminant analyses point to a level of impairment in many locations and for many species that exceeds established risk levels. However, testing to directly measure these compounds in CLTs and other at-risk seabird populations is needed to confirm the contaminant accumulation patterns observed in forage fish species.

One emerging message from this work is the need to account for spatial variability in isotope and contaminant analyses. We found clear differences in accumulation levels among sediment, plant species, invertebrates and higher-order animals. The spatial variability we detected points to differential risks of pollution and enrichment across the regions of the Bay. The difference in accumulation levels among samples highlights the potential limitations of contaminant risk assessments that are based on sediment or a single plant or invertebrate species at a single location. The dissimilarity among potential food items (prey species) and the long-lived species that consume them, such as the EPGT, points to the need for direct measurement of potential contamination risks in species of conservation concern.

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Seaport complex takes delivery of zero-emission hauling truck

The heavy-duty rig, which will transport cargo between the ports of L.A. and Long Beach and Inland Empire warehouses and distribution centers, runs on electric batteries powered by a hydrogen fuel cell.

By Ronald D. White, Los Angeles Times

July 23, 2011

An El Segundo company aims to help the nation's busiest seaport complex advance its green technology efforts by providing zero-emission trucks for heavy-duty hauling.

Executives from Vision Motor Corp. delivered a heavy-duty hauling truck Friday to one of the port complex's most important cargo haulers, Total Transportation Services Inc. of Rancho Dominguez.

The Tyrano class 8 rig looks like any other big rig, but a hydrogen fuel cell powers an electric drive, emitting only water from the tailpipe. The ports of Los Angeles and Long Beach are billing it as the world's first zero-emission heavy-duty hydrogen rig. If it performs to expectations during an 18-month test, Total Transportation plans to order at least 100 more.

Experts said the venture could set the stage for a new era in green cargo movement.

Fleets of zero-emission trucks with the range to deliver cargo to the Inland Empire's warehouses and distribution centers would "eliminate one of the principal objections neighbors and governments have when freight and logistics are a major part of the local economy — that's the problem of diesel emissions," said economist John Husing, whose firm, Economics & Politics Inc., tracks international trade.

The Tyrano uses a combination of technologies to operate with an expected range of 200 miles, said Rudy Tapia, vice president for business development for Vision Motor. The power flows through electric batteries, which are kept charged by a hydrogen fuel cell. No fossil fuels are used in the truck.

"Up and above the benefit of zero emissions, we at TTSI feel that this fuel format is the only true way to break our dependence on imported fuel. Hydrogen is the most abundant resource on the planet," said Vic La Rosa, president of Total Transportation , a hauling and logistics company that moves freight and provides warehousing and rail service and handles shipments through seaports in Los Angeles, Long Beach, San Diego, Seattle, Tacoma, Wash., and Norfolk, Va.

Getting Total Transportation onboard for the test was a big boost, said Martin Schuermann, chief executive of Vision Motor.

"It underlines our assumptions that there are multiple commercial applications for our hydrogen powered zero-emission big rigs in today's trucking industry," Schuermann said.

Officials at the ports of Los Angeles and Long Beach have a lot riding on the outcome. The nation's largest and second largest cargo container ports, respectively, put up $425,000 in seed money for the development of the Vision Motor truck through their joint Technology Assistance Program, which has an annual budget of $1.5 million. The program has funded several projects, including a hybrid diesel tugboat from Seattle-based Foss Maritime Co.

"We really want to see the truck put through the paces to see how durable the fuel cell system is," said Heather Tomley, director of environmental planning for the Port of Long Beach. "We're hoping that it works as well as they think it will."

In addition to the on-road Tyrano, Total Transportation will test a Vision Motor truck more like the common terminal tractor, designed to move containers inside the ports.

Kevin Maggay, air quality supervisor for the Port of Los Angeles, said its green technology efforts so far, including the introduction of fuels that pollute less than earlier versions, were just the beginning.

"We have made great strides in reducing emissions, but we need to go further and we have to find new technologies to get us there," Maggay said. "Clean diesel does not get us there."

Vision Motor's business plan may have tapped into a way to avoid the problem all small start-ups face — the inability to rapidly scale up to major factory production levels. It's not building the trucks. It's using Freightliner to provide the chassis and cab. It's not building the electric motor, which is made by Siemens. The fuel cell is made by Hydrogenics Canada. Vision Motor will deliver the proprietary software to make the systems work together, Tapia said.

"We go with best of breed for the components for the best performance and durability and for the lowest costs," Tapia said. "It's the most capital efficient way to go."

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LATHAM & WATKINS LLP

File No. 048876-0011

August 1, 2011

VIA EMAIL AND OVERNIGHT MAIL

Mr. Vicente Rodriguez
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123
vrodriguez@waterboards.ca.gov

Re: NASSCO's Comments on the Draft Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098)

Dear Mr. Rodriguez:

Designated Party National Steel and Shipbuilding Company ("NASSCO") submits the following comments regarding the Draft Environmental Impact Report ("DEIR") for the Shipyard Sediment Remediation Project ("Project"), State Clearing House Number 2009111098, publicly released by the California Regional Water Quality Control Board, San Diego Region ("Regional Board") on June 16, 2011. NASSCO is also concurrently submitting under separate cover additional comments on the DEIR prepared by Rick Bodishbaugh, Tom Ginn and Gary Brugger of Exponent, and Michael Whelan and David Templeton of Anchor QEA, which are intended to supplement this letter. O-3-1

Although we have numerous concerns with the analysis in the DEIR, NASSCO's key concerns are summarized as follows:

- **Monitored Natural Attenuation**: The DEIR fails to mention (much less evaluate) a monitored natural attenuation alternative to the Project, even though such an alternative was selected as the preferred remedy in the Detailed Sediment Investigation underlying Tentative Cleanup and Abatement Order R9-2011-0001 ("TCAO") and the associated Draft Technical Report ("DTR"), and notwithstanding that substantial evidence demonstrates that the monitored natural attenuation alternative will avoid all of the proposed Project's significant and potentially significant environmental impacts, obviate the need for the Project's detailed, costly and uncertain mitigation measures, and feasibly accomplish the Project Objectives in a reasonable period of time. O-3-2

- **Recontamination from Stormwater**: The DEIR does not disclose the past and continuing discharges of urban runoff from Chollas Creek and other sources to the Shipyard O-3-3

O-3

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Sediment Site ("Site"), even though the TCAO and DTR make clear that these discharges have contributed pollutants to sediments at the Site. This omission is compounded by the DEIR's failure to evaluate reasonably foreseeable impacts to the Site from recontamination, which would likely occur after the Project's contemplated dredging is completed given that stormwater discharges to the Site (unrelated to NASSCO) are uncontrolled. O-3-3

- **Hypothetical Baseline**: The DEIR states without analysis that existing sediment quality at the Site adversely impacts beneficial uses to aquatic life, aquatic-dependent wildlife and human health. But these statements are based on extremely conservative theoretical assumptions used to support the DTR's analysis, and have no relationship to the actual, *existing* conditions at the Site, as is mandatory for the "baseline" under the California Environmental Quality Act ("CEQA"). O-3-4

- **Bias In Favor of Convair Lagoon CDF Alternative**: More than 30% of the DEIR is devoted to consideration of the Convair Lagoon alternative (in addition to six appendices), while each of the other alternatives is evaluated in less than seven pages. The DEIR does not explain why the analysis is stacked in favor of the Convair Lagoon alternative, it does not disclose that the alternative is being championed by the San Diego Unified Port District ("Port District"), and it does not indicate why the Port District was allowed to submit a detailed analysis in support of its preferred alternative (which would create ten acres of waterfront property for the Port District with substantial corresponding financial benefits to it and substantial corresponding costs to the other Designated Parties). O-3-5

- **Proposed Mitigation Is Infeasible:** The DEIR introduces new mitigation requirements that were not evaluated in the TCAO/DTR's economic feasibility analysis, and which will add an estimated $11.8 to $18.3 million to the costs of remediating the Site. Because these measures were not evaluated under State Water Resources Control Board Resolution No. 92-49, Polices and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code section 13304 ("Resolution 92-49"), or California Water Code sections 13267 and 13307, and in any event will not pass muster under such analysis to the extent that it is conducted, the Regional Board lacks authority to impose these measures under the Porter Cologne Act and they are thus "legally infeasible" under CEQA. The additional costs also render certain of the measures, and implementation of the proposed Project as a whole, economically infeasible under CEQA. O-3-6

- **The Regional Board Cannot Mandate Cleanup Methods:** The proposed Project and alternatives (aside from the "no project" alternative) each purport to dictate the method by which cleanup levels at the Site are to be achieved. However, because the Regional Board's authority under the Porter Cologne Act is limited to prescribing cleanup levels rather than selecting methods to achieve those cleanup levels, (Water Code § 13360), the Project and the alternatives proposing remediation each are "legally infeasible" under CEQA because they cannot be adopted under the Porter Cologne Act. O-3-7

NASSCO's specific and detailed comments on the DEIR are set forth below.

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I. THE DEIR'S ALTERNATIVES ANALYSIS IMPROPERLY OMITS CONSIDERATION OF MONITORED NATURAL ATTENUATION

A. CEQA Requires Evaluation of Potentially Feasible Alternatives That Will Reduce Environmental Impacts

In order to be legally valid and fulfill the EIR's purpose to "foster informed decisionmaking and public participation," an EIR "**must** consider a reasonable range of potentially feasible alternatives" that would "avoid or substantially lessen any of the significant effects of the project." 14 Cal. Code Regs. ("CEQA Guidelines") § 15126.6(a) (emphasis added); *Center for Biological Diversity v. County of San Bernardino*, 185 Cal. App. 4th 866, 885 (2010) ("The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making."). The purpose of the alternatives discussion is to identify ways to reduce or avoid significant environmental effects, (*Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 47 Cal. 3d 376, 403 (1988)), and proposed alternatives must be discussed to the extent that they are able to implement most although not all of the identified project objectives. *See Mira Mar Mobile Community v. City of Oceanside*, 119 Cal. App. 4th 477 (2004). Further, "an in-depth discussion is required" of any alternative that is "at least potentially feasible." *Center for Biological Diversity*, 185 Cal. App. 4th at 883. O-3-8

An agency's selection of alternatives for evaluation in an EIR must be supported by a "reasonable basis," and an EIR is legally defective if it fails to include a reasonable explanation for excluding consideration of an alternative that would reduce environmental impacts and achieve most project objectives. *Center for Biological Diversity*, 185 Cal. App. 4th at 883. Moreover, the scope of the alternatives analysis is not subject to a "categorical legal imperative," rather "[e]ach case must be evaluated on its facts . . ." *Watsonville Pilots Ass'n v. City of Watsonville*, 183 Cal. App. 4th 1059, 1086 (2010).

B. The DEIR Was Required to Evaluate Monitored Natural Attenuation As an Alternative To The Project

1. Overview of The Monitored Natural Attenuation Alternative

Monitored Natural Attenuation ("MNA") refers to the reliance on natural processes to achieve site-specific remedial objectives. As explained in the DTR, MNA:

> [i]s a contaminated sediment remedy that depends on un-enhanced natural processes to reduce risk to human and environmental receptors to acceptable levels. [MNA] involves leaving the contaminated sediment in place and allowing the ongoing aquatic processes to contain, destroy, or otherwise reduce the bioavailability of the sediment pollutants in order to achieve site specific remedial action objectives. Underlying MN[A] processes may include biodegradation, biotransformation, bioturbation, diffusion, dilution, adsorption, volatilization, chemical reaction or destruction, resuspension, and burial by clean sediment. O-3-9

DTR, at 30-2.[1]

"Monitoring is fundamental to the remedy in order to assess whether risk reduction and ecological recovery by natural processes are occurring as expected." *Id.* Thus, while dependent upon natural processes, MNA is not a "no-action" remedy, as it must be used within the context of a carefully controlled and monitored cleanup approach.

Although MNA is completely ignored in the DEIR, it was selected as the preferred alternative remedy out of the three studied in detail in the expert-prepared Detailed Sediment Investigation underlying the TCAO/DTR.[2] NASSCO and Southwest Marine Detailed Sediment Investigation ("Shipyard Report"), at 1-2 – 1-4. The Shipyard Report also provided the data underlying the TCAO and DTR. TCAO, at ¶ 13. The Shipyard Report concluded that "natural recovery of benthic macroinvertebrate communities would be expected to occur within a 3-5 year period" if off-site sources were to be controlled, and that MNA "is the only alternative that provides acceptable effects on beneficial uses and is technically and economically feasible." Shipyard Report, at 15-3 and 19-12, 19-13. The Shipyard Report and its associated sediment investigation was "detailed" and conducted with substantial oversight and input from Regional Board staff, stakeholders, and the public. Shipyard Report, at 1-2 – 1-4 (summarizing the directives and guidance provided by Regional Board staff throughout the planning and execution of the sediment investigation and Shipyard Report); Deposition of David Barker ("Barker Depo."), at 80:2 – 80:22, 82:3 – 82:4, 82:14 – 82:23 (discussing the scope, quality, and extent of Regional Board staff involvement in the sediment investigation); Deposition of Tom Alo ("Alo Depo."), at 402:21 – 403:18 (acknowledging that the Regional Board had significant oversight and involvement in the process of developing and conducting the sediment investigation and Shipyard Report); DTR, at 13-2 – 13-3 (summarizing Regional Board staff and stakeholder involvement in the sediment investigation). O-3-10

The MNA alternative includes "sampling to assess naturally occurring changes in sediment conditions and biological communities," consisting of long-term monitoring, with periodic surveys and sample collection throughout areas of the Site not otherwise subject to disturbance, in order "to track sediment quality and benthic community conditions over time." Shipyard Report, at 17-1. More specifically, the alternative requires monitoring of physical, chemical, and biological parameters in four separate sampling events during years 1, 2, 5, and 10, and additional monitoring beyond year 10, if necessary, depending upon the degree to which natural recovery has occurred after 10 years. Shipyard Report, at 16-1. Monitoring stations would be located every 2 to 5 acres throughout the Site, depending on the chemical concentrations currently existing in the sediments (i.e., within the specified range, monitoring O-3-11

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1 Unless otherwise indicated, all documents or information cited in this letter are already contained within the Shipyard Administrative Record ("Administrative Record"). Accordingly, NASSCO incorporates herein those documents and information by this reference, and is not resubmitting them with this letter.

2 The "MNA alternative" discussed in this letter refers to the monitored natural attenuation alternative evaluated in and recommended by the Shipyard Report.

stations would be more closely spaced in areas with higher chemical concentrations.). *Id.*, at 16-1 - 16-2. Each monitoring event would include bathymetry and core sampling for sediment thickness and physical properties (including particle size distribution, total solids, and TOC); monitoring of a selected set of metals, as well as butyltins, PCBs, and PAHs; and amphipod toxicity tests and benthic macroinvertebrate community assessments. *Id.* Reports would be prepared and submitted to the Regional Board after each monitoring event. *Id.* O-3-11

The DEIR fails to offer *any* explanation, much less a "reasoned" explanation, for completely omitting discussion or consideration of the MNA alternative. Because substantial evidence from multiple sources demonstrates that MNA can achieve the Project Objectives while avoiding the proposed Project's significant environmental impacts (and the need to rely on detailed, costly and uncertain mitigation measures), as discussed below, CEQA requires evaluation of MNA as an alternative remedy. Exclusion of MNA from the DEIR frustrates CEQA's goal of informed decision making and meaningful public participation, because it precludes the public from commenting on, and the Regional Board from considering and potentially adopting, a remedy that will avoid the Project's significant environmental impacts while achieving its objectives in a timely and cost-effective manner. Any doubt by Regional Board staff about whether MNA should have been considered is put to rest conclusively by the fact that it was the Shipyard Report's preferred remedy, mandating its inclusion in any "reasonable range" of alternatives based on the specific facts of this proceeding. *Watsonville Pilots Ass'n,* 183 Cal. App. 4th at 1086. O-3-12

2. The Monitored Natural Attenuation Alternative Will Feasibly Attain Project Objectives

Pursuant to the Regional Board's mandate, the primary purpose of the Project is to protect beneficial uses in San Diego Bay for human health, aquatic life, and aquatic-dependent wildlife, and to ensure the best water quality that is "reasonable." DEIR, at 3-3 and 3-4. Project Objectives also include the implementation of a sediment cleanup that is consistent with the TCAO, including the attainment of cleanup levels set forth in the TCAO, which will have long-term effectiveness while minimizing environmental impacts and disruptions on the use of shipyard and other San Diego Bay-dependent facilities. DEIR, at 3-4 and 3-5. As discussed below, substantial evidence demonstrates that natural recovery is already occurring at the Site, and that the MNA alternative is capable of fully satisfying Project Objectives in a feasible manner. O-3-13

The DTR acknowledges that "a range of natural recovery processes are active at the Shipyard Sediment Site." DTR, at 30-3. As detailed in NASSCO's May 26, 2011 comments on the TCAO and DTR,[3] record evidence shows that natural attenuation is already occurring at the O-3-14

[3] For the sake of brevity, and because NASSCO has already submitted detailed comments on the TCAO/DTR that are included within the Administrative Record, NASSCO will reference its prior comments in this letter rather than re-stating those comments in full. All of NASSCO's prior comments pertaining to the issues addressed in this letter are incorporated herein by this reference.

Site for all five primary contaminants of concern ("primary COCs") identified in the TCAO,[4] and that, if allowed to continue in lieu of dredging, will achieve the Regional Board's cleanup goals within a reasonable period of time. *See* Comments On The San Diego Regional Water Quality Control Board Cleanup Team's September 15, 2010 Tentative Cleanup And Abatement Order No. R9-2011-0001, Draft Technical Report, And Shipyard Administrative Record ("NASSCO's May 26 Comments"), at 40-41. Sampling conducted in 2009 indicates that the surface-weighted average concentrations ("SWACs")[5] for the five primary COCs decreased substantially in the monitored locations during the seven years since the data for the Shipyard Report was collected in 2002, and, in many cases, are now only slightly higher than post-remedial (i.e., dredging) SWACs in the TCAO. This suggests that the cleanup goals articulated in the TCAO can be achieved in a reasonable time through the MNA alternative, without incurring the significant environmental, economic, and social impacts that are certain to result from dredging. Barker Depo. Exhibit No. 1228. In fact, among the locations sampled in 2009, which were selected because they are considered representative of site-wide conditions, ***three of the five SWACs for primary contaminants of concern already have attained the post-remedial SWACs that would be required by the TCAO***, and the remaining two are only slightly higher. *Id.*; *see also* Barker Depo., at 335:22 – 337:13 (confirming same); *see also* Barker Depo., at 303:5 – 304:4 (acknowledging that MNA could eliminate risks to benthic organisms, and improve protection for all beneficial uses within five years). O-3-14

Regarding the efficacy of natural attenuation, evidence within the Administrative Record demonstrates that sediments buried below approximately 10 cm are not "biologically available,"[6] and thus do not impact the water or marine environment. Evidence also shows that new O-3-15

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[4] The primary COCs are copper, mercury, HPAHs, PCBs, and TBT. DEIR, at 4.3-3 and 4.3-4.

[5] A "SWAC" approach, which refers to calculating the average concentration of a contaminant in the sediment at the surface, was used to assess potential impacts to human health and aquatic-dependent wildlife at the Site. DTR, at 32-7. The TCAO and DTR require that sediments be remediated to meet specified cleanup levels, articulated as post-remedial SWACs for the primary COCs, which levels have been determined by Regional Board staff not to pose an unreasonable health risk to humans or aquatic dependent wildlife. *Id.* Under the DTR's approach, once these extremely conservative target SWACs are met, through MNA or otherwise, the sediments will be considered fully protective of beneficial uses.

[6] The term "biologically available" refers to the potential for a chemical to enter into ecological or human receptors. Importance of Bioavailablity for Risk Assessment of Sediment Contaminants at the NASSCO Site – San Diego Bay, Herbert E. Allen, Ph. D., March 11, 2011 ("Allen Report"), at 2. Sediments below the "biologically active zone"—which refers to the surface layer of sediment in which bioturbation and mixing occurs, and where the exposure potential is greatest for invertebrates and fish—are not "bioavailable." The biologically active zone comprises approximately the top 10 cm of sediment; however, the most biologically active zone typically occurs within the top 0-2 cm. Deposition of David Gibson, at 156:3 – 157:12; Shipyard Report, at 15-3.

sediments are deposited at a rate of 2 cm per year, suggesting that new sediments will bury any residual contamination within a reasonable period of time. Deposition of David Gibson ("Gibson Depo."), at 156:3 – 157:12 (agreeing that sediments buried below approximately 10 cm are below the "biologically active zones," and therefore are not biologically available); Regional Board Cleanup Team's Response to NASSCO's Requests For Admission, at RFA No. 57 (agreeing that new sediments are deposited at a rate of 2 cm/year at the Shipyard Sediment Site); Barker Depo., at 292:6 – 292:22 (agreeing that Site characteristics, including active deposition of sediments at 1-2 cm per year, limited elevated concentrations of chemicals in certain areas of the shipyard, and that the limited bioavailability of the chemicals to benthic organisms favors the potential effectiveness of natural recovery). O-3-15

Additionally, "chemical biodegradation;[7] sediment accumulation, mixing, and burial; and [concomitant] benthic fauna recolonization" are other natural processes that are expected to "lead to changes in aquatic life conditions" at the Site. Shipyard Report, at 18-4 ("Natural recovery will occur through breakdown of organic chemicals and through burial and dilution of chemical concentrations by newly deposited sediment."). O-3-16

3. The Monitored Natural Attenuation Alternative Will Avoid All Of the Proposed Project's Significant and Potentially Significant Impacts

The DEIR recognizes that each of the Project's potential environmental impacts results from "construction or dredging activity," and that, in the absence of construction or dredging, no temporary construction traffic or noise would occur, and there would be no air quality impacts, contribution to global warming, objectionable odors, risk of accidental spills during cleanup activities, impacts to marine species or communities, or increased potential impacts related to hazards or marine biological resources. DEIR, at 5-10, 5-25. The same is true with respect to all alternatives considered except for the "no-project" alternative. O-3-17

Because it involves no construction or dredging, it is undisputed that implementing the MNA alternative will avoid all of the Project's significant environmental impacts to air quality, as well as its potentially significant effects to biological resources, water quality, hazardous materials and traffic, all of which are tied specifically to dredging. The MNA alternative would also avoid the Project's proposed destruction of highly sensitive eelgrass and mature benthic communities, and obviate the Project's mandatory reliance on numerous mitigation measures which are costly and uncertain, and which will cause their own environmental impacts requiring O-3-18

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[7] Site constituents and primary COCs such as TBT and PAHs are known to naturally degrade relatively quickly in the marine environment. *See* Barker Depo, at 335:22 – 336:10 (testifying that TBT undergoes rapid natural degradation in the environment, and confirming that the 2009 testing results are consistent with previous findings concerning the rapid biodegradation of TBT); Shipyard Report, at 15-3 ("Petroleum hydrocarbons . . . weather relatively quickly. The most toxic components of petroleum hydrocarbons are broken down in weeks to months in the marine environment. As a result, remediation of subtidal sediments is ordinarily not required even after a major oil spill. A relatively short period of natural recovery is therefore expected to address any effects of petroleum hydrocarbons.").

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mitigation (NASSCO also believes that many of these mitigation requirements are infeasible or otherwise inappropriate, and may not be imposed by the Regional Board, as detailed below, such that certain of the impacts deemed potentially significant would need to be treated as significant if the proposed Project is adopted). In this way, the environmental impacts associated with the MNA alternative would be equivalent to those of the "no project/no development alternative" (Alternative 1) studied in the DEIR, which was found to be the "environmentally superior" alternative "because the direct physical effects of the proposed project **would not occur**." DEIR, at 5-25 (emphasis added). O-3-18

A wealth of evidence elsewhere in the Administrative Record likewise shows that the MNA alternative will not implicate the environmental and other costs associated with dredging. *See, e.g.,* Shipyard Report, at § 19 (comparing a variety of alternatives and concluding that dredging alternatives "provide little or no incremental benefit over baseline conditions but impose significant impacts on shipyard operations and on the local community, and do so at a high cost"); *see also* Barker Depo., at 306:22 – 307:21 (acknowledging the existence of healthy benthic communities at the Site, agreeing that MNA would preserve those communities and avoid the possible risk of colonization by invasive species, and recognizing that these factors weigh in favor of selecting MNA over dredging), 916:22 - 917:2 (avoiding destruction of the mature benthic communities and eelgrass beds located at the Site would be one benefit of selecting the MNA alternative). O-3-19

By contrast to natural recovery, the DTR confirms that dredging "destroys the benthic community," with no guarantee that it will be recolonized successfully. DTR, at 34-11; *see also* Barker Depo., at 306:22 – 307:21. Dredging destroys other biota as well, such as eelgrass, which may require more than five years to become reestablished and mature to the point that they can sustain the original community. Shipyard Report, at 15-10, 18-9 – 18-10. Moreover, "eelgrass is currently found primarily in areas with water depths less than 10 ft and may not be able to reestablish itself in the deeper water that would exist in the dredged areas" regardless of any mitigation that is imposed. Shipyard Report, at 18-12. Critically, the MNA alternative also avoids the very real possibility that the Project will be implemented and substantial amounts of sediment dredged, only to have the dredged areas recontaminated by ongoing and uncontrolled stormwater discharges to the Site from Chollas Creek and elsewhere. As noted, natural recovery is already occurring at the Site even in the presence of continuing sources of stormwater discharges to the Site. The TCAO and DTR recognize that these stormwater discharges continue to affect sediments at the Site, (TCAO, at ¶¶ 4, 11, 30, 32, 33; DTR, at §§ 4.7, 11.6, 30, 32, 33), although the DEIR failed to evaluate this reasonably foreseeable significant impact. O-3-20

Given that source control is a critical component of any remedy that is selected,[8] it certainly makes more sense to ensure that source control is achieved before incurring the significant costs associated with dredging, since recontamination may obviate any beneficial O-3-21

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[8] According to EPA Guidance, "[i]dentifying and controlling contaminant sources typically is critical to the effectiveness of any [ ] sediment cleanup." Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, EPA-540-R5-05-012 (Dec. 2005), at 2-20.

O-3

results of the dredging, and since natural recovery is already occurring at the Site even in the presence of ongoing stormwater contamination. The MNA alternative would allow source control to be implemented, and continued monitoring could determine whether the TCAO's cleanup levels are achieved through natural recovery and without the need for dredging. If dredging ultimately is required, which NASSCO does not believe it will be, that dredging would be more effectively implemented after stormwater discharges to the Site are controlled. O-3-21

4. Monitored Natural Attenuation is Not a "No Action" Remedy

As the Cleanup Team acknowledges, *"[m]onitored natural recovery is not a passive, no-action, or no-cost remedy*:

> While it does not require active construction, effective remediation via MN[A] relies on a fundamental understanding of the underlying natural processes that are occurring at the site. <u>MN[A] remedies require extensive risk assessment, site characterization, predictive modeling and monitoring to verify source control, identify natural processes, set expectations for recovery, and confirm that natural processes continue to reduce risk over time as predicted</u>.

O-3-22

DTR, at 30-2 (emphasis added); *see also* Shipyard Report, at 17-1 (describing detailed monitoring requirements associated with MNA). Indeed, the DEIR recognizes that "[r]emedial actions may include . . . natural recovery." DEIR, at 3-5.

In addition to detailed monitoring requirements, the MNA alternative also contemplates active remediation (or other action) *if necessary* based on the monitoring results. *E.g.*, Barker Depo., at 916:16 – 917:17 (testifying that if MNA is selected and does not work as expected, the Regional Board could impose dredging or another remedy). Thus, the "no project/no development" alternative, which "would not implement the Tentative CAO," (DEIR, at 5-9), and would not include any monitoring or associated requirements, plainly is distinguishable from implementing the MNA alternative. O-3-23

By way of analogy, in *Watsonville Pilots Association v. City of Watsonville*, the court rejected an agency's claim that the EIR's analysis of a no project alternative in the context of a general plan approval constituted sufficient consideration of a reduced development alternative, because "the environmental impacts of the project were primarily due to the impacts of growth itself" and "the alternatives analysis should have included an assessment of a reduced growth alternative that would meet most of the objectives of the project but would avoid or lessen these significant environmental impacts." 183 Cal. App. 4th at 1089-90. Instead, "[b]ecause . . . the 'no project' alternative would not create *any* plan for the future . . . it did not serve the purpose that a reduced development alternative should have served . . . Analysis of such an alternative would have provided the decision makers with information about how most of the project's objectives could be satisfied without the level of environmental impacts that would flow from the project." *Id.* at 1090. Accordingly, the city's certification of the EIR was set aside. O-3-24

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Here, because taking "no action" would not implement the TCAO or serve the purposes of the MNA alternative, an "in-depth discussion" of the MNA alternative is required. *Center for Biological Diversity*, 185 Cal. App. 4th at 883. O-3-24

C. The Monitored Natural Attenuation Alternative Should Be Adopted

As explained, NASSCO believes that CEQA compels the DEIR to evaluate the MNA alternative before the Regional Board may approve the proposed Project. More importantly, however, the Regional Board should adopt the MNA alternative instead of the Project because MNA provides the opportunity to feasibly accomplish Project Objectives, in a reasonable period of time, without the environmental impacts, costs and economic and social disruptions that will result from the contemplated dredging of 143,000 cubic yards of sediment. Indeed, the Regional Board is prohibited from adopting the proposed Project instead of the MNA alternative, due to CEQA's "substantive mandate" that agencies refrain from approving projects with significant environmental effects if there are feasible alternatives that can avoid those effects. *Mountain Lion Foundation v. Fish & Game Comm.*, 16 Cal. 4th 105, 134 (1997). O-3-25

Upon request, NASSCO will be pleased to provide the Regional Board with any further information regarding the MNA alternative that it may wish to consider, in addition to the large volume of supporting evidence already included within the Administrative Record; and, as explained below, NASSCO will also provide a detailed analysis of the MNA alternative for inclusion in a recirculated DEIR. O-3-26

II. THE DEIR FAILS TO DISCUSS STORMWATER DISCHARGES TO THE SITE OR REASONABLY FORESEEABLE IMPACTS FROM RECONTAMINATION

A. An Accurate Description of the Project's Environmental Setting Is Critical to An Accurate Assessment of Impacts and Alternatives

An EIR is not required unless a proposed activity may result in a "significant effect on the environment." CEQA § 21100(a). Significant environmental effects are defined as substantial or potentially substantial adverse changes in the environment. CEQA §§ 21068, 21100(d); CEQA Guidelines § 15382. The "environment" for the purposes of CEQA analysis refers to the "the physical environmental conditions in the vicinity of the project" – normally "as they *exist* at the time the notice of preparation [for the EIR] is published" – and this environmental setting is referred to as the "baseline" against which the potential impacts of a proposed project are measured. CEQA Guidelines § 15125(a). In order to assess whether a project will have a potentially significant impact, the potential effects of a proposed activity are measured against this existing conditions "baseline." CEQA Guidelines § 15126.2(a) ("In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the *existing* physical conditions in the affected area as they *exist* at the time the notice of preparation is published . . .") (emphasis added). O-3-27

Because an EIR "must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed . . . in the full environmental context," (CEQA Guidelines § 15125(c)), an EIR is invalid if its description of the

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environmental setting is in any way deficient. *Cadiz Land Co. v. Rail Cycle, L.P.*, 83 Cal. App. 4th 74, 87 (2000) ("If the description of the environmental setting of the project site and surrounding area is inaccurate, incomplete or misleading, the EIR does not comply with CEQA."). This is because an "inadequate description of the environmental setting for the project" makes "a proper analysis of project impacts [] impossible." *Galante Vineyards v. Monterey Peninsula Water Management Distr.*, 60 Cal. App. 4th 1109, 1122 (1997). O-3-27

B. The DEIR Ignores Ongoing Sources of Contamination to the Site and Associated Impacts From Recontamination

The DEIR's description of the environmental setting completely ignores discharges of urban runoff to the Site from Chollas Creek, as well as stormwater discharges to the Site via storm drains SW4 and SW9, all of which are continuing and uncontrolled.[9] Because substantial evidence makes clear that these on-going discharges contribute pollutants to the sediments at the Site, and thus present a reasonable likelihood that the Site could be recontaminated after the Project's contemplated dredging, the DEIR's decision to exclude them from the environmental setting is improper as a matter of law and also precludes a legally adequate consideration of environmental impacts and alternatives. *See, e.g., San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus*, 27 Cal. App. 4th 713, 725-29 (1994) (environmental setting invalid as a matter of law, and rendered inadequate the impact analysis and mitigation findings, where the EIR failed to discuss a nearby wildlife preserve). O-3-28

As discussed in NASSCO's May 26 Comments, and stated clearly in the TCAO and DTR (and the supporting technical studies cited in the DTR),[10] substantial evidence shows that Chollas Creek discharges have contributed (and will continue to contribute) to the accumulation of pollutants observed in marine sediments at the Site; and, further, that the discharge of contaminants from Chollas Creek is not expected to be fully controlled for decades. May 26 Comments, at 35-39; *see also* TCAO, at ¶¶ 4 and 10 ("during storm events, storm water plumes toxic to marine life emanate from Chollas Creek up to 1.2 kilometers into San Diego Bay, and contribute to pollutant levels at the Shipyard Sediment Site."); DTR, at 4-1, 4-14 – 4-15 (confirming that the toxic plume of contaminated stormwater from Chollas Creek during rain events has been shown to extend more than a kilometer into San Diego Bay, including the area within NASSCO's leasehold, and contributes an array of pollutants to the Site); Deposition of Craig Carlisle ("Carlisle Depo."), at 200:5-200:13 (confirming that Chollas Creek releases contributed to sediment contamination at the Site); Barker Depo., at 921:14 – 922:15 (confirming that storm water outflows from Chollas Creek have contributed to the accumulation of pollution O-3-29

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[9] Pollutants in these discharges include metals, such as arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc; TSS; sediment; petroleum products; and synthetic organics, such as pesticides, herbicides, and PCBs. DTR, at 4-6.

[10] DTR, at § 4.7.1.3 (collecting studies concluding that toxic storm water flows from Chollas Creek impact the sediments at the Site, including Schiff (2003); Katz (2003); and Chadwick, *et al.* 1999. Sediment Quality Characterization - Naval Station San Diego Final Summary Report. U.S. Navy Technical Report 1777.

in marine sediment at the Site, and that these outflows reach the inner portion of NASSCO's leasehold), 923:8 – 923:15 (confirming that Stations NA19, NA06, NA15 and NA17 within the Site are potentially subject to influence from Chollas Creek); Carlisle Depo., at 104:5 – 105:3 (same). The TCAO and DTR also specifically identify urban runoff from SW4 and SW9 as sources contributing to sediment contamination at the Site. TCAO, at ¶¶ 4 and 10; DTR, at § 4; *see also, e.g.,* Carlisle Depo., at 102:23 – 103:21 (concluding that chemicals discharged from SW9 impact the area to be addressed in the TCAO); 207:2 – 207:7. O-3-29

Because these sources are continuing, logic dictates against dredging sediments at the Site until the sources are controlled, given the potential for subsequent recontamination. Indeed, the Shipyard Report concluded that "remediation of shipyard sediments prior to control of contaminant sources would be premature. Remediation would be ineffective because the shipyard leaseholds would be recontaminated by Chollas Creek and storm drain effluent." Shipyard Report, at 13-3. O-3-30

Moreover, members of the Cleanup Team have acknowledged it is "probable" that discharges from Chollas Creek will remain uncontrolled for the foreseeable future. Deposition of Benjamin Tobler ("Tobler Depo."), at 90:6 – 92:5. No reductions are required under the Chollas Creek TMDL for metals[11] until **2018**, and full compliance is not required until October **2028**. RWQCB Resolution No. R9-2007-0043, at ¶ 13; Barker Depo., 925:19-927:25. And it is unlikely that full compliance with the TMDL will be achieved even within the twenty-year timeframe set forth in the TMDL, because existing technology is simply insufficient and cost-prohibitive. Tobler Depo., at 90:6 – 92:5 ("[W]ithout getting into space-age technology, which is extremely cost-prohibitive, the only possible fix for the problem is a system of sand filters. Sand filters do filter out metals, but even sand filters only get you into the general ballpark for meeting compliance. In other words, the best sand filters right now only just barely get you to the ballpark of compliance. There's no margin of safety with it."). Thus, according to Regional O-3-31

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[11] Since 1994, Chollas Creek storm water samples have frequently exceeded Basin Plan narrative water quality objectives for toxicity, and California Toxics Rule criteria for copper, lead, and zinc. DTR, at 4-12. As a result, Chollas Creek was placed on the Clean Water Act section 303(d) List of Water Quality Limited Segments in 1996 for cadmium, copper, lead, zinc and toxicity, with zinc, copper, and diazinon subsequently identified as causes of the observed toxicity. Chollas Creek TMDL for Metals, Background, (available at http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekmetals.shtml). Chollas Creek was also designated as a priority hot spot due to the presence of copper, DDT, chlordane and diazinon in the sediments, and the presence of impacts to aquatic life. RWQCB, Proposed Regional Toxic Hot Spot Cleanup Plan (Dec. 1997), at 1-16; Shipyard Report, at 1-16 – 1-17. To address these problems, TMDLs were adopted for diazinon and metals in Chollas Creek, and the Regional Board is currently in the process of developing a TMDL for PCBs, PAHs, and chlordane at the mouth of Chollas Creek. *Id.* The Chollas Creek TMDL for metals allocates quantitative limits for point and nonpoint discharges of copper, lead, and zinc, with the goal of ensuring that the capacity of the waterbody to assimilate pollutant loading is not exceeded.

Board staff, it is "probable" that full compliance will not be achieved, even after 20 years and significant infrastructure improvements, "unless technology comes to the rescue." O-3-31

While it is undisputed that stormwater discharges are reaching the Site and have contributed to sediment contamination at the Site, and that Regional Board staff are well aware of same, the DEIR fails even to mention these sources of pollution, much less address the potential for recontamination. This oversight is particularly egregious given that EPA and Regional Board policies concerning sediment remediation each call for source control prior to any active remediation. Contaminated Sediment Remediation Guidance for Hazardous Waste Sites, EPA-540-R5-05-012 (Dec. 2005) ("Contaminated Sediment Remediation Guidance"), at 2-21 ("Generally, significant continuing upland sources … should be controlled to the greatest extent possible before sediment cleanup."); State Water Resources Control Board Resolution No. 92-49, at III. E.; EPA's Contaminated Sediment Management Strategy, EPA-823-R-98-001 (Apr. 1998), at 54 (recognizing pollution prevention and source control as methods that will allow contaminated sediments to recover naturally without unacceptable impacts to beneficial uses). In fact, EPA Guidance specifically provides that "project managers should consider the potential for recontamination and factor that potential into the remedy selection process" "***before any sediment action is taken***." Contaminated Sediment Remediation Guidance, at 2-21 (emphasis added). O-3-32

This Regional Board and its staff are certainly aware of the need for source control prior to active remediation, given, among other things, the experience at the Convair Lagoon site in San Diego Bay, where significant funds were expended to construct a cap to remediate PCBs, only to subsequently find PCBs on top of the cap, apparently due to incomplete source control (among other potential causes). *E.g.*, Barker Depo., at 183:22 – 183:25. Ironically, the DEIR recognizes the potential for recontamination in its analysis of the Convair Lagoon alternative, noting the prior history at Convair Lagoon and explaining that the current Convair Lagoon CAO requires discharges to be abated, to the satisfaction of the State Board, before any further remedial actions may be conducted at Convair Lagoon. DEIR, at 5-35, 5-208, 5-211, 5-225 ("The CAO states that soil and groundwater must be cleaned up and waste discharges abated prior to conducting remedial actions in Convair Lagoon and San Diego Bay to prevent potential recontamination of the marine sediments in the bay."). Inexplicably, however, the DEIR simultaneously fails even to mention potential recontamination in relation to the proposed Project. *See also* Deposition of Cynthia Gorham, at 62:4 – 62:23 (acknowledging that dredging prior to source control may lead to recontamination). O-3-33

The DEIR also ignores other potential sources of recontamination that could occur after the Project's contemplated dredging. For example, while the DEIR concedes that resuspension of sediment caused by dredging related ship/barge movements is a potentially significant impact, (DEIR, at 4.3-15), it wholly fails to consider resuspension from non-dredging related ship movements. *See also* DEIR, at 4.3-15 (discussing potential for resuspended sediment to be introduced into the water column during placement of silt curtains). O-3-34

The DEIR's failure to discuss urban runoff/stormwater discharges to the Site and the potential for Site recontamination precludes a proper consideration of the Project's potential environmental impacts or comparison of alternatives, and renders the DEIR invalid. O-3-35

C. The Proposed Project May Not Feasibly Attain Project Objectives Due to the Likelihood That The Site Will Be Recontaminated After Dredging

Among others, the Project includes an objective of implementing a cleanup plan "that will have long-term effectiveness." DEIR, at 3-5. Even setting aside the proposed Project's significant environmental effects and questions regarding the necessity of the contemplated dredging or the efficacy of related mitigation measures, the proposed dredging may not ultimately be effective, or have "long-term effectiveness," if the dredged areas are subsequently recontaminated by ongoing sources of contamination to the Site. This is another reason why the DEIR must describe those sources and analyze the reasonably foreseeable and potentially significant impacts from recontamination, and identify any mitigation measures or alternatives to address this impact. O-3-36

Potential recontamination of the Site also weighs in favor of adopting the MNA alternative, which would allow source control to be addressed prior to any dredging, while confirming whether natural recovery is achieving the cleanup levels in the TCAO. O-3-37

III. THE BASELINE DOES NOT REFLECT EXISTING CONDITIONS

A. The Baseline Must Be Premised On *Existing* Physical Conditions

As noted, potentially significant impacts are assessed in an EIR by measuring the potential effects of a proposed activity against a "baseline." CEQA Guidelines § 15126.2(a) ("In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the *existing* physical conditions in the affected area as they *exist* at the time the notice of preparation is published . . .") (emphasis added). Regarding the selection of a "baseline," the California Supreme Court recently confirmed that the lead agency must use "existing physical conditions." *Communities for a Better Env't v. South Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 316, 319, 321 n. 7 (2010) (proper baseline for determining whether there would be significant environmental effects from emissions caused by proposed modifications to an oil refinery was the refinery's current existing operations, rather than its maximum permitted operations); *see also Eureka Citizens for Responsible Government v. City of Eureka*, 147 Cal. App. 4th 357, 370 (2007) ("environmental impacts should be examined in light of the environment as it exists when a project is approved"). O-3-38

"Case law makes clear that '[a]n EIR must focus on impacts to the existing environment, *not hypothetical situations*.'" *Sunnyvale West Neighborhood Ass'n v. City of Sunnyvale*, 190 Cal. App. 4th 1351, 1373 (2010) (emphasis added). This is because "[a]n approach using hypothetical . . . conditions as the baseline results in 'illusory' comparisons that 'can only mislead the public as to the reality of the impacts and subvert full consideration of the actual environmental impacts,' a result at direct odds with CEQA's intent." *Id.* at 1374. "It is only against [a proper] baseline that any significant environmental effects can be determined." *Id.* at 1373. O-3-39

Agencies possesses discretion to decide how the existing physical conditions can most realistically be measured, so long as that determination is supported by substantial evidence. O-3-40

Communities for a Better Environment, 48 Cal. 4th at 328. "[T]he date for establishing a baseline cannot be a rigid one. Environmental conditions may vary from year to year and in some cases it is necessary to consider conditions over a range of time periods." *Id.* at 327-28. O-3-40

B. The DEIR's Description of Sediment Quality at the Site Is Based On Hypothetical Assumptions Used In the TCAO and DTR

Based on the most cursory purported description of sediment quality at the Site, (DEIR, at 4.3-2; 3-3), the DEIR assumes (without providing any factual or analytical support) that Site sediments present risks to aquatic life, aquatic-dependent wildlife and human health beneficial uses. These assumptions color the entire CEQA review, including the Project Objectives and the analysis of alternatives and mitigation measures, and go to the heart of the decision whether the proposed Project should be pursued notwithstanding its undisputed significant and potentially significant environmental impacts. It is clear that the DEIR premises its statements regarding sediment quality on the TCAO and DTR, which the Project is designed to implement. But the TCAO's conclusions of risk to beneficial uses at the Site are predicated on assumptions that are overly conservative and unrealistic—by design and as admitted by the Cleanup Team, with an intent of being overly protective. Regardless of whether or not the Regional Board's highly conservative assumptions are appropriate in the context of the Project's evaluation under the Porter Cologne Act (NASSCO believes they are not), such assumptions cannot form a proper baseline under CEQA, as a matter of law, because CEQA mandates that the baseline reflect actual, existing conditions rather than hypothetical or theoretical scenarios. *Sunnyvale*, 190 Cal. App. 4th at 1373. O-3-41

A wealth of information in the Administrative Record shows that existing conditions at the Site present no risk to aquatic life, aquatic-dependent wildlife or human health beneficial uses. Rather, actual conditions are protective of beneficial uses, and the "risks" identified in the DTR were manufactured by compounding a series of overly conservative and unrealistic assumptions. *See* NASSCO's May 26 Comments, at 7-34. In fact, the Shipyard Report concluded that Site conditions were protective of beneficial uses based on sampling conducted in 2002-03;[12] and, as explained above, supplemental 2009 sampling (the most recent data available) demonstrates that natural attenuation has since reduced further the SWACs for primary COCs at the Site, and that for three of the five primary COCs the SWACs are already below the post-remediation levels required by the TCAO at the locations monitored in 2009. Shipyard Report, at 18-4; Barker Depo., Ex. 1228. O-3-42

The hypothetical assumptions in the DTR and TCAO that are the foundation of the DEIR's environmental setting and baseline regarding sediment quality and alleged risks to beneficial uses are summarized below. O-3-43

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[12] Because the data underlying the TCAO and DTR was collected in 2002-2003, and because that data is the most recent comprehensive data set for the Site, it may appropriately be used to establish the baseline. It is also appropriate to consider the data collected in 2009. *Communities for a Better Environment*, 48 Cal. 4th at 328.

1. Aquatic-Dependent Wildlife

In assessing risks to aquatic-dependent wildlife, Regional Board staff assumed that each of the six species of concern that were evaluated[13] derived 100% of their diet from prey obtained within the Site. DTR, at § 24.2.2, Table 24-6. This assumption is entirely unrealistic for all six receptors—and was in no way predicated on the actual foraging activities of the receptors or any studies, guidelines or other agency documents. *E.g.*, Alo Depo., at 333:11-334:2; 345:8-346:13. The home range for each receptor is substantially greater than the 43 acre shipyard area, demonstrating that the receptors will travel well beyond (and consume prey outside) the confines of the shipyards. It also is unrealistic to assume that any receptor would choose to forage exclusively in an active industrial shipyard where the habitat quality is low for all species. Expert Report, of Thomas C. Ginn, Ph.D. ("Ginn Report"), at 59-61. By contrast, using a realistic assumption of each receptor's foraging area, alone, demonstrates that there is no risk to any of the receptors at the NASSCO shipyard. *Id*. Thus, the DTR's finding of risk to aquatic-dependent wildlife is entirely dependent upon Regional Board staff's policy decision to assume receptors would consume 100% of their diet at the shipyards; is not reflective of existing conditions at the Site; and cannot be used to inform the DEIR's baseline under CEQA. O-3-44

It is notable that in assessing the Project's impacts to the California Least Tern (one of the six receptors evaluated in the DTR's aquatic-dependent wildlife analysis), the DEIR states that the Site is only a "very small area of San Diego Bay" and that there are other open water areas available for foraging. DEIR, at 4.5-51. The DEIR also notes that "the majority of the sediment remediation site is in an area with relatively low abundance of prey species" for the least tern, and that "[t]here is no shallow water foraging habitat at the project site, limiting feeding opportunities." DEIR, at 4.5-51, 52. In other words, the DEIR's biological analysis emphatically refutes the DTR's assumption that a least tern would consume 100% of its diet from the Site, and precludes any reliance on such an assumption in selecting the environmental baseline relative to the effect of Site sediments on aquatic-dependent wildlife beneficial uses. O-3-45

The DEIR should be revised to reflect accurately the estimated foraging behavior of the six species of concern evaluated in the DTR's aquatic-dependent wildlife analysis, and analyze how that data affects the DTR's conclusions regarding risks to aquatic-dependent wildlife from sediments at the Site and the determination of an appropriate baseline. The DEIR's baseline should also be revised to reflect existing conditions. O-3-46

2. Human Health Impairment

Likewise, in the human health risk analysis, Regional Board staff assumed not only that fishing *could* occur at the Site—a facially erroneous assumption because strict security measures resulting from the shipyards' work for the U.S. Navy prevent *any* fishing at the shipyards—but also that each hypothetical subsistence angler at the shipyards would derive his or her entire O-3-47

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[13] The DTR's aquatic-dependent wildlife analysis evaluated the California Least Tern, the California Brown Pelican, the Western Grebe, the Surf Scoter, the California Sea Lion, and the East Pacific Green Turtle. DTR, at Table 24-4.

daily protein source from fish caught within the shipyard (161 g/day), **every day for 70 years (for carcinogens)**,[14] and would always eat the entire fish or shellfish (including skin/shell, organs, eyes, etc.), containing the maximum measured pollutant concentrations. Ginn Report, at 80-81; Expert Report of Brent L. Finley, Prepared in Regards to the California Regional Water Quality Control Board's Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 (San Diego Bay) (March 11, 2011) ("Finley Report"), at 9, 22. O-3-47

Given that absolutely no fishing occurs at the shipyards, and since the Administrative Record is devoid of evidence that there has *ever* been *any* fishing at the shipyards (*see* Alo Depo., at 88:4-93:18), it is highly conservative (to put it mildly) to assume that anglers will fish at the shipyards, much less that any angler would do so every day for 70 years and derive all of his or her protein requirements from fish caught at the shipyards. Because this hypothetical assumption bears no relationship to existing conditions at the Site, it cannot be used to inform the DEIR's environmental baseline relative to the effect of Site sediments on human health beneficial uses. O-3-48

The DEIR should be revised to accurately describe the extent of fishing currently taking place at the Site, and analyze how that information affects the DTR's conclusions regarding risks to human health from sediments at the Site and the determination of an appropriate baseline. The DEIR's baseline should also be revised to reflect existing conditions. O-3-49

3. Aquatic Life

The DTR contends that aquatic life beneficial uses at the Site are impaired "due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site." TCAO, at ¶ 14, DTR, at 14-1. But the results of the sediment investigation indicate that, although contaminants of concern and other pollutants are present in Site sediments in elevated concentrations relative to reference, they do not pose significant risks to aquatic life because they are not "bioavailable" and many constituents do not "bioaccumulate."[15] NASSCO's May 26 Comments, at 8. O-3-50

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[14] The DEIR uses an assumption of 30 years for non-carcinogens.

[15] As explained above, "bioavailability" is a measure of the potential for a chemical to enter into ecological or human receptors. Similarly, "bioaccumulation" refers to the accumulation of substances, such as pesticides or COCs, in an organism. Bioaccumulation occurs when an organism absorbs a toxic substance at a rate greater than that at which the substance is lost.

The DTR cites a finding that "bioaccumulation is occurring at the shipyard" as one basis for concluding that aquatic life at the Site is impacted. DTR, at 14-1, 19-1. But the DTR's conclusion that Site sediments impact aquatic life is overly-conservative, since substances may bioaccumulate in laboratory tests (such as those underlying the DTR's bioaccumulation finding), but not adversely affect the benthic community, and because not all shipyard chemicals were found to bioaccumulate. DTR, at 19-1; Barker Depo, at 98:19 – 98:22. For many COCs, including all primary COCs, the laboratory bioaccumulation test was the only test showing any

Risks to aquatic life were evaluated by sampling and assessing both benthic macroinvertebrates and fish. Ginn Report, at 12. Effects on benthic macroinvertebrates were assessed using a triad approach, involving the synoptic collection of data on sediment chemistry, toxicity, and benthic community structure, and effects on fish were assessed by comparing fish living at the Site to fish caught in reference areas in San Diego Bay. The results of these analyses showed little or no effects on aquatic life; in particular, the results of the sediment investigation confirmed that (1) amphipod toxicity is absent from all but one station at the NASSCO Shipyard (out of 15 monitored), with only one station showing any significant difference from reference conditions, and even then the station was only 3% below the statistical reference range equal to one of the reference stations; (2) measurements of four indices of the health of benthic macroinvertebrate communities are not different from reference conditions[16]; (3) fish show no elevation in significant liver lesions or other abnormalities related to chemical exposures at the Site; and (4) predicted exposures of aquatic-dependent wildlife fall below the thresholds for which adverse effects are expected. Ginn Report, at 15-16. Likewise, the direct measurements of biological conditions, which Regional Board staff acknowledge "are the most important since they are direct measures of what is being protected," reveal that only a minimal fraction of stations at NASSCO do not meet reference conditions. Alo Depo., at 228:23 – 229:3; Ginn Report, at 49. Put another way, of 42 total toxicity tests conducted (excluding NA22, which is not being addressed under the Project), 37 tests showed conditions at NASSCO were as protective as background, with respect to toxicity. O-3-51

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statistical relationship between the chemicals at the Site and a biological response to a particular chemical, suggesting that the concentrations observed in the *Macoma* laboratory testing did not accurately predict adverse responses in consumer organisms at the Site. Barker Depo, at 95:22 – 98:16. Moreover, other COCs, including cadmium, chromium, nickel, selenium, silver, and PPT showed no statistical relationship with biological effects and also did not bioaccumulate in laboratory tests. DTR, at Table 20-1. Similarly, bioaccumulation relationships for arsenic and zinc, although statistically significant, were each controlled by only a single data point. DTR, at 19-1.

16 The health of benthic macroinvertebrate communities at the Site was measured by comparing four benthic macroinvertebrate metrics at the NASSCO Site with the 95% prediction limits for the reference pool selected by Regional Board staff. The four metrics evaluated were (1) the benthic response index for Southern California embayments (BRI-E), which is a quantitative index that measures the conditions of marine and estuarine benthic communities by reducing complex biological data to single values; (2) total abundance, which measures the total number of individuals identified in each replicate sample; (3) total taxa richness, which measures the number of taxa identified in each replicate sample; and (4) Shannon-Weiner Diversity, which is a measure of both the number of species and the distribution of individuals among species, with higher values indicating that more species are present or that individuals are more evenly distributed among species. DTR, at 18-20. Of the 60 individual comparisons between Site conditions and reference conditions (15 stations and 4 metrics), there were only three significant differences from the reference pool. Ginn Report, at 31.

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Remarkably, even the DTR's overly conservative analysis[17] acknowledges that (1) benthic communities are equivalent to reference conditions at 14 of 15 stations in the NASSCO leasehold, with the only "moderately" impacted station located at the mouth of Chollas Creek; (2) amphipod toxicity was found at only 1 of 15 stations at NASSCO, and for that station the survival rate, at 70%, was still only 3% below the statistical reference range **and equal to one of the reference stations**; (3) toxicity to sea urchins was not found at any of the 15 stations at NASSCO; and (4) toxicity to bivalves was found at only 5 of 15 stations at NASSCO. DTR, at Tables 18-8 and 18-13. Yet, despite these favorable toxicity results and contrary to current regulatory guidance, the DTR simply assumed "possible" or "likely" effects whenever chemical and biological indicators disagreed, resulting in seven stations at NASSCO being incorrectly characterized as having either "possible" or "likely" impacts on benthic macroinvertebrates. For example, NA19 was characterized as "likely" impaired, even though six of the seven lines of direct biological evidence showed no significant differences from reference conditions. Alo Depo., at 263:22 – 265:17. The DTR's conclusions of adverse effects to aquatic life beneficial uses does not accurately reflect existing conditions and cannot be used to form the DEIR's baseline. O-3-52

C. The Environmental Setting Fails to Account For Pre-1960 Activities Contributing to Existing Conditions at the Site

In the description of Project Site Conditions for the Hazards and Hazardous Materials analysis, the DEIR describes wastes allegedly generated as a result of shipyard operations conducted by NASSCO since at least 1960, and BAE Systems (and its predecessor) since 1979. DEIR, at 4.3-1, 2. But the DEIR completely ignores pre-1960 activities that caused releases of hazardous materials to the Site, even though the DTR and the Administrative Record include detailed information regarding a variety of industrial operations conducted at the Site going back to the turn of the century, by a multitude of entities. O-3-53

It is well-documented that the City of San Diego leased properties at or in the vicinity of the Site to numerous industrial and commercial tenants beginning in approximately 1900—well before NASSCO existed or operated at the Site. San Diego Unified Port District Report, Historical Study San Diego Bay Waterfront Sampson Street to 28th Street (2004) (SAR159392 – 94); City of San Diego, Report for the Investigation of Exceedances of the Sediment Quality O-3-54

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[17] The DTR framework is overly conservative and fundamentally flawed because it concludes that adverse effects on benthic macroinvertebrates are "likely" or "possible" whenever sediment chemistry is characterized as "high"—regardless of whether significant sediment toxicity or adverse effects on benthic communities are also observed. DTR, at Table 18-4. As a result, the chemistry line of evidence unilaterally trumps the others, causing the TCAO and DTR to reach conclusions that are not technically justified. Ginn Report, at 48. Regional Board staff's framework is further biased by its lack of a "no" effects category—meaning that stations will be characterized as having at least "low" levels of effects, even where the results are indistinguishable from reference conditions—contrary to methods published by others, including the State Water Resources Control Board. *Id.*

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Objectives at National Steel and Shipbuilding Company Shipyard (2004) (SAR157095 – 167). These former tenants included operators in heavy industries such as tire manufacturing, lumbering, fish-packing and shipbuilding, and operated at times when environmental regulations were minimal or non-existent. There is ample record evidence that these entities contributed significant contamination to the Site. *See e.g.*, *id.*; Letter from City Port Director to Anthony Martinolich (1951) (SAR175155) ("[a]pparently your sandblasters are dumping the used sand in the bay in your water area."); Documents Evidencing Transformer Spill/PCB discharge by Lynch Shipbuilding at foot of 28th Street (1943) (PORT05994 -06007) ("hot oil from the transformer was sprayed over many square feet of deck"). O-3-54

Accordingly, the DEIR must be revised to reflect the waste discharges to the Site that resulted from pre-1960s activities. O-3-55

D. The DEIR Provides No Support For Its Assumption That 15% of the Sediment Will Be Classified as "Hazardous" Material

The DEIR assumes that 15% of the sediment to be dredged under the proposed Project will be classified as "hazardous" and require transport to a Class I hazardous waste facility. *E.g.*, DEIR, at 4.1-12. This is presented as a "worst-case" scenario. *Id.* The DEIR does not provide any support for this assumption, however, and therefore must be revised to inform the public as to the basis of the assumption. If none of the dredged sediment is "hazardous," that would upset the stated rationale for incurring the environmental impacts and other costs associated with the proposed plan to dredge 143,000 cubic yards of sediment from the Bay. If, after dredging, more than 15% of the material is determined to be "hazardous," this would disturb the remaining environmental impact analyses for a variety of impact areas, including but not limited to impacts associated with truck trips required to transport the material to a hazardous waste facility. O-3-56

The DEIR's assumption regarding the amount of sediment that will qualify as "hazardous" is relied upon and affects all environmental impact areas that were assessed, so it is particularly important that the DEIR provide support for that assumption; or, if there is no support, explain how each impact area will be affected if the assumption proves to be incorrect. O-3-57

IV. THE DEIR'S DESCRIPTION OF THE PROJECT'S PROPOSED SAND COVER REMEDY MUST BE REVISED TO CLARIFY THAT AN ENGINEERED SAND CAP IS NOT REQUIRED

While the proposed Project calls for dredging as the primary remedial tool, the Project Description indicates that "[d]ue to the presence of infrastructure, such as piers and pilings, dredging is constrained in several locations within the project site. Therefore, contaminated areas under piers and pilings will be remedied through subaqueous, or in situ, clean sand cover. In situ clean sand cover is the placement of clean material on top of the contaminated sediment." DEIR, at 3-7. Elsewhere, the DEIR indicates that approximately 2.4 acres of the remedial areas "will be covered with a layer of clean sand to contain contaminated sediments." DEIR, at 4.2-14. NASSCO recognizes that clean sand cover is part of the TCAO proposed by the Cleanup Team and evaluated in the DTR; however, certain language in the DEIR and its proposed mitigation measures must be clarified in order to ensure that the proposed remedy is not O-3-58

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confused with the separate and significantly more costly and technologically challenging (and likely infeasible) remedy of an engineered sand cap. Such clarification is necessary in order to ensure that the Project Description in the DEIR accurately reflects the remediation that is being proposed by the TCAO and DTR.[18] *See San Joaquin Raptor*, 27 Cal. App. 4th at 730 ("an accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity."); CEQA Guidelines § 15124 (EIR must include "description of the project's technical . . . characteristics, considering the principal engineering proposals if any . . ."). O-3-58

Although the DEIR correctly refers to a "clean sand cover" rather than an engineered sand "cap," certain language in the DEIR could be misconstrued to refer to an engineered cap, and Mitigation Measure 4.2.7 includes requirements commensurate with an engineered cap. For example, the DEIR refers to the "design and install[ation]" of the sand cover, in contrast to the DTR's description of the "placement of a sand layer" in under-structure remedial areas. *Compare* DEIR, at 4.2-14 *with* DTR, at 30-4. In addition, Mitigation Measure 4.2.7 proposes detailed requirements regarding the "design" of the sand cover, including requirements that it "prevent substantial perturbation . . . of underlying contaminated sediments," "physically isolate the sediments from benthic or epigenetic organisms," "stabilize the contaminated sediments," and include "final engineering plans." DEIR, at 4.2-20. This measure includes the likely requirement for a surficial layer of protective armor rock, along with, potentially, an intervening layer of filter gravel and brick, among other things that would be required in an engineered cap. O-3-59

In light of the above, the DEIR should be revised to make clear that the TCAO contemplates a sand cover rather than an engineered sand cap in the under-pier remedial areas, and Mitigation Measure 4.2.7 should be modified accordingly. The distinction is significant with respect to the proposed Project's economic and technological feasibility analysis. As explained below, Mitigation Measure 4.2.7 is estimated to add approximately **$7,000,000** in additional costs relative to the clean sand cover remedy contemplated by the parties in the TCAO/DTR process. Memorandum Regarding Cost Implication of Mitigation Measures Described in the Draft Environmental Impact Report for the San Diego Shipyards Sediment Cleanup Project, San Diego California, submitted concurrently herewith (the "Anchor Comments"). O-3-60

V. THE DEIR PROPOSES INFEASIBLE MITIGATION MEASURES

A. CEQA Mitigation May Not Be Adopted Unless It Is "Feasible"

Mitigation may not be adopted under CEQA unless it is "feasible," which CEQA defines as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." CEQA Guidelines § 15364. Mitigation is "legally infeasible" if its adoption is beyond the powers conferred by law on the agency, or prohibited by statutes governing the agency. *Kenneth* O-3-61

[18] The sand cover is described as a mitigation measure (number 4.2.7), but it is more than that, as it is a critical component of the Project's proposed remediation strategy and thus must be detailed as part of the Project description in the DEIR.

Mebane Ranches v Superior Court, 10 Cal. App. 4th 276, 291 (1992); *Sequoyah Hills Homeowners Ass'n v City of Oakland*, 23 Cal. App. 4th 704, 715-16 (1993). O-3-61

CEQA does not provide agencies with independent authority to mitigate environmental impacts. Rather, "[i]n mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than this division." CEQA § 21004; *see also* CEQA Guidelines § 15040. Accordingly, the Regional Board may not adopt any mitigation measures for the proposed Project unless those measures are authorized by the Porter Cologne Act or other applicable statutory authority beyond CEQA. To the extent mitigation contemplated by the DEIR does not satisfy the Porter Cologne Act, it is legally infeasible under CEQA and may not be adopted. O-3-62

B. New Mitigation Proposed In The DEIR Does Not Satisfy Resolution 92-49; Therefore It May Not Be Adopted

1. The TCAO's Cleanup Levels Must Be Evaluated For Economic Feasibility Under Resolution 92-49

The Regional Board's authority to issue cleanup and abatement orders is supplied by Water Code section 13304, (*see* DEIR, at 3-3), which is part of the Porter Cologne Act, Water Code sections 13000, *et seq.*, which sets forth California's water quality control laws. Regarding implementation of Water Code section 13304, the State Board issued Resolution 92-49.. Among other things, Resolution 92-49 requires an analysis of cost-effectiveness and technological and economic feasibility in determining cleanup levels. Resolution 92-49, at 6-8 ("The Regional Water Board shall . . . ensure that dischargers shall have the opportunity to select cost-effective methods for . . . cleaning up or abating the effects [of wastes discharged and] . . . require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, cleanup and abatement."). The Regional Board is also required to evaluate costs pursuant to Water Code section 13307. O-3-63

The DTR explains that the "economic feasibility" requirement under Resolution 92-49 "refers to the objective balancing of the incremental benefit of attaining more stringent cleanup levels compared with the incremental cost of achieving those levels," and "does not refer to the discharger's ability to pay the costs of a cleanup." DTR, at 31-1. In assessing economic feasibility under Resolution 92-49, the benefits of remediation are best expressed as the reduction in exposure of human, aquatic wildlife and benthic receptors to site-related contaminants of concern. *Id.* O-3-64

Resolution 92-49 cites Water Code section 13307 as authorizing the State Board to adopt policies for Regional Boards to follow for the oversight of cleanup and abatement activities. Section 13307, in turn, mandates that the State Board's policies "*shall* include … [p]rocedures for identifying and utilizing the *most cost-effective* methods … for cleaning up *or abating the effects* of contamination or pollution." Water Code § 13307(a)(3) (emphasis added). Water Code section 13267 likewise requires a costs-benefits analysis with regard to any "technical or monitoring program reports" required by the Regional Board, providing specifically that "[t]he burden, including costs, of these reports shall bear a reasonable relationship to the need for the O-3-65

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report and the benefits to be obtained from the reports." This provides further confirmation that the cost of any measures imposed on dischargers by the Regional Board must have a reasonable relationship to the anticipated benefits to be obtained. O-3-65

2. New Mitigation Requirements In The DEIR Would Increase Site-Wide Remediation Costs By Approximately $11.8 to $18.3 Million

As set forth in the concurrently submitted Anchor Comments, an expert assessment of the mitigation proposed in the DEIR indicates that new measures or requirements not discussed in the TCAO/DTR will increase Site-wide remediation costs by an estimated $11.8 to $18.3 million. The critical changes or additions to the cleanup requirements that are proposed in the DEIR, and associated increases in remediation costs, are summarized in the chart below, and detailed further in the Anchor Comments.[19] These measures were not evaluated in the TCAO/DTR, and were not included in the DTR's economic feasibility analysis for the TCAO. O-3-66

[19] NASSCO takes issue with the necessity or feasibility of many of these measures, as set forth in the Anchor Comments and elsewhere in this letter. NASSCO also seeks clarification as to the scope or application of certain of these measures, as also reflected elsewhere in NASSCO's comments. Such clarification (and corresponding revision to the DEIR and its discussion of mitigation measures), or the removal of certain mitigation, could alter the above cost estimates.

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Mitigation Measure(s)	Probable Minimum Cost	Most Probable Cost	Probable Maximum Cost
Automatic turbidity monitoring systems (MMRP 4.2.1)	$ 500,000	$ 800,000	$ 1,000,000
Double silt curtain enclosure (MMRP 4.2.2)	$ 250,000	$ 400,000	$ 500,000
Bucket additions and controls (closure switches, Clam Vision TM) (MMRP 4.2.2)	$ 250,000	$ 400,000	$ 500,000
Air Curtains (MMRP 4.2.2)	$ 300,000	$ 400,000	$ 500,000
Complete enclosure of dredge AND barge (MMRP 4.2.3)	$ 1,500,000	$ 1,750,000	$ 2,000,000
Design and construction of permanent cap instead of sand cover (MMRP 4.2.7)	$ 5,000,000	$ 6,000,000	$ 7,000,000
Hydraulic placement of cap material (MMRP 4.2.8)	$ 1,500,000	$ 1,750,000	$ 2,000,000
Restriction on haul times (MMRP 4.4.1)	$ 2,000,000	$ 3,200,000	$ 4,000,000
Biological monitoring for sea turtles, terns, etc. (MMRP 4.5.7 -4.5.9)	$ 250,000	$ 400,000	$ 500,000
Use of engine catalysts, low-NOx, and alternative fuels (MMRP 4.6.8 - 4.6.10)	$ 100,000	$ 180,000	$ 200,000
Use of special deodorizing additives (such as Simple Green) (MMRP 4.6.15)	$ 50,000	$ 80,000	$ 100,000
Total Estimated Cost Increase from Mitigation Measures	$ 11,700,000	$ 15,360,000	$ 18,300,000

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3. The New Mitigation Has Not Been Evaluated Under Resolution 92-49, And Is Not Economically Feasible Under Resolution 92-49

The aforementioned mitigation requirements have not been assessed for economic feasibility under Resolution 92-49 or Water Code sections 13267 and 13307, and the TCAO and DTR's economic feasibility determinations did not incorporate the additional $11.8 to $18.3 million in estimated remedial expenses. Because these costs have not been assessed for compliance under Resolution 92-49 or Water Code sections 13267 and 13307, they may not be imposed under the Porter Cologne Act. As a result, the Regional Board lacks authority to impose them under CEQA because they are "legally infeasible," and they may not be adopted by the Regional Board. *Sequoyah Hills*, 23 Cal. App. 4th at 715-16; *Kenneth Mebane Ranches*, 10 Cal. App. 4th at 291; CEQA Guidelines § 15364; CEQA § 21004.

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Nor could these mitigation measures pass muster under Resolution 92-49 had they been evaluated. The DTR's economic feasibility analysis compared incremental benefits of further cleanup, expressed in terms of exposure reduction to target receptors, with the incremental cost of achieving those benefits, and determined that the degree of exposure reduction does not justify the incremental cost of such reductions beyond approximately $33 million in total cleanup costs. DTR, at 31-2 - 31-3. Even before the mitigation requirements proposed in the DEIR, the maximum estimated cleanup costs totaled approximately $60,345,500, well beyond the point at which the DTR concluded any incremental benefit is not supported by the additional costs. Resolution 92-49 certainly will not permit an additional $11.8 to $18.3 million in remediation

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costs, given that the additional, significant costs would have such a minimal degree of environmental benefit. Accordingly, the additional mitigation requirements proposed in the DEIR may not permissibly be adopted by the Regional Board under Resolution 92-49. Stated differently, to the extent that the Regional Board determines that the additional mitigation requirements are necessary to achieve the TCAO's cleanup levels (which NASSCO disputes), then those cleanup levels are economically infeasible and must be revised. Accordingly, Resolution 92-49 precludes adoption of the above measures, as does Water Code section 13307. O-3-68

It is also worth noting that the costs of the mitigation requirements proposed in the DEIR, which increase the total Project cleanup costs to an estimated $72,145,500 to 78,645,500, also render implementation of the Project economically infeasible under CEQA. Given their estimated cost, many of the proposed individual mitigation measures, including each of those set forth in the chart above, are also economically infeasible under CEQA. *See* CEQA Guidelines § 15364 (feasibility analysis under CEQA includes consideration of "economic factors"). O-3-69

VI. SIMILAR SITES MUST BE TREATED SIMILARLY, BUT OTHER SEDIMENT REMEDIATION PROJECTS HAVE NOT BEEN SUBJECTED TO CEQA REVIEW AND MITIGATION

Resolution 92-49 also provides that the "Regional Water Board *shall* . . . prescribe cleanup levels which are *consistent* with appropriate levels set by the Regional Water Board for analogous discharges that involve similar wastes, site characteristics, and water quality considerations." (emphasis added). *See also* Barker Depo., at 345:12-345:17 (recognizing that one goal of Resolution 92-49 is to ensure that the Regional Boards treat similar sites similarly). Constitutional principles of due process and equal protection likewise require both fundamental fairness and similar treatment of similarly situated persons subject to the same legislation or regulation. U.S. Const. amend. XIV, §1; Cal. Const. art. I, §§ 7, 15. O-3-70

Contravening these principles, the Project appears to be the first sediment remediation project in San Diego Bay that the Regional Board has subjected to CEQA review and mitigation. The Regional Board imposed CEQA review notwithstanding that the Project is "categorically exempt" from CEQA, as explained below, and despite the DEIR's concession that an average of 245,000 cubic yards of sediment are dredged annually from San Diego Bay, which nullifies the Cleanup Team's prior position that "unusual circumstances" required CEQA review because the Project called for the dredging of 143,000 cubic yards of sediment. Because the Regional Board's unprecedented imposition of CEQA review is not consistent with the Regional Board's treatment of similarly situated sites in San Diego Bay, and because, among other things, the DEIR is proposing mitigation that would add approximately $11.8 to $18.3 million to the cost of cleanup, the Regional Board's review of the Project under CEQA violates Resolution of 92-49 and the constitutional mandates of due process and equal protection. Notably, most of these measures have not been required for other cleanups in San Diego Bay (or elsewhere), including for the Campbell Shipyard cleanup, the most recent environmental sediment remediation project in San Diego Bay. O-3-71

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VII. THE IMPOSITION OF NEW MITIGATION THROUGH THE DEIR WOULD VIOLATE DUE PROCESS BECAUSE THE PARTIES HAVE NOT HAD THE OPPORTUNITY TO TAKE DISCOVERY ON THOSE REQUIREMENTS

The DEIR's new mitigation requirements (if adopted) violate due process for the additional reason that they purport to alter the cleanup required under the TCAO and DTR, but were first imposed after the close of discovery in the TCAO proceeding, precluding the opportunity for the parties to take discovery regarding the new requirements. There is no question that due process mandates that discovery may be taken regarding the parameters of the TCAO and DTR; the Presiding Officer's February 18, 2010 Discovery Plan specifically states that the "Designated Parties are entitled to the procedural and due process safeguards" provided by the state and federal constitutions, the California Administrative Procedure Act, and the California Code of Regulations. O-3-72

NASSCO, along with the City of San Diego, United States Navy, SDG&E, BAE Systems and Campbell Industries, previously made this very point in connection with their combined request for the discovery period to be extended to coincide with the CEQA process, so that the parties would retain the right to take discovery on any components of the TCAO/DTR (or their implementation) that might be affected by the CEQA review.[20] The Cleanup Team agreed. SAR381340 ("Because the CEQA process must determine the timing of the San Diego Water Board's consideration of the tentative CAO and DTR . . . the Cleanup Team does not believe there is any good reason not to integrate the timing of the remaining discovery deadlines with the CEQA process."). But this request was denied by former Presiding Officer David King. O-3-73

Accordingly, to the extent the Regional Board desires to impose additional mitigation requirements introduced in the DEIR, it must reopen the discovery period to allow the Designated Parties to take discovery regarding same, and extend the comment period so that the parties may use the results of discovery to inform their comments. O-3-74

VIII. THE CUMULATIVE IMPACTS ANALYSIS FAILS TO IDENTIFY REASONABLY FORESEEABLE DREDGING PROJECTS IN SAN DIEGO BAY

As noted, the DEIR indicates that between 1994-2005, "an average of approximately 245,000 cubic yards of sediment was dredged from San Diego Bay each year," including maintenance and environmental dredging, with an annual total as high as 763,000 cubic yards. O-3-75

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[20] The parties' request stated: "Tying discovery deadlines to the CEQA process is logical because the "project" will be better defined and explained through the CEQA process and in the resulting Environmental Impact Report ('EIR"). The Parties will not know whether or to what extent they are agreeable to the final CAO (and therefore, can waive discovery) until after the CEQA process has been completed, including the submission of public comments and responses by the Regional Board and an analysis of proposed mitigation measures. It therefore makes sense for the discovery period to coincide with the CEQA process, so that the parties may take any discovery they believe is necessary as a result of the CEQA process, or waive discovery entirely." SAR381342.

DEIR, at 4-2. The DEIR further makes the "**conservative assumption** that two similar-sized dredging projects occur during the dredging operations at the project site." DEIR, at 4.3-30 (emphasis added). The DEIR also "anticipates that **regularly scheduled** maintenance dredging projects may occur in San Diego Bay over the next several years." DEIR, at 4.2-25. These statements raise several concerns regarding the DEIR's cumulative impacts analysis, which applies across all environmental impact areas considered in the DEIR. O-3-75

First, given (i) that approximately 245,000 cubic yards of sediment are dredged from the Bay each year; (ii) that we can conservatively assume that two dredging projects of approximately 143,000 cubic yards each will occur during Project implementation; and (iii) that maintenance dredging in the Bay is "regularly scheduled," the DEIR's failure to identify a single anticipated dredging project is unsupportable. The DEIR should identify *any* dredging projects currently underway or scheduled to take place in the next ten years, regardless of whether they are maintenance *or* environmental dredging projects, as well as any specific dredging projects that are reasonably foreseeable or probable at this time. The DEIR's statement that no "specific environmental dredging projects have been identified" suggests that maintenance dredging projects have been identified, but were simply not disclosed. DEIR, at 4.3-30. This is improper. O-3-76

The DEIR also should explain the steps that were taken to identify "probable" future dredging projects; and, if a "schedule" of "regularly scheduled" maintenance dredging exists, it should be made publicly available. CEQA Guidelines § 15065(a)(3) (cumulative impacts analysis must consider "the effects of probable future projects."). Among other things, the DEIR should indicate the extent to which the proposed or probable dredging projects may involve contaminated rather than "pristine" sediment,[21] and whether eelgrass or other sensitive biological communities may be located in the dredged areas. Similarly, the DEIR should clarify the grounds supporting its statements that "the location and timing of future dredging and staging activity is not known," and that "[m]aintenance dredging projects in the San Diego Bay do not typically occur simultaneously." DEIR, at 4.1-31. The last assertion is curious given the DEIR's above-stated point that the Regional Board conservatively is assuming that two other dredging projects of approximately 143,000 cubic yards will occur while the Project is being implemented, so that approximately 420,000 cubic yards of sediment will be dredged concurrently from the Bay. O-3-77

Second, the DEIR should explain whether the Regional Board has conducted CEQA review for any of the dredging projects in San Diego Bay that its record reflect occurred during 1994-2005, and whether it intends to conduct CEQA review for any of the anticipated future dredging projects in the Bay. The DEIR indicates that future projects would require NPDES permitting, but does not mention CEQA review. DEIR, at 4.2-25. O-3-78

Third, the DEIR should include a thorough analysis of any specific or reasonably anticipated dredging projects (maintenance or environmental) that will occur during the next ten O-3-79

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21 There are no "pristine" sediment conditions that exist in San Diego Bay (or any other water body), such that any dredging will involve the removal of sediments contaminated to some degree.

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years. Based on the DEIR's historical analysis, the EIR could analyze the Project's impacts in the context of an additional 24,500,000 cubic yards of sediment that may reasonably be expected to be dredged from the Bay over the next ten years, in light of past averages. Given CEQA's mandate to conduct environmental review at the earliest time feasible, (*Laurel Heights.*, 47 Cal. 3d at 394-96), and given that these other dredging projects are unlikely to be reviewed under CEQA, it is important for the Regional Board to conduct this cumulative impacts analysis now, rather than deferring it to the future in the context of other dredging projects (if subsequent CEQA analysis is done at all). O-3-79

Fourth, although the cumulative impacts analysis implicates all impact areas, the DEIR should pay particular attention to the anticipated combined effects of dredging on sensitive eelgrass communities in the Bay, and the resultant effects to marine life that are reliant upon eelgrass as habitat. At a minimum, the DEIR should assess the location of sensitive eelgrass throughout the Bay, the extent to which foreseeable dredging projects will impact eelgrass, the effect of the combined eelgrass losses when measured in tandem with the Project, and the extent to which all of those losses may or may not be mitigated feasibly and in a reasonable amount of time. O-3-80

Finally, Mitigation Measure 4.2.14 provides that the Regional Board shall "coordinate" water quality monitoring efforts and data with other dredging projects in the Bay for the duration of the Project, and take other actions intended to address potential cumulative impacts. DEIR, at 4.2-25. However, it is not clear that other dredging projects will be under the jurisdiction of the Regional Board. If they are not, this mitigation measure is unenforceable and illusory, and thus infeasible. If they are under the jurisdiction of the Regional Board, then the Board should be able to provide more specific information regarding all reasonably anticipated future dredging projects, and whether or not the Regional Board intends to review those dredging projects under CEQA. As a start, the Regional Board could indicate any applications it has received for dredging-related permits. If future CEQA review is not conducted, this may be the only opportunity to assess the cumulative environmental effects of dredging significant quantities of sediment from San Diego Bay. O-3-81

IX. THE ENVIRONMENTAL IMPACT ANALYSES, MITIGATION MEASURES AND ALTERNATIVES CONTAIN ADDITIONAL DEFICIENCIES

Set forth below are additional comments on various environmental impact analyses, mitigation measures and alternatives in the DEIR, to the extent these issues are not separately addressed.[22] For the sake of brevity, comments pertaining to specific impact areas or mitigations addressed elsewhere in this letter generally are not reasserted here. O-3-82

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[22] Please note, however, that additional, detailed analyses of certain mitigation measures included in chapters 4.2, 4.4, 4.5, 4.6 and 4.7 of the DEIR are provided in the Anchor Comments. In addition, further discussion of DEIR Sections 4.2, 4.3 and 4.5, and the DEIR's alternatives analysis, is included in the concurrently submitted memorandum by Rick Bodishbaugh, Tom Ginn and Gary Brugger ("Exponent Comments").

Sections 3 and 4—Project Description and Environmental Analyses

- Water Code section 13360 provides in relevant part that "[n]o waste discharge requirement or other order of a regional board . . . shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner." Contradicting Water Code section 13360, the proposed Project purports to dictate how the Site should be remediated to achieve the TCAO's cleanup levels. Because the Regional Board lacks authority to dictate how the cleanup levels are to be achieved, it may not adopt the proposed Project, which therefore is legally infeasible under CEQA. *Kenneth Mebane Ranches,* 10 Cal. App. 4th at 291; *Sequoyah Hills Homeowners Ass'n*, 23 Cal. App. 4th at 715-16; CEQA § 21004; CEQA Guidelines § 15040. O-3-83

Section 4.1—Transportation and Circulation

- The DEIR indicates that vessel traffic in San Diego Bay for maintenance dredging is similar to that required for the proposed Project. DEIR, at 4.1-9. To better assess cumulative impacts, the DEIR should provide a discussion of the vessel traffic typically encountered during recent maintenance dredging projects in the Bay, based on the volume of dredging that occurs. O-3-84

- The DEIR indicates that an alternative traffic mitigation measure is the diversion of 15 percent of the dredged sediment to an ocean disposal site, but that "ocean disposal has not been approved by the San Diego Water Board at this time." DEIR, at 4.1-24. Given that no form of remediation or disposal has yet to be approved by the Regional Board, the purpose of this statement should be explained. O-3-85

- The DEIR uses the 2000 Highway Capacity Manual ("HCM") published by the Transportation Research Board, even though an updated edition was published in 2010. The Regional Board should explain its decision to use the 2000 manual, despite the availability of an updated version, and explain whether use of the 2010 HCM would affect the results of the DEIR's traffic analysis in any way. O-3-86

- The DEIR states that the I-5 Southbound Ramp/Boston Avenue intersection currently operates at LOS E during the p.m. peak hour, but the Draft Barrio Logan /Harbor 101 Community Plan Update acknowledges that this intersection currently operates at LOS F. The Regional Board should explain this discrepancy, as well as whether the results of the DEIR's traffic analysis would be affected in any way if this intersection is properly categorized as operating at LOS F. O-3-87

- The DEIR repeatedly refers to "the City's performance criteria" or "the City's significance criteria" without specifying which city is referred to (San Diego or National City), or which particular guidance document contains the referenced criteria. *See e.g.*, DEIR, at 4.1-16, 4.1-25, Appx. B, at 39. The Regional Board should clarify which city's criteria is implicated, and cite to the particular document containing the criteria that were relied upon. O-3-88

- The DEIR recognizes that the National City General Plan is currently in the process of being updated; however, it appears that the revised General Plan was adopted on June 7, 2011, and a revised zoning map is expected to be adopted on August 16, 2011, well before the Regional Board will take action on the Project. The Regional Board should explain whether the results of the DEIR's traffic analysis will be affected in any way by the revisions to these plans. O-3-89

Section 4.2—Hydrology and Water Quality

- At page 4.2-12, the DEIR correctly acknowledges that cleanup to "background sediment quality level" is economically infeasible. The DEIR should be revised to indicate that cleanup to background also is technologically infeasible, as conceded in the Cleanup Team's written discovery responses. Cleanup Team's Response to NASSCO's RFA No. 18. O-3-90

- Mitigation Measure 4.2.1 requires automatic rather than manual turbidity monitoring during dredging. The requirement for automatic dredging should be deleted and replaced by manual monitoring. Given possible disturbances in San Diego Bay, such as ship movements or storm events, the likelihood of false positives from automatic monitoring is high, and the associated dredging interruptions will significantly impair the ability to implement the proposed remedy in a timely and cost-effective manner. O-3-91

- Mitigation Measure 4.2.2, as described on pages 1-10 and 4.2-17 of the DEIR, indicates that the contractor "may" use air curtains in conjunction with silt curtains. In the Mitigation Monitoring and Reporting Program ("MMRP"), however, Mitigation Measure 4.2.2 provides that the contractor "shall" use air curtains. DEIR, at 7-5. We understand that the use of air curtains is not intended to be mandatory, and that the "shall" included in the MMRP is inadvertent. Accordingly, we request revision of the MMRP so that the requirements of Mitigation Measure 4.2.2 relative to the use of air curtains are consistent throughout the document. O-3-92

- Mitigation Measure 4.2.2 includes a requirement for a double silt curtain enclosure, which adds considerable cost without any demonstrated environmental benefit. This requirement therefore should be eliminated. O-3-93

- Mitigation Measure 4.2.2 also would require certain customized features on the dredge buckets, such as closure switches and Clam Vision TM. These features would add considerable cost, and pose the risk of complicating the contractor's work by providing ambiguous or misleading data during dredging. These features should not be required. O-3-94

- Mitigation Measure 4.2.3 requires that double silt curtains are to "fully encircle the dredging equipment and the scow barge being loaded with sediment." Including the scow barge in the enclosure would significantly impact (and slow down) operations, increasing costs without measurable environmental benefit. This requirement should be removed. O-3-95

- In addition to concerns raised elsewhere in this letter, Mitigation Measure 4.2.14 constitutes improper "deferred" mitigation because it defers an assessment of reasonably O-3-96 anticipated cumulative impacts from other dredging projects in concert with the proposed Project. O-3-96

Section 4.4—Noise

- Mitigation Measure 4.4.1 prohibits certain treatment and haul activities between the hours of 7:00 p.m. and 7:00 a.m., to the extent the activities would cause "disturbing, excessive, or offensive noise," unless a permit has been obtained from the City of San Diego's Noise Abatement and Control Administrator in conformance with San Diego Municipal Code section 59.5.0404. DEIR, at 4.4-10. NASSCO understands that this measure is intended to allow work to be performed continuously at all hours of the day, so long as a variance or other appropriate permit has been obtained from the City of San Diego, or so long as any noise generated is not "disturbing, excessive, or offensive." Please confirm that this is the Regional Board's understanding as well. The ability to work continuously throughout the day is critical to accomplishing the proposed remediation in a timely and cost-effective manner. O-3-97

- Mitigation Measure 4.4.2 is generally similar to Mitigation Measure 4.4.1, except that it applies to activities in National City rather than the City of San Diego. Mitigation Measure 4.4.2 should be modified to correspond to Measure 4.4.1, and allow activities to occur continuously throughout the day, in National City, so long as any noise generated is not "disturbing, excessive, or offensive," or if a variance or other appropriate permit has been obtained from National City. O-3-98

Section 4.6—Air Quality

- Mitigation Measure 4.6.15 provides that the contractor "shall apply a mixture of Simple Green and water (a ration of 10:1) to the dredged material." DEIR, at 4.6-21. We understand that this measure is not intended to apply to every load of dredged material, and instead should apply only to the extent that an odor issue arises. As such, we request that the language of Mitigation Measure 4.6.15 be revised to clarify that liquids need only be applied to the extent odor issues arise with respect to particular portions of the dredged material. O-3-99

Section 5.5—Alternative 1: No Project/No Development Alternative

- The DEIR states that the "no project" alternative would not reduce or minimize adverse effects to aquatic life, aquatic-dependent wildlife and human health beneficial uses "because the contaminated sediments would remain in place." DEIR, at 5-10. This statement is conclusionary, and is not supported by the requisite "facts and analysis." *Citizens of Goleta Valley v. Board of Supervisors*, 52 Cal. 3d 553, 568 (1990) ("the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions."). As set forth above and in NASSCO's May 26 Comments, substantial evidence does not support the contention that current sediment conditions adversely effect any of these beneficial uses, rather, such contentions are premised on assumptions which are clearly erroneous and not reflective of existing conditions at the Site. *See* CEQA Guidelines § 15384 ("Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate . . . does not constitute substantial evidence."). O-3-100

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- The DEIR's conclusion that the no project alternative would result in the Site continuing to be "injurious to human health," and "a public nuisance" is similarly unsupported by "facts and analysis" or any substantial evidence. DEIR, at 5-10. O-3-101

Section 5.6—Alternative 2: Confined Aquatic Disposal (CAD) Site

- Alternative 2 consists of dredging and constructing a CAD facility "at a yet to be determined location." DEIR, at 5-11. Given that a location for the facility has not been identified, the feasibility of this alternative cannot properly be evaluated. O-3-102

- Alternative 2 assumes that a majority of dredged sediments would be "barged to an ocean disposal location." DEIR, at 5-11. But elsewhere the DEIR rejects consideration of ocean disposal. If the Regional Board believes ocean disposal is a feasible option, the DEIR should explain the basis for that decision. If not, the DEIR should state clearly that Alternative 2 is not feasible and may not be adopted. O-3-103

- The DEIR indicates that "Alternative 2 could have greater impacts [to marine biological resources] if the CAD facility did not effectively sequester underlying contaminants . . ." DEIR, at 5-15; *see also id.* at 5-13. But the DEIR provides no analysis of whether this may or may not happen, and concludes only that the potential marine biological impacts from Alternative 2 "would be slightly increased as compared to the proposed project" but remain less than significant with mitigation. *Id.* Without any analysis of whether or not the CAD cap will maintain its integrity, Alternative 2 should be considered to have a significant effect on marine biological resources and water quality, and should be treated as environmentally inferior to the proposed Project. This is certainly a critical area that would warrant detailed evaluation before Alternative 2 could be approved by the Regional Board. O-3-104

- The Regional Board lacks authority to adopt Alternative 2 because the Regional Board's authority under the Porter Cologne Act is limited to setting cleanup levels, rather than selecting methods to achieve cleanup levels. Water Code § 13360. Accordingly, Alternative 2 is legally infeasible under CEQA. *Kenneth Mebane Ranches*, 10 Cal. App. 4th at 291; *Sequoyah Hills Homeowners Ass'n*, 23 Cal. App. 4th at 715-16; CEQA § 21004; CEQA Guidelines § 15040. O-3-105

Section 5.7—Alternative 3: Convair Lagoon Confined Disposal Facility

- The DEIR indicates that "[a] complete analysis of the potential impacts related to Alternative 3, the Convair Lagoon CDF, was completed by Atkins and is included in Section 5.10 of this chapter. Technical appendices in support of the Convair Lagoon CDF Alternative Analysis are included as Appendices I through O of this PEIR." DEIR, at 5-18. But the DEIR fails to explain why a "complete analysis" of this alternative was prepared by separate consultants, or why technical appendices were included for this alternative. The DEIR also fails to explain why a "complete analysis" and technical appendices were not provided for Alternatives 1, 3 or 4. O-3-106

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- The DEIR must explain the basis for this discrepancy. If Regional Board staff believe the cursory analysis in Section 5.7 is insufficient for a proper assessment of Alternative 3, then it must explain why it believes the same cursory analysis is sufficient for consideration of the remaining alternatives. If Regional Board staff believes that the analysis included for Alternatives 1, 3 and 4 is insufficient to allow the Regional Board to adopt one of those alternatives, or fairly compare these alternatives to the proposed Project, the DEIR should also make that point clear. O-3-107

- The Regional Board lacks authority to adopt Alternative 3 because the Regional Board's authority under the Porter Cologne Act is limited to setting cleanup levels, rather than selecting methods to achieve cleanup levels. Water Code § 13360. Accordingly, Alternative 3 is legally infeasible under CEQA. *Kenneth Mebane Ranches*, 10 Cal. App. 4th at 291; *Sequoyah Hills Homeowners Ass'n*, 23 Cal. App. 4th at 715-16; CEQA § 21004; CEQA Guidelines § 15040. O-3-108

Section 5.8—Alternative 4: Nearshore CDF With Beneficial Use of Sediments

- The DEIR indicates that "the location of the CDF for Alternative 4 is unknown at this time; therefore, it is unknown whether this alternative would result in any short-term or long-term loss of use of shipyard or other San Diego Bay-dependent facilities." DEIR, at 5-20. But this is only one reason why the feasibility of Alternative 4 cannot be assessed without identification of where the CDF would be located. The DEIR fails to demonstrate that Alternative 4 is a feasible alternative that could attain most of the Project Objectives, and it may not be adopted by the Regional Board. O-3-109

- The DEIR indicates that Alternative 4 "could have greater impacts if the covering did not effectively sequester underlying contaminants . . ." DEIR, at 5-23, *see also id.* at 5-21. But the DEIR provides no analysis of whether this may or may not happen, and concludes only that the potential marine biological impacts from Alternative 4 "would be slightly increased as compared to the proposed project" but remain less than significant with mitigation. *Id.* Without any analysis of whether or not the CDF covering will maintain its integrity, Alternative 4 should be considered to have a significant effect on marine biological resources and hydrology and water quality, and should be treated as environmentally inferior to the proposed Project. This is certainly a critical area that would warrant detailed evaluation before Alternative 4 could be approved by the Regional Board. O-3-110

- The Regional Board lacks authority to adopt Alternative 4 because the Regional Board's authority under the Porter Cologne Act is limited to setting cleanup levels, rather than selecting methods to achieve cleanup levels. Water Code § 13360. Accordingly, Alternative 4 is legally infeasible under CEQA. *Kenneth Mebane Ranches*, 10 Cal. App. 4th at 291; *Sequoyah Hills Homeowners Ass'n*, 23 Cal. App. 4th at 715-16; CEQA § 21004; CEQA Guidelines § 15040. O-3-111

Section 5.9—Identification of Environmentally Superior Alternative O-3-112

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- The DEIR's conclusion that the no project alternative "would cause [the alleged] environmental impacts related to the existing conditions to be perpetuated," is not supported by any "facts and analysis." *Citizens of Goleta Valley,* 52 Cal. 3d at 568. This is a fatal omission, as it is the sole justification provided by the DEIR for foregoing the "environmentally superior" no project alternative, which would avoid all of the proposed Project's significant and potentially significant impacts. O-3-113

X. THE ALTERNATIVES ANALYSIS IS BIASED IN FAVOR OF THE CONVAIR LAGOON ALTERNATIVE FAVORED BY THE PORT DISTRICT

The DEIR selected four alternatives for consideration: (1) the No Project/No Development Alternative (Alternative 1), (2) Confined Aquatic Disposal Site (Alternative 2), (3) Convair Lagoon Confined Disposal Facility (CDF) (Alternative 3), and (4) CDF with Beneficial Use of Sediments (Alternative 4). DEIR, at 5-9. While the alternatives analysis (and the DEIR as a whole) is deficient for its failure to study the MNA alternative, as detailed above, it also is facially biased in favor of Alternative 3; which, unlike the other Alternatives, received its own, detailed supplemental evaluation consisting of roughly 239 pages, or approximately **31% of the entire DEIR**, not including six Alternative-specific appendices totaling approximately 247 additional pages. DEIR, at 5-32. By contrast, the other three alternatives each received between 2 and 6.5 pages of analysis in the DEIR, with no appendices. O-3-114

We understand that Alternative 3 is favored by the San Diego Unified Port District ("Port District"), which makes sense given that this alternative would create ten acres of shoreline property that would likely be leased by the Port District to third parties. DEIR, at 5-117. We also understand that the detailed supplemental analysis of Alternative 3 was submitted on behalf of the Port District, and at the Port District's request, and note that the analysis was prepared by different consultants than those that prepared the remainder of the DEIR, including the analysis of the other alternatives. DEIR, at 9-1 and 9-2. The DEIR should clearly explain to the public the circumstances associated with the Regional Board's decision to include more than 200 pages of analysis (plus appendices) for one alternative prepared by separate consultants for a party that will benefit from that alternative (if implemented), while the other alternatives each received less than seven pages of analysis. O-3-115

The Regional Board should make publicly available any contract or other agreement that has been entered into between the Regional Board and the Port District (or the Port District's consultants) regarding the preparation of the expanded analysis for Alternative 3, as well as any other documentation associated with the decision to include the expanded analysis of Alternative 3 in the DEIR. The Regional Board should also make clear if Alternative 3 is the politically preferred alternative, or is otherwise receiving special treatment because it is being advanced by the Port District, and explain why the Port District is being allowed to submit its own self-serving alternatives analysis for inclusion in the DEIR, an offer that has not (to NASSCO's knowledge) been extended to other Designated Parties or members of the public. CEQA's emphasis on public participation and open decisionmaking demands that the public be fully apprised of the circumstances associated with the inclusion of the expanded analysis regarding Alternative 3. O-3-116

To this end, NASSCO requests the opportunity to prepare a detailed analysis of the MNA alternative for incorporation into a recirculated DEIR. To the extent the Regional Board is unwilling to allow NASSCO to prepare an analysis of the MNA alternative for inclusion into the DEIR, it should explain the basis for treating NASSCO differently than the Port District. O-3-117

Biasing an EIR in favor of one entity or alternative is grounds for invalidation under CEQA. For example, CEQA's implementing regulations specifically provide that "[t]he lead agency is responsible for the adequacy and objectivity of the draft EIR," and the draft EIR "must reflect the independent judgment of the lead agency." CEQA Guidelines § 15084(e); *see also* CEQA § 21082.1 (EIR "shall be prepared directly by, or under contract to" the lead agency). Although a lead agency may enlist the initial drafting and analytical skills of an applicant's consultant, the agency must apply its "independent review and judgment to the work product before adopting and utilizing it." *Eureka Citizens*, 147 Cal. App. 4th at 369-371 (quotations omitted); *People v. County of Kern*, 62 Cal. App. 3d 761, 775 (1976) (lead agency "may not use a draft EIR as its own without independent evaluation and analysis."); CEQA Guidelines § 15084(e) ("Before using a draft prepared by another person, the lead agency shall subject the draft to the agency's own review and analysis."). Thus, the Regional Board may not simply adopt the Port District's submittal verbatim, and the DEIR must include a reasoned basis for its extensive analysis of Alternative 3 relative to the other alternatives. O-3-118

Moreover, as noted above, the Port District was the only entity that was permitted to directly draft sections of the EIR, improperly biasing the alternatives analysis in its favor. This is particularly troubling given the circumstances of the instant proceeding. Unlike a typical development project subject to CEQA, where approvals are sought by a single project applicant, here, multiple parties are required to implement the Project and currently are involved in federal court litigation regarding the proper allocation of costs required for Project implementation. There is no basis for allowing the Port District to prepare a self-serving analysis of an alternative that would provide it with financial and other benefits associated with the creation of an additional ten acres of shoreline property while imposing additional costs on other Designated Parties and additional (but largely undisclosed) impacts on the environment. O-3-119

XI. THE CONVAIR LAGOON ALTERNATIVE WILL CAUSE ADDITIONAL ENVIRONMENTAL IMPACTS AND SHOULD NOT BE ADOPTED

Alternative 3, which the DEIR acknowledges has greater impacts than the proposed Project, (DEIR, at 5-19), should not be adopted for a variety of reasons, but primarily because it would take contaminated sediment from one location in the Bay and transport it for burial in another location of the Bay, creating the very real possibility that contaminants from the sediment will escape from the CDF and recontaminate another portion of the Bay. As a threshold matter, the DEIR simply fails to analyze this risk in sufficient detail to provide the decisionmakers with an accurate assessment of the likelihood that the Convair site may be recontaminated due to CDF failure. This alone mandates that the DEIR treat Alternative 3 as causing a significant impact to water quality, hazards and hazardous materials, and marine biological resources, and dictates that the Regional Board may not adopt Alternative 3 because it is environmentally inferior to the proposed Project. CEQA § 21002 (project may not be approved if feasible alternatives exist that would substantially lessen environmental impacts). O-3-120

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A variety of additional inadequacies regarding Alternative 3 and the DEIR's analysis of same are set forth below (and also are discussed in the concurrently submitted Exponent Comments):

- As noted above, the DEIR indicates that Alternative 3 cannot be commenced until continuing discharges of PCBs to the Convair Lagoon site are abated to the satisfaction of the State Board, in order to "prevent potential recontamination of the marine sediments in the bay." DEIR, at 5-35, 5-208. But the DEIR does not provide any indication of how long it will take to achieve source control at Convair Lagoon, and thus fails to provide any information as to how soon Alternative 3 could be implemented in relationship to the Project or other alternatives. This clouds the viability of Alternative 3, given the Regional Board's desire to implement the TCAO as soon as reasonably possible. It also clouds the feasibility of the alternative under CEQA, which requires that an alternative be "capable of being accomplished in a successful manner *within a reasonable period of time* . . ." CEQA Guidelines § 15364 (emphasis added). O-3-121

- The DEIR states the source of continuing PCB contamination to the Convair site "presumably" is a 60-inch storm drain, reflecting uncertainty as to the source and highlighting the difficulty that may be required to ultimately address the issue. DEIR, at 5-224. It also suggests that cap failure may, in part, be the cause of the recontamination, a cautionary point in relationship to Alternative 3's contemplated CDF. O-3-122

- Alternative 3 is premised on the assumption that 15%, or 21,510 cubic yards, of the material dredged from the Shipyard Sediment Site will be classified as "hazardous" and thus would not qualify for placement in the CDF, due to high contamination levels. Conversely, the DEIR assumes that 85%, or 121,890 cubic yards, would be placed within the CDF. DEIR, at 5-42. But the DEIR fails to provide any support for these assumptions, which are critical to the feasibility of Alternative 3. If these assumptions are incorrect, and substantially more of the dredged sediment does not qualify for placement into a CDF, the ability to feasibly implement Alternative 3 will be jeopardized. O-3-123

- The DEIR indicates that the thresholds of significance used to assess Alternative 3 are "primarily" based on Appendix G to the CEQA Guidelines. DEIR, at 5-62. The DEIR should explain which thresholds of significance are not based on Appendix G, and the reason for departing from these thresholds in certain circumstances. O-3-124

- Table 5-8 purports to provide a list of past, present and probable future projects within the vicinity of the Convair Lagoon Alternative site. DEIR, at 5-63-67. But the table fails to include a list of past, present and probable future (or indeed any other) dredging projects in San Diego Bay, which necessarily precludes an accurate evaluation of the cumulative impacts from Alternative 3's proposed dredging of 143,000 cubic yards of sediment from the Bay. O-3-125

- The DEIR acknowledges that "[e]xtensive eelgrass beds are present on the Convair Lagoon Alternative site." DEIR, at 5-101. The DEIR indicates that Alternative 3 would destroy 5.64 acres of eelgrass, with 6.01 acres significantly impacted. DEIR, at 5-113, 114. Given the DEIR's acknowledgment of the importance of eelgrasss as habitat for a variety of marine life, and the extensive (and uncertain) mitigation that would be required to address O-3-126

Alternative 3's substantial eelgrass destruction, this weighs strongly against adoption of Alternative 3, in which eelgrass impacts from disposal of sediment would substantially outweigh eelgrass impacts caused by dredging at the Shipyard Site. O-3-126

- Alternative 3 indicates that the Southern California Eelgrass Mitigation Policy requires pre and post construction surveys within 30 days of project commencement and completion. DEIR, at 5-109. But elsewhere the DEIR indicates that such surveys are required 120 days before proposed start dates. DEIR, at 4.5-56. This discrepancy should be clarified. O-3-127

- Alternative 3 would result in the direct loss of 4 acres of intertidal habitat; another significant impact weighing heavily against adoption of Alternative 3. DEIR, at 5-114. O-3-128

- The DEIR contends that Alternative 3 satisfies a Port Master Plan ("PMP") goal that "Bay fills, dredging and the granting of long-term leases will be taken only when substantial public benefit is derived." DEIR, at 5-117. According to the DEIR, a substantial public benefit would be satisfied because the Alternative "would protect the quality of the waters of San Diego Bay for use and enjoyment by the people of the state" by implementing the TCAO. This is inaccurate, because, rather than "protecting" the waters of the state, Alternative 3 would actually eliminate 10 acres of water by converting it to upland habitat. Accordingly, Alternative 3 would cause a significant impact regarding consistency with local policies and ordinances, by virtue of its conflict with the PMP's Goals. This is particularly critical given that Alternative 3 is the only alternative that would require the elimination of state waters in order to implement the TCAO. O-3-129

- The DEIR also contends that Alternative 3 satisfies PMP Goal X, requiring that the "quality of water in San Diego Bay will be maintained at such a level as will permit human water contact activities." DEIR, at 5-118. Rather than "maintaining" water quality, however, Alternative 3 calls for the elimination of 10 acres of water by converting it to upland habitat. While the DEIR claims that Alternative 3 satisfies this goal by virtue of implementing the TCAO, Alternative 3 is the only alternative that proposes eliminating water in the Bay in order to accomplish TCAO objectives. Alternative 3 therefore would cause a significant impact by conflicting with local policies and ordinances. O-3-130

- The DEIR asserts that Alternative 3 satisfies PMP Goal XI, which provides that "[t]he District will protect, preserve and enhance natural resources, including natural plant and animal life in the Bay as a desirable amenity, and ecological necessity, and a valuable and usable resource." DEIR, at 5-118. But since Alternative 3 will destroy up to six acres of eelgrass at the Convair site, and destroy the benthic community, on its face the alternative is incapable of "preserving" same. While mitigation measures propose "creating similar habitat in an alternative location," (DEIR, at 5-118), this certainly is not equivalent to "preserving" the eelgrass present at the Convair site in the first instance. Alternative 3 therefore would cause a significant impact by conflicting with local policies and ordinances. Alternative 3 conflicts with Goal XI for the additional reason that it proposes off-site creation of eelgrass habitat in locations outside of the PMP area, insufficient to comply with the PMP's mandate. O-3-131

- Alternative 3's proposed Mitigation Measure 5.10.4.3 constitutes improper "deferred" mitigation because it defers a determination of the "success criteria" and "actions to O-3-132 undertake for failed mitigation goals" until after Project approval. It also does not provide for a final Regional Board determination as to the adequacy of the mitigation measure. O-3-132

- Alternative 3's proposed Mitigation Measure 5.10.4.4 also constitutes improper deferred mitigation because it does not provide success criteria or performance standards, and does not provide for a final Regional Board determination as to the adequacy of the mitigation measure. O-3-133

- Not only will Alternative 3 cause greater environmental impacts than the proposed Project, but its significant impacts to 6 acres of eelgrass and 4 acres of intertidal habitat at the Convair site (among other impacts) would require the imposition of substantial mitigation measures. While these measures are uncertain regarding their potential for success, they also will cause significant environmental impacts of their own requiring even further mitigation. DEIR, at 5-125. This weighs heavily against adoption of Alternative 3, and there is simply no reason to rely on mitigation measures to protect against the additional impacts from Alternative 3, only to be required to rely on even more mitigation measures to address the environmental impacts caused by the initial mitigation, when other less environmentally harmful alternatives are available. O-3-134

XII. THE DEIR MUST BE "RECIRCULATED"

Recirculation of an EIR is required if "significant new information" is added to the EIR after notice of public review has been given but before final certification. CEQA Guidelines § 15088.5(a). Recirculation is generally required when the addition of new information deprives the public of a meaningful opportunity to comment on substantial adverse project impacts or feasible mitigation measures or alternatives that are not adopted. *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112 (1993); CEQA Guidelines §15088.5(a). The CEQA Guidelines specify that the new information requiring recirculation may include changes in the project or the environmental setting. CEQA Guidelines §15088.5(a). Recirculation is also required if information added to the EIR shows a new potentially significant impact that was not previously addressed. *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova*, 40 Cal. 4th 412, 447 (2007). "A decision not to recirculate must be supported by substantial evidence in the administrative record." CEQA Guidelines § 15088.5(e). O-3-135

Here, recirculation of a revised DEIR is required for at least the following reasons, among others:

- A revised DEIR must evaluate the MNA alternative. As explained above, the MNA alternative will avoid all of the Project's significant and potentially significant impacts and obviate the need for mitigation measures, and substantial evidence shows that it can feasibly attain Project Objectives in a reasonable period of time. O-3-136

- A revised DEIR must include an updated description of the environmental setting, including a disclosure of past and ongoing sources of contamination to the Site via stormwater from Chollas Creeks and SW4 and SW9, as well as an accurate O-3-137

O-3

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description of baseline conditions regarding sediment quality at the Site, in relationship to the potential impairment of aquatic life, aquatic-dependent wildlife and human health beneficial uses. This baseline must be premised on actual conditions rather than hypothetical (and erroneous) assumptions. O-3-137

- A revised DEIR must evaluate the reasonably foreseeable potentially significant impact of recontamination of the Site, after Project implementation, from ongoing and uncontrolled stromwater discharges from Chollas Creek and SW4 and SW9. Mitigation measures and alternatives to address this potentially significant impact must also be evaluated. O-3-138

- A revised DEIR must include an updated cumulative impacts analysis accounting for scheduled and reasonably anticipated probable future dredging projects in San Diego Bay. O-3-139

- A revised DEIR must treat as "significant" impacts previously found to be less than significant based on mitigation measures that are infeasible or otherwise impermissible, including mitigation that may not be adopted by the Regional Board under the Porter Cologne Act, and which therefore is legally infeasible under CEQA. O-3-140

XIII. THERE ARE NO "UNUSUAL CIRCUMSTANCES" REQUIRING AN EIR

A. The Project is Categorically Exempt From CEQA

O-3-141

Finally, NASSCO reasserts its objection to the Regional Board's decision to require preparation of an EIR for the Project, on the grounds that the Project is "categorically exempt" from CEQA review. While NASSCO's preceding comments are based on its assumption that the Regional Board and its staff will continue with the Project's CEQA review notwithstanding that the Project should be found exempt, the preceding comments should in no way be interpreted as a waiver of NASSCO's position that an EIR is not required.

CEQA section 21084(a) requires the Secretary of the Natural Resources Agency to prepare and adopt "a list of classes of projects which have been determined not to have a significant effect on the environment," and which are therefore "categorically exempt" from CEQA. Thirty-three such categorical exemptions are currently authorized, (CEQA Guidelines sections 15301-333), and each exempted class of project "embodies a 'finding by the Resources Agency that the project will not have a significant environmental impact.'" *San Lorenzo Valley Community Advocates For Responsible Education v. San Lorenzo Valley Unified School District*, 139 Cal. App. 4th 1356, 1381 (2006); CEQA Guidelines § 15300. If a project is categorically exempt, it "may be implemented without any CEQA compliance whatsoever." *Ass'n for Prot. of Envt'l Values in Ukiah v. City of Ukiah*, 2 Cal. App. 4th 720, 726 (1991). O-3-142

As explained in the motion filed by NASSCO on July 23, 2010, the TCAO is "categorically exempt" from CEQA under at least the three exemptions set forth in CEQA Guidelines sections 15307, 15308 and 15321, which apply to actions by regulatory agencies to O-3-143 protect natural resources or the environment, as well as regulatory enforcement actions. More specifically, the referenced classes of exempted projects include (i) "actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment" (Class 7); (ii) "actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment" (Class 8); and (iii) actions by agencies related to "enforcement of a law, general rule, standard, or objective, administered or adopted by the regulatory agency" (Class 21). CEQA Guidelines §§ 15307, 15308 and 15321. Because the proposed Project is to be overseen by a regulatory agency, the Regional Board, and is designed to protect water quality and beneficial uses in the San Diego Bay, it clearly falls within the scope of each of these exemptions. O-3-143

In fact, the above-referenced categorical exemptions were cited in the first three iterations of the TCAO, released between 2005–2008, to support the Cleanup Team's then-position that the TCAO was exempt from CEQA review. Cleanup Team's California Environmental Quality Act Analysis for Shipyard Sediment Project; Tentative Cleanup and Abatement Order R9-2010-002, dated July 9, 2011 ("CUT's CEQA Analysis"); Tentative Cleanup and Abatement Order R9-2005-0126, released April 29, 2005; Tentative Cleanup and Abatement Order R9-2005-0126, released August 24, 2007; Tentative Cleanup and Abatement Order R9-2005-0126, released April 4, 2008. It was not until the fourth iteration of the TCAO, released on December 22, 2009, that the Cleanup Team dramatically reversed course and alleged that CEQA review was required because the Project "presents unusual circumstances both with respect to its scope and unique characteristics." CUT's CEQA Analysis, at 2, Section II(A). O-3-144

An exemption finding would be consistent with statewide practice and this Regional Board's prior practice of exempting cleanup and abatement orders, including orders for sediment remediation and dredging projects in San Diego Bay, and, as NASSCO repeatedly has asserted, also would avoid any unnecessary delay in the cleanup associated with the preparation and certification of an EIR. O-3-145

B. The DEIR Refutes the Regional Board's Determination That Unusual Circumstances Differentiate The Project From Other Dredging in the Bay

NASSCO recognizes that a categorical exemption to CEQA may not apply where a project includes "unusual circumstances" ***and*** those unusual circumstances present a "reasonable possibility of a significant effect on the environment." *Banker's Hill, Hillcrest, Park West Community Preservation Group v. City Of San Diego*, 139 Cal. App. 4th 249, 278 (2006). Both of these prongs must be satisfied, however, as "[a] negative answer to either question means the exception does not apply." *Id.* (quoting *Santa Monica Chamber of Commerce v. City of Santa Monica*, 101 Cal. App. 4th 786, 800 (2002)). Further, "unusual circumstances" will not be found unless some feature distinguishes the project from other typical projects in the exempt class, such that the type of environmental impacts that may result are different than the type of environmental impacts likely to result from other typical projects within the class. *E.g., Santa Monica Chamber of Commerce*, 101 Cal. App. 4th at 801-803. O-3-146

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In opposition to NASSCO's motion, the Cleanup Team argued that an EIR is required because the TCAO "**is the largest sediment remediation project *in the history San Diego Bay***" and thus is distinguishable from "garden variety" Class 7, Class 8, and Class 21 projects because it is expected to require dredging of over 140,000 cubic yards of sediment. *See* Cleanup Team's Comments On The Applicability of a CEQA Categorical Exemption For Tentative Cleanup And Abatement Order R9-2010-0002, at 2 (emphasis added). The Cleanup Team further relied on a statement by David Gibson that the Project "**will result in more dredging and removal of sediments from San Diego Bay than all previous Cleanup and Abatement Orders combined**." *Id.* at n.1 (emphasis added). In addition, the Cleanup Team asserted that NASSCO's argument for an exemption was based on an improper supposition that "<u>large-scale dredging projects</u> do not usually have a potential for significant adverse environmental impacts," while, according to the Cleanup Team, the volume of this dredging project differentiated it from other dredging in San Diego Bay. *Id.*; *see also* CUT's CEQA Analysis, at 3, Section III(A) (citing the alleged unprecedented scope of the project, and referencing as factors supporting a finding of unusual circumstances its associated "physical disturbance to the environment, including but not limited to, sediment movement, air quality impacts from diesel emissions from dredging equipment, and potential impacts to traffic patterns and noise from equipment operations in the area where the sediments will be dewatered and from which they will be transported."); *see also* DTR, at 37-3. O-3-147

Finally, the Cleanup Team contended that the above-referenced categorical exemptions contain exclusions where "construction activities" are undertaken in the context of an otherwise exempt project, and that dredging of sediment constitutes a "construction activit[y]" such that dredging cannot qualify for a categorical exemption under CEQA Guidelines sections 15307, 15308 or 15321. Cleanup Team's Comments On The Applicability of a CEQA Categorical Exemption For Tentative Cleanup And Abatement Order R9-2010-0002, at 4. The Cleanup Team further opined that "large-scale modifications" to the environment caused by the volume of dredging required for the Project precluded application of a categorical exemption, including the destruction of eelgrass habitat. O-3-148

But the DEIR disproves the Regional Board's finding that "unusual circumstances" required an EIR for this particular sediment remediation project, which calls for the dredging of approximately 143,000 cubic yards of sediment. The DEIR indicates that during an 11-year period between 1994-2005, "<u>an average of approximately 245,000 cubic yards of sediment was dredged from the Bay each year</u>," including maintenance and environmental dredging, with an annual total as high as 763,000 cubic yards. The DEIR further indicates that the project dredge volume "**falls within the historic ranges for the yearly overall volume of dredging activity in San Diego Bay**." DEIR, at 4-2 (emphasis added). O-3-149

Because the DEIR confirms that the volume of dredging for this Project is consistent with the normal amount of dredging conducted in San Diego Bay each year (albeit the Project is a larger sediment remediation CAO than other sediment dredging in San Diego Bay), there are no "unusual circumstances" warranting CEQA review for this but not other dredging projects. Accordingly, NASSCO reasserts its objection to the preparation of the EIR, and requests that the Regional Board refrain from further CEQA review of the Project and elect not to prepare or certify a Final EIR. O-3-150

In addition, so that the public may better understand the type and scope of dredging typically conducted in San Diego Bay, NASSCO requests that the Regional Board make publicly available and include in the Administrative Record the records of dredging in San Diego Bay between 1994-2005, referenced at page 4-2 of the DEIR, as well as any additional records reflecting past dredging in San Diego Bay or reasonably anticipated future dredging. The Regional Board should also explain the extent to which it does or does not regularly analyze sediment dredging projects in San Diego Bay under CEQA, and indicate each dredging project in San Diego Bay that has undergone CEQA review.

Thank you for your consideration of these comments. We look forward to your responses.

Very truly yours,

Jeffrey P. Carlin
of LATHAM & WATKINS LLP

cc: Frank Melbourn, on behalf of the Advisory Team
Designated Parties (per attached proof of service)

SD\797454.7

Certification of Authenticity of Electronic Submittal

I, Jeffrey P. Carlin, declare:

I am an associate at Latham & Watkins LLP, counsel of record for National Steel and Shipbuilding Company ("NASSCO") in the Matter of Tentative Cleanup and Abatement Order R9-2011-0001 before the San Diego Regional Water Quality Control Board ("Water Board"). I am licensed to practice law in the State of California and make this declaration as an authorized representative for NASSCO. I declare under penalty of perjury under the laws of the State of California that the electronic version of NASSCO's Comments on the Draft Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098), submitted to the Water Board and served on the Designated Parties by e-mail on August 1, 2011, is a true and accurate copy of the submitted signed original. Executed this 1st day of August 2011, in San Diego, California.

Jeff P Carl

Jeffrey P. Carlin

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Attorneys for Designated Party
National Steel and Shipbuilding Company

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

IN THE MATTER OF TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001 (SHIPYARD SEDIMENT CLEANUP)	**DECLARATION OF SERVICE**

PROOF OF SERVICE

I am employed in the County of San Diego, State of California. I am over the age of 18 years and not a party to this action. My business address is Latham & Watkins LLP, 600 West Broadway, Suite 1800, San Diego, CA 92101-3375.

On **August 1, 2011**, I served the following document described as:

1. **NASSCO'S COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SHIPYARD SEDIMENT REMEDIATION PROJECT (SCH # 2009111098)**

2. **ANCHOR QEA'S MEMORANDUM REGARDING COST IMPLICATIONS OF MITIGATION MEASURES DESCRIBED IN THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE SAN DIEGO SHIPYARDS SEDIMENT CLEANUP PROJECT, SAN DIEGO, CALIFORNIA**

3. **EXPONENT, INC.'S COMMENTS ON DRAFT PRELIMINARY ENVIRONMENTAL IMPACT REPORT FOR THE SHIPYARD SEDIMENT REMEDIATION PROJECT, DATED JUNE 16, 2011**

by serving a true copy of the above-described documents in the following manner:

BY ELECTRONIC MAIL

Upon written agreement by the parties, the above-described documents were transmitted via electronic mail to the parties noted below on **August 1, 2011**.

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BY ELECTRONIC MAIL

Upon written agreement by the parties, the above-described documents were transmitted via electronic mail to the parties noted below on **August 1, 2011**.

BY OVERNIGHT MAIL DELIVERY

I am familiar with the office practice of Latham & Watkins LLP for collecting and processing documents for overnight mail delivery by Express Mail or other express service carrier. Under that practice, documents are deposited with the Latham & Watkins LLP personnel responsible for depositing documents in a post office, mailbox, subpost office, substation, mail chute, or other like facility regularly maintained for receipt of overnight mail by Express Mail or other express service carrier; such documents are delivered for overnight mail delivery by Express Mail or other express service carrier on that same day in the ordinary course of business, with delivery fees thereon fully prepaid and/or provided for. I deposited in Latham & Watkins LLP' interoffice mail a sealed envelope or package containing the above-described document and addressed as set forth below in accordance with the office practice of Latham & Watkins LLP for collecting and processing documents for overnight mail delivery by Express Mail or other express service carrier:

Vincente Rodriguez Frank Melbourn Catherine Hagan California Regional Water Quality Control Board San Diego Region 9174 Sky Park Court, Suite 100 San Diego, CA 92123-4340 fmelbourn@waterboards.ca.gov chagan@waterboards.ca.gov Telephone: (858) 467-2958 Fax: (858) 571-6972	(12 copies of each document)

I declare that I am employed in the office of a member of the Bar of, or permitted to practice before, this Court at whose direction the service was made and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on **August 1, 2011**, at San Diego, California.

Diane Griffin

Diane Griffin

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LATHAM & WATKINS LLP

August 1, 2011

VIA EMAIL AND OVERNIGHT MAIL

Mr. Vicente Rodriguez
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123
vrodriguez@waterboards.ca.gov

Re: NASSCO's Comments on the Draft Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098)

Dear Mr. Rodriguez:

Designated Party National Steel and Shipbuilding Company ("NASSCO") submits the enclosed comments regarding the Draft Environmental Impact Report ("DEIR") for the Shipyard Sediment Remediation Project ("Project"), State Clearing House Number 2009111098, publicly released by the California Regional Water Quality Control Board, San Diego Region ("Regional Board") on June 16, 2011. The enclosed comments were prepared by Michael Whelan and David Templeton of Anchor QEA, and supplement the comment letter prepared by my office that is being submitted concurrently.

Very truly yours,

Jeffrey P. Carlin
of LATHAM & WATKINS LLP

cc: Frank Melbourn, on behalf of the Advisory Team
Designated Parties (per attached proof of service)

O-3-155

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O-3

MEMORANDUM

To:	Kelly Richardson and Jeff Carlin, Latham & Watkins	**Date:**	August 1, 2011
From:	Michael Whelan, P.E., and David Templeton, Anchor QEA, L.P.		
Cc:	Mike Chee, NASSCO		
Re:	Cost Implications of Mitigation Measures Described in the Draft Environmental Impact Report for the San Diego Shipyards Sediment Cleanup Project, San Diego, California		

This memorandum presents a detailed discussion and tabulation of estimated costs that could result from the imposition of certain mitigation measures described in the San Diego Shipyard Project's Draft Environmental Impact Report (EIR), dated June 16, 2011. If imposed in combination and as described in the Mitigation and Monitoring Reporting Program (MMRP; Section 7 of the Draft EIR), the various mitigation measures are estimated to potentially add $11.8 to $18.3 million to the total project cost estimate, which is currently estimated at up to $60 million. O-3-156

Many of the mitigation measures described in the MMRP are typical for environmental sediment cleanup projects of this type and, therefore, have been included in Anchor QEA, L.P.'s most recent cost model for the site sediment cleanup. "Typical" environmental mitigation measures for sediment remediation projects include those required for the 2005/2006 cleanup of Campbell Shipyard, the most recent sediment cleanup project in San Diego Bay as well as the ongoing cleanup of the Rhine Channel in Newport Beach (for which a Water Quality Certification [WQC] was issued by the Santa Ana Regional Water Quality Control Board). However, a number of mitigation measures are not typical, do not provide substantive increases in environmental protection, and/or significantly increase construction costs. Such measures have typically not been in effect for Campbell Shipyard, Rhine Channel, or many other similar projects. O-3-157

The impacts to construction costs are compounded when various measures are implemented in combination. Practices that decrease the contractor's productivity while failing to increase environmental protectiveness are particularly problematic and likely to result in O-3-158 escalated total costs. Table 1 presents a summary of these compounding factors and estimated costs as they relate to MMRP mitigation elements. Costs are presented as a range of probable minimum, most probable, and probable maximum, reflecting the early stage of the project and the conceptual nature of its current definition. Cost elements will be refined as the project design process proceeds. The following sections discuss the mitigation measures in greater detail and focus on their effectiveness based on our experience with similar sediment cleanup projects. O-3-158

A key consideration in this analysis is whether these mitigation measures are "required" or if the Draft EIR is recommending that they be considered during design and permitting (e.g., development of the Construction Quality Assurance Plan [CQAP] and the Section 401 WQC), with further consideration of environmental protectiveness and cost implications. O-3-159

MITIGATION ELEMENTS RELATED TO HYDROLOGY, WATER, AND AIR QUALITY

Mitigation Measure 4.2.1: Hydrology and Water Quality

This mitigation measure requires that "automatic systems" be used to monitor turbidity outside of the construction area. While automatic monitoring of dredging position and progress is a standard and beneficial industry practice (and a key monitoring element of the Section 401 WQC), the automated monitoring of *turbidity* is not, aside from a select few instances known nationally. In fact, requiring automated monitoring is likely to have significant adverse effects on operations owing to the difficulty of discerning meaningful turbidity results from ambient conditions and statistical "noise." Turbidity is a complex phenomenon and subject to a host of environmental variables as well as to the ever-changing conditions of construction. Successful monitoring of turbidity effects, and interpretation of the monitoring data, requires the judgment of a skilled operating team so that external variables can be properly taken into account. Automating the monitoring is likely to lead to significant uncertainty and false positives (unwarranted indications of exceedances) resulting from external factors such as currents, weather, and vessel traffic as well as a frequent need to refine or clarify what the automatic monitors are indicating, which is likely to lead to confusion and loss of time on the project. O-3-160

Potential slowdowns to the dredging process, even if limited in duration, will result in considerable extra costs, because dredging effectiveness is primarily driven by production O-3-161 rate. Working in these active shipyards is already subject to a number of scheduling challenges. We expect that adding the uncertainty of an automated turbidity monitoring system could add as much as $500,000 to $1 million to total project costs, simply through the occasions of unnecessary work slowdown and uncertainty. O-3-161

Alternatively, implementation of a water quality monitoring program that employs the manual collection of turbidity values allows for appropriate adjustments for tidal exchanges, wind, and vessel traffic. This flexibility will allow the contractor to adjust dredging and barge-loading methodologies (e.g., speed and bucket type) based on visual assessment at both the early warning and compliance distances from the construction area. In turn, manual collection of water quality results in better production rates and lower costs while providing better environmental protectiveness. O-3-162

Mitigation Measure 4.2.2: Hydrology and Water Quality

This mitigation measure lists a number of best management practices (BMPs) intended to meet water quality objectives during the dredging work. Some of these BMPs are standard and would customarily be included in the project specifications, such as prohibitions against stockpiling, spillage, and splashing; bucket closure; and debris grid management. Other listed BMPs, however, are not representative standard practice. While there have been limited instances known nationally where they have been applied to highly toxic cleanup events, at this project they will add significantly to construction costs (and potentially slowing down the rate of progress) without a commensurate gain in environmental protectiveness. Examples of such BMPs include: O-3-163

- **Double silt curtain enclosure.** Although double silt curtains were used for the Campbell Shipyard project in San Diego, they are not a standard practice. Single silt curtains, for instance, have been required and successfully used for recent and ongoing sediment cleanup projects in Newport Beach and at the Port of Long Beach. Employing double silt curtains adds considerable cost and management time without any demonstrated environmental benefit. We estimate that this measure could add $250,000 to $500,000 to project costs, owing not only to the increased cost of material purchase but also to the greater effort required to manage and move the double silt curtain. O-3-164

- **Specialized bucket additions and controls (e.g., closure switches and Clam Vision TM).** These additions and controls would add cost due to their purchase, installation, upkeep, calibration, and management and would pose the risk of complicating the contractor's work by providing ambiguous or misleading data owing to the many variables that are in effect during dredging. We envision this measure adding as much as $250,000 to $500,000 to project costs. Alternatively, a practical water quality control and monitoring plan (as was used used successfully for the Campbell Shipyard project in 2005/2006) will ensure compliance with the Section 401 WQC and allow the contractor to use the right equipment for the conditions while keeping production efficient. O-3-165
- **Air curtains.** The MMRP suggests these as a supplement to silt curtains for better controlling loss of suspended sediment and enhancing worker safety. We are not aware of any regional precedent for using air curtains for these reasons, and their effectiveness in this regard appears highly doubtful. Air curtains would add considerable cost and would be time-consuming to install, maintain, and continually relocate as the dredging proceeds. We estimate that this measure could add as much as $300,000 to $500,000 to project costs, owing not only to the increased cost of material purchase but also to the greater effort required to manage and move the air curtain assembly. O-3-166

Mitigation Measure 4.2.3: Hydrology and Water Quality

This mitigation measure stipulates that double silt curtains (previously discussed) are to "fully encircle the dredging equipment and the scow barge being loaded with sediment." Although a silt curtain enclosure around the dredging barge is a typical requirement, including the scow barge in the enclosure would have a significant impact on operations. Each time the scow barge is loaded, it would have to wait within the silt curtain enclosure until water quality within the curtains can be documented as meeting water quality criteria and then for the curtain enclosure to be opened. This delay on the contractor's work efforts will increase dredging cycle times and, therefore, significantly slow down the necessary progress of the cleanup work. We also anticipate an increase to the dredging unit cost that could add as much as $1.5 to $2 million to project costs, with little to no resulting environmental benefit. With the appropriate controls on scow leakage and overflow, it O-3-167 would be unnecessary and counterintuitive to require that the scows also be situated within the silt curtains. O-3-167

Mitigation Measure 4.2.7: Hydrology and Water Quality

This mitigation measure anticipates a fundamentally different concept for the underpier remediation aspect of the project work. Prior discussions envisioned that a cover layer of sand or a sand-gravel mixture would be placed below piers, as a means of lessening the incidence of exposed contaminants and augmenting the ongoing process of sedimentation. Installing the cover to be a permanent feature that is fully protected against erosion requires the addition of a surficial armoring layer, generally comprised of a rock product, separated from the underlying sand by an intervening "filter layer" of gravel, and potentially a layer of filter fabric. The resulting sequence of aggregrate material layers would in fact be 5 to 7 feet thick, comprised of layers of sand, gravel, and rock. Not only is such a sediment cover a far more complex element to design and construct, it also raises the risk of imposing stresses on the foundations and soils that underlie the overwater marine structures. Clearly, this measure has tremendous impacts on the project's cost and timeframe. We estimate that the cost impact would be as much as $5 to $7 million, which makes it the most costly of all the mitigation measures described in the MMRP, because the material and placement costs increase so substantially. O-3-168

Mitigation Measure 4.2.8: Hydrology and Water Quality

Hydraulic placement of sand cover material might in fact be a feasible and cost-effective option for some contractors, but including hydraulic placement as a project requirement will unnecessarily disrupt the ability of otherwise qualified contractors to submit competitively priced bids. Other feasible methods are also available for placement of sand and gravel materials below overwater structures, including long-reach conveyors and reticulated bucket arms. Rather than making hydraulic placement a project requirement, we recommend instead to let individual contractors determine whether they will use mechanical or hydraulic methods to place sand cover materials. In other words, we recommend approaching the project requirements in much the same way as was done for the successful Campbell Shipyard project. Otherwise, the cost difference could be substantial, as much as $1.5 to $2 million for this relatively high-cost element of the project. O-3-169

Mitigation Measure 4.4.1: Noise

This mitigation measure anticipates a restriction on haul times to the hours between 7 am and 7 pm only. While these construction times are consistent with the San Diego Municipal Code, imposition of this ordinance will delay the critical transport of sediment off site. The common and recommended practice for critical environmental cleanups, such as this one, is to obtain a temporary variance from the City Ordinance so that the work can be completed in as timely a fashion as possible. Because sediment disposal is a high-cost item on the project, any change will result in a proportionately high impact. We estimate that restricting truck haul times could add as much as $2 to $4 million is cost by significantly complicating the sediment transport operations and hindering the rate and progress of the cleanup action. O-3-170

Mitigation Measures 4.5.7-4.5.9: Biological Resources

It is expected that the proper application of operational controls and BMPs, as will be detailed in the Section 401 WQC, in combination with effective construction quality assurance will be successfully able to limit impacts to biological resources. Further, water quality impacts that might result from the work are expected to be short-term in duration. Nevertheless, the use of biological monitors on such projects is not without precedent and can be completed without incurring significant project delays, although it does add cost to the work effort. We estimate that the net cost could be as much as $250,000 to $500,000. O-3-171

Mitigation Measures 4.6.8-4.6.10: Air Quality

This set of mitigation measures discusses the use of various technologies for reducing air emissions from construction equipment engines to the extent that they are readily available and cost effective in the San Diego Air Basin (ADAB). Specifically identified measures include the use of engine catalysts, low-NOx fuels, and alternative fuels. Because of the clause regarding their use only when available and cost effective, the imposition of these measures on construction costs is restricted. In the case of low-NOx fuels, the MMRP defines cost effective as up to 125 percent of the cost of diesel. We anticipate that these requirements will increase overall costs by approximately $100,000 to $200,000. O-3-172

Mitigation Measure 4.6.15: Air Quality

The MMRP describes the application of a sanitizing solution (Simple Green and water mixed in a 10:1 ratio) as a means of controlling potential odors from sediment stockpiles. This mitigation measure would require purchase of the chemical agent in industrial-size quantities and applying and mixing the solution into sediment stockpiles using earthmoving equipment. The method would slow down the dewatering and drying process, because water would be added to the sediment and would add weight to sediment loads being hauled off for disposal. If this measure were applied consistently to all sediment stockpiles, it would have a significant impact on construction progress, delaying the processing and disposal of dredged sediments and would have a similar affect on cost, increasing costs by as much as $1 million. The cost impacts can be managed by using this measure only on an as-needed basis, in cases where significant odors are present, thus bringing the estimated net costs down to an estimated $50,000 to $100,000. This as-needed approach appears to be consistent with the Regional Water Quality Control Board's intentions. Note that such measures were not used for the Campbell Shipyard project, which occurred immediately adjacent to the San Diego Convention Center, and no odor-related problems were reported. O-3-173

O-3-174

TABLE

Table 1
Summary of Cost Impacts from Potential Environmental Mitigation Elements

Mitigation Measure(s)	Probable Minimum Cost	Most Probable Cost	Probable Maximum Cost	Summary of Key Considerations (as discussed in accompanying memo)
Automatic turbidity monitoring systems (MMRP 4.2.1)	$ 500,000	$ 800,000	$ 1,000,000	Increased potential for excessive work stoppages and 'false positive' readings.
Double silt curtain enclosure (MMRP 4.2.2)	$ 250,000	$ 400,000	$ 500,000	Has precedent in San Diego but not elsewhere Doubles the cost of silt curtain materials and deployment efforts.
Bucket additions and controls (closure switches, Clam Vision TM) (MMRP 4.2.2)	$ 250,000	$ 400,000	$ 500,000	Requires up-front capital expenditure with potential to slow down dredging operations, without commensurate gain in environmental protection.
Air Curtains (MMRP 4.2.2)	$ 300,000	$ 400,000	$ 500,000	Unorthodox (except in isolated instances nationally) and of questionable merit. Expensive to install and relocate as the dredging proceeds.
Complete enclosure of dredge AND barge (MMRP 4.2.3)	$ 1,500,000	$ 1,750,000	$ 2,000,000	Will cause regular and systemic delays in hauling of sediment to offloading site. Other BMPs will allow sufficient protection of water quality.
Design and construction of permanent cap instead of sand cover (MMRP 4.2.7)	$ 5,000,000	$ 6,000,000	$ 7,000,000	Significantly changes approach to design and construction of sand cover in dredged and underpier areas. A surficial layer of protective armor rock would likely be needed, along with, potentially, an intervening layer of filter gravel and fabric.
Hydraulic placement of cap material (MMRP 4.2.8)	$ 1,500,000	$ 1,750,000	$ 2,000,000	Should be given as an option for contractors, but not as a requirement. Other legitimate (and potentially more cost-effective) techniques exist.
Restriction on haul times (MMRP 4.4.1)	$ 2,000,000	$ 3,200,000	$ 4,000,000	Will have significant effect on sediment haul-out rates (needed on a 24-hour cycle). Recommendation is obtain temporary City variance.
Biological monitoring for sea turtles, terns, etc. (MMRP 4.5.7 -4.5.9)	$ 250,000	$ 400,000	$ 500,000	Additional monitoring effort. Best management practices(BMPs) likely to be sufficiently protective of biological resources.
Use of engine catalysts, low-NOx, and alternative fuels (MMRP 4.6.8 - 4.6.10)	$ 100,000	$ 180,000	$ 200,000	Cost effect is countered by implementing this as a contractor option, subject to equipment availability.
Use of special deodorizing additives (such as Simple Green) (MMRP 4.6.15)	$ 50,000	$ 80,000	$ 100,000	Best if done only on an as-needed basis.
Total Estimated Cost Increase from Mitigation Measures	$ 11,700,000	$ 15,360,000	$ 18,300,000	

O-3-174

Certification of Authenticity of Electronic Submittal

I, Jeffrey P. Carlin, declare:

I am an associate at Latham & Watkins LLP, counsel of record for National Steel and Shipbuilding Company ("NASSCO") in the Matter of Tentative Cleanup and Abatement Order R9-2011-0001 before the San Diego Regional Water Quality Control Board ("Water Board"). I am licensed to practice law in the State of California and make this declaration as an authorized representative for NASSCO. I declare under penalty of perjury under the laws of the State of California that the electronic version of Anchor QEA's Memorandum Regarding Cost Implications of Mitigation Measures Described in the Draft Environmental Impact Report for the San Diego Shipyards Sediment Cleanup Project, San Diego, California, submitted to the Water Board and served on the Designated Parties by e-mail on August 1, 2011, is a true and accurate copy of the submitted hard copy. Executed this 1st day of August 2011, in San Diego, California.

Jeffrey P. Carlin

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LATHAM&WATKINS LLP

August 1, 2011

VIA EMAIL AND OVERNIGHT MAIL

Mr. Vicente Rodriguez
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123
vrodriguez@waterboards.ca.gov

Re: NASSCO's Comments on the Draft Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098)

Dear Mr. Rodriguez:

Designated Party National Steel and Shipbuilding Company ("NASSCO") submits the enclosed comments regarding the Draft Environmental Impact Report ("DEIR") for the Shipyard Sediment Remediation Project ("Project"), State Clearing House Number 2009111098, publicly released by the California Regional Water Quality Control Board, San Diego Region ("Regional Board") on June 16, 2011. The enclosed comments were prepared by Rick Bodishbaugh, Tom Ginn and Gary Brugger of Exponent, and supplement the comment letter prepared by my office that is being submitted concurrently.

Very truly yours,

Jeffrey P. Carlin
of LATHAM & WATKINS LLP

cc: Frank Melbourn, on behalf of the Advisory Team
Designated Parties (per attached proof of service)

Exponent®

EXTERNAL MEMORANDUM

TO: Jeff Carlin and Kelly Richardson, Latham & Watkins

FROM: Rick Bodishbaugh, Tom Ginn, and Gary Brugger, Exponent

DATE: August 1, 2011

PROJECT: PH10719.001

SUBJECT: Comments on Draft Preliminary Environmental Impact Report for the Shipyard Sediment Remediation Project, Dated June 16, 2011

O-3-177

At your request, Exponent has provided technical comments on the subject document (the PEIR), as viewed on the San Diego Regional Water Quality Control Board (RWQCB) website. These comments are restricted to the PEIR sections concerning environmental setting, impacts and mitigation, water quality, and biological resources, both for the existing conditions and for the remedial alternatives under consideration, as well as the engineering recommendations and design details of the preferred and alternative projects, to the extent they are presented. We have not reviewed in detail nor commented on PEIR sections dealing with transportation and circulation, noise, air quality, or greenhouse gas emissions.

Description of Current Environmental Conditions

The PEIR includes several brief qualitative descriptions of the current environmental conditions and characterizes possible beneficial use impairment at the Shipyard Sediment Site. These include descriptions of water quality (Section 4.2), sediment quality (Section 4.3), and biological resources (Section 4.5) at the Site. In general, these statements are drawn from and are consistent with findings set forth in the Tentative Cleanup and Abatement Order (TCAO, RWQCB 2010a) and the accompanying Draft Technical Report (DTR, RWQCB 2010b). However, as noted in comments we have previously submitted on the general lack of beneficial use impairment at the NASSCO Shipyard (see attached memorandum, dated May 25, 2011), and in the expert report we prepared critiquing the DTR (Ginn 2011), the conclusions of Site-wide beneficial use impairment in the TCAO are flawed, and do not accurately reflect current O-3-178 environmental conditions. The analyses relied upon in the TCAO and DTR to reach a conclusion of beneficial use impairment are completely dependent on unrealistic and scientifically unsupportable assumptions and hypotheticals, including: O-3-178

- Fractional intakes of 100 percent for recreational and subsistence anglers. In other words, the exposure estimate upon which the DTR human risk calculations are based assumes that all fish and lobster consumed by humans over a period of 30 years (non-carcinogens) to 70 years (carcinogens) are caught within the boundaries of the Shipyard Site. These calculations disregard both the limited fish populations at the Site and the access restrictions that preclude the use of the Site for fishing. O-3-179

- Area use factor of 100 percent for all modeled aquatic-dependent wildlife receptors. All wildlife are presumed to derive their entire sustenance by foraging within the boundaries of the Shipyard Site, even though all have known forage ranges much larger than the Site, and suitable foraging habitat at the Site is extremely limited in size, of poor quality, or unattractive because of human activity. O-3-180

- Inappropriately derived avian and reptilian toxicity reference values for lead, which drive an erroneous conclusion that sediment lead levels are a significant risk to wildlife. O-3-181

- A highly biased evaluation approach for aquatic life (i.e., benthic) impairment that ignores direct evidence of the lack of toxicity or benthic community impacts at many Shipyard stations with elevated sediment chemistry. O-3-182

In addition, the PEIR fails to acknowledge the existence or significance of non-Site related sources of water and sediment contamination in the characterization of current conditions, future impacts, or possible mitigation required. In particular, while Chollas Creek is described as a major freshwater source for central San Diego Bay, the significance of Chollas Creek as a known historical and current contaminant source for the portion of the Bay surrounding the shipyards is ignored, as is the potential for recontamination of the Shipyard Site if this source is not adequately controlled prior to remediation. The importance of Chollas Creek and municipal storm drain outfalls as both historic and ongoing contaminant sources to the Shipyard Site has O-3-183 been recognized since the early stages of the sediment investigation (Exponent 2003), and is explicitly recognized and described in the DTR (RWQCB 2010b). O-3-183

Discussion of Project Alternatives

The PEIR discusses and contrasts 4 alternatives to the proposed project, both from the perspective of impacts and mitigation required at the Shipyard Site and impacts and mitigation created by the various disposal alternatives, including transportation and ultimate disposition of dredged materials. These options are: O-3-184

- No project (no action alternative)
- Confined aquatic disposal (CAD alternative)
- Convair Lagoon confined disposal facility (Convair Lagoon CDF alternative)
- Nearshore confined disposal facility (Nearshore CDF alternative)

Because the dredging method and dredged footprint is the same for all alternatives, the on-Site benefits and direct remediation-related impacts are essentially the same, with the exception of the no action alternative. Therefore the discussion primarily concerns differences driven by the alternative dredge spoil disposal method and location. O-3-185

A notable omission of the PEIR assessment of alternatives is a failure to consider natural recovery through monitored natural attenuation (MNA) of contamination. Contrary to the hypothetical scenario evaluated in the PEIR under the “No Project” alternative, sediment contamination at the Shipyard Site is not static. Mitigation of any putative existing impacts or impairment would increase over time by natural attenuation from chemical degradation and sedimentation that is currently taking place at the Shipyards. The MNA remedial alternative has been discussed as a possible option at the Shipyard Site since the beginning of the sediment investigation, and was the alternative judged most likely to result in the highest net benefits with respect to beneficial uses in the feasibility assessment contained in the Phase I/II sediment investigation report (Exponent 2003). Given this history and the existing analyses, the complete omission of an MNA alternative from the PEIR evaluation is egregious. O-3-186

Alternative 1: No Action Alternative

Under this hypothetical scenario, no dredging is conducted and contamination is assumed to be static and unchanged into the future. This is in fact an unrealistic scenario, and is apparently only included in the PEIR because of a statutory requirement to include a no-action alternative. Based on the unrealistic assumptions and dismissive treatment of the no-dredging scenario, Alternative 1 does not appear to be under serious consideration by the RWQCB. O-3-187

Alternative 2: CAD Alternative

While the discussion of this alternative correctly identifies the primary benefits of this option (elimination of land-based staging and transport of dredged materials and associated impacts and mitigation), few details are provided. Without a specific location and project design for a CAD, it is impossible to fully describe, let alone quantify impacts or mitigation that would be required for this alternative. The discussion of net environmental costs and benefits is therefore incomplete, and this alternative cannot properly be compared with the proposed project or other alternatives. Also, since the sediments do not qualify for off-shore/deep water disposal due to contamination, near shore confined disposal carries a significant risk from both a physical and a regulatory perspective. It would be more realistic to include the removal, dewatering, and upland disposal of the most contaminated sediments in this alternative, as proposed under Alternative 3. However, this modification would eliminate many of the advantages of a CAD over the proposed project (i.e., some dewatering, transportation and upland disposal would be required). The likelihood and impacts of containment failure from an accident or natural disaster, such as a seismic event, should be evaluated. O-3-188

Alternative 3: Convair Lagoon CDF Alternative

The majority of the PEIR is concerned with the description and discussion of this alternative (including more than 200 pages in Section 5.10 and several appendices). This starkly contrasts with the minimal detail and much more qualitative evaluation presented for the other three evaluated alternatives. Although Alternative 3 is not recommended by the PEIR, the vastly greater level of detail and analysis presented for Alternative 3 could imply to the reader that this O-3-189 is a preferred or leading alternative to the proposed project. This inconsistency should be explained. O-3-189

One obvious negative aspect of Alternative 3 is the dramatically greater loss of aquatic habitat and associated required mitigation due to the destruction of existing habitat in the CDF area, which is diverse and of relatively high quality. A detailed description of the various habitat types that would be destroyed or impacted by the Convair Lagoon CDF project is included in the PEIR, and would result in the complete loss of nearly 10 acres of jurisdictional waters (see Appendix J, Table 1). This total includes 1 acre of upland habitat, 4 acres of intertidal habitat, 4.5 acres of shallow subtidal habitat, and 0.3 acres of deep subtidal habitat. Notably, more than six acres of eelgrass loss is identified at the Convair Lagoon CDF site (eelgrass being the only designated Habitat Area of Particular Concern for the entire project), including more than 4 acres of eelgrass beds that were established as mitigation for prior remediation of this former industrial site. This compares with a small fraction of an acre of eelgrass loss due to dredging at the Shipyard Site. In other words, the critical habitat loss due to disposal is vastly greater than that associated with dredging for this alternative. Eelgrass beds must be replaced at a rate of 120 percent of the loss, as stipulated by the Southern California Eelgrass Mitigation Policy. The PEIR also notes that there is the potential for impacts to a nesting colony of endangered California least terns, located approximately one quarter mile from the Convair Lagoon site. The U.S. Fish and Wildlife Service, which exercises federal natural resource trusteeship over this area, has recognized and commented on the local importance of the site and surrounding intertidal area as a resting and foraging habitat for migrating shorebirds in the Pacific flyway, including the threatened western snowy plover (USFWS 2011, attached). O-3-190

The PEIR includes a preliminary analysis of required habitat mitigation due to construction of the CDF, but this analysis is incomplete, since no specific mitigation projects or locations are proposed. Without a complete description of the off-Site disposal locations for Alternatives 2 and 4, it is not possible to fully place impacts or required mitigation of the alternatives into a comparative context, but Alternative 3 certainly results in a significant destruction of aquatic and shoreline habitat - much higher than the proposed project. O-3-191

The PEIR analysis of Alternative 3 has several significant engineering/technical flaws and omissions:

- The design is a short fill located within an active fault zone, leading to a significant risk of failure and recontamination due to a seismic event. It is stated that the earthquake risks at the Convair Lagoon site are acceptable after mitigation (based on a preliminary study by Ninyo Moore), without any real engineering evaluation to confirm that the conditions and mitigation will work. Furthermore, the EIR does not address the risks should an earthquake occur during the placement of the contaminated sediments. O-3-192
- The EIR does not address the risk of leakage or failure of the existing storm drains and the deposition of additional contaminants from the storm drains outside of Convair Lagoon. These structures are likely leaking, and would also be susceptible to failure during earthquake events. Additionally, the age of these structures and condition is not addressed. Even if the storm drains remain intact, there is a risk of contamination from releases of fuels and other hazardous contaminants from their respective drainage basins. O-3-193
- The EIR fails to qualitatively note, let alone quantify the contaminants already present in the lagoon under the existing sand cap. The fact that the existing cap has been recontaminated due to failed source control is noted in Section 10, but not in any of the sections that parallel evaluation of the proposed project and the other alternatives. The fact that an ongoing source of PCBs is believed to be present is therefore acknowledged in the PEIR, but not factored into the impact and mitigation assessment. Convair Lagoon should not be used as a CDF until the PCB source has been identified and removed. Then cleanup or recapping must be completed before the lagoon can be used as a repository for shipyard sediments. There is no indication that the source area has as yet been controlled, let alone defined. O-3-194
- The master plan table shows a 3” asphalt cap. This is inadequate. A 4” asphalt concrete cap would be required to get sampling vehicles and other light vehicles such as pickup trucks across the asphalt. Additionally, placing the cap on sand over an unconsolidated fill is likely to create substantial problems caused by differential settlement, resulting in failure of the asphalt and a need for substantial and on-going maintenance. Even a more substantial design such as the use of 4” of ¾ crushed rock, 4” of asphalt treated base and 2 lifts of asphalt 2” thick is likely to fail under differential settlement, requiring frequent O-3-195

repair. Finally, this cap design is not impervious, and storm water will leak through the asphalt. At least 3 seal coats will be necessary to prevent infiltration through this cap. Also required would be a storm drain system to address surface water on the 10 acres. O-3-195

- Extension of 2 large storm sewer pipes through the containment barrier is proposed. This would create a likely conduit for placed contaminants due to sewer pipe leakage and flow around the pipe through the bedding material. This flow can also put hydraulic pressure on any holes in the filter fabric allowing more fine sediment to escape the filter barrier at the rock anchor. The new storm sewer outfall will also be discharging further into the bay, adding contaminants to new areas. O-3-196
- Alternative 3 makes no effort to prevent return of water from the dredged material to the lagoon as required by the project specific mitigation requirement described for the proposed project and Alternatives 2 and 4. The Alternative 3 design proposes silt curtain and weir/pipe discharge from the fill area back to the lagoon without treatment, contrary to the stated objectives for the other alternatives. O-3-197
- The conceptual design for the containment barrier may be inadequate as the materials specified are likely not to hold, risking destruction of the filter fabric during placement of the anchor rock. The details provided are insufficient to verify that quantities are adequate. O-3-198
- The energy dissipater design is not sufficiently detailed to evaluate. Additional information should be provided. O-3-199
- The assessment fails to evaluate placement of hard shoreline out into the Bay. This will reflect waves to other parts of the lagoon, possibly creating substantial erosion in other areas. O-3-200
- The assessment fails to account for the increased weight of the pozzolonic treated material. There may be only a 15% increase in volume but the weight increase will be greater, because the pozzolonic material is substantially denser than the dredged sediments. Since disposal costs are usually calculated by weight, the increased weight must be calculated and used to estimate disposal fees. O-3-201
- The summary of Alternative 3 as presented on page 5-17 states that no dewatering of contaminated sediments would be required, but the PEIR contradicts this statement on O-3-202

page 5-42, where it is noted that the contaminated sediments (assumed to be 15% of the total sediments) will be dewatered. O-3-202

- No information is provided on any intended future use of the Convair Lagoon parcel, beyond serving as a CDF. The fill and cap design is unlikely to be capable of supporting any structure or redevelopment without significant compromise or risk of containment failure. Any anticipated future use or development of the CDF area should be described in the PEIR, and potential impacts and mitigation required should be assessed. O-3-203

Alternative 4: Nearshore CDF Alternative

The discussion of this alternative correctly identifies the primary associated benefits and problems, including the requirement for staging and offsite transport of most of the dredged material. However, like Alternative 2, it is not possible to quantify most impacts or required mitigation without a specific off-Site disposal location and more details about the design of the CDF. As such, this discussion and evaluation are incomplete. The alternative cannot be properly compared with the proposed project. As with Alternatives 2 and 3, there are significant risks of containment failure and subsequent recontamination of the Bay due to disturbance, accident, or seismic events that do not exist for land based disposal. O-3-204

Summary of Project Alternative Discussion

As noted above, the discussion of alternatives fails to evaluate the net benefits of MNA, which should be considered a legitimate option to dredging, and evaluated fairly and realistically. The discussion presented in the PEIR cannot even be taken as a complete or fair comparison of the four selected alternatives. O-3-205 Alternative 1 is completely unrealistic and appears to be a "throw away" alternative included to meet the statutory requirement for inclusion of a no-action alternative. O-3-206 Alternatives 2 and 4 are qualitatively described, but little detail about possible locations or design is provided, making quantitative comparison of benefits or associated impacts and mitigation impossible. O-3-207 Alternative 3, the Convair Lagoon CDF is presented with so much disproportionate detail and volume of information that the discussion takes on a persuasive tone favoring this alternative. O-3-208 Also absent from the comparison is an assessment of any potential for inadvertent re-release of contaminants back into San Diego Bay through CAD or CDF O-3-209 containment failure in the future. In fact, none of the risks of failure are adequately evaluated by the PEIR. Any aquatic disposal alternative clearly has a much higher potential for re-release of contaminants than upland disposal options. O-3-209

Several conclusions about the net benefits and risks of the alternatives are apparent from the information presented, but are missing or inadequately stated in the PEIR: O-3-210

- Alternative 3, the Convair Lagoon CDF will have the highest associated ecological impacts, due to the extent and quality of the habitat destruction that will result from filling the CDF area.
- All three of the evaluated alternatives that include dredging will result in significantly more aquatic and shoreline habitat impacts than the proposed project, and all carry significant additional risk of future failure and re-release of contamination. O-3-211

References

O-3-212

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RWQCB. 2010b. Draft technical report for tentative cleanup and abatement Order No. R9 2011-001, for the shipyard sediment site. Sand Diego Bay, San Diego, CA. California Regional Water Quality Control Board, San Diego Region, San Diego, CA. Available at: http://www.waterboards.ca.gov.sandiego.

USFWS (U.S. Fish and Wildlife Service) 2011. Letter from Scott A. Sobiech, USFWS Deputy Field Supervisor to Tom Alo, San Diego Regional Water Quality Control Board. FWS-EC-LET-11-01. Received Jan 13, 2011.

ATTACHMENT: MEMORANDUM DATED MAY 25, 2011

Exponent®

External Memorandum

TO: T. Michael Chee

FROM: Rick Bodishbaugh

DATE: May 25, 2011

PROJECT: PH10719.001

SUBJECT: Summary of Need to Remediate NASSCO Stations

At your request, Exponent has reviewed the findings of the September 15, 2010 Tentative Cleanup and Abatement Order, as well as all lines of evidence presented therein for the proposed cleanup project. Our technical opinion remains unchanged from the one we reached in our 2003 Detailed Sediment Investigation Report. There is presently no evidence of significant impairment of beneficial uses due to NASSCO sediment contamination, and active remediation would not produce any clear long-term improvement in beneficial uses relative to current conditions. Current impacts to the benthic community are extremely limited in extent and severity, and are more likely the result of physical disturbance than chemical toxicity. There is presently no significant risk to aquatic dependent wildlife or human receptors, under realistic and reasonable exposure scenarios. Monitored natural recovery is therefore equivalent to or better than all other alternatives, and should be the preferred alternative of any remedial decision-making process. O-3-213

A station-by-station summary for NASSCO stations of the primary lines of evidence concerning risk, beneficial use impairment, and the need for remediation follows.

Glossary of Key Terms in Summary

Primary COCs – The five principle contaminants of concern addressed in the Tentative Cleanup and Abatement Order, including copper, mercury, High Molecular Weight Polynuclear Aromatic Hydrocarbons (HPAHs), polychlorinated biphenyls (PCBs), and tributyltin (TBT).

Composite SWAC – The spatially weighted average concentration (SWAC) in sediments, calculated using Thiessen polygon areas. Theissen polygons are areas whose boundaries define the area that is closest to each sample station relative to all other stations, and are mathematically defined by the perpendicular bisectors of the lines between adjacent points. Each Thiessen polygons is interpreted to be the area represented by a single sediment sample.

60% LAET – The lowest adverse effects threshold (LAET) is the lowest concentration of any of the seven apparent effect thresholds (AETs) developed from the Triad study. An AET is the concentration above which adverse effects to benthic invertebrates always occur. AETs were developed for the three toxicity tests and four benthic community parameters assessed in the DTR Triad analysis. The 60% LAET was selected as a highly protective site-specific benchmark of potential benthic community impairment. O-3-214

SS-MEQ – Site-Specific Median Effects Quotient (SS-MEQ) is a multiple chemical benchmark calculated from the median sediment concentration of the five primary chemicals of concern (COCs) at six stations that were scored as "likely impaired" in the DTR Triad analysis. These stations are NA19, NA22, SW04, SW13, SW22 and SW23. For each station, the effects quotients (the ratio of measured concentration to the median "likely impaired" concentration) were calculated for each of the primary COCs, and these were averaged to yield the multi-chemical SS-MEQ. A benchmark of 90% of the SS-MEQ was used as a protective site-specific benchmark of benthic community impairment.

Triad Station – Of the 66 stations in the Shipyard Site, 30 Triad station were established where all three lines of evidence were collected, including benthic community conditions data, sediment chemistry data, and sediment toxicity data.

DTR – Draft Technical Report. The technical document supporting the conclusions reached in the Tentative Cleanup and Abatement Order.

SQGQ1 – Sediment Quality Guideline Quotient 1 (SQGQ1) as defined in Fairey et al. (2001). The SQGQ1 is the mean sediment quality guideline quotient chemical combination using the effects median probable effects level and other individual sediment quality guideline values. The chemicals included in the SQGQ1 mean calculation are cadmium, copper, lead, silver, zinc, total chlordane, dieldrin, total PCBs and total PAHs.

BRI – Benthic Response Index (BRI) is a metric developed by scientists at the Southern California Coastal Water Research Project (SCCWRP) to measure the relative likelihood of benthic community degradation in coastal marine environments in California.

Shannon-Weiner Diversity Index – Shannon-Weiner Diversity Index (Diversity Index) is a measure of both the number of species and the distribution of individuals among species; higher values indicate that more species are present or that individuals are more evenly distributed among species.

Reference LPL and UPL – the reference lower prediction limit (LPL) and upper prediction limit (UPL) are the one-tailed 95% prediction limits of the reference pool of stations. Site biological indicators outside the prediction limits (below LPL or above UPL) are judged to be significantly different from the reference condition.

SPI – sediment profile imaging (SPI) is a photographic method of assessing benthic community structure. Photographs are taken with a probe-mounted camera mounted above a prism that penetrates into the sediment and photographs a vertical cross-section of the sediment. The resulting photographs provide information on physical conditions in the sediment as well as a direct assessment of the presence condition of the benthic fauna. O-3-214

Stage 1 - refers to the succession of benthic colonization and interaction with sediment soon after disturbance or defaunation of the soft-bottom marine sediment. Stage 1 represents the first stage at which small tube-dwelling polychaetes that feed at the sediment surface colonize the sediment soon after disturbance in the sediment.

Stage 2 – refers to the benthic colonization phase after Stage 1, in which the succession is characterized by organisms that burrow shallowly into the sediment but nevertheless feed at or near the sediment surface. Burrowing activity loosens and aerates the sediment, a process that makes it more suitable for further colonization.

Stage 3 – refers to the climax phase of benthic colonization, which is characterized by organisms that burrow well into the anaerobic sediment and feed at depth off of organic matter and microbial decomposers. These deep burrowing organisms typically irrigate their burrows with oxygenated surface water. This community is regarded as the mature stage of a fully developed benthic community.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA01

SUMMARY OF STATION CONDITIONS

1. Primary COCs are relatively low:

- Composite SWAC ranking = 28 of 66 polygons
- Copper ranking = 26 of 66 polygons
- Mercury ranking = 19 of 66 polygons
- HPAH ranking = 25 of 66 polygons
- PCB ranking = 30 of 66 polygons
- TBT ranking = 31 of 66 polygons

2. Chemistry is below conservative biological benchmarks: O-3-215

- No exceedances of 60% LAETs
- SS-MEQ = 0.69 (less than 0.90 benchmark)

3. No impacts to benthic community:

- **Triad Station: "Unlikely" benthic impacts**
- **DTR chemistry score = moderate**
  SQGQ1 is less than 1.0. Only 2 chemicals exceed both DTR SQG and UPL.
- **DTR toxicity score = low**
  No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
- **DTR benthic disturbance score = low**
  No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
- **SPI data indicate Stage I and III successional stages present**

CONCLUSION

Based on relatively low chemistry, and the absence of benthic impacts, NA01 was properly excluded from the proposed remedial footprint in the DTR

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA02

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 46 of 66 polygons
   - Copper ranking = 44 of 66 polygons
   - Mercury ranking = 46 of 66 polygons
   - HPAH ranking = 44 of 66 polygons
   - PCB ranking = 41 of 66 polygons
   - TBT ranking = 46 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.41 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **SPI data indicate Stage I and III successional stages present**

O-3-215

CONCLUSION

Based on relatively low chemistry, and a lack of evidence for benthic impacts, NA02 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA03

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 32 of 66 polygons
   - Copper ranking = 36 of 66 polygons
   - Mercury ranking = 13 of 66 polygons
   - HPAH ranking = 26 of 66 polygons
   - PCB ranking = 31 of 66 polygons
   - TBT ranking = 24 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.67 (less than 0.90 benchmark)

3. **No impacts to benthic community:**
   - **Triad Station: "Unlikely" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 2 chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = low**
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI data indicate Stage I and III successional stages present.**

O-3-215

CONCLUSION

Based on relatively low chemistry, and the absence of benthic impacts, NA03 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA04

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 34 of 66 polygons
   - Copper ranking = 22 of 66 polygons
   - Mercury ranking = 13 of 66 polygons
   - HPAH ranking = 34 of 66 polygons
   - PCB ranking = 39 of 66 polygons
   - TBT ranking = 13 of 66 polygons

O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.69 (less than 0.90 benchmark)

3. **No impacts to benthic community:**
   - **Triad Station: "Unlikely" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 1 chemical exceeds both DTR SQG and UPL.
   - **DTR toxicity score = low**
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI data indicate Stage I and III successional stages present.**

CONCLUSION

Based on relatively low chemistry, and the absence of benthic impacts, NA04 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA05

SUMMARY OF STATION CONDITIONS

O-3-215

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 47 of 66 polygons
   - Copper ranking = 44 of 66 polygons
   - Mercury ranking = 50 of 66 polygons
   - HPAH ranking = 44 of 66 polygons
   - PCB ranking = 47 of 66 polygons
   - TBT ranking = 40 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.40 (less than 0.90 benchmark)

3. **No impacts to benthic community:**
   - **Triad Station: "Unlikely" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. No chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = low**
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI data indicate Stage I and III successional stages present.**

CONCLUSION

Based on relatively low chemistry, and the absence of benthic impacts, NA05 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA06

SUMMARY OF STATION CONDITIONS

1. **Only mercury and copper are relatively high:**
   - Composite SWAC ranking = 19 of 66 polygons
   - Copper ranking = 9 of 66 polygons
   - Mercury ranking = 2 of 66 polygons
   - HPAH ranking = 31 of 66 polygons
   - PCB ranking = 15 of 66 polygons
   - TBT ranking = 18 of 66 polygons

2. **Chemistry is below or slightly exceeds conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 1.11 (greater than 0.90 benchmark)

3. **No impacts to benthic community:**

   - **Triad Station: "Unlikely" benthic impacts**

   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 3 chemicals exceed both DTR SQG and UPL.

   - **DTR toxicity score = low**
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL

   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.

   - **SPI data indicate Stage I and III successional stages present**

O-3-215

CONCLUSION

There are no impacts to the benthic community at this station. NA06 was included in the DTR proposed remedial footprint because of relatively high mercury and copper, which are potential food web risk drivers. However, a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks. Therefore, no risk-based justification for remediating NA06 exists.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA07

SUMMARY OF STATION CONDITIONS

1. **Only mercury and HPAH are relatively high:**
   - Composite SWAC ranking = 17 of 66 polygons
   - Copper ranking = 35 of 66 polygons
   - Mercury ranking = 7 of 66 polygons
   - HPAH ranking = 6 of 66 polygons
   - PCB ranking = 21 of 66 polygons
   - TBT ranking = 39 of 66 polygons

2. **Chemistry is below or slightly exceeds conservative biological benchmarks:**
   - Only slight exceedance of 60% HPAH LAET (63%)
   - SS-MEQ = 0.91 (slightly more than 0.90 benchmark)

3. **No impacts to benthic community:**
   - Triad Station: “Unlikely” benthic impacts
   - DTR chemistry score = moderate
     SQGQ1 is less than 1.0. Only 2 chemicals exceed both DTR SQG and UPL. O-3-215
   - DTR toxicity score = low
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - DTR benthic disturbance score = low
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - SPI data indicate Stage III successional stage present.

CONCLUSION

HPAH and mercury are relatively elevated at this station. HPAH is a potential benthic and food web risk driver, while mercury is a potential food web risk driver. There are no impacts to the benthic community at this station, and a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks. Therefore, no risk-based justification for remediating NA07 exists, and NA07 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA08

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
    - Composite SWAC ranking = 40 of 66 polygons
    - Copper ranking = 18 of 66 polygons
    - Mercury ranking = 36 of 66 polygons
    - HPAH ranking = 34 of 66 polygons
    - PCB ranking = 35 of 66 polygons
    - TBT ranking = 40 of 66 polygons

O-3-215

2. **Chemistry is below conservative biological benchmarks:**
    - No exceedances of 60% LAETs
    - SS-MEQ = 0.56 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
    - **Non-Triad Station**
    - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and a lack of evidence for benthic impacts, NA08 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA09

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 38 of 66 polygons
   - Copper ranking = 22 of 66 polygons
   - Mercury ranking = 10 of 66 polygons
   - HPAH ranking = 44 of 66 polygons
   - PCB ranking = 37 of 66 polygons
   - TBT ranking = 36 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.62 (less than 0.90 benchmark)

O-3-215

3. **No clear indication of impacts to benthic community:**
   - **Triad Station: "Possible" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 2 chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = moderate**
     Bivalve test scored below reference LPL. Amphipod and urchin tests scored above reference LPLs.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI data indicated Stage I and III present.**

CONCLUSION

There are no clear impacts to the benthic community at this station. NA09 was included in the DTR proposed remedial footprint because of a "possible impacts" score in the DTR Triad analysis and relatively high mercury levels. However, none of the four benthic community indicators evaluated is significantly different from reference conditions. Only one of the three toxicity tests (bivalve larval development) was different from reference, and this is the least reliable of the three tests performed. Mercury is a potential food web risk driver. However, a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks. Therefore, no risk-based justification for remediating NA09 exists.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA10

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 54 of 66 polygons
   - Copper ranking = 48 of 66 polygons
   - Mercury ranking = 51 of 66 polygons
   - HPAH ranking = 54 of 66 polygons
   - PCB ranking = 54 of 66 polygons
   - TBT ranking = 44 of 66 polygons

O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.35 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **SPI data indicate Stage III successional stage present.**

CONCLUSION

Based on relatively low chemistry, and a lack of evidence for benthic impacts, NA10 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA11

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 49 of 66 polygons
   - Copper ranking = 43 of 66 polygons
   - Mercury ranking = 34 of 66 polygons
   - HPAH ranking = 44 of 66 polygons
   - PCB ranking = 45 of 66 polygons
   - TBT ranking = 56 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.42 (less than 0.90 benchmark)

O-3-215

3. **No clear indication of impacts to benthic community:**

   - **Triad Station: "Possible" benthic impacts**

   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 1 chemical exceeds both DTR SQG and UPL.

   - **DTR toxicity score = moderate**
     Amphipod test scored slightly below reference LPL. Bivalve and urchin tests scored above reference LPLs.

   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.

   - **SPI data indicate Stage I and III successional stages present.**

CONCLUSION

There are no highly elevated COPC levels at this station. There are no clear impacts to the benthic community. None of the four benthic community indicators evaluated is significantly different from reference conditions. Only one of the three toxicity tests (amphipod survival) was lower than reference. Due to a lack of high chemistry and no clear indication of benthic impacts, NA11 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA12

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 55 of 66 polygons
   - Copper ranking = 50 of 66 polygons
   - Mercury ranking = 49 of 66 polygons
   - HPAH ranking = 52 of 66 polygons
   - PCB ranking = 57 of 66 polygons
   - TBT ranking = 47 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.35 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Triad Station: "Possible" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. No chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = moderate**
     Bivalve test scored below reference LPL. Amphipod and urchin tests scored above reference LPLs.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI indeterminate, due to poor probe penetration.**

CONCLUSION

There are no highly elevated COPC levels at this station. There are no clear impacts to the benthic community. None of the four benthic community indicators evaluated is significantly different from reference conditions. Only one of the three toxicity tests (bivalve larval development) was lower than reference, and this is the least reliable of the three tests performed. Due to a lack of high chemistry and no clear indication of benthic impacts, NA12 was properly excluded from the proposed remedial footprint in the DTR. O-3-215

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA13

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 53 of 66 polygons
   - Copper ranking = 42 of 66 polygons
   - Mercury ranking = 48 of 66 polygons
   - HPAH ranking = 54 of 66 polygons
   - PCB ranking = 52 of 66 polygons
   - TBT ranking = 48 of 66 polygons

O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.38 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **SPI data indicate Stage I and III successional stages present.**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA13 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA14

SUMMARY OF STATION CONDITIONS

1. Primary COCs are relatively low:
- Composite SWAC ranking = 60 of 66 polygons
- Copper ranking = 55 of 66 polygons
- Mercury ranking = 53 of 66 polygons
- HPAH ranking = 59 of 66 polygons
- PCB ranking = 59 of 66 polygons
- TBT ranking = 54 of 66 polygons

O-3-215

2. Chemistry is below conservative biological benchmarks:
- No exceedances of 60% LAETs
- SS-MEQ = 0.28 (less than 0.90 benchmark)

3. No direct evidence of impacts to benthic community:
- **Non-Triad Station**
- **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA14 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA15

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 22 of 66 polygons
   - Copper ranking = 28 of 66 polygons
   - Mercury ranking = 24 of 66 polygons
   - HPAH ranking = 38 of 66 polygons
   - PCB ranking = 34 of 66 polygons
   - TBT ranking = 7 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.87 (less than 0.90 benchmark)

3. **No impacts to benthic community:** O-3-215
   - **Triad Station: "Unlikely" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 2 chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = low**
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI data indicate Stage I and III successional stages present.**

CONCLUSION

There are no impacts to the benthic community at this station. NA15 was included in the DTR proposed remedial footprint because of relatively TBT, which can potentially impact gastropods and pose a food web risk. However, a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks, and there is no evidence of an impacted gastropod population at the shipyard. Therefore, no risk-based justification for remediating NA15 exists.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA16

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 30 of 66 polygons
   - Copper ranking = 26 of 66 polygons
   - Mercury ranking = 18 of 66 polygons
   - HPAH ranking = 39 of 66 polygons
   - PCB ranking = 17 of 66 polygons
   - TBT ranking = 25 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.69 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**

   - **Triad Station: "Possible" benthic impacts**

   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. Only 2 chemicals exceed both DTR SQG and UPL.

   - **DTR toxicity score = moderate**
     Bivalve test scored below reference LPL. Amphipod and urchin tests scored above reference LPLs.

   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.

CONCLUSION

There are no highly elevated COPC levels at this station. There are no clear impacts to the benthic community. None of the four benthic community indicators evaluated is significantly different from reference conditions. Only one of the three toxicity tests (bivalve larval development) was lower than reference, and this is the least reliable of the three tests performed. Due to a lack of high chemistry and no clear indication of benthic impacts, NA16 was properly excluded from the proposed remedial footprint in the DTR.

O-3-215

STATION NA17

SUMMARY OF STATION CONDITIONS

1. **Only copper and TBT were relatively high:**
   - Composite SWAC ranking = 10 of 66 polygons
   - Copper ranking = 7 of 66 polygons
   - Mercury ranking = 35 of 66 polygons
   - HPAH ranking = 42 of 66 polygons
   - PCB ranking = 18 of 66 polygons
   - TBT ranking = 3 of 66 polygons
2. **Chemistry is below or slightly exceeds conservative biological benchmarks:**
   - Only TBT exceeds the 60% LAET
   - SS-MEQ = 1.41 (greater than 0.90 benchmark)
3. **No direct evidence of impacts to benthic community:**
   - **Triad Station: "Possible" benthic impacts**
   - **DTR chemistry score = high**
     SQGQ1 is greater than 1.0 and 4 chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = low**
     No evidence of toxicity. Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - **DTR benthic disturbance score = low**
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - **SPI data indicate Stage I and III successional stages present.**

CONCLUSION

There are no clear impacts to the benthic community at this station. NA17 was included in the DTR proposed remedial footprint because of a "possible impacts" score in the DTR Triad analysis and relatively high TBT and copper levels. However, none of the four benthic community indicators evaluated is significantly different from reference conditions, and none of the three toxicity tests was different from reference. In other words, the "possible" disturbance score was due solely to high chemistry, not to any biological indicator. TBT can potentially impact gastropods and pose a food web risk. However, a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks, and there is no evidence of an impacted gastropod population at the shipyard. Copper is primarily a benthic risk driver, and can pose a food web risk. Again, there is no evidence of either benthic impacts or food web risk from copper, based on a realistic analysis of risk to wildlife and human receptors. Therefore, no risk-based justification for remediating NA17 exists.

O-3-215

O-3

STATION NA18

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 39 of 66 polygons
   - Copper ranking = 31 of 66 polygons
   - Mercury ranking = 37 of 66 polygons
   - HPAH ranking = 49 of 66 polygons
   - PCB ranking = 32 of 66 polygons
   - TBT ranking = 19 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.56 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad station**
   - **No SPI data**

O-3-215

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA18 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA19

SUMMARY OF STATION CONDITIONS

1. **Only PCB and TBT are relatively high:**
   - Composite SWAC ranking = 18 of 66 polygons
   - Copper ranking = 18 of 66 polygons
   - Mercury ranking = 38 of 66 polygons
   - HPAH ranking = 40 of 66 polygons
   - PCB ranking = 10 of 66 polygons
   - TBT ranking = 8 of 66 polygons
2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.92 (slightly greater than 0.90 benchmark)
3. **No direct evidence of impacts to benthic community:**
   - Triad Station: "Likely" benthic impacts
   - DTR chemistry score = high
     SQGQ1 is greater than 1.0 and 4 chemicals exceed both DTR SQG and UPL.
   - DTR toxicity score = moderate
     Bivalve test scored below reference LPL.
   - DTR benthic disturbance score = low
     No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.
   - SPI data indicate Stage I and III successional stages present.

CONCLUSION

NA19 was included in the DTR proposed remedial footprint because of a "likely" impacted score in the DTR Triad analysis and relatively high TBT and PCB levels. However, none of the four benthic community indicators evaluated is significantly different from reference conditions, and only one of the three toxicity tests (bivalve larval development, the least reliable of the three tests) was different from reference. In other words, the "likely" disturbance score was due solely to high chemistry, and one of seven biological indicators being different from reference conditions. TBT can potentially impact gastropods and pose a food web risk. However, a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks, and there is no evidence of an impacted gastropod population at the shipyard. PCBs are a potential food web risk driver, and again, there is no evidence of food web risk from PCBs, based on a realistic analysis of risk to wildlife and human receptors. Therefore, no risk-based justification for remediating NA19 exists.

O-3-215

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA20

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 50 of 66 polygons
   - Copper ranking = 61 of 66 polygons
   - Mercury ranking = 65 of 66 polygons
   - HPAH ranking = 43 of 66 polygons
   - PCB ranking = 60 of 66 polygons
   - TBT ranking = 14 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.34 (less than 0.90 benchmark)

3. **No impacts to benthic community:**
   - **Triad Station: "Unlikely" benthic impacts**
   - **DTR chemistry score = low**
     SQGQ1 is less than 1.0. No chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = low**
     Amphipod, urchin, and bivalve tests all scored above reference LPL.
   - **DTR benthic disturbance score = moderate**
     The number of taxa present is below that found in the reference condition. However, the other three indicators show no sign of disturbance. BRI is below the reference UPL. Abundance and diversity index are above reference LPL. The relatively low number of taxa present is likely the result of physical disturbance in this area.
   - **SPI data indicate Stage I and III successional stages present.**

O-3-215

CONCLUSION

Based on relatively low chemistry, and the absence of clear evidence of benthic impacts, NA20 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA21

SUMMARY OF STATION CONDITIONS

1. **Only TBT is relatively high:**
   - Composite SWAC ranking = 41 of 66 polygons
   - Copper ranking = 50 of 66 polygons
   - Mercury ranking = 58 of 66 polygons
   - HPAH ranking = 50 of 66 polygons
   - PCB ranking = 51 of 66 polygons
   - TBT ranking = 12 of 66 polygons

O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.50 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA21 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA22

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 51 of 66 polygons
   - Copper ranking = 50 of 66 polygons
   - Mercury ranking = 63 of 66 polygons
   - HPAH ranking = 33 of 66 polygons
   - PCB ranking = 47 of 66 polygons
   - TBT ranking = 36 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.35 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Triad Station: "Likely" benthic impacts**
   - **DTR chemistry score = moderate**
     SQGQ1 is less than 1.0. No chemicals exceed both DTR SQG and UPL.
   - **DTR toxicity score = moderate**
     Bivalve test scored below reference LPL.
   - **DTR benthic disturbance score = moderate**
     No evidence of disturbance. BRI is below reference UPL. Abundance and number of taxa are above reference LPL. Diversity index is above reference LPL.
   - **SPI data indicate Stage I and III successional stages present.**

O-3-215

CONCLUSION

Station NA22 has relatively low COPC levels. This station received a "likely" impacted score in the DTR Triad analysis. However, none of the four benthic community indicators evaluated is significantly different from reference conditions, and only one of the three toxicity tests (bivalve larval development, the least reliable of the three tests) was different from reference. In other words, the "likely" disturbance score was due solely to high chemistry, and one of seven biological indicators being different from reference conditions. Furthermore, this area is under the influence of deposition from Chollas Creek, and will be assessed as part of the Chollas Creek Mouth TMDL process. For this reason, NA22 was not included and the DTR proposed remedial footprint, and no risk-based justification for remediation exists.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA23

SUMMARY OF STATION CONDITIONS

1. Primary COCs are relatively low:

- Composite SWAC ranking = 31 of 66 polygons
- Copper ranking = 11 of 66 polygons
- Mercury ranking = 13 of 66 polygons
- HPAH ranking = 36 of 66 polygons
- PCB ranking = 20 of 66 polygons
- TBT ranking = 36 of 66 polygons

O-3-215

2. Chemistry is below conservative biological benchmarks:

- No exceedances of 60% LAETs
- SS-MEQ = 0.72 (less than 0.90 benchmark)

3. No direct evidence of impacts to benthic community:

- **Non-Triad Station**
- **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA23 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA24

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 45 of 66 polygons
   - Copper ranking = 40 of 66 polygons
   - Mercury ranking = 29 of 66 polygons
   - HPAH ranking = 50 of 66 polygons
   - PCB ranking = 37 of 66 polygons
   - TBT ranking = 49 of 66 polygons O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.47 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA24 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA25

SUMMARY OF STATION CONDITIONS

O-3-215

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 64 of 66 polygons
   - Copper ranking = 63 of 66 polygons
   - Mercury ranking = 62 of 66 polygons
   - HPAH ranking = 59 of 66 polygons
   - PCB ranking = 64 of 66 polygons
   - TBT ranking = 63 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.20 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA25 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA26

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 61 of 66 polygons
   - Copper ranking = 64 of 66 polygons
   - Mercury ranking = 60 of 66 polygons
   - HPAH ranking = 64 of 66 polygons
   - PCB ranking = 47 of 66 polygons
   - TBT ranking = 58 of 66 polygons

O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.23 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA26 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA27

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 36 of 66 polygons
   - Copper ranking = 10 of 66 polygons
   - Mercury ranking = 10 of 66 polygons
   - HPAH ranking = 44of 66 polygons
   - PCB ranking = 40 of 66 polygons
   - TBT ranking = 42 of 66 polygons O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.69 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA27 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER
NO. R9-2011-0001

STATION NA28

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 42 of 66 polygons
   - Copper ranking = 14 of 66 polygons
   - Mercury ranking = 31 of 66 polygons
   - HPAH ranking = 36 of 66 polygons
   - PCB ranking = 47 of 66 polygons
   - TBT ranking = 45 of 66 polygons O-3-215

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.55 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA28 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA29

O-3-215

SUMMARY OF STATION CONDITIONS

1. **Primary COCs are relatively low:**
   - Composite SWAC ranking = 58 of 66 polygons
   - Copper ranking = 58 of 66 polygons
   - Mercury ranking = 53 of 66 polygons
   - HPAH ranking = 53 of 66 polygons
   - PCB ranking = 45 of 66 polygons
   - TBT ranking = 50 of 66 polygons

2. **Chemistry is below conservative biological benchmarks:**
   - No exceedances of 60% LAETs
   - SS-MEQ = 0.30 (less than 0.90 benchmark)

3. **No direct evidence of impacts to benthic community:**
   - **Non-Triad Station**
   - **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA29 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA30

SUMMARY OF STATION CONDITIONS

1. Primary COCs are relatively low:

- Composite SWAC ranking = 59 of 66 polygons
- Copper ranking = 54 of 66 polygons
- Mercury ranking = 45 of 66 polygons
- HPAH ranking = 62 of 66 polygons
- PCB ranking = 61 of 66 polygons
- TBT ranking = 64 of 66 polygons

O-3-215

2. Chemistry is below conservative biological benchmarks:

- No exceedances of 60% LAETs
- SS-MEQ = 0.30 (less than 0.90 benchmark)

3. No direct evidence of impacts to benthic community:

- **Non-Triad Station**
- **No SPI Data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA30 was properly excluded from the proposed remedial footprint in the DTR.

TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001

STATION NA31

SUMMARY OF STATION CONDITIONS

1. Primary COCs are relatively low:
- Composite SWAC ranking = 66 of 66 polygons
- Copper ranking = 65 of 66 polygons
- Mercury ranking = 64 of 66 polygons
- HPAH ranking = 66 of 66 polygons
- PCB ranking = 65 of 66 polygons
- TBT ranking = 65 of 66 polygons

O-3-215

2. Chemistry is below conservative biological benchmarks:
- No exceedances of 60% LAETs
- SS-MEQ = 0.16 (less than 0.90 benchmark)

3. No direct evidence of impacts to benthic community:
- **Non-Triad Station**
- **No SPI data**

CONCLUSION

Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA31 was properly excluded from the proposed remedial footprint in the DTR.

ATTACHMENT: USFWS, 2011

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

O-3

In Reply Refer To:
FWS-EC-LET-11-01

JAN 13 2011

Mr. Tom Alo
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123

Subject: Draft Addendum No. 4 to Cleanup and Abatement Order No. R9-2004-0258 Former Teledyne Ryan Aeronautical Site, 2701 N. Harbor Drive, San Diego, California

Dear Mr. Alo:

Thank you for the opportunity to comment on the subject document. As indicated in the public notice and the addendum, the cleanup and abatement is for wastes discharged to land at the former Teledyne Ryan Aeronautical (TDY) site. Elevated levels of contaminants that were released to land have been found in groundwater beneath the site and in conveyance systems that transported contaminated media from the site to Convair Lagoon and San Diego Bay. The addendum, once executed, should result in cleanup of onsite soils such that remaining contaminant levels will pose no known unacceptable risk to human health, under the commercial/industrial future use conditions proposed for the site. In addition, the addendum, once executed, is expected to prevent waste discharges from the TDY site to Convair Lagoon and San Diego Bay. A subsequent enforcement order will be issued to assess and cleanup wastes discharged from landside sources to the marine sediments of Convair Lagoon and San Diego Bay. O-3-216

The U.S. Fish and Wildlife Service (Service) has an interest in remedial actions at the site because of the potential for trust resources to be exposed to and impacted by site-related contaminants. Resources of concern at the TDY site are primarily avian species that feed and/or nest in or near intertidal and shallow water habitats, and the aquatic biota that constitute their diet. These include numerous species of seabirds that nest in dense colonies and feed on fish from San Diego Bay. One such species is the Federal and State-endangered California least tern (*Sternula (Sterna) antilarium browni*), which has a nesting colony at Lindbergh Field bordering the TDY site. When exposed, mudflats, such as those that occur in Convair Lagoon provide feeding habitat for small shorebirds including the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*). Other species of interest include waterfowl, shorebirds, seabirds and marsh birds that occur in great numbers as they stop to feed and/or overwinter in San Diego Bay as part of migrations along the Pacific Flyway. Many of the latter rely heavily on aquatic and/or semi-aquatic invertebrates for their nutrition. Service concerns about biota upon which trust resources rely for food include O-3-217 preservation of populations sufficient to support the nutritional needs of listed and migratory species and to ensure that site-related contaminants are not present at unsafe levels in the diet of trust resources. O-3-217

The former TDY site is a vacant industrial facility that provides little if any habitat for use by wildlife species. The property is to be redeveloped for future commercial/industrial uses that preclude the creation of habitat for wildlife species. Consequently, concerns about risks posed to wildlife by cleanup actions outlined in Addendum No. 4 are very limited, and apply only if soils are considered for uses other than commercial/industrial development, and if means for preventing migration of soil into Convair Lagoon are unsuccessful. At this time, the following comments are offered for the record. O-3-218

1. While the proposed cleanup levels for contaminants in soil may be protective of human health under commercial/industrial exposure conditions, they would not be considered protective of terrestrial wildlife without further consideration. Risks to terrestrial species should be evaluated if any uses for soils other than those identified in Addendum No. 4 are considered in the future. O-3-219

2. In the event that soils migrate off site and become sediment in Convair Lagoon, the proposed cleanup levels for contaminants in soils would not be considered protective of aquatic life or aquatic-dependent wildlife. O-3-220

Again, the Service's concerns about cleanup and abatement planned for this industrial site are very limited, and are contingent upon changes in plans for the soils at the site, or the ability to prevent migration of contaminated site-related particles into Convair Lagoon. Unlike the upland portion of the former TDY site, Convair Lagoon and San Diego Bay provide habitat for many fish and wildlife species. Consequently, the Service looks forward to working extensively with the San Diego Regional Water Quality Control Board (Regional Board), other State and Federal Trustees, and Teledyne Ryan, Inc. as you move into the assessment and cleanup of wastes discharged from landside sources to the marine sediments of Convair Lagoon and San Diego Bay. The Service appreciates the Regional Board staff's efforts in working with us toward our mutual goal of protecting and restoring San Diego Bay and the Nation's wildlife resources. If you have any questions about comments provided in this letter, please contact Catherine Zeeman of my staff at (760) 431-9440 extension 291. O-3-221

Sincerely,

Scott A. Sobiech
Deputy Field Supervisor

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D. Frederick Bodishbaugh, Ph.D.
Managing Ecotoxicologist

Professional Profile

Dr. Rick Bodishbaugh is a Managing Ecotoxicologist in Exponent's EcoSciences practice. He has 19 years of diverse experience in aquatic toxicology research, chemical and site assessment ecological risk assessment (ERA) in aquatic and terrestrial systems, and natural resource damage assessment (NRDA). His specific areas of technical expertise include fish and wildlife toxicity assessment, resource/habitat equivalency analysis (REA/HEA), bioavailability of chemical contaminants in aquatic and terrestrial ecosystems, and chemical structure-activity relationships. Dr. Bodishbaugh's graduate research focused on the aquatic toxicology of synthetic surfactant and other organic pollutants. Originally trained as a chemical engineer, he also has 4 years of experience as a geophysical and geochemical engineer in the international offshore oil and gas industry, and is trained and experienced in geophysical surveying and reservoir geology. Dr. Bodishbaugh also has formal training in marine biochemistry, molecular biology, and bioremediation principles.

O-3-222

Dr. Bodishbaugh is experienced in evaluating the effects of contaminated soil, groundwater, surface water, and sediments on ecological receptors. He has conducted assessments of chemical risk at dozens of sites for energy, petrochemical, pulp and paper, manufacturing, and mining industry clients. He is intimately familiar with federal, regional, and various state guidance and standards or practice for ERA under common regulatory frameworks, and has extensive face-to-face negotiation experience with federal and state regulatory agency technical staff across the U.S. He is also experienced in evaluating and interpreting field bioaccumulation and laboratory toxicity bioassay data for use in assessing ecological risk. He is well versed in the environmental toxicology and assessment of metals and persistent organic pollutants, especially PCBs and PAHs.

Dr. Bodishbaugh is experienced in providing technical support in a litigation context. He has extensive NRDA experience, and has helped clients develop defensive and settlement strategies for NRDA claims by federal, state, and tribal trustees at sites in Alaska, California, Indiana, Missouri, New Jersey, New York, Texas, and Washington. He is an expert in the application of REA and HEA, including applications for assessment of groundwater injury. He has worked closely with client legal teams to assess and critically evaluate the technical merits and costs of natural resource liability and settlement options, and has represented industry clients in both formal and informal trustee negotiations to arrive at rational injury assessments and cost effective, restoration-based compensation options. He has provided deposition testimony on NRD liability for east and west coast clients, and has contributed to numerous expert reports for NRD cases.

Academic Credentials and Professional Honors

Ph.D., Aquatic Toxicology, Duke University, 1995
B.S., Chemical Engineering, University of Tulsa (*cum laude*), 1985

Publications

Pastorok RA, Noftsker C, Iannuzzi TJ, Ludwig DF, Barrick RC, Ruby MV, Bodishbaugh DF. Natural remediation of polynuclear aromatic hydrocarbons and other petroleum hydrocarbons. In: Natural Remediation of Environmental Contaminants: Its Role in Ecological Risk Assessment and Management. Swindoll M, Stahl Jr RG, Ells SJ (eds), SETAC General Publications Series, Society of Environmental Toxicology and Chemistry, SETAC Press, Pensacola, FL, pp. 159–198, 2000.

Bodishbaugh DF. Acute toxicity mechanisms and quantitative structure-activity relationships of alkylphenol polyethoxylate surfactants in fish. Dissertation. Duke University, Durham, NC, 1995.

Bonaventura C, Bonaventura J, Bodishbaugh DF. Environmental bioremediation: Approaches and processes. In: Ecotoxicity and Human Health: A Biological Approach to Environmental Remediation. Bloom AD and de Serres FJ (eds) CRC Press, Boca Raton, FL, 1995.

O-3-222

Bonaventura C, Bonaventura J, Bodishbaugh DF. Environmental bioremediation: Applications and new horizons. In: Ecotoxicity and Human Health: A Biological Approach to Environmental Remediation. Bloom AD and de Serres FJ (eds) CRC Press, Boca Raton, FL, 1995.

Selected Presentations

Ginn T, Bodishbaugh DF. Key issues for use of habitat equivalency analysis in scaling compensatory restoration projects. Presentation at SETAC Annual Meeting, Portland, OR, November 2004.

Bodishbaugh DF, Moore ML, Godtfredsen KL. Congener composition of environmental PCB mixtures: An empirical analysis. Presentation at SETAC Annual Meeting, Austin, TX, November 2003.

Bodishbaugh DF. Toxicity endpoint extrapolation for characterization of ecological risk: Which method is right? Invited presentation at SETAC Annual Meeting, San Francisco, CA, November 1997.

Bodishbaugh DF. Toxicity assessment for calculation of ecological risk: The deterministic vs. probabilistic approaches to endpoint extrapolation. Presentation at SETAC Annual Meeting, Washington, DC, November 1996.

Bodishbaugh DF. *In vitro* studies of acute toxicity mechanisms and structure-activity relationships of nonionic surfactants in fish. Presentation at SETAC Annual Meeting, Denver, CO, November 1994.

Project Experience

Natural Resource Damage Assessment

Performed injury assessments and developed restoration alternatives for more than a dozen NRDA sites, involving PCBs, mining wastes, pulp mill effluent, chemical plant discharges and other hazardous releases. Habitats assessed include freshwater rivers and lakes, estuaries, and marine systems, as well as terrestrial habitats.

Familiar with NOAA, DOI, and various state trustee guidance and standard NRDA methods. Experienced in emerging NRDA issues, such as evaluation of groundwater resource damages, resource scaling in sensitive habitats, allocation at complex industrial sites, and allegations involving wood waste.

Developed client-customizable HEA computational tools for real-time evaluation of injury and restoration alternatives. Provided technical support and strategy in preparation for and during legal negotiations between industry clients and trustees on NRD settlements. O-3-222

Developed and provided scientific rationale for cost-effective HEA-based restoration alternatives to avoid an expensive and arbitrary cash settlement. Presented and defended NRDA alternatives and technical justifications to trustees during face-to-face settlement negotiations.

Ecological Risk Assessment

Conducted or supervised ERAs for numerous industrial facilities where a combination of organic and inorganic contaminants were risk drivers. Sites have included pipelines, foundries, refineries, petrochemical plants, wood preservative sites, manufactured gas plant sites, shooting ranges, pulp mills, landfills, shipyards, mining sites, research facilities, and munitions plants. State-of-the-art approaches for ecological screening assessments, receptor exposure modeling, toxicity assessment, and chemical hazard characterization were integrated to form rational, science-based site assessments.

Conducted extensive bioavailability and bioaccumulation assessments for organic and inorganic contaminants in aquatic systems to provide higher tiers of assessment at complex sites where conventional bulk sediment assessment failed to produce feasible remedial alternatives. Successfully implemented habitat assessment and bioavailability analysis as tools to focus the scope of ecological risk assessments and make site assessment manageable.

Conducted ERAs of PCB contamination for numerous industrial clients. Contamination scenarios evaluated include direct product discharges and indirect transport of product to soil, groundwater, and surface water, including sensitive habitats. Industrial sites evaluated include pipeline facilities, heavy manufacturing facilities, and landfills. Developed site-specific food web modeling approaches to the assessment of risk from PCBs, and negotiated technical approaches to assessment with state and federal regulatory agencies. Reviewed and critiqued recent research developments and helped design original research into environmental toxicity of PCBs.

Developed, supported, and negotiated site-specific approaches to the assessment of metals toxicity at mining sites where natural mineralization and physical disturbance make bulk concentration a poor indicator of exposure and risk from site activities.

Litigation Support

Testified in deposition on general and site-specific NRDA issues on liability insurance case for a pulp and paper industry client in Alaska.

Testified in deposition on potential groundwater injuries at an industrial facility in New Jersey.

Authored and contributed to expert reports on NRDA issues submitted to state and federal courts on several NRD cases across the country. O-3-222

Reviewed literature and served as an expert technical consultant for client legal teams, and authored affidavits on aquatic toxicity and biodegradation issues in support of active litigation concerning client product liability.

Conducted ERA and NRDA training for client legal staff.

Aquatic Toxicology Research and Consulting

Designed and conducted aquatic toxicity investigations using a variety of *in vivo* and *in vitro* techniques and test species, including studies on the toxicity mechanisms and structure-activity relationships of surfactant chemicals, detergents, and oil spill dispersants to fish.

Provided oversight for client-supported independent research used to establish the value of potential restoration projects.

Participated in the design of chronic dietary exposure studies to assess risk of endangered salmon species to PCBs and PAHs in estuarine sediments.

Served as technical consultant on potential endocrine disruptor effects of chemicals and client operations. Conducted training for client technical staff.

Professional Affiliations

- American Chemical Society
- Society of Environmental Toxicology and Chemistry

Exponent

Thomas C. Ginn, Ph.D.
Principal

Professional Profile

Dr. Thomas Ginn is a Principal Scientist in Exponent's EcoSciences practice. He specializes in natural resource damage assessment and ecological risk assessment. He has conducted studies of the effects of inorganic and organic chemicals on aquatic and terrestrial organisms at sites nationwide. Dr. Ginn has specialized expertise in assessing the fate, exposure, and effects of substances such as PCBs, PAHs, dioxins, arsenic, cadmium, copper, lead, and mercury. He has provided scientific consultation regarding the design of remedial investigations and development of overall strategy, and he has provided technical support during negotiations with state and federal agencies. Dr. Ginn has provided support to industrial clients for natural resource damage assessments in Alaska, Arizona, California, Idaho, Indiana, Missouri, Montana, Massachusetts, Michigan, Minnesota, New Jersey, New York, Ohio, Oklahoma, South Carolina, Texas, Washington and West Virginia. In these projects, he has worked closely with legal counsel during strategy development and settlement negotiations with state, federal, and tribal trustees. Dr. Ginn has performed detailed technical assessments of injuries to terrestrial and aquatic resources, including fishes, birds, and mammals, and has also developed innovative and cost-effective restoration alternatives. He has provided deposition and trial testimony concerning injury to aquatic and terrestrial resources. Dr. Ginn has evaluated remedial alternative at contaminated sediment sites and has conducted state-of-the-art studies of the sources and distribution of trace metals. He has also developed site-specific sediment quality values based on the empirical relationships of chemical concentrations to biological effects. O-3-223

Dr. Ginn has authored many publications in the area of applied ecology. He has given numerous presentations and CLE seminars on risk assessment and natural resource damage assessment. Since 1983, he has co-authored the annual literature review of marine pollution studies published by the Research Journal of the Water Environment Federation. Dr. Ginn has served as an expert witness concerning the effects of waste discharges and chemicals in sediments on aquatic organisms. He has also served on scientific advisory committees concerning management of contaminated sediments for Puget Sound, San Francisco Bay, and New York/New Jersey Harbor. Dr. Ginn testified to the U.S. House of Representatives, Commerce Committee, concerning the natural resource damage provision of Superfund reauthorization.

Academic Credentials and Professional Honors

Ph.D., Biology, New York University, 1977
M.S., Biological Sciences, Oregon State University, 1971
B.S., Fisheries Science, Oregon State University, 1968

Licenses and Certifications

Certified Fisheries Professional, American Fisheries Society, Certificate No. 2844

Publications

Mearns AJ, Reish DJ, Oshida PS, Buchman M, Ginn T, Donnelly R. Effects of pollution on marine organisms. Water Environ Res 2009; 81(10):2070–2125.

Gala W, Lipton J, Cernera P, Ginn TC, Haddad R, Henning MH, Jahn K, Landis WG, Mancini E, Nicoll J, Peters V, Peterson J. Ecological Risk Assessment (ERA) and Natural Resource Damage Assessment (NRDA): Synthesis of assessment procedures. Integrated Environ Assess Manage 2009; 5(4):515–522.

Mearns AJ, Reish DJ, Oshida PS, Buchman M, Ginn T, Donnelly R. Effects of pollution on marine organisms. Water Environ Res 2008; 80(10):1918–1979.

Becker DS, Ginn TC. Critical evaluation of the sediment effect concentrations for polychlorinated biphenyls. Integrated Environ Assess Manage 2008; 4(2):156–170. O-3-223

Mearns AJ, Reish DJ, Oshida PS, Buchman M, Ginn TC, Donnelly R. Effects of pollution on marine organisms. Water Environ Res 2007; 79(10):2102–2160.

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Haven KF, Ginn TC. A mathematical model of the interactions of an aquatic ecosystem and a thermal power station cooling system. Proceedings, 4th National Workshop on Entrainment and Impingement. Jensen LD (ed). E.A. Communications, Melville, NY, pp. 321–344, 1978.

Poje GV, Ginn TC, O'Connor JM. Responses of ichthyoplankton to stresses simulating passage through a power plant condenser tube. In: Energy and Environmental Stress in Aquatic Systems. J.H. Thorp and J.W. Gibbons (eds.). U.S. Department of Energy, Technical Information Center, Washington, DC, pp. 794–808, 1978.

Ginn TC, Waller WT, Lauer GL. Survival and reproduction of *Gammarus* spp. (Amphipoda) following short-term exposure to elevated temperature. Chesapeake Sci 1976; 17(1):8–14.

Ginn TC, Waller WT, Lauer GL. The effects of power plant condenser cooling water entrainment on the amphipod, *Gammarus* sp. Water Res 1974; 8(11):937–945.

Ginn TC, Bond CE. Occurrence of the cutfin poacher, *Xeneretmus leiops*, on the continental shelf off the Columbia River mouth. Copeia 1973; 4:814–815.

Selected Project Experience

Natural Resource Damage Assessments

Illinois River and Lake Tenkiller (Oklahoma). Assessment of the status of benthic macroinvertebrates and fishes in the aquatic environment and relationships of biotic characteristics to habitat factors and potential effects of poultry operations. Expert witness in the case.

Bayway and Bayonne Refineries (New Jersey). Evaluation of marine, wetland, and terrestrial communities at the refinery sites. Expert witness in the case.

Tittabawassee and Saginaw River/Bay (Michigan). Assessment of potential injuries to aquatic and terrestrial resources caused by releases of dioxins/furans and other substances. Negotiations with state, tribal, and federal trustees.

Pine Bend Refinery (Minnesota). Key issues involve injuries to groundwater, surface water, and wetland resources resulting from releases of petroleum products. Negotiations with state and federal trustees.

FAG Bearing site (Missouri). The claim focused on potential injuries to groundwater resources and federally-listed aquatic species resulting from releases of trichloroethene. Negotiation with trustees and successful settlement.

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Ohio River (Ohio and West Virginia). Claim related to alleged releases of carbamate-metal complexes from a manganese smelter at Marrietta. Key issues involve the causes of mortalities in populations of freshwater mussels and fishes and restoration alternatives for important species. Negotiations with state and federal trustees and deposition.

Ashtabula River/Harbor site (Ohio). Key issues include potential effects of PCBs and PAH on fishes and invertebrates in the harbor ecosystem.

White River (Indiana). Alleged injuries included a major fish kill associated with releases of carbamate-metal complexes from an industrial facility. Participant in technical negotiations with state and federal trustees.

Koppers site in Charleston Harbor (South Carolina). Assessment of PAH and metals in the estuarine environment and development of restoration alternatives. Negotiations with state and federal trustees.

Coeur d'Alene River (Idaho). Provided expert testimony concerning potential injuries caused by metals at deposition and trial (U.S. v. Asarco et al).

Saginaw River/Bay (Michigan). Key issues involve bioaccumulation and effects of PCBs in fishes, aquatic birds, and terrestrial wildlife. Participated in settlement negotiations with state and federal trustees.

Three industrial sites on the St. Lawrence River (New York). Negotiations with federal, state, and tribal trustees on injuries related to PCBs and PAH and identification of restoration alternatives.

Duwamish River (Washington). Claim related to releases of PCBs in the estuarine environment and potential injuries to fish, benthic, and bird resources. Participated in settlement negotiations with state, federal, and tribal trustees.

Clark Fork Basin Superfund complex (Montana). Served as technical lead for PRP negotiations with the trustee and developed supporting scientific reports. Provided testimony at trial in areas of water quality, sediments, and ecosystem-level effects of metals for terrestrial environments.

SMC Cambridge site (Ohio). Technical review and response to a natural resource damage claim associated with metals injuries to wetland resources. Participated in settlement negotiations with state and federal trustees.

Pools Prairie Superfund site (Missouri). Key issues include groundwater injuries and potential effects on a federally listed species.

Koppers site in Texarkana (Texas). Assessment of aquatic injuries and developed restoration settlement package for client. Leader of technical negotiations with state and federal trustees.

SMC Newfield site (New Jersey). Conducted technical review and response to a natural resource damage claim for groundwater resources at the. Participated in settlement negotiations with the state trustee.

Ecological Risk Assessments O-3-223

NASSCO Shipyard (California). Expert and mediation support to resolve sediment remediation issues in response to a cleanup and abatement order. Issues involved the amount of dredging and other remediation required to reduce aquatic and human health risks at the site and the scope of post-remedial monitoring.

San Diego Bay Shipyard sites (California). Studies of sediment contamination and ecological risks of metals (e.g., copper, zinc, and butyltins) and organic substances (PAH and PCBs) at two major shipyards. Site-specific studies included sediment triad assessment and sampling of resident biota for bioaccumulation and histopathology analyses.

Hudson River (New York). Studies and agency presentations to support ecological risk assessment for the upper Hudson River. Technical leader for studies of the effects of PCBs on fishes, invertebrates, mammals, and birds of the upper Hudson River.

National Zinc site (Oklahoma). Participated in agency negotiations on RI/FS implementation. Assessed effects of metals on aquatic and terrestrial biota.

Lake Apopka (Florida). Ecotoxicological investigation of large-scale avian mortality at restored wetland habitats near the lake. The specific objective is to determine whether organochlorine pesticides or some other environmental factor was the causal agent of the mortalities.

Shelter Island Boatyard (California). Principal investigator for field and laboratory studies and an assessment of sediment cleanup levels for copper, mercury, and butyltin near a commercial marine maintenance operation in San Diego Bay, California.

PCB sites in Southeast. Principal-in-charge for ecological risk assessments conducted at several natural gas pipeline compressor stations located throughout the southeastern U.S. Led technical negotiations with EPA concerning the scope and interpretation of studies assessing risk of PCBs to aquatic and terrestrial biota.

Clark Fork River (Montana). Managed integrated ecological risk assessment studies at the Clark Fork River, Montana, Superfund site. Assessed the bioavailability and effects of metals in aquatic and terrestrial food chains.

Chikaskia River (Oklahoma). Managed field and laboratory studies of the effects of cadmium and the development of site-specific water quality criteria using the water effect ratio approach.

Campbell Shipyard (California). Directed an investigation of sediment chemical levels, biological effects, and human health risks at a major shipyard facility in San Diego Bay, California.

Commencement Bay Superfund Site (Washington). Managed RI/FS that included extensive field sampling of sediments and biota, assessing effects of toxic substances, assessing health risks, and identifying pollutant sources.

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Puget Sound Estuary Program (Washington). Managed a multiyear, comprehensive field and laboratory investigation of the effects of chemicals in various sub-areas of Puget Sound. The study included numerous projects involving field and laboratory analyses, assessment of pollutant sources, assessments of human health and ecological risks, and development of sampling and analytical protocols.

Sewage Discharges (Alaska). Managed field and laboratory studies of benthic macroinvertebrates, bioaccumulation, and water quality at three sewage outfalls in southeastern Alaska.

Bering Sea (Alaska). Conducted study design, statistical analysis, and interpretation of results for a field study investigating the effects of commercial harvesting operations on surf clams and other invertebrates.

Poplar River (Montana). Managed a risk assessment for water quality, air quality, and socioeconomic impacts of a coal-fired power plant in the Poplar River basin in Montana. Managed an EIS for river flow apportionment alternatives and atmospheric emissions from the plant.

Klamath Lake (Oregon). Managed a project to evaluate water quality effects on fish populations in the Klamath River basin and to develop a modeling approach to assess the effects of flow apportionment alternatives on water quality and fish habitat.

Puget Sound (Washington). Project manager for an assessment of potential biological effects caused by the release of dichloromethane from an industrial facility. Prepared expert report for use in litigation.

Regulatory Programs

Project manager for technical support activities for EPA's Office of Marine and Estuarine Protection. Supervised data management, development of technical guidance, estuarine program support, monitoring program design, bioaccumulation analyses, and quality assurance reviews.

Served as one member of the five-member Technical Review Panel for the Long-Term Management Strategy for San Francisco Bay. The panel provided critical outside technical review of the program's conceptual approach, scientific rigor, and technical findings. Specifically assigned to sediment toxicology aspects.

Manager for a comprehensive review by EPA of sediment toxicity test methods and development of a resource document that is used to select appropriate test methods for use in NPDES monitoring programs at industrial facilities.

Served as a member of a six-member Biological Resource Assessment Group for New York Harbor. Specifically assigned as an expert in chemical contaminants in sediments and bioaccumulation. O-3-223

For EPA multi-year project, served as chief biologist for technical evaluation of Clean Water Act Section 301(h) applications for permit modifications at marine sewage discharge sites throughout the United States.

Provided technical support to the Oklahoma Water Resources Board for the development of site-specific water quality criteria for metals.

For the Army Corps of Engineers, served as principal-in-charge for Puget Sound Dredged Disposal Analysis Phase I and II baseline biological surveys at dredged material disposal sites in Puget Sound, Washington.

Served on the Technical Advisory Committee for the Puget Sound Estuary Program. The committee provided technical review and program guidance to the various sponsoring agencies.

Other Water Quality Studies

Served as principal investigator and expert witness for an assessment of benthic biological effects and sediment chemical levels near the Pt. Loma, California, sewage discharge.

Assessment of the effects of offshore LNG terminals in the Gulf of Mexico on fish populations. Evaluated effects of fish egg and larvae entrainment of key species in proposed facilities at various locations.

Conducted a comprehensive assessment of bioaccumulation of inorganic and organic substances in marine organisms in the Southern California Bight.

Directed a comprehensive review and evaluation of the biological impacts of oil spill cleanup operations on marine ecosystems.

Conducted an evaluation of the role of soil and water bioassays for assessing biological effects of hazardous waste sites.

Principal investigator to evaluate the biological impacts of ocean disposal of manganese nodule processing wastes.

Managed a project to evaluate available cause and effect data and models to predict water quality and biological impacts for Puget Sound, Washington.

Developed the biological components of an ecosystem model to evaluate effects of multiple power plant discharges on a single water body.

Managed statistical analyses of benthic infauna data collected near the Waterflood Causeway in the Beaufort Sea.

Project co-manager and principal investigator for a review and analysis of biological impact data for all currently operating coastal power plants in the United States.

Principal scientist to evaluate responses of benthic invertebrates and fishes to lake aeration and circulation projects.

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Principal scientist for a comprehensive limnological evaluation of the Lafayette Reservoir in California.

Evaluated the responses of benthic invertebrates and fishes to lake aeration and circulation programs and developed recommendations for applicable lake restoration techniques.

Principal investigator in analyzing water quality conditions at a hypereutrophic lake and conducting public workshops on alternative restoration measures.

Developed a method of predicting biological responses of new cooling lakes based on a deterministic ecosystem model and empirical fish production models.

Conducted field and laboratory investigations of the effects of power plant entrainment on macroinvertebrates in the Hudson River estuary. Determined relationship of entrainment effects to populations in the lower estuary.

Managed laboratory bioassay studies evaluating the combined effects of temperature, chlorine, and physical stress on estuarine ichthyoplankton and zooplankton.

Professional Affiliations

- Society of Environmental Toxicology and Chemistry
- American Chemical Society
- American Institute of Fishery Research Biologists

Depositions

The Quapaw Tribe of Oklahoma et al. v. Blue Tee Corp, et al., United States District Court, Northern District of Oklahoma, Case No. 03-CV-0846-CVE-PJC, deposition 2010.

Moraine Properties, LLC v. Ethyl Corporation, United States District Court, Southern District of Ohio, Civil Action No. 3:07-cv-00229, deposition 2010.

State of Oklahoma et al. v. Tyson Foods, Inc, et al., United States District Court for the Northern District of Oklahoma, Civil Action Number 4:05-CV-00329-TCK-SAJ, deposition 2009.

New Jersey Department of Environmental Protection and Administrator, New Jersey Spill Compensation Fund v. Exxon Mobil Corporation, Superior Court of New Jersey, Law Division/Union County, DOCKET NO. L-3026-04, deposition 2008.

United States of America, The State of West Virginia, and The State of Ohio v. Elkem Metals Co. L.P., Ferro Invest III Inc., Ferro Invest II Inc., and Eramet Marietta Inc, United States District Court, Southern District of Ohio, Eastern Division, Case No. 2:03 CV 528, deposition 2005.

United States of America v. Asarco Incorporated et al., United States District Court for the District of Idaho, Case No. CV-96-0122-N-EVL, deposition, 2000.

State of Montana v. Atlantic Richfield Company, United States District Court for the District of Montana, Case No. CV-83-317-HLN-PGH, deposition, 1996.

Aluminum Company of America and Northwest Alloys, Inc. v. Accident and Casualty Insurance Company, et al, Superior Court of the State of Washington, King County, Case No. 92-2-28065-5, depositions 1995, 1996.

Asarco v. American Home Insurance Company, et al., Superior Court of the State of Washington, King County, Case No. 90-2-23560-2, deposition 1993.

U.S. v. City of San Diego, United States District Court, Southern District of California, Case No. 88-1101-B, depositions 1991, 1993.

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Trials and Arbitrations

United States of America v. Asarco Incorporated et al., United States District Court for the District of Idaho, Case No. CV-96-0122-N-EVL, testimony at trial, 2001.

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State of Montana v. Atlantic Richfield Company, United States District Court for the District of Montana, Case No. CV-83-317-HLN-PGH, testimony at trial 1997 (aquatic and terrestrial phases of the trial).

U.S. v. City of San Diego, United States District Court, Southern District of California, Case No. 88-1101-B, deposition, testimony at trial 1991, testimony at motion hearing 1994.

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Gary L. Brugger, P.E.
Senior Managing Engineer

Professional Profile

Mr. Gary Brugger is a Senior Managing Engineer in Exponent's Environmental Sciences practice. He has more than 30 years of experience in civil and environmental engineering. His project experience includes "environmental forensics"; environmental insurance technical support; litigation technical support; product stewardship; site investigation, remediation, and closure; water resources and water quality management, including industrial, municipal, and wastewater treatment and management; contaminated site redevelopment; waste management; landfill closure; remedial performance evaluation; and lead paint investigation and abatement. Specific assignments have included compliance auditing; TSCA registration; regulatory affairs and compliance management; CERCLA and RCRA investigations; remedial design and closure plan preparation; hazardous waste cleanup management; emergency response management, planning, and assessment; construction management and monitoring; ecological restoration; and wastewater treatment technology assessment, including failure analysis and prevention. He has also conducted and managed lead-based paint investigations, prepared management and abatement plans, and developed proprietary methods for use of a portable x-ray fluorescence (XRF) analyzer for field screening soils to segregate lead-based paint from other sources of lead. In addition, he has directed the investigation and/or review of numerous NRDAs. Mr. Brugger also has testified as an expert in the areas of environmental compliance (RCRA, CERCLA, TSCA, and CWA), remediation and remedial requirements, environmental forensics, emergency response management, and cost allocation. O-3-224

At Exponent, Mr. Brugger specializes in solving complex and diverse environmental and related problems for which his broad engineering and environmental background are invaluable. Mr. Brugger frequently works with other engineers and scientists at Exponent to evaluate environmental contributions to process or materials failures, to conduct product and due-diligence evaluations, and to work with clients to improve their product's reliability and limit or eliminate the risk to the environment from the product.

Mr. Brugger's experience as a design engineer, regulator, and consultant allows him to apply a broad approach derived from his understanding of science, engineering, and regulations. With this approach, Mr. Brugger has been able to anticipate environmental issues and integrate their solutions into his clients' routine practices. Since 1988, he has helped to integrate environmental programs into the company cultures of clients in the manufacturing, fabrication, plating, mining, agriculture, pulp and paper, and food processing industries. More recently, he is helping clients assess their greenhouse gas footprint and develop innovative solutions to reducing the footprint or recovering energy. He has developed innovative investigation techniques, remedial measures, and disposal practices that have provided documented cost savings for clients. Where confidentiality has allowed, Mr. Brugger has presented or published the results. Recent presentations have included such diverse topics as innovative investigations, environmental forensics, and redevelopment value analysis.

Academic Credentials and Professional Honors

B.S., Civil Engineering, University of California at Davis, 1970

Association of Washington Businesses: AWB Waste Management Committee, AWB Superfund Committee, and AWB Environmental Executive Committee

Licenses and Certifications

Registered Professional Civil Engineer, Alaska, # 7910
Registered Professional Civil Engineer, Idaho, # 5966
Registered Professional Civil Engineer, Oregon, # 14111PE
Registered Professional Civil Engineer, Washington, # 15170
Registered Professional Engineer, Montana#9770
Registered Professional Engineer, Oklahoma, #24438
Registered Professional Engineer, Michigan, #6201057384
Registered Professional Engineer, Tennessee, #00114829

Presentations

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Shields WJ, Ruby MV, Benton L, Sun B, Brugger G. Identification of the sources of lead contamination in surface soils in the vicinity of mines and smelters. Invited presentation, Local Solutions Smart Future Conference and Celebration. Working and Living with Lead, Port Pirie, South Australia, September 28–October 1, 2003.

Brugger G, Lehmicke L. Environmental forensics applied to voluntary restoration. Presentation, AEHS Conference, San Diego, CA, March 19, 2002.

Yost L, Brugger G. Use of conceptual site models for risk communication and remediation. AEHS Conference, San Diego, CA, March 19, 2002.

Brugger G. Guilty by association, innocent by forensics. AEHS Conference, San Diego, CA, March 2001.

Brugger GL, Lehmicke L. Dating a chlorinated solvent release: 1982 or 1994. Platform presentation, Environmental Forensics Session, 10th West Coast Conference of AEHS, San Diego CA, March 22, 2000.

Brugger GL, Perry M, Clem E. RCRA Corrective Action an asset in redeveloping a solvent recycling facility. Poster presentation, 10th West Coast Conference of AEHS, San Diego CA, March 21–23, 2000.

Brugger GL, Murphy S, Rohr W. Use of portable XRF to screen former Inert Target Range for heavy metals, allowing rapid assessment and remediation. Platform presentation, Investigations Section, 9th West Coast Conference of AEHS Oxnard, CA, March 29, 1999.

Brugger GL, Ivers L. Innovative recovery of waste oil by using subfreezing temperatures to allow removal of contaminated water as clean ice. Presentation to the BP Arctic Remediation Conference, Anchorage, AK, and U.S. Air Force Conference, Honolulu, HI, 1995.

Ivers L, Brugger GL. Restoration and recycling of abandoned asphalt plant. Presentation to the BP Arctic Remediation Conference, Anchorage, AK, and U.S. Air Force PACAF Remediation, Recycling and Restoration Conference, Honolulu, HI, March 1995.

Konen B, Brugger GL, Ghofani TG. *Ex situ* bioremediation in interior Alaska. Presentation to the BP Environmental Conference, Anchorage, AK, 1993.

Brugger GL, McKay E. RCRA soil treatment by generators, a study of soil treatment within a "RCRA tank." Presentation, Hazamacon, Spring 1991.

Brugger GL, McKay E, et al. RCRA incineration ash transfer, methodology and control for transfer of incinerator ash to remote sites for disposal. Presentation at the 2nd Annual Northwest Conference for Hazardous Materials Management and Recycling, 1991.

Brugger GL. Impact of MTCA standards on cleanups of sites with chlordane, DDT, and lindane contamination. White paper presented to the AWB Environmental Committee, Seattle, WA, 1990.

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Brugger GL. Impact of the Washington State Waste Minimization Regulations on selected industries. White paper presented to the AWB Environmental Committee, Seattle, WA, 1990.

Brugger GL. Design of carbon treatment systems for treatment of groundwater. Presentation to the Kleinfelder Environmental Conference, Sacramento, CA, 1989.

Brugger GL, Hubbard TR. The action team approach to expedited restoration of urban bays. A presentation of the use and success of the interagency action team approach to improved water quality in urban bays. Presentation to the Second Annual National Urban Bay Conference, Seattle, WA. Sponsored by EPA, 1987.

Project Experience

Solid and Hazardous Waste

Landfills

Responsible for engineering controls for landfill cap and stormwater controls for landfill closure and development as a golf course.

Responsible for RCRA Subtitle D audits and needs studies for more than 40 landfills. Studies covered identification of non-complying landfills and preliminary assessment of requirements to close or bring the landfills into compliance, including cost estimates.

Responsible for approval of design and issuance of permit for time-critical landfill expansion. Working in partnership with the landfill consultant, developed the design for the first self-sealing double liner system.

Responsible for approval of design and issuance of permit for time-critical closure of three major landfills. Working in partnership with the City's engineers, developed the first multi-layer closure cap implemented on the West Coast.

Landfill closure plan for Eielson AFB (Alaska) was integrated with the need to treat fuel-contaminated soils excavated during major expansion of base housing and mission support buildings. Land-farming cells were constructed on top of the former landfill using a compacted soil liner. Over the course of the next five summers, the excavated soils were bioremediated on top of the former landfill. Each spring, the soils cleaned during the previous summer were incorporated into the soil liner. At the end of the land-farming project, the treated soils were sufficiently clean to qualify as a RCRA Subtitle D landfill cap. The combining of the two projects saved the USAF over $7,000,000 budgeted for the landfill cap.

RCRA Subpart X O-3-224

Responsible engineer for development of the RCRA closure plan for the open-burning, open-detonation facility at Eielson AFB. Tasks included site investigation, closure report, and agency negotiations.

Acted as engineering consultant and technical reviewer of the RCRA closure plan for Egland AFB.

Acted as technical consultant to Eielson AFB's Civil Engineering Squadron audit of Elmendorf OBOD permit.

Acted as consultant to range manager to address RCRA Subpart X monitoring, compliance, environmental controls, and closure issues.

RCRA Permitting and Compliance

Acted as consultant to project manager addressing numerous compliance issues, including RCRA tank certifications and emergency response planning.

Conducted audits of facilities in Washington, Oregon, and Hawaii for major bank client financing expansion of manufacturing and warehouse facilities. Included RCRA and stormwater permitting compliance assessment.

Acted as RCRA compliance consultant regarding waste management, waste segregation, SARA reporting, and emergency response planning.

RCRA compliance and closure consultant to project manager for resolution of environmental issues associated with AST leaks and spills at a chemical manufacturing and repackaging facility.

Retained as a compliance consultant for a restoration project involving land that had previously received heavy-metal sludge from an industrial wastewater treatment facility. Provided research and documentation to establish that the sludge was not currently a regulated waste nor a regulated waste at the time it was placed. Furthermore, removal of the waste would have compromised the planned wetland restoration project.

Retained as a consultant to assess potential RCRA compliance issues associated with the release of chlorinated solvents from an electronics manufacturing facility. Initial assessment indicated that the contaminant plume was the result of historical operations and not related to current operations.

O-3-224

Retained to assess source of groundwater contamination from wood preservatives. Tasks included evaluating RCRA compliance and management practices, as well as stormwater impacts. Assessment concluded that stormwater was mixing with contaminated groundwater from a historical accident. Remediation system modifications were recommended to intercept contaminated groundwater plume.

Retained as a consultant and possible testifying expert to assess whether USTs and ASTs operated by the client were regulated under RCRA. Initial evaluation indicated that these tanks were not regulated under RCRA.

Retained to assist with remediation and disposal of mercury-contaminated rocks from a former industrial trickling filter. Innovations included novel removal and cleaning process that recovered most of the mercury and allowed the majority of the rocks to be disposed as non-hazardous waste.

Environmental Engineering

Remedial Performance Evaluation

Retained to assess the design of, and to install and operate, a bio-pile system for *ex situ* bioremediation of fuels and non-chlorinated solvents. The original design, prepared by a national laboratory, was found to be unnecessarily complex and difficult to construct. Revised the system from vacuum to blower, simplified the monitoring system, and modified the construction plan, resulting in a savings of $250,000—over half the construction cost. Subsequently, developed and tested a non-mechanical system for use on remote sites, resulting in a savings of 75 percent over the original design estimate.

Retained to assess contractor's proposal to recover oil and hazardous materials from drummed liquids using a gravity separator. Initial review indicated that the process was unreliable, expensive, too time consuming, and would require a RCRA permit. An alternative treatment approach was developed using subfreezing air temperatures to freeze the water in the drums then remove it as uncontaminated ice. The remaining liquid was field screened for solvents. Solvents were segregated for RCRA disposal, and waste oils were recovered for use as fuel in portable heaters. Cost savings from proposed treatment was more than $500,000.

Retained by manufacturer to provide technical advice and permitting assistance for onsite micro-encapsulation of arsenic-contaminated soils. Review of competitive proposals and test results from three vendors indicated that tight process controls were necessary if the encapsulated soils were to pass the RCRA hazardous waste designation. Innovations included permitting the treatment process under the "treatment by generators" provisions in RCRA, and designing the treatment-area "tank" to be left in place as a RCRA cap.

Reviewed plans to use an in-well stripping process to remove chlorinated solvents released from a small metal-plating facility. Our analysis indicated that the system was inadequately characterized and too small to meet remedial goals within the project schedule. Additionally, we raised concerns that the proposed system would introduce oxygen to the aquifer, ending the natural biodegradation of the plume. Recommended two-phase in-well stripping approach that used nitrogen in the initial phase to maintain anaerobic conditions in the aquifer, thus supporting natural biodegradation. O-3-224

Retained to review and comment on proposed remedial technologies to be applied at two locations at the site. Initial review of the steam extraction technology proposed by the regulator indicated that it was nearly six times the cost of containment through conventional means. Furthermore, no studies had been conducted to ensure that the contaminants could be recovered once the steam had mobilized them. Also saved the client substantial costs for soil removal. A soil removal program had been proposed based on two soil samples. Close scrutiny of the data suggested that the contamination was extremely localized and associated with creosote-treated railroad ties left in place when a rail spur was abandoned. Confirmation sampling supported this assumption, saving the client more than $100,000.

Retained to review a proposed remedial system for a dry cleaner site. The ROD proposed use of Fenton's Reagent to remove residual PCE from former cesspools suspected to be the current source of contamination, but ignored piping and other potential issues, including the amount of organic carbon present in the system that would react violently with the Fenton's Reagent. Additional work on this Long Island site includes a natural attenuation assessment, regulatory strategy development, vapor intrusion assessment, and identification of prior investigations conducted by others that breached the natural containment at the site, releasing chlorinated compounds to offsite groundwater.

Wastewater Treatment

Evaluated causes of the digester failure at the City of Spokane wastewater treatment plant, prepared expert report and presented expert testimony regarding the causes of failure and the standard of care associated with a "back-of-the-envelope" engineering design prepared by a professional engineer working a consulting assignment for the City.

Assessed design and operational problems associated with anaerobic digesters being operated for digestion and methane production. Work included assessment, preparation of training materials, and presentation at a seminar. Within 2 months, digesters were not only stable, but performing consistently above the design efficiencies. Problems encountered included highly variable waste stream, limited controls, inconsistent/conflicting direction and advice, equipment not performing as designed, inadequate (or never provided) operation manuals, and inadequate training.

Retained by City of Spokane to conduct forensic analysis of unusual grease problem, to provide suggestions for management, identify source if possible, and provide recommendations for treatment. Work included successful identification of the material, recommendations for inspection and communication with industries that were possible sources, and strategy for identification and appropriate actions should the problem re-occur. Industry communication strategy was successful, and no reoccurrences have been observed.

Retained by Fortune 200 company as an expert and consultant regarding claims of damage to POTW pump stations and sewers from clients' discharges. Multiple projects in multiple states. Provided client with engineering and cost documents to allow negotiation of reasonable settlement of legitimate claims and rejection of excessive charges. Also evaluated pretreatment systems and made recommendations.

Retained by confidential client to assess efficacy of physical chemical system to remove trace contaminants, including pharmaceuticals, from drinking water.

O-3-224

Retained by internationally recognized museum and research facility to solve odor and pretreatment issues. Helped client conduct investigations, assess treatment technologies, and implement solutions.

Conducted blind efficacy testing of chemical treatment technology to enhance and expedite treatment of conventional and other pollutants at existing industrial and municipal treatment facilities. Tests were designed and conducted to verify that the product was, in fact, achieving treatment and not fooling the tests.

Retained by Phoslock International to assess applications of Phoslock technology for phosphorus removal in the United States. Work also included submittal of pre-manufacturing notices and regulatory support for applications.

Retained to determine the operational conditions that led to the failure of the #3 Digester at the Spokane Wastewaster Reclamation plant. Personally responsible for operations analyses and interviews of plant and other personnel with knowledge of the digester and/or the event. Interviewed 30 people and resolved conflicts between initially reported observations and recorded and preserved data. All significant observations were verified and accounted for within the data and failure mode.

Retained to develop innovative approach for water and wastewater treatment for the Polar Ice Coring Research facility located in Alaska. Work included development of innovative water treatment and wastewater treatment technologies that would supply the facility during the summer research season and could be easily protected during the harsh winter months.

Retained by international client to evaluate off-the-shelf integrated treatment plants for potential use at resort facilities in areas with limited power. The proposed technology did not have the flexibility to address weekly fluctuations in flow and loading, because most facilities were occupied from noon on Sunday to noon on Friday, with significant cleaning activities occurring in between. Developed two approaches—one used a lagoon system where land was available, and the other used aerated equalization basis followed by extended aeration activated sludge package plant.

Retained by confidential client to provide efficacy testing of physical chemical treatment system to remove trace contaminants, including trace pharmaceuticals, from drinking water. Work includes identifying a range of parameters for testing, locating representative water supplies, and conducting tests to verify the effectiveness of the process.

O-3-224

Highlights of wastewater projects as a state review and grants engineer:

- Wastewater construction grants for state of Washington – Managed more than $200,000,000 in projects from 1974 through 1979.
- Technical plan review of nearly $0.5 billion in wastewater treatment and pretreatment facilities. Review included reliability, operability, and adequacy.
- Expertise in conventional, tertiary, and innovative chemical treatment for industrial wastewater, stormwater, and municipal wastewater.
- Expertise in permitting issues that included nearly 1,000 industrial pretreatment facilities, hundreds of POTWs, and dozens of stormwater treatment facilities.
- Drafted first municipal stormwater permit and first water quality–based permit for major POTW in EPA Region X.

Mining, Smelting, and Finishing

Served as senior engineer for multimillion-dollar demonstration projects to conduct full-scale testing of remedial measures for several major CERCLA sites involving surface mines and smelting operations.

Retained as a consultant to assist client who had purchased a site with metal finishing waste. Assignment included remedial technology assessment and permitting. Permitting strategy included the first use of the RCRA provisions allowing generators to treat their own waste streams under their waste generator permits. These demonstration projects developed cost-effective techniques for remediating soils with various concentrations of heavy metals.

Developed and implemented a recycling plan for flue dust and sandblast wastes contaminated by heavy metals, and conducted a preliminary assessment of long-term impact from the use of this material. Also evaluated heavy metal contribution to adjacent waterway sediments from coal and mercury mine drainage. Conducted an evaluation, up-river remedial design, and implementation plan for the smelter slag sandblast waste.

Organized PRP group, developed plans, and directed an environmental evaluation and expedited remedial measures for a lead smelter and processor. Contaminated sediments and soils were recovered and recycled, avoiding substantial remediation costs associated with planned disposal.

Conducted preliminary site assessments, including wetlands evaluations of a former industrial site in the Northwest. During the wetlands assessment, found evidence of smelter slag. Discovered that the property had been developed for smelting operations that had ceased nearly 100 years ago. Knowledge of the magnitude of potential liabilities and uncertainties associated with developing a former smelter site allowed the client to assess risks rapidly and make timely business decisions.

Served as project manager and designer for a survey of metals fabrication, handling, and storage facilities. Evaluated potential for recycling surplus metals and qualitatively assessing environmental concerns associated with the operations. Innovations included beta-testing a Niton XRF analyzer that provided real-time analysis of metal alloys to determine approximate salvage value.

O-3-224

Served as project and client manager for site investigation, and as client manager for ecological and toxicological risk assessment of industrial sites. Innovations included the use of field screening techniques and inclusion of an ecologist and a toxicologist on the sampling team, which allowed adjustment of the sampling plan in the field, facilitating collection of the data needed to prepare the risk assessments.

Served as project manager and responsible engineer for series of remedial demonstration projects that included the first large-scale soil incinerator, first large-scale biological treatment system, and also included bioventing, use of power plant boilers to incinerate waste, and landfill closures. Major challenges included reluctant regulators, temperatures to –30°F, management of ultrafine dusts from the incinerator and the power plant ash, and biological hazards (mosquitoes and moose). Innovations included conducting *ex situ* biological treatment on top of a landfill, which saved the client more than $5,000,000 in soil treatment costs.

Responsible for the design and restoration of the gravel pit and batch plant sites at Elmendorf AFB. Sites covered nearly 10 acres and contained over 100,000 yd^3 of soil potentially contaminated with asphalts and heavy metals. Innovations included the recovery and recycling of 100,000 gal of asphalt, 30,000 tons of rock used for roadway ballast, and 15,000 tons of asphalt-coated rock and soil incorporated in roadway and parking lot subgrades. Innovations saved the client nearly $6,000,000 vs. the cost of a planned and budgeted disposal option.

Manufactured Gas Plants and Other Related Projects

Served as project manager and consultant for RCRA investigation and proposed closure of major wood treatment facility. Contaminants included creosotes and other wood treating chemicals. Work included cost analysis, cost allocation evaluation, and evaluations of prior investigations, interim removal actions, and treatment systems.

Site manager for Washington State Department of Ecology. Accomplishments included site investigations, interim removal, and disposal plan development (asbestos contaminated with PAH. Demonstrated to EPA that the site should not be listed on the NPL.

Served as project manager for Washington State Department of Ecology for environmental issues associated with the original MGP for the City of Seattle. Although the site had originally been built on a pier, the structure had been torn down and the area filled. Challenges included identification of historical disposal areas, and development of sampling plans and special controls for installation of building piling supports to minimize disturbance of PAHs.

Acted as senior remediation consultant on several restoration and redevelopment projects at MGP sites. Tasks included review of innovative research proposals and results, remedial technology analysis, regulatory analysis, storm water management planning, redevelopment analysis, cost analysis, and senior technical review.

Pesticides O-3-224

Retained to investigate, remediate, and resolve environmental issues associated with an agricultural chemical warehouse fire. Challenges included addressing contamination and risks from the 181 chemicals in the warehouse at the time of the fire. A risk-based investigation approach was developed, and the project focused on chemicals that were in the warehouse in sufficient quantity to present an environmental or toxicological risk. Laboratory cost savings from this approach was in excess of $500,000. This was one of the first RI/FS projects accepted and closed by the Oregon Department of Environmental Quality. The project went from work plan preparation through investigation and remedial implementation within 11 months.

Retained to investigate, evaluate, remediate, and resolve environmental issues associated with a fire at a pesticide applicator's warehouse in eastern Oregon. The warehouse had contained nearly 80 tons of aluminum phosphide pellets used for fumigation of grain elevators and ships. Worked with the client to arrange first-responder training for employees and developed an emergency response plan to stabilize the unburned pellets. Worked with the manufacturer to expand the FIFRA registration and licensing for the product to allow use for control of burrowing rodents as an alternative to disposal.

Retained to evaluate contamination and risks associated with fertilizer distribution facility that had also handled some pesticides. The RI/FS had been completed, and the client wished to assess potential remedial measures. Review of the RI/FS indicated that pesticide issues were limited, and although soil concentrations exceeded Washington State MTCA standards, they did not exceed EPA standards, thereby allowing disposal as non-RCRA waste in Idaho. Groundwater contaminated with nitrates and phosphates above drinking-water standards was used for irrigation where the contaminants would be removed as a beneficial component of the water.

Retained as a consultant to assess compliance issues associated with corrosion inhibitors included in products used in large hydraulic systems. Because the corrosion inhibitors included compounds that were biocides, the client needed to know if the products and the manufacturing process were regulated under FIFRA, TSCA, or both. Because the active ingredients in some of the inhibitors are formulated for pesticides, this became a complex assessment to verify that the actual raw materials used in our client's products were manufactured as corrosion inhibitors and were approved for such use under both FIFRA and TSCA.

PCBs

Acted as Washington State Department of Ecology engineering manager for emergency response for recovery and treatment of PCBs from a transformer spill that occurred when a transformer being loaded on a barge broke free and fell into the river. Responsibilities included review and approval of recovered PCBs/water treatment system and disposal.

Served as principal investigator and enforcement officer for a mysterious oil spill containing PCBs. Careful investigation determined that the employees of a machine shop had dumped waste oils without PCBs into a former power plant flume that contained PCB-contaminated sediments. During the brief contact period, the waste oil mobilized the PCBs. A case was developed, and substantial monetary penalties were assessed against the dumpers, including allocation of cleanup costs.

O-3-224

Retained to determine the cause of transformer recontamination of five PCB transformers at a major industrial facility. Transformers had been cleaned and certified to be <50 ppm PCBs, but resampling during an EPA inspection found PCBs in the 500- to 800-ppm range. Thorough investigation of the methods used by the transformer cleaning contractor, and interviews of the client's employees who observed the contractor, enabled us to determine that the cleaning contractor had problems with its oil removal unit and did not remove and recycle the transformer oil either under load or with heated oil as required. Furthermore, the verification sampling was done with the transformer cold and prior to use. Consequently, a relatively substantial amount of PCBs remained trapped within the coils.

Served as project manager for contract to support USAF initiative to remove PCBs from USAF facilities. Project assignments included development of an investigation and management plan, investigation and testing of electrical components, and auditing of prior work involving PCB removal and/or recycling projects. Challenges included differing state standards for PCBs and poorly documented prior work. Two California bases (Vandenberg and Mather) and Williams AFB in Arizona required resampling, because prior contractors had not used the 1-ppm threshold used in California. Consequently, these transformers had to be resampled and re-cleaned or disposed as PCB waste.

Retained as a consultant in a litigation case to investigate the probable source of PCBs found in a storm water retention pond and sediments of an adjacent waterway. Although cutting fluids in the client's machine shop were suspected and alleged by the regulators, the contamination was not consistent with the client's source (location). The investigation focused on a nearby facility with documented spills of hydraulic fluids in the late 1940s though the late 1950s. Investigation of library and company records indicated that the nearby facility had used surplus aircraft hydraulic oil in their hydraulic systems. Research of the records of the Commemorative Air Force (CAF) and interviews with CAF volunteers produced documentation that the surplus aircraft hydraulic oil used by the nearby facility contained substantial quantities of PCBs.

Product Stewardship

Initially retained in 1987 to address regulatory compliance issues associated with solvent use and disposal. Scope subsequently expanded to include integration of environmental issues within the development, use, and ultimate disposal of products. Within 18 months, the implementation of ideas developed by the Tempress team reduced the defective parts rate to less than 0.001 percent, (from greater than 5 percent). Solvent use was reduced by 98 percent, while product quality, customer satisfaction, and profit margin increased dramatically.

Retained to observe, document, and recover for testing piping components used in fuel dispensing. Additional activities included assessment of the installation, notation of any failures causing environmental impact, and documentation of any near-term potential failures or impacts.

Retained to file Toxic Substances Control Act (TSCA) applications and verify efficacy of proprietary product used in the treatment of waste water and lake restoration. Application was complete and EPA approval to begin manufacturing was received within 60 days.

O-3-224

Retained to review electronic device and associated materials to verify California Prop. 65 compliance, and to certify product stewardship program for client's customers. Work included assessment of device and the extent and nature of subcontractors' stewardship programs, and evaluation of printing and materials used for instructions and CD.

Retained to address environmental hazards and risks associated with green energy systems. Although the systems are completely recyclable, the client needed to assess any potential environmental impacts associated with abandonment, vandalism, landfill disposal, and incineration. Subsequently retained to address other environmental stewardship issues and integrate them with manufacturing and marketing.

Environmental Forensics

TIC v. Quemetco, et al. Case No. BC 012529 in the Superior Court of the State of California, County of Los Angeles. Subject: Release of lead from a secondary smelter with regard to insurance coverage matters. Technical consultant and principal investigator. Client: RSR Corporation (represented by Latham & Watkins).

RSR Corporation et al. v. AIU Insurance Company et al. Cause No. 93-0217 in the 71st Judicial District Court, Harrison County, Texas. Principal investigator and consultant for recovering records and calculating emissions from historical smelter operations at sites in Texas, Washington, and Indiana. Work included identification and documentation of process upsets documented (but not previously identified) during routine ambient monitoring by state and local air agencies and the recovery and use of other agency documents to validate air dispersion models and expert opinions.

Retained as expert in the practice of automotive recycling, including the nature, extent, and management of waste streams resulting from this process. Provided analysis and documentation that facilitated settlement.

Retained to identify timing of disposal of battery manufacturing wastes found in the crawl space of a large commercial building. Because of multiple ownership of the battery manufacturing operation, it was necessary to ascertain the timing of the release(s) in order to establish responsibility. Innovations included the dating of construction materials and building remodels, dating battery casings, and dating the plates based on alloy content.

Retained to prepare cost allocation of investigation, remediation, and restoration costs for a major industrial facility. Before cost allocation could be prepared, contaminant sources had to be identified, segregated, and dated.

Retained to ascertain the source of mercury contamination found in an industrial wastewater treatment facility. Research of the client's records produced the original design drawings from the 1950s. The design showed a floating mercury bearing. From prior experience with these bearings, we estimated that the original floating bearing would likely have contained approximately 40 pounds of mercury. Having identified the probable source, our client was allowed to proceed with environmental closure of this site, allowing for planned redevelopment.

Served as project manager and principal investigator for drum disposal site for feasibility study and record of decision preparation project. Although four prior consultants and two Navy investigations had failed to produce evidence that the drums placed at the site were in fact "RCRA Clean," convinced the Navy to try once more. Investigation demonstrated the total quantity of materials released was consistent with washed drums and found documents and managers not previously found who confirmed that the drums had in fact been cleaned in accordance with RCRA. Site closed under MTCA (state standards) at a savings of more than $500,000 in disposal costs. Project team received a Navy commendation for outstanding performance for actions on this project. O-3-224

Litigation Technical Support

David Michael v Denbeste Transportation. Case Number VC038131. Retained to assess the environmental controls, site management, and regulatory compliance and non-compliance with EPA and California laws and guidance regarding decontamination and site safety at a state Superfund site. Additionally asked to assess how such compliance or non-compliance would have contributed to the injury of Mr. Michael, who was working at the site.

Angel Good, et al. v. Fluor Daniel Corporation, et al. U.S. District Court, Eastern District of Washington Case No. CT-00-5021-EFS. Retained as expert to evaluate the emergency response to an event at the plutonium finishing plant at Hanford, including expert report. Also retained to assist with preparation of a technical report evaluating the improper use of ISO 9000 and ISO

14000 (Gap Analysis) processes to evaluate emergency response activities. The same issues were addressed in a separate case, *Arthur Aylsworth, et al. v. Fluor Daniel Corporation, et al.* U.S. District Court, Eastern District of Washington Case No. CY-00-3038-EFS.

Grove Investment Company v. United States Testing Company and Grove Investment Company vs. Collins Radio Company, et. al. Case Number SA CV 00-1076 DOC (EEx) (Lead Case) Consolidated with Case Number SA CV 01-646 DOC (EEx). Retained as expert to assess process solvent usage by the electronics and metal finishing industries in the 1960s and 1970s. Deposition has not been scheduled. Client: Weston Benshoof.

Union Station Associates, LLC v. Puget Sound Energy, Inc. Case No. C01-289P in the U.S. District Court, Western District of Washington at Seattle. Subject: Sources of polycyclic aromatic hydrocarbons at a site of former iron foundry, railroad terminal, manufactured gas plant, wood treatment facility, and power plant. Deposition: 2002. Client: Riddell Williams (representing Travelers Insurance, insurance carrier for Puget Sound Energy).

Seattle City Light v. Lloyds et al. Review of claims and assessment of costs related to water transport of contaminants; assessment of claims and costs prepared by opposition experts. Case dismissed prior to deposition. Client: Lane Powell Spears Lubersky for Lloyds.

Massoud v. Sparky's Towing et al. Retained by defendant for evaluation of contaminant sources at site owned by plaintiff. Developed scientific evidence presented at deposition and trial to demonstrate that automotive fluids from vehicles handled at Sparky's could not have produced the contamination found at the plaintiff's site. Evidence developed included a forensic analysis of automotive wastes and fluids, including analysis of trace metals and alloys used in automobiles. The jury did not award the plaintiff any environmental damages. Client: Phil Welshman of Friese and Welshman representing Sparky's. O-3-224

Andalex v. D.A. Stuart et al. Retained to address Toxic Substances Control Act compliance issues associated with products manufactured by D.A. Stuart regarding product liability claims and allocation of responsibilities. Deposition: 2002. Client: Richards, Brandt, Miller, Nelson representing D.A. Stuart on behalf of AIG.

City of Ridgefield v. SAFECO, AIG, et al. Retained to analyze and document the City of Ridgefield's contributions related to impacts from the lease of City property to Pacific Wood Treating. Initial assignments have included evaluation of remedial technologies, property acquisition, and redevelopment opportunities. Deposition: Not yet scheduled. Client: Merrick, Hofstedt & Lindsey, representing the City of Ridgefield's interests on behalf of its insurers AIG and SAFECO.

Todd Shipyards v. Lloyds. Retained by counsel for Todd Shipyards as an expert on shipyard best-management practices, environmental compliance, and waste management practices. Deposition: 2001. Client: Corr Cronin representing Todd Shipyards.

Fentron Building v. American Motorist et al. Evaluation of remedial technologies, facility compliance issues, and cost assessment and allocation for site restoration related to third-party claims. Clients held not liable; case dismissed prior to deposition. Clients: Merrick, Hofstedt & Lindsey, representing Westport Insurance Company; Soha & Lang, representing Central National of Omaha and Highlands Insurance; Forsberg & Umlauf, representing First State and INSCO insurance companies.

Lilyblad Petroleum et al. v. Industrial Indemnity et al. Evaluated remedial technology, facility compliance issues, cost assessment, and cost allocation for site restoration related to third-party claims. Deposition: March and April 1999. Client: Forsberg & Umlauf, representing Old Republic.

J.I. Case & Co. v. Jones Stevedoring. Assessed level of environmental controls required and processing equipment and associated costs necessary to bring the facility into compliance; also evaluated appropriateness of actions by regulators. Deposition: May 1998. Settled out of court. Client: Williams, Kastner & Gibbs, representing Jones Stevedoring.

Esterline Technologies Corporation and Midcon Cable v. Highland Insurance Company et al. Evaluated remedial technology and cost assessment for site restoration related to RCRA compliance issues and to third-party claims. Case dismissed before deposition (October 1998). Client: Merrick, Hofstedt & Lindsey, representing Highlands Insurance.

King County v. Sunset Demolition. Subject: Improper handling and disposal of solid waste and the associated impacts on public health and the environment. Deposition and expert witness testimony: 1985. Client: King County (Washington) Prosecutor's Office.

U.S. EPA v. Western Processing. Subject: Presentation of investigation methods and results demonstrating that the actions by the owner and operator of the facility presented a substantial risk to public health and environment. Depositions: 1982, 1983. Client: U.S. Environmental Protection Agency.

O-3-224

Insurance Technical Support

Retained to assess and document the state of RCRA compliance requirements that were related to and may have contributed to the release of hazardous materials. Initial review identified that first responders, who did not follow emergency response plans provided by the insured industry, contributed to the extent of property damage from the event.

Retained to evaluate plans, costs, and schedule for remediation of a major Superfund site. Responsible for remedial technology assessment, including the risk of failure, schedule for performance, and associated costs. Work was completed within a 10-day period to allow client to prepare a proposal to the site owner for cost cap insurance.

Retained to assess nature and cause of contamination at a school district maintenance facility. An accident involving the fuel dispensers, a turbine failure, and a leaking vent pipe were thought to be the cause of the majority of the contamination. However, an environmental forensic evaluation of the nature and extent of the contamination and the precise location of the failed equipment suggested that overfilling of the UST was the primary source of contamination. Research of maintenance records produced memos documenting two significant incidents when the tank was overfilled. Client: AIG Environmental Claims.

Retained by the insurance company funding cleanup of a contaminated property to provide technical support for review and approval of investigation plans, remedial technology assessments, treatability studies, remediation plans, and associated schedules and budgets. Saved client $300,000 by eliminating unnecessary studies and sampling costs.

Retained by insurance company to assess interim remedial measures (IRMs) and remedial technology to contain cost for which the insured was potentially responsible. Project successes included scoping of the IRMs to reduce costs and eliminate future liability, and termination of a plan to use expensive and risky IRMs that could have cost the insured and the client millions of dollars.

Retained to assess remedial failure of a soil-vapor extraction (SVE) and groundwater recovery system and develop closure strategy for a large service station complex in central Washington. Initial review of the site plans identified two large cisterns (that were part of the storm water control measures) located upgradient and laterally from the original spill site. Surface spills during fuel dispensing were being released to these cisterns, and heavy rainfall events would flood the cisterns, initially changing the direction of near-surface groundwater flow and resulting in recontamination of the site. Client was advised that the site would never reach cleanup goals without revising the storm water management.

O-3-224

Remedial Cost Analysis

Prepared expert analysis and testified at trial regarding past and future remediation costs that Raybestos had incurred as the result of a breach of agreement with the State of Indiana. Trial held in Indiana Superior Court September 2006. Cost projection analysis used proprietary cost model developed with Mark Johns of Exponent. The model and results were presented at trial, and the judge accepted the model, calculations, and analysis, and subsequently awarded our client 100% of claimed prior and future costs.

Prepared cost analysis for remediation/removal of lead-contaminated soil at the Roberts' Ranch in San Diego County as part of negotiating a purchase and sale agreement. This assignment included not only the remedial cost analysis but also working closely with our client (counsel to the seller) to draft technical requirements, and to establish conditions of the purchase and sale agreement that would allow the seller reasonable control of the removal process, to protect their liabilities and cost.

Redevelopment, Closure, and Brownfields

Served as project manager to address environmental issues associated with former 40-acre waste disposal site being redeveloped for residential use. Environmental issues included metals and nitrates. Used simple hydraulic models and natural attenuation analysis to demonstrate that the site could be safely redeveloped without requiring further measures to protect nearby water supplies. This information was communicated via a simple site model used to facilitate the regulatory understanding of the miniscule risks that the site presented. Client savings from avoiding additional investigation and long-term monitoring were estimated at more than $300,000.

Served as project manager for closure of site and resolution of environmental issues necessary to facilitate sale and redevelopment of a large shopping center in suburban Maryland. Contaminants included multiple solvents (chlorinated and non-chlorinated) and heavy metals. Potentially affected areas included residential areas, schools, and a major wetland. Used available data and conceptual site models to demonstrate that ecological and health risks associated with the site would be eliminated by the natural attenuation processes already at work at the site. Evaluation also included an assessment of remedial failure that could be caused by changes in site conditions, and addressed concerns that the natural bioremediation would halt before reaching acceptable levels. Although solvent and metals concentrations in groundwater exceeded MCLs, client received a no-further-action letter based on our analysis. Net client savings included $200,000 in additional investigation costs and potentially $1,000,000 in long-term monitoring costs.

Served as project manager and consultant for restoration and proposed redevelopment of a portion of a major wood treatment facility that was on City property, located between residential areas and the national wildlife refuge. Contaminants included creosotes and other wood-treating chemicals. Work included cost analysis, EDA and EPA grant application support, interim removal action evaluation, and remedial failure analysis. Analysis allowed site re-development to proceed, with limited risk to the City. In turn, the lead PRP at the site was able to use more than $2,500,000 in remedial action from the City's redevelopment project to obtain matching cleanup grants.

O-3-224

Served as project manager for large solvent and fuel distribution facility and former solvent recycling facility. Tasks included failure analysis of various remedial actions proposed by site owner's consultant. Also conducted risk failure analysis of existing operations and liabilities associated with the site that could affect future redevelopment or sale. Analyses demonstrated that current operations were susceptible to routine failures that could prevent the site from ever achieving agency cleanup goals. Conversely, the near-surface geology and hydrogeology, along with the existing monitoring system, actually were an asset if the site were to be used for any operations that could accidentally release solvents, because natural containment, biological remediation equipment, and monitoring systems were in place and operational.

Retained by counsel for secondary insurers to evaluate site conditions and potential failure of proposed remedial measures. Initial evaluation indicated that the environmental issues associated with the site could be resolved within the limits of the underlying policies, and that further action or evaluation was not necessary.

Retained by major re-insurer to evaluate remedial actions and costs associated with a major Superfund site. Evaluated proposed remedial actions with regard to adequacy, cost, and failure potential, as well as proposed budgets and schedules. Project was initiated and completed within 2 weeks.

Retained by USAF ACC to conduct audits and assessments of Superfund sites at all 22 USAF ACC bases in the United States. Evaluated both the implemented and planned remediation for potential failures leading to unacceptable environmental or health risks. Project encompassed more than 50 Superfund sites with more than 200 remediation systems. Identified sites where remediation was no longer necessary as well, and reduced proposed sampling and extent of long-term monitoring.

Retained as a regulatory, closure, and remedial technology evaluator to address environmental engineering challenges associated with the closure or expansion of military installations in the three rounds of BRAC. Specific assignments included evaluation of risks of remediation failure or inadequacy to protect future uses of facilities. Such uses included schools and residential facilities, as well as commercial and industrial complexes. Evaluated remedial technology and schedule to ensure that remedial requirements would not interfere with the expansion of base facilities (industrial repair complexes) as well as support services such as child development centers and schools. Work was performed for USAF, U.S. Army, U.S. Navy, and Marines. California bases included Castle, Mather, Fort Ord, Twenty-Nine Palms, China Lake, Vandenberg, Davis Well Field, Stockton Army Depot, Sharp Army Depot, and Travis.

Supported an economic stability and redevelopment project in South Stockton, California. Provided an analysis and preliminary plan for required facilities, utilities, and zoning changes needed to develop undeveloped and underutilized properties for business purposes in support of economic growth and stability of the South Stockton neighborhood. 1970 graduate-level class and community support project through University of California at Davis.

O-3-224

Lead-Based Paint Investigation and Management

Retained as a technical expert to assess the nature, extent, and significance of lead paint investigations conducted at six school districts in Texas. Also retained to investigate and evaluate the restoration plans and costs associated with lead-based paint at these facilities.

Served as project manager for a study that included lead-based paint surveys of base schools, child development centers, hospital, recreational facilities, day care centers, day care homes, and representative military family housing. Survey data were analyzed and used to develop a lead-based paint management program plan. Project challenges included the need to manage lead-based paint on and in buildings listed on the national historic register that required maintenance of the original look and color of the buildings.

Acted as program and project manager for $4,000,000 lead-based paint investigation and management planning/consulting project that covered 200,000 military family housing units worldwide, as well as more than 4,000 schools, hospitals, child development centers, day care facilities, and other Air Force facilities used by military families. Recommended abatement procedures, revision of existing military housing renovation guidance to reduce potential releases of lead-based paint, in-place lead-paint management planning, evaluation of lead-based paint renovation debris, and options for disposal.

Served as project manager for investigation of lead-based paint and asbestos at historical command and aide residences. Showed staff how to interpret existing management plans and prior reports, eliminating the need for further investigation and management.

Served as project manager for lead investigation project. Developed screening methods to allow U.S. Army staff to segregate soil contaminated with lead-based paint from soil contaminated with bullet lead containing arsenic, using proprietary XRF soil screening methods. Soil in an area between an indoor shooting range and Post support buildings painted with lead-based paint had become contaminated with lead. However, because the bullet lead contained potentially leachable arsenic, the areas contaminated with bullet lead needed to be segregated from the areas contaminated with lead-based paint. XRF screening methods were employed, and the Army successfully segregated and remediated the soils contaminated by the different sources of lead.

O-3-224

Water Resources and Water Quality Management

Retained as project manager to support appeal of proposed permit requirements for NPDES permit. Although the proposed permit limits appeared to be required to meet Great Lakes Water Quality Standards for discharges, the analyses (by the regulator who drafted the permit) were flawed. Although the analyses' flaws were minor in nature, cumulatively they resulted in proposed permit effluent limits that would be expensive to meet, could not be met under routine adverse conditions, and provided no measurable benefit to water quality. Exponent prepared a rebuttal report pointing out the flaws—which included failure to address natural groundwater discharges with elevated contaminant concentrations, calculation errors, and use of unreliable sample data—and also provided documented studies showing that the minimal effects level for the contaminants was well above the proposed limit.

Served as project manager for design of restoration project to restore former disposal site on Hood Canal. Developed innovative design that provided nesting and perching structures for eagles and osprey, improved shoreline habitat for surf smelt, protected the small boat launch, and used native plants to revegetate the 3-acre site. The native plants specified provided much-needed food and cover, eliminated the need to provide nutrients and water during the first summer, and were less costly than traditional regrading and reseeding. U.S. Navy received regional recognition for use of native plants.

Served as project manager for restoration of a gravel pit, as required by Section 404, under direction of the U.S. Army Corps of Engineers. Innovations included the construction of nesting habitat, forage areas, and safety islands to attract geese away from the runways. Eielson AFB natural resources manager received USAF award for the success of this project.

Served as project manager and principle designer for expansion of storm water treatment facility to accommodate revised mission for Fairchild AFB. Innovations included expansion and re-configuration of the ponds to increase contact with vegetation and thereby improve metals removal, long-term maintenance plan to ensure continued compliance with permits, and revised vegetation to eliminate use by ducks and other water fowl that were accessing the current ponds located near the flight lines.

Acted as design engineer for vegetation restoration to improve spawning habitat for salmon. Innovations included use of limestone to improve water chemistry and introduction of plants formerly native to the area, to provide summer shading and reduce water temperatures.

Served as an internal consultant for implementation and limitation issues for water quality testing to detect water contamination from terrorist activities. Using experience and knowledge of water collection, treatment, and distribution facilities, identified sampling locations, assessed analytical methods, and evaluated the effectiveness of certain compounds.

O-3-224

Developed an innovative process to recycle 1,000,000 gal per day of the process wastewater that was being discharged to the POTW, while advising a client on process management of an industrial pre-treatment system. The payback from savings on water and sewer bills would be met within 8 years. However, the development of nearby properties was being delayed because of inadequate sewer capacity and water supplies. The right to the unneeded water and sewer capacity could be sold to the developers for more than the cost of recycling.

Professional Affiliations

- Sponsor Member, Washington State Defense Trial Lawyers Association

Deposition and Trial Testimony

Available on request.

Certification of Authenticity of Electronic Submittal

I, Jeffrey P. Carlin, declare:

I am an associate at Latham & Watkins LLP, counsel of record for National Steel and Shipbuilding Company ("NASSCO") in the Matter of Tentative Cleanup and Abatement Order R9-2011-0001 before the San Diego Regional Water Quality Control Board ("Water Board"). I am licensed to practice law in the State of California and make this declaration as an authorized representative for NASSCO. I declare under penalty of perjury under the laws of the State of California that the electronic version of Exponent Inc.'s Comments on the Draft Preliminary Environmental Impact Report for the Shipyard Sediment Remediation Project, Dated June 16, 2011, submitted to the Water Board and served on the Designated Parties by e-mail on August 1, 2011, is a true and accurate copy of the submitted hard copy. Executed this 1st day of August 2011, in San Diego, California.

Jeffrey P. Carlin

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File No. 048876-0009

August 1, 2011

VIA EMAIL

Mr. Vicente Rodriguez
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123
vrodriguez@waterboards.ca.gov

Re: General Dynamics' Comments on the Draft Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098)

Dear Mr. Rodriguez:

General Dynamics Company ("General Dynamics") submits the following comments regarding the Draft Environmental Impact Report for the Shipyard Sediment Remediation Project ("DEIR"), State Clearing House Number 2009111098, which was publicly released by the Regional Board Cleanup Team ("Cleanup Team") on June 16, 2011. Because the DEIR includes multiple references to the General Dynamics' Convair Division Lindbergh Field Plant ("General Dynamics Lindbergh Field Facility"), General Dynamics, as the former lessee of that property, has a substantial interest in this proceeding, as well as a general interest in the development of reasonable and scientifically sound cleanup plans for contaminated sites in San Diego, including the Shipyard Sediment Remediation Project and Convair Lagoon.

As discussed below, General Dynamics has a number of significant concerns regarding the DEIR's proposed Convair Lagoon Confined Disposal Facility ("CDF"). Specifically, General Dynamics is concerned that the Cleanup Team concludes in the DEIR that spending millions of dollars to place contaminated sediments from the Shipyard Sediment Site back into the Bay, creating the Convair Lagoon CDF, is a potentially viable alternative for the Shipyard Sediment Site, particularly considering that the risk of recontamination cannot be eliminated. O-4-1

Despite significant risks and challenges associated with the construction and maintenance of a CDF, the DEIR unduly emphasizes this alternative by including extensive discussion of Convair Lagoon, as well as unnecessary documentation pertaining to the demolition of General Dynamics' former Lindbergh Field Facility. In particular, Appendix A to Appendix K consists largely of dozens of forms from the Department of Parks and Recreation describing buildings O-4-2

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formerly located at the General Dynamics Lindbergh Field Facility. These documents appear to have been included without any discernable or legitimate purpose, as they do not relate to the Shipyard Sediment Site cleanup, or to the pier and seaplane ramp proposed for demolition as part of the Convair Lagoon CDF. O-4-2

For the reasons discussed herein, General Dynamics objects to the Convair Lagoon CDF as a potential means for disposing of Shipyard Sediment Site sediments, and respectfully requests that all references to General Dynamics' former Lindbergh Field facility within the DEIR be stricken.

I. THE DEIR MUST FOCUS ON THE SHIPYARD SEDIMENT SITE, NOT CONVAIR LAGOON

The Cleanup Team's purpose in issuing the DEIR is to "analyze the [Shipyard Remediation Project's] potential impacts on the environment, to discuss alternatives, and to propose mitigation measures for identified potentially significant impacts that will minimize, offset, or otherwise reduce or avoid those environmental impacts." DEIR, at 1-1 (emphasis added). While the DEIR discusses four alternatives to the proposed project, including (1) the No Project/No Development Alternative, (2) the Confined Aquatic Disposal Site, (3) the Convair Lagoon CDF, and (4) CDF with Beneficial Use of Sediments, a disproportionate share of the DEIR was devoted to the Convair Lagoon CDF—including over 200 pages and six appendices drafted by the San Diego Unified Port District's ("Port District") consultant. DEIR, at 5-9 (setting forth the four project alternatives); 5-32 - 5-271 (discussing the Convair Lagoon CDF). By contrast, the other alternatives set forth in the DEIR each received only between 2 and 6 ½ pages of analysis. Moreover, no other party interested in the Shipyard Sediment Remediation Project, or the Convair Lagoon remediation was permitted to make a similar contribution. To avoid the appearance of bias, the San Diego Regional Water Quality Control Board ("Regional Board") staff should explain to the public why it included more than 200 pages of analysis (plus appendices) for one alternative prepared by the Port District's consultants, while the other alternatives received a much less detailed analysis. Although the Convair Lagoon CDF was not ultimately selected as the environmentally superior alternative, General Dynamics is concerned that the extensive discussion and special treatment of this alternative compared to the other alternatives may lead to confusion as to the preferred course of action, and as discussed below, General Dynamics does not view the Convair Lagoon CDF as a viable long-term solution for the remediation of the Shipyard Sediment Site or Convair Lagoon. O-4-3

In addition to the disproportionate consideration afforded to the Convair Lagoon CDF, General Dynamics is also concerned that much of the information contained in the Convair Lagoon CDF analysis does not relate to the Shipyard Sediment Remediation Project and should not have been included. For example, the DEIR's Appendix K, which purports to be an "Architectural Resources Evaluation" of the pier and seaplane ramp that would be demolished if the Convair Lagoon CDF were adopted, contains descriptions of a number of buildings previously located at General Dynamics' former Lindbergh Field Facility that were demolished over a decade ago. These documents are wholly irrelevant to the Shipyard Sediment Site, and O-4-4 there is no legitimate purpose for including them in the DEIR as part of an evaluation of architectural resources, especially when they no longer exist.[1] Likewise, the DEIR also discusses a closed leaking underground storage tank case at the former General Dynamics facility, with no explanation of how this tank relates to the Shipyard Sediment Remediation Project, or any of the alternatives under consideration. DEIR, at 5-191. While this type of information might be appropriate with regard to an EIR for Convair Lagoon, it is plainly irrelevant to the Shipyard Sediment Remediation Project. Thus, the Cleanup Team should make clear that independent CEQA review will be required for the Convair Lagoon CDF, if selected, and strike the references to the closed underground storage tank and the demolished buildings that were previously located at the former General Dynamics' Lindbergh Field Facility. O-4-4

II. SPENDING MILLIONS OF DOLLARS TO DREDGE CONTAMINATED SEDIMENT, ONLY TO DISPOSE OF IT ELSEWHERE IN THE BAY, IS NOT A VIABLE REMEDY FOR THE SHIPYARD SEDIMENT SITE

Notwithstanding General Dynamics' above-listed concerns regarding the preparation of the DEIR, it would be patently unreasonable for dischargers to spend millions of dollars to dredge over 140,000 cubic yards of contaminated sediment, only to dispose of it in a CDF elsewhere in the Bay—particularly when consideration of the specific design details of the CDF have been deferred. O-4-5

As drafted, the DEIR contemplates that existing sediment at Convair Lagoon would be dredged and contained in a CDF, along with spoils from the Shipyard Sediment Site, and that BMPs and long-term monitoring measures would be implemented to protect water quality. DEIR, at 5-17 – 5-19; DEIR, at Table 5-1. However, even if the proposed BMPs and monitoring measures are implemented as discussed in the DEIR, there is no guarantee that the CDF will be successful, or that sediments contained in the CDF will never be released. In fact, Convair Lagoon is already a prime example of the dangers associated with confined disposal: After significant funds were expended constructing a cap to remediate PCBs, and cleaning storm drain lines that discharge to the lagoon, PCBs were subsequently found on top of the cap. While the Cleanup Team has suggested that the contamination, "presumably c[ame] from the 60-inch storm drain" (which drains sources upland from Convair Lagoon), the cause of the contamination has O-4-6

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[1] While it is true that the issue of source control is relevant to any alternative, including the Convair Lagoon CDF, the cleanup and abatement order for the former Teledyne Ryan site already requires source control to be achieved before further cleanup of Convair Lagoon is implemented (DEIR, at 5-35 (citing R9-2004-0258)); accordingly, the DEIR may simply note that the CDF alternative could not be adopted until source control is achieved in accordance with R9-2004-0258. Any further detail concerning potential upland sources at Convair Lagoon is not required, and is inappropriate given that the DEIR is supposed to analyze the Shipyard Sediment Remediation Project, not Convair Lagoon. This is particularly true considering that interested parties with respect to the Convair Lagoon cleanup were not afforded the opportunity to assist in the development of the DEIR, as was the Port District.

not been established, and it remains possible that the contamination resulted from a breach of the cap. DEIR, at 5-35 ("Subsequent to installation of the sand cap over the PCB contaminated sediments in Convair Lagoon, monitoring has been conducted that has discovered PCB contamination above the cap, presumably coming from the 60-inch storm drain.") (emphasis added). O-4-6

The Regional Board should not risk a similar outcome with respect to a CDF at Convair Lagoon. If the proposed CDF were to be adopted and fail, causing impacts to the environment, the commingling of sediments in the CDF would likely result in complex, multi-party litigation—at great cost to all parties involved.[2] Since the Port District would be the sole beneficiary of such an alternative, due to its acquisition of the 10 additional acres of land that would be created by constructing the CDF, any alternative involving the commingling and confinement of sediments at Convair Lagoon should be contingent upon the Port District's agreement to fully fund such an approach, including accepting any and all future liability, obligations and costs, and indemnifying other parties for monitoring and remediation costs if the CDF fails. O-4-7

III. CONCLUSION

O-4-8

For the foregoing reasons, General Dynamics strongly objects to the Convair Lagoon CDF alternative, and requests that pages 20 to 90 of Appendix A to Appendix K, and all similar references to the former Lindbergh Field Facility, be stricken from the DEIR.

Respectfully submitted,

Jennifer Casler-Goncalves
of LATHAM & WATKINS LLP

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2 As it stands, the Shipyard Sediment Site now involves 13 Designated Parties. To General Dynamics' knowledge, of the numerous parties involved, the Port District is the only party in favor of the Convair Lagoon CDF alternative.

APPENDIX D

RESPONSE TO COMMENTS REPORT

Tentative Cleanup and Abatement Order No. R9-2011-0001 and Draft Technical Report for the Shipyard Sediment Site, San Diego Bay

August 23, 2011

California Regional Water Quality Control Board
San Diego Region

Response to Comments Report

Tentative Cleanup and Abatement Order No. R9-2011-0001 and Draft Technical Report for the Shipyard Sediment Site San Diego Bay

August 23, 2011

STATE OF CALIFORNIA

EDMUND G. BROWN, JR. Governor
MATT RODRIQUEZ, Agency Secretary, California Environmental Protection Agency

State Water Resources Control Board

California Regional Water Quality Control Board
San Diego Region

This report was prepared under the direction of

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Vicente R. Rodriguez, *Water Resources Control Engineer*
Chad Loflen**,** *Environmental Scientist*
Cris Carrigan, *Staff Counsel, Office of Enforcement*

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LIST OF ORGANIZATIONS THAT SUBMITTED COMMENTS

BAE Systems San Diego Ship Repair
Campbell Industries
City of San Diego
National Steel and Shipbuilding Company
San Diego Coastkeeper and Environmental Health Coalition
San Diego Gas and Electric
San Diego Unified Port District
Star and Crescent Boat Company
United States Navy

LIST OF DESIGNATED PARTIES

1. BAE Systems San Diego Ship Repair, Inc. (formerly Southwest Marine, Inc.)
2. National Steel and Shipbuilding Company (NASSCO)
3. San Diego Gas & Electric Company, a subsidiary of Sempra Energy Company
4. Chevron USA, a subsidiary of Chevron Texaco
5. BP, the parent company of and successor to Atlantic Richfield Co. (ARCO)
6. U.S. Department of the Navy
7. City of San Diego
8. Marine Construction and Design Company / Campbell Industries, Inc.
9. San Diego Unified Port District
10. San Diego Coastkeeper (formerly San Diego Baykeeper)
11. Environmental Health Coalition
12. San Diego Port Tenants Association
13. San Diego Water Board Cleanup Team

LIST OF ACRONYMS, ABBREVIATIONS, AND KEY TERMS

AET	Apparent Effects Threshold
AFFF	Aqueous Film Forming Foam
ASTM	American Society of Testing Material
ANOVA	Analysis of Variance
AQUA	Aquaculture Beneficial Use
ARCO	Atlantic Richfield Company
ASTs	Aboveground Storage Tanks
AT & SF	Atchison, Topeka, and Santa Fe Railroad
AUF	Area Use Factor
AVS/SEM	Acid Volatile Sulfide / Simultaneously Extracted Metals
BAE Systems	BAE Systems San Diego Ship Repair
BAF	Biota Accumulation Factor
BAP	Benzo[a]pyrene
BAZ	Biologically Active Zone
Basin Plan	Water Quality Control Plan for the San Diego Basin – Region 9
BIOL	Preservation of biological habitats of special significance
Bight 08	Southern California Bight 1998 Regional Marine Monitoring Survey
BMP	Best Management Practice
BPJ	Best Professional Judgment
BRI-E	Benthic Response Index for Embayments
BSAFs	Biota-to-Sediment Accumulation Factors
BTAG	U.S. Navy/USEPA Region 9 Biological Technical Assistance Group
CAD	Confined Aquatic Disposal
CalEPA	California Environmental Protection Agency
CAO	Cleanup and Abatement Order
CCC	Criterion Continuous Concentration
CCR	California Code of Regulations
CDF	Confined Disposal Facility
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
City	City of San Diego
CMC	Criterion Maximum Concentration
CNRSW	Commander Navy Region Southwest
Coastkeeper	San Diego Coastkeeper
COCs	Constituents of Concern
COMM	Commercial and sport fishing
CoPC	Chemicals of Potential Concern
CSF	Cancer Slope Factor
CTR	California Toxics Rule
Cu	Copper
CWA	Clean Water Act
CWC	California Water Code
DDT	Dichlorodiphenyltrichloroethane
DFG	California Department of Fish and Game
DRO	Diesel Range Organics
DTR	Draft Technical Report
DTSC	California Department of Toxic Substances Control
DWQ	Division of Water Quality
EHC	Environmental Health Coalition
EMC	Event mean concentration
ERA	Ecological Risk Assessment
ERL	Effects range low
ERM	Effects range medium
EST	Estuarine habitat
HPAHs	High Molecular Weight Polynuclear Aromatic Hydrocarbons
IND	Industrial service supply
Invest Co.	Star & Crest Investment Company
IR	Ingestion Rate
IRIS	Integrated Risk Information System
Kp	Partition Coefficients
LAET	Lowest Apparent Effects Threshold
IRP	Installation Restortation Program
LC50	Median Lethal Concentration
LOAELs	Low-Adverse-Effects-Levels
LOE	Lines of Evidence
LPAHs	Low Molecular Weight Polynuclear Aromatic Hydrocarbons
LPL	Lower Prediction Limit
MAR	Marine habitat
MARCO	Marine Construction and Design Company
MEC	Midpoint Effect Concentration
MEK	Methyl Ethyl Ketone
MIGR	Migration of aquatic organisms
MLLW	Mean lower low water
MLOE	Multiple Lines of Evidence
MM	Management measures
MNA	Monitored Natural Attenuation
MOS	Margin of safety
MS4	Municipal Separate Storm Sewer Systems

MSL	Mean Sea Level
MTDB	Metropolitan Transit Board
NA	NASSCO
NASSCO	National Steel and Shipbuilding Company
NAV	Navigation
NAVSTA	Naval Station
NOAA	National Oceanic and Atmospheric Administration
NOAELs	No-Adverse-Effects-Levels
NOV	Notice of Violation
NPDES	National Pollutant Discharge and Elimination System
NRTAs	Natural Resource Trustees Agencies
NRC	National Research Council
NTR	National Toxics Rule
NURP	National Urban Runoff Program
NWR	Sweetwater Marsh and South San Diego Bay National Wildilfe Refuges
OAL	Office of Administrative Law
OHHEA	Office of Environmental Health and Hazard Assessment
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyl
PCTs	Polychlorinated Terphenyls
PEL	Probable Effects Level
PL	Prediction Limit
Port	San Diego Unified Port District
Porter-Cologne	Porter-Cologne Water Quality Control Act
PPPAH	Priority Pollutant Polynuclear Aromatic Hydrocarbon
PRGs	Preliminary Remediation Goals
PW	Pore Water
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/ Quality Control
RAP	Remedial Action Plan
RARE	Rare, threatened, or endangered species
REC1	Water contact recreation
REC2	Non-contact water recreation
RfD	Reference Dose
RLs	Response Levels
RME	Reasonable Maximum Exposure
RRO	Residual Range Organics
SAR	Shipyard Sediment Site Administrative Record
SCCWRP	Southern California Coastal Water Research Project
SDG&E	San Diego Gas and Electric
SDMCC	San Diego Marine Construction Company
SDUPD	San Diego Unified Port District
SEM	Simultaneously Extracted Metals
SHELL	Shellfish harvesting
SPI	Sediment Profile Imaging
SQG	Sediment Quality Guidelines
SQGQ	Sediment Quality Guideline Quotient
SS-MEQ	Site-Specific Median Effects Quotient
SQOs	Sediment quality objectives
SS	Site Specific
SSO	Site-specific objective
Star & Crescent	Star & Crescent Boat Company
State Board	State Water Resources Control Board
SVOCs	Semi Volatile Organic Compounds
S-W Diversity	Shannon-Weiner Diversity Index
SWAC	Surface-Area Weighted Average Concentration
SWI	Sediment Water Interface
SWM	Southwest Marine, Inc.
SWCS	Storm Water Conveyance System
SWPPP	Storm Water Pollution Prevention Plan
SWPMP	Storm Water Pollution Monitoring Plan
TCAO	Tentative Cleanup and Abatement Order
TBT	Tributyltin
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TR	Tissue Residue (biota-water-sediment equilibrium partitioning approach)
TRGs	Tissue Residue Guidelines
TRI	Toxic Release Inventory
Triad	Sediment Quality Triad
TRV	Toxicity Reference Value
TSCA	Toxic Substances Control Act
TSS	Total Suspended Solids
TUc	Toxic Unit Chronic
ug/kg	microgram/kilogram
UPL	Upper Prediction Limit
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USTs	Underground storage Tanks
US Navy	United States Navy
VOCs	Volatile Organic Compounds
Water Boards	State Water Resources Control Board and CA Regional Water Quality Control Boards
WDR	Waste discharge requirements
WER	Water effects ratio
WILD	Wildlife habitat

WOE	Weight of Evidence	**WQO**	Water Quality Objectives
WQC	Water quality criteria		

EXECUTIVE SUMMARY

The California Regional Water Quality Control Board, San Diego Region's (San Diego Water Board) Cleanup Team prepared this Response to Comments Report on the Shipyard Sediment Site Tentative Cleanup and Abatement Order No. R9-2011-0001 (TCAO) and its supporting Draft Technical Report (DTR). The DTR presented a straightforward, yet sophisticated, analysis of the deleterious impacts to beneficial uses from elevated levels of metals, PCBs, and other pollutant wastes that have accumulated in San Diego Bay bottom sediments at the Site. Because the DTR concluded that beneficial uses in San Diego Bay are impaired by these elevated levels of pollutants, the Cleanup Team undertook a further analysis of an appropriate cleanup level under State Water Resource Control Board (State Water Board) Resolution No. 92-49. The TCAO ordered a group of responsible parties to cleanup the pollutant wastes they discharged at the Shipyard Sediment Site to specific numeric cleanup levels that will protect beneficial uses of San Diego Bay. To ensure that beneficial uses are protected and remain so, the TCAO further established a robust post-remedial monitoring regime. This Report addresses over 450 technical and legal comments submitted by 10 different organizations and entities, including environmental organizations and responsible parties named as "dischargers" under the TCAO.

The comments received not only discussed a wide variety of topics addressed in the DTR and TCAO, but also were demonstrably divergent in their treatment of those topics. All the commentors based their comments, in large part, on the same data, which was collected in 2001 and 2002, and reported in the Shipyard Report (Exponent, 2003). Yet the commentors' interpretations of that data were wildly different. For example, on the one hand, the National Steel and Shipbuilding Company Shipyard (NASSCO) and BAE Systems San Diego Ship Repair (BAE Systems) concluded the Exponent data demonstrated beneficial uses at the Shipyard Sediment Site are not impaired, that no active remediation at the Site is necessary, and that monitored natural attenuation should be the preferred remedy. On the other hand, the Environmental Health Coalition (EHC) and San Diego Coastkeeper concluded the Exponent data demonstrated beneficial uses are greatly impaired, particularly with respect to aquatic wildlife, and that active remediation in the form of dredging should be employed over a much larger portion of the Site than the TCAO recommends.

In this Report, the Cleanup Team employed a "user friendly" approach to organizing and responding to comments. All of the comments relating to a specific subject in the DTR and/or TCAO, as well as the Cleanup Team's respective responses, were grouped together and organized by finding number.[1] In the above example, all of the comments, rebuttal comments, and the Cleanup Team's responses to comments relating to alternative cleanup levels by NASSCO, BAE Systems, EHC and Coastkeeper (and indeed all of the commentors), can be found under Finding 32 .

[1] All of the original comment and rebuttal comment letters are provided on the San Diego Water Board website here: http://www.waterboards.ca.gov/sandiego/water_issues/programs/shipyards_sediment/2005_0126adt.shtml . The Comment ID numbers used in this Report refer to numbers the Cleanup Team assigned to each of the over 450 individual comments received. All the individual comments are provided in Appendix B, listed by their Comment ID number.

Several parties, including San Diego Gas and Electric (SDG&E), Star & Crescent Boat Company (Star & Crescent), the U.S. Navy, and the San Diego Unified Port District (Port District), contended that there is no substantial evidence in the record to support naming them as dischargers under the TCAO. Many of the other parties disagreed, and submitted rebuttal comments and evidence to support the TCAO's findings of responsibility. Consistent with the "user friendly" approach described above, the Cleanup Team organized the comments, rebuttal comments, and its responses regarding a specific party's responsibility for cleanup under the applicable finding number (Finding 9 for SDG&E), (Finding 5 for Star & Crescent), (Finding 10 for the Navy), (Finding 11 for the Port District).

In addition to this Report, based on the quality, content and character of the comments received, the Cleanup Team will clarify and add data, analyses and evidence to the DTR, and produce revisions to the DTR and TCAO on September 15, 2011, as required by the Third Amended Order of Proceedings. However, despite the number and diversity of comments, the Cleanup Team expects to recommend very few changes to the TCAO. On balance, the comments, rebuttal comments, and preparing responses to them, served to illustrate the soundness and reasonableness of the Cleanup Team's analysis in the DTR and recommendations in the TCAO.

"The most basic goal of the California Regional Water Quality Control Board, San Diego Region…is to preserve and enhance the quality of resources in the San Diego Region for the benefit of present and future generations." [Water Quality Control Plan for the San Diego Basin (Basin Plan), p.1] Since its earliest iteration, the Basin Plan has contained an entire section in its implementation chapter emphasizing the importance of appropriate regulation of the shipyards as a critical tool for implementing this most basic Basin Plan goal. As illustrated by this Report, the TCAO, and its supporting DTR, represent perhaps the most significant action taken to date by the San Diego Water Board to enhance and protect the beneficial uses of San Diego Bay that have long been impacted by activities at the Shipyard Sediment Site.

1. TCAO Finding 1 and DTR Section 1: Waste Discharge

Finding 1 of TCAO No. R9-2011-0001 states:
Elevated levels of pollutants above San Diego Bay background conditions exist in the San Diego Bay bottom marine sediment along the eastern shore of central San Diego Bay extending approximately from the Sampson Street Extension to the northwest and Chollas Creek to the southeast, and from the shoreline out to the San Diego Bay main shipping channel to the west. This area is hereinafter collectively referred to as the "Shipyard Sediment Site." The National Steel and Shipbuilding Company Shipyard facility (NASSCO), the BAE Systems San Diego Ship Repair Facility (BAE Systems), the City of San Diego; Star & Crescent Boat Company, Campbell Industries (Campbell); San Diego Gas and Electric (SDG&E); the United States Navy, and the San Diego Unified Port District (Port District) have each caused or permitted the discharge of waste to the Shipyard Sediment Site resulting in the accumulation of waste in the marine sediment. The contaminated marine sediment has caused conditions of contamination or nuisance in San Diego Bay that adversely affect aquatic life, aquatic-dependent wildlife, human health, and San Diego Bay beneficial uses. A map of the Shipyard Sediment Area is provided in Attachment 1 to this Order.

RESPONSE 1.1

DTR Sections: 1, 36
Comments Submitted By: NASSCO, Coastkeeper and EHC, BAE Systems
Comment IDs: 33, 35, 39, 40, 41, 42, 54, 108, 133, 134, 291, 294, 16, 418, 419, 420, 438
Comment

Several Designated Parties made comments on the adequacy of the TCAO and DTR based on legal arguments concerning Water Code section 13304 and Resolution No. 92-49. Those comments are presented below.

ID 33
NASSCO commented that the TCAO treats NASSCO differently than other similar sites, in violation of law. The TCAO violates the consistency requirement that is expressly stated in Resolution No. 92-49, as well as related principles of due process and equal protection by proposing cleanup levels that are far more stringent than what has been required at other similarly situated shipyard and boatyard sites in San Diego Bay and elsewhere. Fundamental fairness dictates that similarly situated sites should be treated similarly, and there is no rational basis for treating NASSCO differently than other comparable sites in the same water body, especially in light of overall condition of the site, as documented in the sediment investigation and Exponent Report.

ID 155
Resolution 92-49 provides that the "Regional Water Board shall . . . prescribe cleanup levels which are consistent with appropriate levels set by the Regional Water Board for analogous discharges that involve similar wastes, site characteristics, and water quality considerations." See also Barker Deposition, at 345:12-345:17 (recognizing that a goal of Resolution 92-49 is to ensure that Regional Boards treat similar sites similarly). Principles of due process and equal protection also require both fundamental fairness, and that persons subject to legislation or

regulation who are in the same circumstances be treated alike. U.S. Const. amend. XIV, §1; Cal. Const. art. I, §§ 7, 15.

Over the past decade, the Regional Board has prescribed cleanup levels for sediments at other shipyard and boatyard locations on San Diego Bay with analogous discharges involving similar circumstances as the Site. See e.g., San Diego Regional Board Order Nos. 88-86, 88-78, 89-31, 84-100, 94-101, 94-102, 95-21, 97-63, 99-06, 2001-303, R9-2002-0072. Barker Depo, Ex. 1210 at Exhibit A. However, despite substantial similarities between these sites and NASSCO, the Regional Board now seeks to impose radically more stringent cleanup levels upon NASSCO in departure from prior precedent and in violation of both due process and equal protection principles, and the consistency requirement expressly stated in Resolution 92-49.

The proposed cleanup levels are unprecedented compared to other sediment remediation projects in San Diego Bay. Although similar sites are required to be treated similarly, Staff has proposed unprecedented cleanup levels for the Site, while setting much less stringent levels at other similarly situated sites. Response to NASSCO's RFAs, at 56. Since the early 1990s, the Regional Board has remediated sediments at a number of shipyards, boatyards and other industrial sites in San Diego Bay. Many of these sites, including the Commercial Basin Boatyards, Paco Terminals, Convair Lagoon, and Campbell Shipyard, are similar to NASSCO in many respects, including but not limited to geographical location, water quality considerations, uses, wastes, beneficial uses, and receptors of concern. Barker Depo, at 118:14 – 140:1; 346:25 – 352:15; 354:22 – 361:18; 385:17 – 387:4, 564:25 – 565:23, 567:7 – 567:16; see also Barker Depo, Ex. 1210 at Exhibit A. In particular, Campbell and NASSCO have similar physical, biological and chemical conditions, locations, site activities, waste materials and matrices, offsite pollutant inputs, and hydrodynamic and biogeographic zones. Barker Depo, at 362:15 – 365:5. Yet, in spite of these similarities, the cleanup levels proposed for NASSCO are far more stringent than those of the other sites, including Campbell Shipyard, for the same constituents. See e.g., Barker Depo, 365:8 – 365:23.

For example, at Paco Terminals, Campbell Shipyard, and the Commercial Basin Boatyards requiring cleanup, the copper cleanup levels were 1000 mg/kg, 810 mg/kg, and 530mg/kg, respectively. Thus the copper cleanup levels for all of these sites are well above the post-remedial Surface-Area Weighted Average Concentration ("SWAC") (159 mg/kg) and dredge concentrations (121 mg/kg) proposed for NASSCO. Similarly, the mercury cleanup levels set for the Commercial Basin boatyards that required remediation were 4.8 mg/kg, which is once again almost ten times above the post-remedial SWAC (0.68) and dredge concentration (0.57) proposed for NASSCO. Cleanup levels for primary risk drivers, such as PCBs and TBT, are also significantly more stringent at NASSCO compared with Campbell. Barker Depo, Ex. 1210 at Exhibit A.

To reach these low cleanup levels, Staff has introduced excessive levels of conservatism in its analysis. For example, Staff calculated cleanup levels for Campbell using an apparent effects approach; however, at NASSCO, Staff used the lowest apparent effects threshold, and then introduced a 40% safety buffer to further reduce the cleanup level, resulting in exceptionally low cleanup levels compared to other sites in the bay. Barker Depo, 373:14 – 374:22. Moreover, cleanup levels at NASSCO are also more stringent than similar sites elsewhere in the nation. Barker Depo, at 944:18 – 947:11, 47:16 – 949:21.

ID 35
NASSCO commented that The Regional Board is required to adopt a technically and legally sound TCAO based upon an accurate risk-based assessment, and reasonable assumptions, in accordance with Resolution No. 92-49. In light of the generally favorable site conditions and total values at stake, monitored natural attenuation-which has already been shown to be occurring-is the proper remedy for the NASSCO Site.

ID 133
NASSCO commented that Water Code section 13304 allows dischargers to cleanup or abate the effects of wastes. Further, under such circumstances, section 13304, which requires a discharger to "cleanup or abate the effects of the waste," provides that wastes need not be cleaned up if the effects can be abated, and implicitly acknowledges that cleanup levels can and should be based on site-specific science and risk assessments. In light of these parameters and for the reasons discussed in detail below, active remediation at the NASSCO shipyard, as described in the TCAO and DTR, is not supported by the record.

ID 134
NASSCO commented that the Regional Board must consider the totality of factors affecting water quality in selecting cleanup levels under Resolution No. 92-49, including economic and technological feasibility. Resolution 92-49 provides guidance to Regional Boards concerning the application of Water Code Section 13304. The State Board has described the analysis required by Resolution 92-49 as follows:

Resolution 92-49 directs the RWQCBs to ensure that water affected by an unauthorized release attains either background water quality or the best water quality which is reasonable if background water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background . . . any such cleanup level shall (1) be consistent with maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less stringent than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

See Resolution 92-49, at III. G. See also, In the Matter of the Petition of Unocal Corporation, State Board Order No. WQ 98-12, at 2 (quoting Resolution 92-49); In the Matter of the Petition of Landis Incorporated, State board Order No. WQ 98-13, at 2 (same); In the Matter of the Petition of Unocal Corporation, Order No. 99-10, at 2; In the Matter of the Petition of Chevron Pipe Line Company, State Board Order No. WQ 2002-0002; In the Matter of the Petition of Environmental Health Coalition and Eugene Sprofera, Order No. WQ 92-09, at 4.

Further, the text of Resolution 92-49 requires an analysis of cost-effectiveness and technological and economic feasibility in determining cleanup levels. See Resolution 92-49, at 6-7 ("The Regional Water Board shall . . . ensure that dischargers shall have the opportunity to select cost-effective methods for . . . cleaning up or abating the effects [of wastes discharged and] . . . require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, cleanup and abatement.”) (emphasis added). For the reasons discussed below, active remediation is not economically or technologically feasible within the meaning of Resolution 92-49; rather, monitored natural attenuation is the appropriate remedial alternative considering the demands being made and to be made on the waters at the Site, and the total values involved—beneficial and detrimental, economic and social, and tangible and intangible.

ID 39
Coastkeeper and EHC commented that the law requires cleanup to background except where evidence in the record demonstrates that alternative cleanup levels greater than background water quality are appropriate. The State Water Resources Control Board has empowered the Regional Boards "to require complete cleanup of all waste discharged and restoration of affected water to background conditions (i.e., the water quality that existed before the discharge)." See State Water Board Order 92-49. When ordering a cleanup, the Regional Board must "[e]nsure that dischargers are required to clean up and abate the effects of discharges" to "either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." State Water Board Order 92-49. Therefore, cleanup must be set to background pollutant levels unless background water quality "cannot be restored."

ID 40
The law provides that the Regional Board can establish alternative cleanup levels for constituents greater than background pollutant levels only if the Regional Board makes two findings. First, it must find "that it is technologically or economically infeasible to achieve the background value for that constituent." The Post Remedial Monitoring plan should be expanded to provide a more robust basis for evaluating exposure of benthic invertebrates to contaminants at the site and for assessing sediment toxicity, and include testing from
appropriate reference sites 2550.4(c). If cleanup to background is technologically or economically infeasible, a pollutant level greater than background conditions can be adopted only if the Regional Board finds "that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the concentration limit greater than background is not exceeded." CAL. CODE REGS. tit. 23 §2550.4(c). The cleanup levels must be set at background water quality if the Regional Board fails to make these two findings for each pollutant.

ID 41
The law governing alternative cleanup levels makes clear that the alternative cleanup levels MUST set a concentration limit, or maximum pollutant amount that cannot be exceeded. The Regional Board must find that the constituent will not pose a threat to human health or the environment "as long as the CONCENTRATION LIMIT greater than background is not exceeded." CAL. CODE REGS. tit. 23 §2550.4(c) (emphasis added). Therefore, alternative cleanup levels that are not set at a maximum pollutant level are unlawful. •

The law also dictates that analyzing whether background levels are achievable and what alternative cleanup levels are appropriate must be done on a constituent-by-constituent basis. See CAL. CODE REGS. tit. 23 § 2550.4(c) (The Regional Board must determine technological and economic feasibility "to achieve the background value FOR THAT CONSTITUENT" and find that "THE CONSTITUENT will not pose a threat to human health or the environment as long as the concentration limit greater than background is not exceeded." (emphasis added)).

Finally, State Water Board Order 92-49 requires that any alternative cleanup level:

1) must be consistent with the maximum benefit to the people of the state;
2) must not unreasonably affect present and anticipated beneficial uses of the waterbody; and
3) must not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

ID 42
Decisions of the Regional Board must be made on a reasoned basis and be supported by evidence in the record. A reviewing court will overturn a Regional Board decision "if the court determines that the findings are not supported by the weight of the evidence." CAL. Civ. PROC. CODE § 1094.5(c). For an agency finding to be upheld, the agency's findings must be "supported by substantial evidence" in the record. See JKH Enter, v. Dep't of Industrial Relations. 48 Cal. Rptr. 3d 563. 574 (Cal. Ct. App. 2006).

Therefore, in order to set a cleanup level at less than background water quality, the Regional Board's finding of technical or economic infeasibility must be supported by substantial evidence in the record. Also, there must be substantial evidence in the record demonstrating (1) that the remaining pollutant levels "will not pose a substantial present or potential hazard to human health or the environment as long as the concentration limit greater than background is not exceeded." Cal. Code Regs. tit. 23 §2550.4(c), (2) that the alternative cleanup levels are consistent with the maximum benefit to the people of the state; (3) that the alternative cleanup levels will not unreasonably affect present and anticipated beneficial uses of San Diego Bay; and (4) the alternative cleanup levels will not result in water quality less than that prescribed in the State and Regional Boards' Water Quality Control Plans and Policies. See State Water Board Order 92-49.

ID 54
The economic feasibility analysis fails to calculate or present the data on a pollutant-by-pollutant basis. But the law requires that economic feasibility be determined on a pollutant-by-pollutant basis. See CAL. CODE REGS. Title. 23 § 2550.4(c) (The Regional Board must determine technological and economic feasibility "to achieve the background value for that constituent and find that "the constituent will not pose a threat to human health or the environment as long as the concentration limit greater than background is not exceeded."
(emphasis added)).

ID 108
Coastkeeper and EHC concluded that the Order and DTR fail to demonstrate based on substantial evidence in the record that cleanup to background concentrations is not economically

feasible. The proposed cleanup fails to meet legal requirements for a cleanup to a pollutant level greater than background and does not represent a cleanup to the best water quality which is reasonable "considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." See State Water Board Order 92-49. However, minor changes in alternative cleanup level implementation, monitoring requirements, and the remedial footprint can transform the proposed cleanup into a cleanup that is both legal and the protective of existing and anticipated beneficial uses in San Diego Bay.

ID 418
In rebuttal, BAE Systems commented that contrary to Coastkeeper's and EHC's commentes, the Regional Board applied the correct legal standard. SDC and EHC argue that the Regional Board applied the improper legal standard in determining the appropriate cleanup level at the Shipyard Site, improperly reached the conclusion that cleanup to background is not economically feasible, improperly formulated the DTR-recommended cleanup levels, and failed to ensure that the DTR-recommended cleanup levels achieve the best water quality reasonable. Their position, however, reflects a fundamental misunderstanding of the applicable legal standards, site data, and the technical approaches used by the Regional Board in the DTR. As set forth more fully below, the Regional Board applied the correct legal standard, based its finding that cleanup to background is not economically feasible on a well-reasoned analysis of cost effectiveness, and set appropriate cleanup levels that do not unreasonably impair the beneficial uses of the water. For these reasons, which are more fully addressed below, SDC and EHC’s comments lack credence and should be rejected.

ID 419
BAE Systems provided the following rebuttal to Coastkeeper's and EHC's comment that alternative cleanup levels can only be established if the Regional Board makes two findings. The Act [Porter-Cologne] and implementing regulations, however, do not support their position. Rather, where background is not technologically or economically feasible, the Regional Board is only required to set an alternative cleanup level where the beneficial uses of the water are not unreasonably impaired.

First, SDC and EHC’s position fails to recognize that if the alternative cleanup level does not unreasonably affect the beneficial uses, it is not considered “a condition of pollution or nuisance,” which is a prerequisite to the Regional Board’s exercise of authority under the Act. See Cal. Water Code § 13304(a). The California Water Code, as well as the Federal Clean Water Act, recognize that industrial discharges are acceptable as long as they do not unreasonably impair other beneficial uses. See, e.g., S. Fl. Water Mgmt. Dist. v. Miccosukee Tribe of Indians, 541 U.S. 95, 102 (2004) (noting that “the [Federal Clean Water] Act prohibits ‘the discharge of any pollutant by any person’ unless done in compliance with some provision of the Act”). As more fully explained below and in BAE Systems’ May 23, 2011 Comments, Site sediments do not pose any unacceptable risk to aquatic life, aquatic-dependent wildlife, or human health, and do not unreasonably affect the beneficial uses of the water. Because the alternative cleanup levels set forth in the DTR do not unreasonably affect the beneficial uses of the water, they are acceptable.

Second, the Regional Board is not required to determine the appropriate cleanup level irrespective of the associated costs with cleanup. In fact, the Regional Board is required to balance the impact on the environment against the technological and economical costs associated with a cleanup to determine a level of remediation that is reasonable and cost-effective. For example, California Water Code § 13304 requires dischargers to either "clean up the waste or abate the effects of the waste . . . ." Cal. Water Code § 13304(a) (emphasis added). This makes it clear that abatement of the effects of waste, rather than remediation to background, can accomplish the goals of the Porter-Cologne Water Quality Control Act in the same manner as remediation to background. The State Water Board's guidance is no different. Specifically, State Water Board Resolution No. 92-49 does not require cleanup to background unless it is both technologically and economically feasible: the Regional Board "shall . . . ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible . . . ." State Water Board Resolution No. 92-49, § III(G) (emphasis added).

Similarly, the Act requires that the State Water Board develop guidelines and procedures for regional boards that "include . . . [p]rocedures for identifying and utilizing the most cost-effective methods . . . for cleaning up or abating the effects of contamination or pollution." Water Code § 13307(a)(3). This makes clear that abating the effects of contamination must be tempered by cost considerations. Thus, contrary to SDC and EHC's position, the DTR correctly states that the Water Code permits "an alternative cleanup level less stringent than background sediment chemistry concentrations if attainment of background concentrations is technologically or economically infeasible – as long as the less stringent cleanup level is protective of beneficial uses." (DTR § 32.1.) As set forth more fully below, there is substantial evidence that (1) cleanup to background is not technologically or economically feasible, (2) the alternative cleanup level is protective of the beneficial uses at the site, and (3) monitored natural attenuation is the most cost-effective method for achieving the cleanup goals articulated in the TCAO.

ID 420
BAE Systems provided the following rebuttal to Coastkeeper's and EHC's comment that the Regional Board is required to set a concentration limit, and that this must be done on a constituent-by-constituent basis. In support of their position, SDC and EHC rely on § 2550.4 of Title 23 of the California Code of Regulations. While it is true that Resolution No. 92-49, in part, incorporates the provisions of Chapter 15, the State Water Board advises implementation of those provisions only if the cleanup and abatement "involves corrective action at a waste management unit regulated by waste discharge requirements issued under Chapter 15." Resolution No. 92-49, § III(F)(2) (emphasis added). Furthermore, Chapter 15, which is titled "Discharges of Hazardous Waste to Land," states in pertinent part:

The regulations in this article apply to owners or operators of facilities that treat, store, or dispose of hazardous waste at Class I waste management units. . . . Furthermore, § 2550.4 of this article also applies to all determinations of alternative cleanup levels for unpermitted discharges to land of hazardous waste, pursuant to ¶ III.G. of Resolution No. 92-49 . . . .

Calif. Code Regs. tit. 23 § 2550.0. The designated parties in the instant proceedings are not considered Class I waste management units, nor do the determinations at issue here relate to unpermitted discharges to land. Furthermore, the provisions contained within Chapter 15 were clearly designed to be instructive guidelines for waste treatment, storage, and disposal facilities, not for sediment remediations. Technical elements for establishing water quality protection standards, monitoring programs, and corrective action programs for releases from waste management units, like those set forth in Chapter 15, are simply not useful in the context of sediment remediation. Thus, to the extent Section 2550.4 addresses concentration limits or constituent-specific cleanup, it is limited to the context of waste discharge and monitoring requirements, and does not apply here.

To the extent that Section 2550.4 does apply, it does so only to reinforce the guidance contained in Resolution No. 92-49, and the general requirement that alternative cleanup levels set above background levels adequately protect the beneficial uses of the water. As already explained, the Regional Board is required only to ensure that the cleanup levels ultimately ordered are economically feasible and adequately protective of the beneficial uses. See, e.g., State Water Resources Control Board Memorandum From Craig Wilson To John Robertus (February 22, 2002), at SAR097571- 81 ("Wilson Memo") (noting that Resolution 92-49 is flexible and making no mention of any requirement to set alternative cleanup levels or analyze economic or technological feasibility on a constituent-by-constituent basis) Contrary to SDC and EHC's position, meeting the standard of Resolution No. 92-49 does not require that cleanup levels be set or economical feasibility be assessed on a constituent-by-constituent basis. Tellingly, SDC and EHC fail to point to any decisions or other CAOs where the Regional Board, or another tribunal, construed Resolution No. 92-49 in such a way.

Finally, and perhaps most importantly, requiring remediation on a constituent-by-constituent basis irrespective of economic feasibility, as urged by SDC and EHC, would likely result in remediation at a level more stringent than background. Not only is this not required under the Act, Resolution 92-49 specifically forbids it: "under no circumstances shall these provisions be interpreted to require cleanup and abatement which achieves water quality conditions that are better than background conditions." (Section III(F)(1) (emphasis added).)

As discussed more fully below, the DTR sets alternative levels on a constituent-by-constituent basis for both primary COCs and secondary COCs, and does so after a careful weighing of the objectives of the Act against the economic feasibility of remediating to background. Accordingly, SDC and EHC's position that the DTR is inadequate in this regard should be rejected.

ID 438
In conclusion, BAE Systems commented that as set forth above, the Regional Board applied the correct legal standard, based its finding that cleanup to background is not economically feasible on a well-reasoned analysis of cost effectiveness, and set appropriate cleanup levels that do not unreasonably impair the beneficial uses of the water. Accordingly, SDC and EHC's comments lack credence and should be rejected.

ID 291
In rebuttal to Coastkeeper's and EHC's comments, NASSCO commented that the Water Code allows dischargers to clean up or abate the effects of wastes, and that EHC/Coastkeeper misstates the applicable legal standard to the extent that they suggest the Water Code sets forth a rebuttable presumption of cleanup to background in all cases. Rather, the Water Code section 13304 requires a discharger to “clean up or abate the effects of the waste . . . .” (emphasis added). Although the statute is often misquoted by using the conjunctive “and” in place of the disjunctive “or” (for example, when referring to a “cleanup and abatement order”), the legislature’s deliberate use of the disjunctive word “or” in the statute makes clear that wastes need not be cleaned up if the effects can be abated. Accordingly, the plain language of section 13304 supports the conclusion that a cleanup under section 13304 can be based on abating the effects of the waste, without remediating to background chemical levels.

In fact, the express language of the statute indicates that cleanup levels above background are acceptable if the sediment does not unreasonably affect beneficial uses, and therefore fails to constitute either “pollution” or a “nuisance.” Specifically, the Regional Board’s jurisdiction under Section 13304 is triggered where a discharge “creates, or threatens to create, a condition of pollution or nuisance,” and it is on this basis that the Regional Board has issued the instant TCAO. Wat. Code § 13304; TCAO, at Finding 1 (alleging conditions of contamination and nuisance that adversely affect aquatic-life, aquatic-dependent wildlife, and human health beneficial uses). As discussed in NASSCO’s Comment Nos. 10 and 11 (NASSCO’s Comments on the San Diego Regional Water Quality Control Board Cleanup Team’s September 15, 2010 Tentative Cleanup and Abatement Order No. R9-2011-0001, Draft Technical Report, and Shipyard Administrative Record, May 26, 2011, “NASSCO’s Initial Comments”), the Water Code recognizes that beneficial uses are not unreasonably impaired by all changes to chemical concentrations in sediments, and that certain concentrations may be above background conditions, yet not constitute a state of “pollution” or “nuisance.”

NASSCO's second point is that the Water Code implicitly recognizes that industrial discharges are permissible as long as they do not unreasonably impair other beneficial uses. The Water Code also implicitly recognizes that industrial uses, including industrial discharges, are acceptable uses of water bodies as long as discharges from those facilities do not unreasonably impair other beneficial uses. If this were not so, permits for the discharge of any wastewater would be denied since there is at least some impact on waters associated with any discharge. Interpreting the statute to require cleanup to background sediment chemistry regardless of the effect of the contaminants on beneficial uses ignores these realities, reads the word “unreasonably” out of the definition of pollution, and effectively imposes a “zero discharge” requirement on all industrial dischargers—an obviously unreasonable result. (“Pollution” means an “alteration of the quality of the water of the state by waste to a degree which unreasonably affects . . . beneficial uses”). Wat. Code § 13050(l) (emphasis added){Notably, other Regional Boards have not invoked Resolution No. 92-49 to require that sediment must be cleaned to background. See San Diego Regional Board Order Nos. 88-86, 88-78, 89-31, 94-100, 94-101, 94-102, 95-21, 97-63, 99-06, 2001-303, R9-2002-72. See also In the Matter of the Petition of Environmental Health Coalition and Eugene Sprofera, Order No. WQ 92-09, State Water Board, September 17, 1992 ("Paco Terminals"). Instead, the Regional Board calibrated cleanup levels to be protective of beneficial uses, regardless of whether that level was at background concentrations or above.}. Similarly, the legislative history of the Porter-Cologne Act confirms that the Regional Boards must balance economic and water quality interests, and that, although "waste disposal and assimilation are not included in the definition of beneficial uses, . . . they are recognized as part of the necessary facts of life, to be evaluated and subject to reasonable consideration and action by regional boards." See Recommended Changes in Water Quality Control, Final Report of the Study Panel to the California State Water Quality Control Board, Prepared for the California Legislature, March 1969, at Appendix A, at 21. See also, id. at 7 (requiring balancing of interests); id. at Appendix A at 26 ("[I]t would be very confusing to refer to waste disposal, dispersion and assimilation as any kind of beneficial uses of water. However, this omission is not intended to question the obvious facts that ultimately the residual substances remaining after treatment of wastes must, in most instances, reach waters of the state, and economic benefits to a waste discharger … relate inversely to the cost of treatment. These economic values are recognized in paragraph 2 of Section 13000.").

NASSCO's third point is that the Water Code mandates that Regional Boards use the most cost-effective methods for cleaning up or abating the effects of contamination or pollution. Water Code Section 13307, which authorizes the State Water Board to adopt policies for Regional Boards to follow in the oversight of cleanup and abatement activities, mandates that the State Water Board's policies "shall include . . . [p]rocedures for identifying and utilizing the most cost-effective methods . . . for cleaning up or abating the effects of contamination or pollution." Wat. Code § 13307(a)(3). Thus, taken together, Water Code Sections 13304 and 13307 allow for the abatement of the effects of past discharges on water quality in the most cost-effective manner. Rather, the key inquiry is whether beneficial uses at the Site are unreasonably affected by the elevated sediment chemistry observed at the Site and/or whether site conditions (1) are injurious to health, indecent or offensive to the senses, or obstructs the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affect at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and (3) occur during, or as the result of, the treatment or disposal of wastes. Wat. Code §§ 13050(l)-(m). As discussed extensively in NASSCO's Initial Comments, Site sediments do not pose any unacceptable risk to aquatic life, aquatic-dependent wildlife, or human health, and do not unreasonably affect beneficial uses.

NASSCO commented that the Regional Board must consider the totality of factors affecting water quality in selecting alternative cleanup levels under Resolution No. 92-49, including economic and technological feasibility. Furthermore, Resolution No. 92-49 requires alternative cleanup levels to be protective of beneficial uses, but grants the Regional Board substantial discretion in determining alternative cleanup levels. To the extent that the Regional Board finds—despite substantial evidence to the contrary—that site conditions do create a condition of pollution or nuisance, the plain terms of Resolution 92-49 do not require cleanup to background unless it is both technologically and economically feasible (i.e., cost-effective) to do so. Specifically, Resolution 92-49 provides that the Regional Board "shall . . . ensure that discharges are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. . . .”

The State Water Board has described the analysis required by Resolution 92-49 as follows:

Resolution 92-49 directs the RWQCBs to ensure that water affected by an unauthorized release attains either background water quality or the best water quality which is reasonable if background water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved,, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background . . . any such cleanup level shall (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less stringent than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

Resolution 92-49, at III.G. See also, In the Matter of the Petition of Unocal Corporation, State Board Order No. WQ 98-12, at 2 (quoting Resolution 92-49); In the Matter of the Petition of Landis Incorporated, State board Order No. WQ 98-13, at 2 (same); In the Matter of the Petition of Unocal Corporation, Order No. 99-10, at 2; In the Matter of the Petition of Chevron Pipe Line Company, State Board Order No. WQ 2002-0002; In the Matter of the Petition of Environmental Health Coalition and Eugene Sprofera, Order No. WQ 92-09, at 4.

Further, the text of Resolution 92-49 requires an analysis of cost-effectiveness and technological and economic feasibility in determining cleanup levels. See Resolution 92-49, at 6-7 (“The Regional Water Board shall . . . ensure that dischargers shall have the opportunity to select cost-effective methods for . . . cleaning up or abating the effects [of wastes discharged and] . . . require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, cleanup and abatement.”) (emphasis added).

NASSCO next alleged that there is substantial evidence in the record that cleanup to background is infeasible, beneficial uses at the site are not impaired, and monitored natural attenuation will achieve cleanup goals. As discussed in NASSCO’s Initial Comments, active remediation is not economically or technologically feasible within the meaning of Resolution 92-49; rather, monitored natural attenuation is the appropriate remedial alternative considering the demands being made and to be made on the waters at the Site, and the total values involved—beneficial and detrimental, economic and social, and tangible and intangible. To the extent the regulatory scheme requires cleanup to background unless economically and technologically infeasible, there exists substantial evidence in the record demonstrating that (1) beneficial uses at the site are not impaired, (2) monitored natural attenuation will achieve the cleanup goals articulated in the TCAO in the most cost-effective manner, and (3) cleanup to background is not feasible, both economically and technologically.

NASSCO provided the following rebuttal to Coastkeeper's and EHC's comment that section 2550.4 of the California Code of Regulations requires that cleanup levels must be set to background water quality, unless the Regional Board analyzes economic and technological feasibility on a pollutant-by-pollutant basis, and determines that cleanup to background is either economically or technologically infeasible on a pollutant-by-pollutant basis. Tellingly, Resolution 92-49 has been in existence for decades; yet, no Regional Board, State Board, or court appears to have ever interpreted it in the manner EHC/Coastkeeper now suggest.

This is because, under Resolution 92-29, the Regional Board "may prescribe an alternative cleanup level less stringent than background sediment chemistry concentrations if attainment of background concentrations is technologically or economically infeasible – as long as the less stringent cleanup level is protective of beneficial uses." Draft Technical Report ("DTR"), at 32-3. Additionally, the State Board grants substantial discretion to Regional Boards in setting alternative cleanup levels under Resolution 92-49. In sum, Resolution 92-49 is intended to ensure that any alternative cleanup levels are protective, and that cleanups are cost-effective. Requiring constituent-by-constituent economic and technological feasibility analyses would make no sense considering the practicalities of sediment cleanup, and would be contrary to the Regional Board's obligation to take into account "the resources, both financial and technical, available to the person[s] responsible for the discharge" in overseeing investigations and cleanups under Resolution 92-49.

Citing Resolution 92-49, EHC/Coastkeeper argues that Section 2550.4 of the California Code of Regulations governs the setting of alternative cleanup levels for the Site, and requires the Regional Board to select concentration limits for each constituent subject to remediation. Resolution 92-49, at III.G. ("[I]n approving any alternative cleanup levels less stringent than background, apply Section 2550.4 of Chapter 15 . . .; any such alternative cleanup level shall: (1) be consistent with maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards."). As discussed below, Section 2550.4 does not operate to require constituent-by-constituent analysis in this cleanup.

Chapter 15, including Section 2550.4, was not designed as general guidance for sediment remediation; rather it sets forth detailed siting, construction, monitoring, and closure requirements for existing and new waste treatment, storage, and disposal facilities. Thus, Chapter 15 provides technical criteria for establishing water quality protection standards, monitoring programs, and corrective action programs for releases from waste management units, much of which is inapplicable to sediment remediation.

The explicit terms of Resolution 92-49 also provides that "discharges subject to [Water Code] Section 13304 may include discharges of waste to land; such discharges may cause, or threaten to cause, conditions of soil or water pollution or nuisance that are analogous to conditions associated with migration of waste or fluid from a waste management unit." In such cases, Resolution 92-49 provides that the Regional Board should implement the provisions of Chapter 15, only to the extent applicable to cleanup and abatement, as follows:

(a) If cleanup and abatement involves corrective action at a waste management unit regulated by waste discharge requirements issued under Chapter 15 the Regional Water Board shall implement the provisions of that chapter;

(b) If cleanup and abatement involves removal of waste from the immediate place of release and discharge of the waste to land for treatment, storage or disposal, the Regional Water Board shall regulate the discharge of the waste through waste discharge requirements issued under Chapter 15, provided that the Regional Water Board may waive waste discharge requirements under WC Section 13269 if the waiver is not against the public interest (e.g if the discharge is for short-term treatment or storage, and if the temporary waste management unit is equipped with features that will ensure full and complete containment of the waste for the treatment or storage period); and

(c) If cleanup and abatement involves actions other than removal of the waste, such as containment of waste in soil or ground water by physical or hydrological barriers to migration (natural or engineered), or in-situ treatment (e.g. chemical or thermal fixation or bioremediation), the Regional Water Board shall apply the applicable provisions of Chapter 15 to the extent that it is technologically and economically feasible to do so.
Resolution 92-49, at III.F.

However, because Chapter 15 was developed to address releases from hazardous waste management units, not to articulate goals for the remediation of sediment, the State Board recognizes that Chapter 15 applies to cleanups only to the extent "feasible."

Here, there is no basis for analogizing the Site to a waste management unit, particularly since the site sediments were found not pose risks to aquatic, aquatic-dependent wildlife, or human health beneficial uses in an extensive and unparalleled sediment investigation, conducted with substantial oversight from the Regional Board. Moreover, cleanup and abatement actions are explicitly exempted from the provisions of Section 2550.4, provided that "remedial actions intended to contain such wastes at the place of release shall implement applicable provisions of [Chapter 15] to the extent feasible." 23 Cal. Code Regs. § 2511.

Additionally, Chapter 15 also provides that "alternatives to construction or prescriptive standards contained in this chapter may be considered. Alternatives shall . . . be approved where the discharger demonstrates that (1) the construction or prescriptive standard is not feasible as provided in subsection (c) of this section, and (2) there is a specific engineered alternative that (A) is consistent with the performance goal addressed by the particular construction or prescriptive standard; and (B) affords equivalent protection against water quality impairment."). In fact, Chapter 15 itself provides that it is not feasible to comply with a prescriptive standard in Chapter 15 if it "(1) is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives which meet the criteria [described above]; or (2) is impractical and will not promote the attainment of applicable performance standards. Regional Boards shall consider all relevant technical and economic factors including, but not limited to, present and projected costs of compliance . . ." 23 Cal. Code Regs. §2510.

Application of Chapter 15, including the requirements of section 2550.4, in the manner EHC/Coastkeeper suggests is clearly not "feasible." Id.; 23 CCR § 2511; Resolution 92-29, at III.F. First, it is impractical to conduct distinct analyses of alternative cleanup levels for each individual pollutant where substantial evidence demonstrates that secondary pollutants are co-located with primary pollutants and will be remediated to protective levels in a common footprint. Similarly, conducting economic and technological feasibility analyses on a pollutant-by-pollutant basis is economically infeasible, and nonsensical given the engineering realities of dredging.

NASSCO commented that the Regional Boards have substantial discretion to select alternative cleanup levels, provided that they are protective. As discussed above, Section 2550.4 relates to waste discharge and monitoring requirements for hazardous waste management units, and in-situ containment of wastes, to the extent “feasible”; however, even to the extent that the Regional Board must apply these requirements in approving alternative cleanup levels, the applicable requirements pertain, at best, to water quality monitoring with respect to in situ remediation of waste discharges. As discussed above, Section 2550.4 addresses concentration limits in the context of waste discharge and monitoring requirements, and is intended only to ensure that alternative cleanup levels set above background levels are adequately protective. This understanding is confirmed by State Water Board guidance, which states that:

Resolution 92-49 is flexible and permits a regional board to set alternative cleanup levels less stringent than background concentrations if attainment of background concentrations is infeasible. Any such alternative cleanup level may not unreasonably affect beneficial uses and must comply with all applicable Water Quality Control Plans and Policies. The Resolution allows for consideration of adverse impacts of any cleanup itself as well as natural attenuation if cleanup goals can be met in a reasonable time.

State Water Board Memorandum From Craig Wilson To John Robertus (February 22, 2002), at SAR097571- 81) (“Wilson Memo”). Notably, although the Wilson Memo references Section 2550.4, it makes no direct mention of any requirement to set alternative cleanup levels, or analyze economic or technological feasibility, on a constituent-by-constituent basis. Id. In fact, it provides that the Regional Board has “substantial” discretion in setting alternative cleanup levels, and notes that Resolution 92-49 requires alternative cleanup levels less stringent than background to “be consistent with maximum benefit to people of the state” and requires consideration of “all demands being made and to be made on the waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible.” Wilson Memo, at SAR097579. Further, this determination is to be “made on a case-by-case basis, and is based on considerations of reasonableness under the circumstances at the site.” Id. Thus, to the extent that Section 2550.4 is applicable to the cleanup and abatement of sediment contamination, EHC/Coastkeeper clearly misinterprets Section 2550.4 as requiring alternative cleanup levels (and the concomitant economic and technological feasibility analyses) to be conducted on a pollutant by pollutant basis.

Rather, section 2550.4 addresses concentration limits in the context of waste discharge and monitoring requirements, and is intended only to ensure that alternative cleanup levels set above background levels are adequately protective. That is, to the extent applicable to cleanup levels, Section 2550.4 simply requires the Regional Board to (1) set alternative cleanup levels at the lowest level that are economically and technologically feasible, and (2) ensure that concentrations of contaminants at such levels “do not pose a substantial present or potential hazard to human health or the environment” (i.e., ensures that the cleanup level is protective of beneficial uses). Here, the Regional Board has set excessively conservative cleanup levels that are protective of human health and the environment, which, if anything, will require the parties to expend much more than is economically feasible, at considerable expense to the parties named on the TCAO. See, e.g., NASSCO and Southwest Marine Detailed Sediment Investigation, Exponent (October 2003) ("Exponent Report"), at 19-13; Deposition of David Barker ("Barker Depo"), at 204:21 – 206:6.

Additionally, in selecting the alternative cleanup levels, the Regional Board has expressly considered the applicable requirements of Resolution 92-49 and California Code of Regulations section 2550.4. TCAO, at Finding 32; DTR, at pp. 32-1 – 32-2. In doing so, the Regional Board set alternative levels on a constituent-specific basis for both primary COCs and secondary COCs. Primary COCs are those associated with the greatest exceedance of background, and the highest magnitude of potential risk at the Site. Cleanup levels for primary COCs, were set using the post-remedial SWAC as a concentration limit. TCAO, at Section 32. Secondary COCs, which are associated with lower exceedances of background, were also extensively and individually evaluated, and were found to be highly correlated with Primary COCs and thus adequately addressed in the common footprint. The Regional Board also assessed risk to wildlife receptors under projected post-remedial conditions, and confirmed that the alternative cleanup levels adequately protect aquatic-dependent wildlife and human health beneficial uses. DTR, at Section 32. By contrast, EHC/Coastkeeper has provided no credible evidence that concentrations below the proposed alternative cleanup levels, but above background, pose "substantial present or potential hazard to human health or the environment."

NASSCO commented that Coastkeeper and EHC cited no precedent supporting its interpretation of Resolution No. 92-49. NASSCO stated that it was aware of no cleanups where the Regional Board has required separate alternative cleanup level or feasibility analyses for each and every constituent involved, particularly where distinct constituents are correlated, as here. Nor has EHC/Coastkeeper pointed to any State Board or court decisions supporting its novel interpretation of Resolution 92-49. For the foregoing reasons, Resolution 92-49 does not require constituent-by-constituent analysis of alternative cleanup levels, or economic or technological feasibility, and EHC/Coastkeeper's comment is without merit.

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NASSCO provided the following rebuttal to Coastkeeper's and EHC's comment that alternative cleanup levels set by the Regional Board are insufficiently protective, and the corresponding implication that cleanup to background is technologically and economically feasible. NASSCO further alleged that assessment of impacts to beneficial uses and economic feasibility analysis under Resolution No. 92-49 support monitored natural attenuation as the appropriate remedy.

EHC/Coastkeeper correctly notes that an agency's findings must be supported by the weight of the evidence in the record. However, EHC/Coastkeeper's specific contentions that the alternative cleanup levels set by the Regional Board are insufficiently protective, and the corresponding implication that cleanup to background is technologically and economically feasible, are without merit.

In fact, considering that the results of the sediment investigation showed that "aquatic life, aquatic-dependent wildlife, and human health beneficial uses are at approximately 95 percent of ideal conditions, and active remedial alternatives will result in improvements that are minimal—on the order of only a percent or so"—any active remediation, including cleanup to background, is economically infeasible{Additionally, there is evidence in the record that cleanup to background is technologically infeasible. Barker Depo, at 246:11 – 248:3 (describing dredging of the volume of sediments required to reach background levels as "an expensive challenge" and noting that "the board has not had regulatory experience with dealing with that volume of material . . . ."). Exponent Report, at 19-13; Barker Depo, at 204:21 – 206:6 ("Q: So, solely for [the economic feasibility] step of the equation, if you have a negligible – negligible benefit on one side, I assume that there – anything more than a negligible cost would mean it's not economically feasible. A. Right. . . . Q. If there's absolutely no benefit of an incremental reduction in cleanup, then there's no cost that would justify that, correct? . . . A: That type of scenario would – could support an alternative cleanup level to background. I don't know if that's what you're asking. But that is a point where the board could make a decision that no further cleanup could be required

NASSCO rebutted Coastkeeper's and EHC"s contention that additional cleanup beyond the TCAO footprint in economically feasible as follows. Resolution 92-49 defines the term "economic feasibility" as follows:

Economic feasibility is an objective balancing of the incremental benefit of attaining further reductions in the concentrations of constituents of concern as compared with the incremental cost of achieving those reductions. The evaluation of economic feasibility will include consideration of current, planned, or future land use, social, and economic impacts to the surrounding community including property owners other than the discharger. Economic feasibility, in this Policy, does not refer to the discharger's ability to finance the cleanup. Availability of financial resources should be considered in the establishment of reasonable compliance schedules.

Resolution 92-49, at III.H.1.b. Additionally, as discussed in the DTR, analyzing economic feasibility involves "estimating the costs to remediate constituents of concern at a site to background and the costs of implementing other alternative remedial levels. An economically feasible cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits." DTR, at 31-1.

NASSCO commented that the record is clear that cleanup to background is economically infeasible. EHC/Coastkeeper erroneously states that the record does not support a finding that cleanup to background is economically infeasible. Under Resolution 92-49, determining economic feasibility requires an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions. Further, Resolution 92-49 explicitly provides that "[e]conomic feasibility . . . does not refer to the discharger's ability to finance cleanup;" rather, an economically feasible cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits. Resolution 92-49, at III.H.

The DTR analysis compared incremental benefits of further cleanup, expressed in terms of exposure reduction to target receptors, with the incremental cost of achieving those benefits, and determined that the degree of exposure reduction does not justify the incremental cost of such reductions, beyond approximately $33 million. This analysis is consistent with the requirements of Resolution 92-49, and is supported by evidence in the record. Moreover, as discussed above, due to the generally favorable site conditions, any active remediation is economically infeasible under the terms set forth in Resolution 92-49. In fact, it is well-known that cleanup of sediment to background levels in San Diego Bay is economically infeasible: to date, because of economic infeasibility, none of the sediment site in San Diego Bay have been remediated to background conditions. Cleanup Team's Responses and Objections To Designated Party BAE's First Set Of Requests for Admission, Admission Nos. 44 – 46 (admitting that it is economically and technologically infeasible to remediate the Site to background, and that the Regional Board has never required remediation to background sediment quality levels for any other site within the San Diego Bay).

The record contains no evidence that cleanup to background is economically feasible; in fact, EHC/Coastkeeper has not even provided evidence that cleanup to the alternative cleanup levels is economically feasible, let alone evidence supporting its position that cleanup to background levels is feasible.

NASSCO commented that no other sediment sites in San Diego Bay have been remediated to background. Moreover, EHC/Coastkeeper cannot point to a single sediment site in San Diego Bay that has been remediated to background levels; rather the consensus is clear, and the Regional Board's Sediment Site Cleanup Team ("Cleanup Team") admits, that cleanup to background is technologically and economically infeasible.

NASSCO's next point is that the alternative cleanup levels were selected based on an overly conservative interpretation of chemistry and biological data, not economic feasibility. EHC/Coastkeeper erroneously states that the economic feasibility analysis was the primary basis for the selection of the alternative cleanup levels; however, this is a patently false statement. The selection of alternative cleanup levels was based on the Regional Board's analyses of many factors, including), including individual station and Site-wide chemistry data, biological data (i.e., toxicity tests, benthic community analysis, SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility. Further, based on these criteria, the selected cleanup levels are excessively conservative, as discussed extensively in NASSCO's Initial Comments.

Thus, contrary to EHC/Coastkeeper's assertions, the economic feasibility analysis was not intended to select a specific remedial scenario, and was not the primary basis for selection of any specific scenario. Rather, the analysis was intended to determine whether a point of diminishing returns on invested resources was apparent in the cost-benefit relationship, and then identify the most cost-effective level of effort—assuming that areas of higher contamination were preferentially selected for removal (as is typical). Accordingly, EHC/Coastkeeper's statement that "the economic feasibility analysis drives the entire cleanup" is incorrect. In actuality, the final selection of a remedial footprint in the DTR was based on simultaneous consideration of many factors (as is legally required under Resolution 92-49), including individual station and Sitewide chemistry data, biological data (i.e., toxicity tests, benthic community analysis, SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility. In fact, considering the results of these analyses, the proposed cleanup is extremely conservative, as discussed in NASSCO's Initial Comments.

EHC/Coastkeeper's assertion that "the economic feasibility analysis in Section 31 determined the alternative cleanup levels" is a mischaracterization of the analysis in the DTR, which contains highly conservative analyses of individual station and Site-wide chemistry data, biological data (including toxicity tests, benthic community analysis, and SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility.

NASSCO alleges that the DTR conservatively estimated the costs of cleanup to alternative cleanup levels. The DTR (at p. 31-1) states that criteria including "total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife, and human health), effects on the shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources." EHC/Coastkeeper suggests that "benefits to human health, wildlife, aquatic-dependent wildlife, and other beneficial uses from removing pollutants" were not "quantified"; however, the economic feasibility analysis does quantify benefits in terms of exposure reduction. Further, using reasonable assumptions, such a quantification would not justify any active remediation. Extensive scientific investigation conducted at the shipyards, including the sediment quality investigation upon which the findings and conclusions of the TCAO are purportedly based, indicates that beneficial uses at the site are not unreasonably impaired and that active remediation would "result in improvements that are minimal—on the order of only a percent or so." Exponent Report, at 19-13.

Yet, active remediation, including the remediation described in the TCAO, would destroy existing mature and thriving benthic communities at the Site, and result in significant negative impacts to NASSCO and the surrounding community, including but not limited to (1) the potential to jeopardize the integrity of slopes and structures at the leasehold, (2) disruption of vital ship repair and construction activities that could result in delays or contractual breaches with the U.S. Navy and other customers, (3) increased truck traffic, (4) diesel emissions from trucks and heavy equipment, (5) noise, (6) accident risks, (7) transportation of large volumes of contaminated sediment through neighborhoods, and (8) the need to establish large staging areas for dewatering activities. Exponent Report, at §§ 18.2, 18.4; Barker Depo, at 306:22 – 307:21. Taking all of these factors into account suggests that the alternate cleanup levels are not economically feasible, and certainly do not weigh in favor of further cleanup.

NASSCO alleged that cleanup levels below the proposed alternative cleanup levels are not justified given the favorable site conditions, and are economically infeasible regardless of whether the eleven cost scenarios are analyzed independently, or in groups of six. The alternative cleanup levels are overly conservative, based on a series of excessively cautious assumptions concerning potential impacts to aquatic life, aquatic-dependent wildlife, and human health. The proposed economic feasibility analysis is similarly overly conservative, and requires cleanup well beyond the point at which the incremental benefits are justified by the incremental costs of further cleanup, considering that it has been demonstrated that monitored natural attenuation will ensure that the (excessively conservative) alternative cleanup levels are met within a reasonable time. Thus, any cleanup beyond the point identified in the DTR is similarly economically infeasible, given the favorable conditions observed at the Site. This is so regardless of whether cleanup scenarios are assessed independently, or in groups of six, as discussed below.

The economic feasibility analysis was a theoretical exercise designed for a single purpose – to provide an incremental cost-benefit analysis for the full spectrum of cleanup possible at the Shipyard Site, including cleanup to background conditions. Eleven scenarios were evaluated based upon the Cleanup Team's best professional judgment that eleven data points would be sufficient to establish a cost-benefit relationship. Additionally, the analysis required that each scenario represent a comparable incremental increase in the level of remedial effort necessary; thus, because 11 divides evenly into 66 (whereas 10 or 12 or 15 does not), using 11 data points facilitated assurance that each scenario represented a comparable incremental increase in level of effort. As described in the DTR, the Regional Board ordered all 66 polygons according to their composite SWAC ranking, which it determined was the best single metric for comparing relative COC levels (As described in the DTR, the sediment chemistry data used to calculate SWAC values for the economic feasibility analysis were the same data set used to asses all aspects of risk and beneficial use impairment at the Shipyard Site. Contrary to EHC/Coastkeeper's assertions, there are no "pollution reduction assumptions," other than the assumption that remediation areas under all scenarios will eventually equilibrate to background COC concentrations. Exposure reduction, as defined in the DTR, is simply the reduction in Sitewide SWAC that results from complete remediation of any specified area. It is an objective value, calculated mathematically from sediment chemistry data alone, and is not dependent on any given exposure scenario or assumptions. The exposure scenarios evaluated in both the human and aquatic-dependent wildlife risk assessments in the DTR are generally proportional to the Site-wide SWAC, therefore SWAC reduction is an appropriate metric for general conclusions about reduction of exposure and risk to human and wildlife receptors.). Each scenario was defined to be incrementally larger than the previous scenario by six polygons. Scenario 1 included the six most contaminated polygons (based on composite SWAC ranking), Scenario 2 included the 12 most contaminated polygons, Scenario 3 the 18 most contaminated polygons, etc. Scenario 11 included the entire Shipyard Site (66 polygons). This "worst first" approach provides a rational and direct manner in which to assess incremental net benefits of the full spectrum of potential cleanup effort.

Resolution 92-49 requires economic feasibility to be considered in setting appropriate cleanup levels, and requires the Regional Board to use best professional judgment in evaluating the point at which the incremental benefits of further cleanup are no longer justified by the incremental costs. Thus, selection of the point at which incremental benefits no longer justify incremental costs is primarily a policy decision, requiring best professional judgment, not a simple mathematical determination.

Here, however, regardless of whether the 11 hypothetical cost scenarios are grouped into five ranges or presented as 11 independent calculations, the underlying cost-benefit relationship is the same. In fact, EHC/Coastkeeper's Figure 1, which depicts the eleven cost scenarios graphed individually, illustrates the same trend that is apparent in DTR Figure 31-1, and lends credence to Regional Board's determination that cleanup to background is economically infeasible.

Specifically, under both scenarios, the benefit per dollar spent is relatively high and flat for the first three scenarios, but decreases dramatically with the additional cleanup associated with scenario 4 (i.e., above $33 million total cost), suggesting that cleanup above $33 million total cost is not economically feasible, given the minimal incremental benefits. In fact, cleanup beyond the economically feasible point as defined in the DTR results in an exposure reduction of less than 7 percent per $10 million spent after $33 million; less than 4 percent after $45 million; and zero at $185 million. Exposure reductions of merely a few percentage points do not justify the expenditure of tens of millions of dollars, and would clearly violate Resolution 92-49's economic feasibility provisions.

Moreover, the Cleanup Team's analysis is based on chemical concentrations only. If the best measure of water quality is used (i.e., direct measurements of toxicity and benthic community analyses at NASSCO), then there is no incremental benefit of dredging any areas at NASSCO; thus, the economically feasible remedy is natural attenuation.

NASSCO next rebutted Coastkeeper's and EHC's comment that Resolution No. 92-49 requires a constituent by constituent economic feasibility analysis. There is no requirement in Resolution 92-49 that requires a constituent-by-constituent economic feasibility analysis. Moreover, EHC/Coastkeeper's proposed constituent-by-constituent economic feasibility analysis is not scientifically valid.

EHC/Coastkeeper asserts that averaging the pollutant reduction concentration for the five primary COCs, as was done in the DTR masks variability in pollutant exposure reduction for individual pollutants, and suggests that, when pollutants are analyzed individually, progression from cost scenario 6 ($69.5 million-$85.3 million) to cost scenario 7 ($85-$101.6 million) results in "more than 20% exposure reduction in mercury." However, EHC/Coastkeeper's proposed constituent-by-constituent reanalysis of the economic feasibility data merely illustrates that the five COCs are not identically distributed across the site, without addressing the issue of net remedial cost-benefit. Attachment A, Exponent, Critique of Comments and Untimely Expert Evidence Offered by the Environmental Health Coalition and Coastkeeper, City of San Diego, San Diego Unified Port District, San Diego Gas & Electric, and the U.S. Navy (June 23, 2011) ("Exponent Critique"), at 2. It also confirms that incremental benefits generally decrease with increasing cost. Id.

Of particular concern, EHC/Coastkeeper's proposed reanalysis also obfuscates the net benefits, leading to absurd results and illustrating why this analysis is a poor standalone basis for selecting a remedy (something it was never intended to do). Specifically, EHC/Coastkeeper's proposed analysis fails to recognize that the mercury SWAC achieved in scenario 7 is actually well below the site-specific reference concentration (i.e., background UPL) for mercury. Id. Under current conditions, the mercury SWAC at the shipyard is not highly elevated relative to background (only 1.2x background UPL prior to any remediation), and very quickly approaches background as the highest composite SWAC polygons are remediated. Accordingly, at scenario 6, mercury is essentially at background. Under scenarios 7 to 11, the mercury SWAC is predicted to be below background, because the remaining unremediated stations all have mercury concentrations below the background UPL (see Figure 1, below). Scenarios 9 and 10 actually predict a rise in mercury SWAC with continued remediation, because areas with mercury levels below background are being dredged and the dredged area is assumed to equilibrate to the higher background level after remediation. As a result, the apparent "reduction" in mercury exposure from scenario 6 to scenario 7 actually produces no benefit to the public relative to the reference condition (defined as 100% exposure reduction), at a cost of more than $16 million.

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NASSCO also rebutted Coastkeeper's and EHC's comment regarding a statement in the TCAO that clean-up of the remedial footprint will restore any injury, destruction, or loss of natural resources. According to Coastkeeper and EHC, the San Diego Water Board does not have authority to conduct natural resource damage assessments because only the Natural Resources Trustees have authority to conduct natural resource damage assessments and to draw conclusions regarding injury to natural resources and the effectiveness of remedial actions in terms of restoring natural resource values.

NASSCO stated that the Regional Board is empowered to "coordinate with the state board and other regional boards, as well as other state agencies with responsibility for water quality, with respect to water quality control matters, including the prevention and abatement of water pollution and nuisance." Water Code § 13225(a). Additionally, as EHC/Coastkeeper has pointed out, under Resolution 92-49, the Regional Board must ensure that constituents at concentrations below the alternative cleanup levels "will not pose a substantial present or potential hazard to human health or the environment," and must also weigh factors including "the current and potential uses of surface waters in the area" and "the potential damage to wildlife [and] vegetation . . . caused by exposure to waste constituents."

The Regional Board has extensively evaluated many of the types of effects that could constitute injury to natural resources at the Site, including exceedances of sediment quality guidelines, sediment toxicity, bioaccumulation, fish histopathology, and risks to wildlife from contaminated prey. Moreover, many of these analyses were developed cooperatively with input from designated Natural Resource Trustees, including U.S. Fish and Wildlife Service, California Department of Game, and the National Oceanographic and Atmospheric Administration. The Regional Board's statement simply articulates that the cleanup of the remedial footprint at the Site will improve environmental conditions such that natural resources, including those evaluated in detail in connection with the Site investigation and cleanup (i.e., benthic macroinvertebrates, fish, and aquatic-dependent wildlife) will benefit from cleanup. Accordingly, it is appropriate and reasonable for the Regional Board to consider whether the cleanup will be protective of natural resources, including whether it will restore any injury, destruction, or loss of natural resources.

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BAE Systems also rebutted Coastkeeper's and EHC's Expert Report (MacDonald, 2011) regarding Natural Resource Trustees. BAE Systems commented that MacDonald lacks the qualification to render any opinions regarding what the Natural Resource Trustees may or may not do, and, therefore, his conclusion is inappropriate.

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BAE also commented on Resolution No. 92-49, stating that the Regional Board should review evidence with a view towards liability. To be named as a discharger, all that is required is “sufficient evidence” of responsibility. See The State Board Water Quality Enforcement Policy, No. 2002-0040, (Feb. 19, 2002). To this end, “a regional water board shall “[u]se any relevant evidence, whether direct or circumstantial” in order to establish the source of a discharge. State Water Board Resolution No. 92-49, at § II(A) (emphasis added). The resolution provides a number of potential sources of evidence, including site characteristics and location in relation to other potential sources of a discharge; hydrologic and hydrogeologic information, such as differences in upgradient and downgradient water quality; industry-wide operational practices that have led to discharges, such as conveyance systems; and physical evidence, such as analytical data. (Id.)

In light of the Clean Water Act’s declared objective and the broad discretion granted to regional water boards by the Act and its implementing regulations, State Water Board decisions suggest that a regional water board should look at evidence with a view toward finding liability. According to the State Water Board, “[g]enerally speaking it is appropriate and responsible for a Regional Board to name all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility.” See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 11 (SWRCB 1985) (noting further that “substantial evidence” means “credible and reasonable evidence which indicates the named party has responsibility”); Stinnes-Western Chemical Corp., Order No. 86-16, at 12 (SWRCB 1986).

Response 1.1

The TCAO Correctly Applies The Requirements And Principles Of Water Code Section 13304 And Its Implementing Regulations.

The Porter-Cologne Water Quality Control Act (Porter-Cologne) was enacted in 1969 with the Legislatively-declared objective of ensuring “that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state.” Water Code § 13000. The State Water Board and the California Regional Water Boards, (collectively referred to as the Water Boards) have animated the Legislature’s concept of “use and enjoyment by the people of the state” by developing and defining what are known as “beneficial uses.” To help ensure the preservation and enhancement of beneficial uses, Porter-Cologne grants Water Boards broad latitude to issue Cleanup and Abatement Orders when necessary to protect California’s valuable and limited water resources from the effects of wastes. Water Code section 13304 (section 13304) governs the San Diego Water Board’s authority to issue CAOs. Section 13304 authorizes the San Diego Water Board to, in pertinent part, require any person who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, to “clean up the waste or abate the effects of the waste.”[1]

[1] Section 13304 provides additional legal bases for water boards to issue CAOs, such as permit violations, but the TCAO’s findings allege, in each instance, that the basis for naming a specific discharger as a responsible party is that it caused or contributed to a condition of pollution or nuisance at the Shipyard Sediment Site.

As Designated Party BAE Systems accurately notes, regulations adopted by the State Water Board require that the Regional Water Boards name in a CAO all dischargers who contributed to a condition of pollution or nuisance to the maximum extent permitted by law. *See* 23 Cal. Code Regs. § 2907; *see also* Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304" (Resolution No. 92-49), § II (A)(4). As BAE Systems further notes, the Regional Water Boards are granted this broad authority precisely because of situations, such as the one now at issue, where contamination is discovered many years after the events causing the contamination. As stated by a leading treatise on California environmental law: "Due to the passage of time and the difficulty of interpreting hydrogeologic evidence, it often is impossible to establish who is responsible for the contamination with a great degree of certainty." Kenneth A. Manaster and Daniel P. Selmi, California Environmental Law and Land Use Practice, § 32.32(1)(a), at p. 32-42. Accordingly, the San Diego Water Board should review the substantial evidence set forth in the DTR and administrative record with an eye towards naming dischargers to the TCAO to further the purposes of Porter-Cologne.

Water Code section 13050 defines "pollution" as an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either "the waters for beneficial uses[,]"or [f]acilities which serve these beneficial uses."[2] Water Code section 13050(l). As the TCAO finds, each of the named dischargers caused and/or contributed to an alteration of the quality of the waters at the Shipyard Sediment Site to a degree that has unreasonably affected beneficial uses there.

None of the Designated Parties disagree with the finding that the quality of waters at the Shipyard Sediment Site has been altered by the discharge of wastes such that a Cleanup and Abatement Order under section 13304 is legally justified. Not surprisingly, the Designated Parties disagree about the appropriate cleanup or abatement action needed to restore beneficial uses. Naturally, NASSCO, and to a lesser extent BAE Systems, argue that Monitored Natural Attenuation (MNA) – the least expensive remedy - is the best remedial action to cleanup or abate the condition of pollution or nuisance at the Site.[3] Equally naturally, at the other extreme, Environmental Health Coalition (EHC) and San Diego Coastkeeper (Coastkeeper) argue that a substantially larger and more expensive dredging project is needed to restore beneficial uses. But, the Cleanup Team is the only Designated Party to this proceeding charged with the duty of

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[2] "Nuisance" means anything which meets all of the following requirements:
(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property. Water Code section 13050(m).
(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
(3) Occurs during, or as a result of, the treatment or disposal of wastes.

[3] NASSCO spills considerable ink arguing that section 13304 allows a party to either clean up **or** abate the effects of its wastes, apparently to support its argument that MNA is the appropriate remedy. While the Cleanup Team disagrees that MNA is the appropriate remedy, we note that NASSCO's argument constitutes an implied admission that beneficial uses at the Shipyard Sediment Site are impaired and that some form of CAO is appropriate. Even Exponent, NASSCO's and BAE Systems's retained expert, concludes, based on a series of industry-favorable assumptions about how to interpret site-specific data, that beneficial uses at the Shipyard Sediment Site are 5 percent impaired.

representing the public interest, rather than the specific interests of its shareholders or members, and it is the only Designated Party obligated to adhere to the policies and procedures established by the Legislature, the State Water Board, and the San Diego Water Board.

All of the Designated Parties other than the Cleanup Team have their own partisan interests in this proceeding. Many of their respective arguments supporting different alternative cleanup levels seem reasonable and evidence-supported when viewed in isolation. Under close scrutiny, however, all ultimately fail because they fall short of striking the proper balance for alternative cleanup levels mandated by Resolution No. 92-49. As will be discussed in detail below, only the TCAO:

> "Ensures that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of … the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on these waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible[.]" Resolution No. 92-49, § III G.

The Cleanup Team, having no partisan interest, is uniquely situated to balance the "total values involved, beneficial and detrimental, economic and social, tangible and intangible," and the alternative cleanup levels proposed in the TCAO achieve the restoration and protection of beneficial uses while striking the appropriate and required balance.[4]

The Record Contains Substantial Evidence Supporting The TCAO's Findings And Alternative Cleanup Levels.

When adopting a CAO under section 13304, a Regional Water Board may not prejudicially abuse its discretion. *See* Water Code, § 13330(c); Code Civ. Proc., § 1094.5(c). A prejudicial abuse of discretion occurs when the Water Board fails to proceed in the manner required by law, fails to support a CAO with findings, or fails to support those findings with substantial evidence. Code Civ. Proc., § 1094.5(c); *Topanga Assn. for a Scenic Community v. County of Los Angeles* (1974) 11 Cal.3d 506, 515. Indeed, a respondent agency's actions are presumed to comply with applicable law. Evid. Code § 664; *Foster v. Civil Service Com. of Los Angeles* (1983) 142 Cal.App.3d 444, 453. As California's Supreme Court observed, substantial evidence is evidence of "ponderable legal significance," which is "reasonable in nature, credible and of solid value." *Ofsevit v. Trustees of California State Universities and Colleges* (1978) 21 Cal.3d 763, 773, n. 9. "Substantial evidence" means facts, reasonable assumptions based on facts and expert opinions supported by facts. *Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004. 1019. Importantly, an agency may also rely on the opinion of its staff in reaching decisions, and "the opinion of staff has been recognized as constituting substantial evidence." *Browning-Ferris Industries v. City Council* (1986) 181 Cal.App.3d 852, 866 *citing Coastal Southwest Dev. Corp. v. California Coastal Zone Conservation Com.* (1976) 55 Cal.App.3d 525, 535-536.

Although Water Code section 13330(c) authorizes a court to exercise its own independent judgment on the record evidence when reviewing a Water Board's decision to adopt a CAO, the

[4] See Response 31.1 for further discussion on how the alternative cleanup levels balance the total values involved.

Water Board's interpretation of its own regulations and the regulatory scheme which it implements and enforces is entitled to great deference. *See Building Industry Assn.(BIA) v. State Water Resources Control Bd.* (2004) 124 Cal.App.4th 985, 998, n. 9; *citing Yamaha Corp. of America v. State Bd. of Equalization* (1998) 19 Cal.4th 1, 7-8. In light of the statutory presumption that an agency's action complies with applicable law, and the judicial direction that an agency's interpretation of its own regulations is entitled to great deference, even when exercising its independent judgment, "a trial court must afford a strong presumption of correctness concerning the administrative findings, and **the party challenging the administrative decision bears the burden of convincing the court that the administrative findings are contrary to the weight of the evidence**." *BIA*, *supra*, 124 Cal.App.4th at 998, emph. added; *citing Fukuda v. City of Angels* (1999) 20 Cal.4th 805, 817. As explained by California's Supreme Court, even in "independent judgment review" cases, the findings of a board where formal hearings are held come before the courts with a strong presumption in their favor, and considerable weight must be given to the findings of experienced administrative bodies made after a full and formal hearing, especially in cases involving technical and scientific evidence. *Fukuda*, *supra*, 20 Cal.4th at 812, *citing Drummey v. State Bd. of Funeral Directors* (1939) 13 Cal.2d 75, 84, 86. Certainly, the San Diego Water Board is an experienced administrative body, familiar with the application of its own regulations, and will be deciding this matter involving technical and scientific evidence after a full and formal hearing. Accordingly, any decision made by the San Diego Water Board regarding the TCAO, if appealed, will go before a reviewing court with a "strong presumption of correctness."

All the Designated Parties agree that there must be substantial evidence in the record to support the findings in the TCAO. Not surprisingly, they disagree over whether there is. Some Designated Parties argue there is no substantial evidence in the administrative record to support naming them as "Dischargers" in the TCAO. The specific, detailed substantial evidence to support naming those Designated Parties as Dischargers is detailed in this Response to Comments under the specified findings, and will not be repeated here. *See e.gs.*, Finding 5 Star & Crescent Boat Company, Finding 9 SDG&E, Finding 10 U.S. Navy, and Finding 11 Port District. Generally, the DTR sets forth and/or cites substantial evidence in the administrative record to support each finding in the TCAO, and this Response to Comments is formatted in the same manner. The following specifically addresses a group of Comments generally arising under Resolution No. 92-49, including: (1) whether there is substantial evidence in the record to support the TCAO's finding that cleanup to background is not economically or technologically feasible; (2) whether there is substantial evidence in the record to support the TCAO's findings that beneficial uses at the Shipyard Sediment Site are impaired and active remediation is warranted; and (3) whether there is substantial evidence in the record to support the TCAO's findings that the proposed alternative cleanup levels will not unreasonably effect present and anticipated future beneficial uses.

The TCAO Is Fully Compliant With State Water Board Resolution No. 92-49 And Furthers Its Policy Objectives.[5]

[5] TCAO Findings 29 (background) 30 (technological feasibility), 31 (economic feasibility), 32 (alternative cleanup levels) and 36 (legal and regulatory authority) overlap to a great extent because the concepts are interrelated under Resolution No. 92-49. While fact and evidence-specific technical responses to comments are organized by finding

Under Water Code section 13360, the San Diego Water Board may not specify the particular manner by which dischargers must cleanup or abate the effects of their wastes, and a person subject to an order under Water Code section 13304 may comply with it in any lawful manner. Accordingly, the consistent and longstanding practice of the San Diego Water Board, and indeed of all the Water Boards, has been to require dischargers to propose the method for complying with a CAO and for the Water Boards to review, analyze and concur with the method proposed. This longstanding practice was codified by the State Water Board in 1992, when it adopted its Resolution No. 92-49. *See* Resolution No. 92-49, ¶ 18. Despite the somewhat tortured process in which the Cleanup Team engaged to develop and present TCAO No. R9-2011-0001 to the San Diego Water Board for its consideration and adoption, its development in the form presented to the San Diego Water Board at this time did not substantially vary from the Water Boards' normal process. The TCAO represents an amalgam of concepts and ideas for cleanup and abatement presented by the named dischargers, as a group in mediation, then reviewed, analyzed and recommended by the Cleanup Team for approval by the San Diego Water Board. As a practical matter, given the named dischargers' inability for nearly ten years to agree on an acceptable and sufficiently protective method of cleanup or abatement and propose it for review and approval, the Cleanup Team had no other realistic choice.

To ensure that dischargers have the opportunity to select cost-effective methods for cleaning up and abating their discharges, the San Diego Water Board must concur with any cleanup and abatement proposal which the dischargers have demonstrated has a substantial likelihood of achieving compliance with cleanup goals and objectives *within a reasonable time frame*. Resolution No. 92-49, § III (A). Those cleanup goals and objectives must, in turn, implement applicable Water Quality Control Plans and Policies and implement permanent cleanup and abatement solutions which do not require ongoing maintenance. *Ibid*. The TCAO and supporting DTR contain data and analyses gathered and submitted by the dischargers, and reviewed, analyzed and recommended by the Cleanup Team. There is a considerable body of evidence in the administrative record and DTR to support findings that the alternative cleanup levels proposed in the TCAO have a substantial likelihood of achieving compliance with cleanup goals and objectives within a reasonable time frame.

Substantial Evidence Supports The TCAO's Findings That The Shipyard Sediment Site Is Impaired And That MNA Cannot Achieve Beneficial Use Protection With A Reasonable Time.

Relying wholly on the Shipyard Report (Exponent 2003), NASSCO and BAE Systems contend that no substantial evidence in the record supports the finding that the Shipyard Sediment Site is impaired. Specifically, NASSCO and BAE Systems contend that the Cleanup Team's analyses, assumptions and interpretation of the same data Exponent used in its analyses are too conservative and that MNA is a sufficient "abatement" action for the Site. NASSCO's and BAE Systems's criticisms are inapt. First, Exponent's MNA proposal implicitly acknowledges there is at least some beneficial use impairment. Otherwise there would be no need to monitor the site

number in the TCAO, this responds to claims by various Designated Parties that the TCAO does not legally comply with Resolution No. 92-49.

to ensure that constituents of concern (COCs) diminish to levels that will be sufficiently protective of beneficial uses over time, a need the Shipyard Report (Exponent, 2003) acknowledges.

Second, the Shipyard Report (Exponent, 2003) is a wholly risk-based analysis that is fashioned in the style of a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-based cleanup. CERCLA actions involve the imposition of “strict liability” and, as a tradeoff for imposing strict liability, Congress determined that CERCLA cleanups can and should leave behind as much residual contamination as can be tolerated. CERCLA cleanups are driven primarily by cost considerations, and a “CERCLA-quality cleanup” is defined to be one that is the cheapest possible within acceptable risk parameters. A CERCLA quality cleanup must be cost effective. *County Line Inv. Co. v. Tinney* (10th Circuit 1991), 933 F.3d 1508, 1514, *citing* 40 C.F.R. § 300.430(f)(1)(ii)(D). U.S. EPA guidance on CERCLA remedies states: ““Cost is a critical factor in the process of identifying a preferred remedy. In fact, CERCLA and the NCP require that every remedy selected must be cost-effective” (U.S. EPA, 1996, p.5). “CERCLA tempers its emphasis on permanent solutions and treatment through the addition of the qualifier "to the maximum extent practicable," and also contains the co-equal mandate for remedies to be cost-effective.” *Id.*, at p. 2.

Porter-Cologne’s purpose and remedy selection process is different than CERCLA’s. While Resolution No. 92-49 directs that costs of cleanup be considered in an economic feasibility context, cost is not one of the driving factors for determining appropriate cleanup levels under Porter-Cologne. The duty to ensure restoration and enhancement of beneficial uses under Porter-Cologne *demands* that the San Diego Water Board make more conservative assumptions about exposure, consumption, and risk than would be appropriate under CERCLA’s cost-driven scheme. Put simply, a “CERLCA-quality cleanup,” or solely risk-based analysis, which is essentially what Exponent (2003) advocates in its MNA recommendation, leaves beneficial uses at risk for an indefinite period of time. In developing the various findings concerning the impairment of beneficial uses at the Shipyard Sediment Site, the Cleanup Team, which has considerable expertise and experience with the implementation of Porter-Cologne and Resolution No. 92-49, based its determinations that the Site is impaired and that MNA is not capable of achieving beneficial use protection within a reasonable amount of time on the same data Exponent (2003) used, and on reasonably conservative assumptions designed to ensure that present and anticipated future beneficial uses will be protected within a reasonable time frame.

Finally, NASSCO’s and BAE System’s argument that MNA is an appropriate abatement action because beneficial uses at the Site are only marginally impaired falsely assumes that there is no need to protect beneficial uses today because the Site is “secured.” They argue that by the time their leases run out the Site will have equilibrated to background sediment chemistry levels. Even if this were true, it would be an abuse of discretion to defer the restoration of beneficial uses in these waters while NASSCO and BAE Systems maintain conditions of pollution or nuisance there for years to come. NASSCO and BAE Systems do not own the waters of the state even if those waters happen to be currently surrounded by security booms. Moreover, Resolution No. 92-49 requires cleanup **or** abatement actions to achieve compliance with cleanup goals and objectives that implement applicable water quality control plans **within a reasonable time frame**. Resolution No. 92-49, § III (A). Allowing beneficial uses at the Site to remain impaired for years is inconsistent with the cleanup goals and objectives for the Shipyard Sediment Site, could in no way be considered "implementing" the San Diego Region's Basin Plan and is simply not a way to achieve cleanup goals and objectives within a reasonable time frame. The entire San Diego Bay is listed on the Clean Water Act section 303(d) list as impaired for PCBs based on fish tissue data. As such, Commercial and Sport Fishing (COMM), Estuarine Habitat (EST), Marine Habitat (MAR), Wildlife Habitat (WILD) and Shellfish Harvesting (SHELL) beneficial uses continue to be impaired. Implementing a cleanup at the Shipyard Sediment Site is just one of the many steps that will need to be taken in the process of restoring "fishable" beneficial uses to San Diego Bay, and it cannot be delayed.

Thus, as described in detail in the Responses to Comments for Findings 18, 24, 28, and 32, the Cleanup Team properly made conservative assumptions in its analysis of whether beneficial uses at the Shipyard Sediment Site are impaired to help ensure that the highest water quality which is reasonable is attained within a reasonable time frame, and that beneficial uses are protected. *See* Water Code section 13000. Indeed, the Cleanup Team and the San Diego Water Board must make these types of conservative assumptions to fulfill their statutory obligations.

Substantial Evidence Supports The TCAO's Finding That Cleanup To Background Is Not Technologically And Economically Feasible.

Under Resolution No. 92-49, a Water Board must require dischargers to cleanup and abate the effects of their wastes in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored. Id., at § III (G). All of the Designated Parties agree with this interpretation of Resolution No. 92-49. *See e.g.,* Exponent NASSCO and Southwest Marine Detailed Sediment Investigation 2003, Appendix P, at p. P-7 ["Under Resolution No. 92-49, the RWQCB is mandated to require a presumptive cleanup goal of background water quality."].[6]

Resolution No. 92-49 also provides direction regarding how Water Boards are to determine whether the presumptive cleanup to background water quality will be required, or whether some alternative cleanup level that results in "the best water quality which is reasonable" should be adopted. The first step for determining an appropriate site cleanup level is to determine whether or not it is economically and technologically feasible to cleanup wastes to background levels. Resolution No. 92-49, §§ III (H)(1)(a), (b). Technological feasibility is determined by assessing available technologies that have been demonstrated to effectively reduce concentrations of waste under similar hydrogeologic conditions. Resolution No. 92-49, § III (H)(1)(a). Some polygons were recommended for exclusion from the remedial footprint because, for example, physical conditions such as their steep slopes and/or proximity to bulkheads or structures make available technologies infeasible to deploy. Economic feasibility is "an objective balancing of the

[6] Even NASSCO's arguments that MNA is the appropriate remedy and that there is no legal authority to order a cleanup where abatement is sufficiently protective of beneficial uses admit that cleanup to background is the presumptive cleanup goal. NASSCO's arguments depend on the assumption that MNA can achieve protection of beneficial uses within a reasonable time frame and that, as a result, cleanup to background is not economically feasible because the incremental cost above MNA for achieving protection of beneficial uses does not result in any incremental benefit. The Cleanup Team disagrees that MNA is capable of achieving protection of beneficial uses within a reasonable time, as detailed in its responses to specific comments.

incremental benefit of attaining further reductions in the concentrations of COCs as compared with the incremental cost of achieving those reductions." Id., at § III (H)(1)(b). As detailed in the Cleanup Team's Response 31.1, the TCAO's proposed alternative cleanup levels require active remediation by dredging of sediments to a point where the incremental costs of further dredging outweigh the incremental environmental benefits. Under the Cleanup Team's analysis, the alternative cleanup levels result in concentrations of COCs that do not unreasonably impact beneficial uses.

If background cleanup levels are economically and technologically feasible, then dischargers must cleanup to background. If it is either technologically or economically infeasible to cleanup to background, then a Water Board is authorized to order alternative cleanup levels above background so long as certain other conditions are met. *See* Resolution No. 92-49, §§ III (G)(1)-(3).

SDG&E, EHC and Coastkeeper argue that the record contains no substantial evidence to support Findings 30 and 31 that cleanup to background is not technologically or economically feasible.[7] The Port District, NASSCO, BAE Systems and the City of San Diego argue that it does. The Designated Parties' arguments differ only with respect to how they chose to interpret the same data.[8] The Cleanup Team's interpretation of the data, and the substantial evidence that supports its conclusions that cleanup to background is not technologically or economically feasible, are set forth in its responses to comments under Findings 30 and 31. As noted above, the San Diego Water Board is granted considerable discretion regarding how to apply the requirements of Resolution No. 92-49 to the specific facts and evidence available to it. Resolution No. 92-49 does not require, as Coastkeeper and EHC argue, that the San Diego Water Board engage in its economic and/or technological feasibility analyses on a "constituent by constituent" basis, by grouping polygons in a specific way, or in any other particular manner. In fact, even EHC's and Coastkeeper's own economic feasibility analysis supports a determination that it is not economically feasible to remediate the Shipyard Sediment Site to background since that analysis concludes that incremental costs outweigh incremental benefits after an addition of 8 polygons to the TCAO's proposed cleanup footprint, and would leave COCs behind at above-background levels.[9] In essence, all that is required is that the Cleanup Team's analyses be reasonable and supported by substantial evidence, which they are.

Substantial Evidence Supports The TCAO's Finding That The Proposed Alternative Cleanup Levels Are Reasonably Protective Of Beneficial Uses.

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[7] SDG&E argues that the entire analysis in the DTR based on site-specific data should be scrapped, and that toxic unit values derived from textbooks without the benefit of site specific toxicity and benthic community analyses should be used to replace it. The argument is one specifically contrived to minimize SDG&E's potential share of responsibility, and is addressed by the Cleanup Team in its Responses to Comments on Findings 18 and 32.

[8] In fact, all of the commentors base their respective claims and arguments on the same set of data, primarily gathered by Exponent in 2001 and 2002. It is only the interpretation of that data that differs.

[9] Because their economic feasibility analysis results in an addition of only 8 polygons to the proposed remedial footprint and would leave COCs in the sediments at above-background levels, EHC's and Coastkeeper's argument that no substantial evidence supports the determination that cleanup to background is not economically feasible is, in essence, an argument that the alternative cleanup levels should be lower than those proposed in the TCAO – not an argument that cleanup to background is feasible.

When determining an appropriate alternative cleanup level, a Water Board is to consider "all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." Resolution No. 92-49, § III (G). If, after having taken the listed factors into consideration, a Water Board determines it is appropriate to adopt a cleanup level less stringent than background, it must make evidence-supported findings that the alternative cleanup levels: (1) are consistent with maximum benefit to the people of the state; (2) do not unreasonably affect present and anticipated beneficial uses of effected waters; and (3) do not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards. Id, at subds. (1)-(3). Thus, Resolution No. 92-49 gives Water Boards broad discretion to adopt a CAO that imposes cleanup levels that balance the "total values" involved in any given situation so long as those cleanup levels meet the listed conditions.

SDG&E,[10] EHC, and Coastkeeper disagree with NASSCO and BAE Systems, and agree with the Cleanup Team's analysis that substantial record evidence establishes that the Shipyard Sediment Site's beneficial uses are impaired. But, each claims that no substantial evidence in the record supports the finding that the TCAO's alternative cleanup levels will sufficiently protect beneficial uses.[11] NASSCO and BAE Systems argue that the TCAO's alternative cleanup levels are supported by substantial record evidence and that, with the conservative assumptions made by the Cleanup Team, beneficial uses will not be unreasonably affected. All of the Designated Parties are using the same data, but their respective analyses vary based on their respective partisan viewpoints and interests. The DTR contains a sophisticated analysis of the alternative cleanup levels capabilities for protecting beneficial uses based on reasonably conservative assumptions. The Cleanup Team's analysis is based on site-specific chemistry, toxicity, and benthic community data. The TCAO also incorporates a "failsafe" post-remedial monitoring program that ensures that the cleanup levels deployed to protect beneficial uses will be achieved and maintained. While all the other Designated Parties' positions are at least somewhat plausible based on the available data, only the Cleanup Team's alternative cleanup levels proposed in the TCAO appropriately balance "all demands being made and to be made on these waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." Resolution No. 92-49, § III (G). The San Diego Water Board is charged with striking the appropriate balance. In essence, the question of how best to weigh the various factors that go into balancing "all demands being made on these waters" and "the total values involved" is one of policy, and the Board has broad discretion to fashion an appropriate answer.

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[10] See footnote 6, supra.

[11] The Port contends that two polygons on the northern edge of the Shipyard Sediment Site should be added to the remedial footprint in order to achieve reasonable beneficial use protection. A portion of those two polygons is contained within the remedial footprint, and the remaining area is currently targeted for an investigative order. The purpose of that investigative order will be to determine whether beneficial uses in that area and areas to the north of it are impaired, whether a CAO should be issued if it is, and whether there are potentially responsible parties not present in this proceeding that should be named as dischargers. Further specific responses to the Port's argument are set forth in Responses to Comments on Finding 32.

The TCAO Correctly Applies Applicable Provisions Of Title 23, Chapter 15 Of The California Code Of Regulations; Resolution No. 92-49 Does Not Require Alternative Cleanup Levels To Be Established For Every Constituent Of Concern.

EHC and Coastkeeper argue that the San Diego Water Board must establish an alternative cleanup level for each and every COCs identified at the Shipyard Sediment Site.[12] The argument is based on their reading of the following statement in Resolution No. 92-49:

> The Regional Water Board shall: ….In approving any alternative cleanup levels less stringent than background, apply section 2550.4 of Chapter 15 [of Title 23 of the Cal. Code of Regs.][.]" Resolution No. 92-49, § III (G).

EHC and Coastkeeper then cite section 2550.4(c), which is a part of Chapter 15 of Title 23, in support of their arguments that (1) economic feasibility must be analyzed on a COC-by-COC basis; and (2) if cleanup to background is economically feasible, an alternative cleanup level must be established for each and every COC. This novel argument fails for several reasons.

When applying a statute or regulation, an administrative body must endeavor to give meaning to every section, and harmonize the meanings of those sections so as to not achieve an absurd result. *California Mfrs. Assn. v. Public Utilities Com.* (1979) 24 Cal.3d 836, 844; *Moyer v. Workmen's Comp. Appeals Bd.* (1973) 10 Cal.3d 836, 844 [A construction making some words surplusage is to be avoided. The words of the statute must be construed in context, keeping in mind the statutory purpose, and statutes or statutory sections relating to the same subject must be harmonized, both internally and with each other, to the extent possible.]. First, EHC's and Coastkeeper's argument fails to consider the section of Resolution No. 92-49 immediately preceding III (G) wherein the regional boards are directed to implement the provisions of Chapter 15 that are applicable to a particular cleanup. Resolution No. 92-49, § III (F)(2). Chapter 15 is to be applied "if the cleanup and abatement involves corrective action at a waste management unit regulated by waste discharger requirements issued under Chapter 15[,]" or "if cleanup and abatement involves removal of waste from the immediate place of release and discharge of the waste to land for treatment storage or disposal[.]" Resolution No. 92-49, §§ III (F)(2)(a), (b). In fact, the entirety of Chapter 15 addresses regulation of, including cleanup and abatement actions at, facilities that treat, store, or dispose of hazardous waste at Class I waste management units. Since the Shipyard Sediment Site is not a Class I waste management unit, it follows that not all of the provisions of Chapter 15, are likely to be "applicable" to a cleanup and abatement action at the Site. In short, read as a whole, Resolution No. 92-49 simply requires that Water Boards apply section 2550.4 to the extent it is applicable, or makes sense.

Second, section 2511 clearly states that cleanup or abatement actions are exempt from the provisions of Chapter 15 of Title 23, including section 2550.4(c), and that Regional Water Boards "shall implement applicable provisions of this chapter to the extent feasible." 23 Cal. Code Regs. § 2511(d). Here, the Cleanup Team applied section 2550.4 to the extent it can be

[12] Both NASSCO and BAE Systems undertake a detailed analysis of Chapter 15 of Title 23 of the California Code of Regulations and, looking at the Chapter as a whole, make a persuasive argument that EHC's and Coastkeeper's argument for constituent by constituent cleanup levels fails. The Cleanup Team incorporates those arguments in this response as if set forth in full.

applied without achieving an absurd result. *See* DTR Findings 32-33. The TCAO proposes numeric alternative cleanup levels for the five "primary" COCs – high molecular weight **p**olynuclear aromatic hydrocarbons (HPAHs), tributyltin (TBT), mercury, copper and polychlorinated biphenyls (PCBs). Because secondary COCs are co-located with primary COCs, post-remedial Surface-Area Weighted Average Concentration (SWACs) for the secondary COCs end up being protective of beneficial uses so long as the TCAO's proposed alternative cleanup levels for the primary COCs are attained. In essence, the TCAO is a cleanup and abatement action designed to address polluted *sediments* and restore them to a quality where they no longer impair beneficial uses of the waters of San Diego Bay. The strict application of section 2550.4(c) urged by EHC and Coastkeeper ignores the context within which this action is being taken, which is not a cleanup and abatement action at a Class I waste management facility.

The distinction between the cleanup of a marine sediment site and the cleanup of groundwater at a Class I waste management facility is further illustrated by the DTR's analysis of aquatic life beneficial uses. Toxicity tests under one of the legs of the triad analysis undertaken to determine site impairment and alternative cleanup levels sufficiently protective for aquatic wildlife beneficial uses measure toxicity for total COC mixtures in marine sediment. The TCAO proposes alternative cleanup levels that achieve beneficial use protection for aquatic wildlife based on total sediment quality conditions. It makes little sense to establish alternative cleanup levels on a COC-by-COC basis for aquatic wildlife beneficial use protection.

Moreover, as NASSCO and BAE Systems point out, setting individual cleanup levels for each COC, then applying them on a polygon-by-polygon basis, as EHC and Coastkeeper urge, would likely result in cleanup to below background levels for some COCs. Of course, aspects of Resolution No. 92-49 that specifically address the application of Chapter 15 prohibit the water boards from interpreting the Resolution in a way that results in "water quality conditions that are better than background conditions." Resolution No. 92-49, § III (F)(1). Accepting EHC's and Coastkeeper's arguments for a COC-by-COC alternative cleanup level and economic feasibility analysis would read section III (F)(1) out of the Resolution and lead to an absurd result.

For these reasons, no other CAO requiring sediment remediation in San Diego Bay has ever undertaken a COC-by-COC analysis of economic feasibility, or set alternative cleanup levels for each and every COC.

In short, the Cleanup Team considered and applied section 2550.4 to the extent it can be applied to the Shipyard Sediment Site consistent with its obligation to give meaning to and harmonize every section of Resolution No. 92-49.

RESPONSE 1.2

DTR Section: 1, 32, 36
Comment Submitted By: NASSCO
Comment ID: 155
Comment

The TCAO results in the disparate treatment of NASSCO, contrary to law. in violation of the mandate of Resolution 92-49, and principles of due process and equal protection, the order would treat NASSCO differently than similarly situated dischargers (Findings 2, 6, 32, 36).

Resolution 92-49 provides that the "Regional Water Board shall . . . prescribe cleanup levels which are consistent with appropriate levels set by the Regional Water Board for analogous discharges that involve similar wastes, site characteristics, and water quality considerations." See also Barker Depo, at 345:12-345:17 (recognizing that a goal of Resolution 92-49 is to ensure that Regional Boards treat similar sites similarly). Principles of due process and equal protection also require both fundamental fairness, and that persons subject to legislation or regulation who are in the same circumstances be treated alike. U.S. Const. amend. XIV, §1; Cal. Const. art. I, §§ 7, 15.

Over the past decade, the Regional Board has prescribed cleanup levels for sediments at other shipyard and boatyard locations on San Diego Bay with analogous discharges involving similar circumstances as the Site. See e.g., San Diego Regional Board Order Nos. 88-86, 88-78, 89-31, 84-100, 94-101, 94-102, 95-21, 97-63, 99-06, 2001-303, R9-2002-0072. Barker Depo, Ex. 1210 at Exhibit A. However, despite substantial similarities between these sites and NASSCO, the Regional Board now seeks to impose radically more stringent cleanup levels upon NASSCO in departure from prior precedent and in violation of both due process and equal protection principles, and the consistency requirement expressly stated in Resolution 92-49. TCAO, at ¶ 32, DTR, at 32-1.

1. The Proposed Cleanup Levels Are Unprecedented Compared To Other Sediment Remediation Projects In San Diego Bay (Findings 32, 36)

Although similar sites are required to be treated similarly, Staff has proposed unprecedented cleanup levels for the Site, while setting much less stringent levels at other similarly situated sites. Response to NASSCO's RFAs, at 56. [Comment No. 17, TCAO, at 32, 36, DTR, at 32, 36.4]. Since the early 1990s, the Regional Board has remediated sediments at a number of shipyards, boatyards and other industrial sites in San Diego Bay. Many of these sites, including the Commercial Basin Boatyards, Paco Terminals, Convair Lagoon, and Campbell Shipyard, are similar to NASSCO in many respects, including but not limited to geographical location, water quality considerations, uses, wastes, beneficial uses, and receptors of concern. Barker Depo, at 118:14 – 140:1; 346:25 – 352:15; 354:22 – 361:18; 385:17 – 387:4, 564:25 – 565:23, 567:7 – 567:16; see also Barker Depo, Ex. 1210 at Exhibit A. [Comment No. 18, TCAO, at 32, 36, DTR, at 32, 36.4]. In particular, Campbell and NASSCO have similar physical, biological and chemical conditions, locations, site activities, waste materials and matrices, offsite pollutant inputs, and hydrodynamic and biogeographic zones. Barker Depo, at 362:15 – 365:5. Yet, in spite of these similarities, the cleanup levels proposed for NASSCO are far more stringent than those of the other sites, including Campbell Shipyard, for the same constituents. See e.g., Barker Depo, 365:8 – 365:23.

For example, at Paco Terminals, Campbell Shipyard, and the Commercial Basin Boatyards requiring cleanup, the copper cleanup levels were 1000 mg/kg, 810 mg/kg, and 530mg/kg, respectively. Thus the copper cleanup levels for all of these sites are well above the post-remedial Surface-Area Weighted Average Concentration ("SWAC") (159 mg/kg) and dredge concentrations (121 mg/kg) proposed for NASSCO. Similarly, the mercury cleanup levels set for the Commercial Basin boatyards that required remediation were 4.8 mg/kg, which is once again almost ten times above the post-remedial SWAC (0.68) and dredge concentration (0.57) proposed for NASSCO. Cleanup levels for primary risk drivers, such as PCBs and TBT, are also significantly more stringent at NASSCO compared with Campbell. Barker Depo, Ex. 1210 at Exhibit A.

To reach these low cleanup levels, Staff has introduced excessive levels of conservatism in its analysis. For example, Staff calculated cleanup levels for Campbell using an apparent effects approach; however, at NASSCO, Staff used the lowest apparent effects threshold, and then introduced a 40% safety buffer to further reduce the cleanup level, resulting in exceptionally low cleanup levels compared to other sites in the bay. Barker Depo, 373:14 – 374:22. Moreover, cleanup levels at NASSCO are also more stringent than similar sites elsewhere in the nation. Barker Depo, at 944:18 – 947:11, 47:16 – 949:21.

Response 1.2

NASSCO's equal protection argument lacks merit. The last sediment cleanup ordered by the San Diego Water Board was over 15 years ago in 1995. As evidenced by the DTR, the advances in data collection, analytical techniques and analytical tools since that time are substantial. Resolution No. 92-49 does not mandate the Regional Water Boards remain stuck in time, nor that they cannot use, *inter alia,* scientific advances with respect to understanding beneficial use impairment, with respect to emerging remediation technologies, and with respect to analyzing the effectiveness of alternative cleanup levels greater than background. Resolution No. 92-49 merely provides that the regional boards are to prescribe cleanup levels which are consistent with analogous discharges that involve similar wastes, site characteristics and water quality considerations, not that alternative cleanup levels must be identical for all cleanups. (Section II (A)(9).) To be consistent, cleanups need not be identical - as NASSCO argues. In all the sediment remediations discussed by NASSCO, including the Shipyard Sediment Site project, the San Diego Water Board acted consistently. It looked at site specific data, it undertook economic and technological feasibility analyses and it set alternative cleanup levels based on the results of its analyses.

Moreover, each sediment site within San Diego Bay is unique and has its own particular characteristics with respect to COCs, total organic carbons, sediment fines and grain size, physical constraints, tides, and many other important variables. For example, the Shipyard Sediment Site is unique from even the Campbell Shipyard Site in that shipyards are not the only contributors to the condition of pollution or nuisance, but, rather, COCs were contributed to the Shipyard Sediment Site by urban runoff and by a major power plant. Critically, the alternative cleanup level proposed is tailored to address nine different COCs at the Shipyard Sediment Site, and relies on site-specific chemistry, toxicity, and benthic community data. These specific data serve to distinguish the Shipyard Sediment Site from the other sediment cleanups discussed by the Commentor. Resolution No. 92-49 expressly recognizes and allows for these types of distinctions.

Finally, NASSCO's argument would elevate Resolution No. 92-49 section II (A)(9) above the other important provisions of Resolution No. 92-49, such as section III (G), which essentially mandates that regional boards may not approve alternative cleanup levels greater than background unless beneficial uses will not be unreasonably impacted. NASSCO's argument, in essence, reads section III (G) out of the Resolution, which is legally impermissible. In fact, only the TCAO appropriately addresses all of the various aspects of Resolution No. 92-49 harmoniously and consistently. As detailed in the TCAO and DTR, the alternative cleanup levels for the Shipyard Sediment Site are entirely appropriate based on the site-specific data, and the Cleanup Team has good reason and a rational basis for treating the cleanup there different from Campbell Shipyard, Paco Terminals, or any of the other sediment remediation projects discussed by NASSCO.

RESPONSE 1.3

DTR Section: 1, 36
Comment Submitted By: BAE Systems
Comment ID: 207
Comment

Responses to MacDonald's Conclusions Regarding the Alternative Clean-Up Levels (TCAO Findings 32, 34; DTR §§ 32, 34). Conclusion D.3.5 that "The Natural Resource Trustees may conduct a natural resource damage assessment to evaluate injuries to natural resources" is Inappropriate and Unsupported.

MacDonald lacks the qualification to render any opinions regarding what the Natural Resource Trustees may or may not do, and, therefore, his conclusion is inappropriate.

Response 1.3

Whether or not Mr. MacDonald is qualified to render opinions about "natural resource damage assessments" and those opinions themselves are irrelevant to the current proceedings since the TCAO and DTR do not undertake a natural resource damages assessment. (Also See Response 1.4)

RESPONSE 1.4

DTR Section: 1, 32, 36
Comment Submitted By: NASSCO
Comment ID: 367
Comment

EHC/Coastkeeper Comment No. 80: The Order incorrectly concludes that "clean-up of the remedial footprint will restore any injury, destruction, or loss of natural resources." The San Diego Regional Board does not have authority to conduct natural resource damage assessments because only the Natural Resources Trustees have authority to conduct natural resource damage assessments and to draw conclusions regarding injury to natural resources and the effectiveness of remedial actions in terms of restoring natural resource values.

The Regional Board is empowered to "coordinate with the state board and other regional boards, as well as other state agencies with responsibility for water quality, with respect to water quality control matters, including the prevention and abatement of water pollution and nuisance." Cal. Wat. Code § 13225(a). Additionally, as EHC/Coastkeeper has pointed out, under Resolution 92-49, the Regional Board must ensure that constituents at concentrations below the alternative cleanup levels "will not pose a substantial present or potential hazard to human health or the environment," and must also weigh factors including "the current and potential uses of surface waters in the area" and "the potential damage to wildlife [and] vegetation . . . caused by exposure to waste constituents."

The Regional Board has extensively evaluated many of the types of effects that could constitute injury to natural resources at the Site, including exceedances of sediment quality guidelines, sediment toxicity, bioaccumulation, fish histopathology, and risks to wildlife from contaminated prey. Moreover, many of these analyses were developed cooperatively with input from designated Natural Resource Trustees, including U.S. Fish and Wildlife Service, California Department of Game, and the National Oceanographic and Atmospheric Administration. The Regional Board's statement simply articulates that the cleanup of the remedial footprint at the Site will improve environmental conditions such that natural resources, including those evaluated in detail in connection with the Site investigation and cleanup (i.e., benthic macroinvertebrates, fish, and aquatic-dependent wildlife) will benefit from cleanup. Accordingly, it is appropriate and reasonable for the Regional Board to consider whether the cleanup will be protective of natural resources, including whether it will restore any injury, destruction, or loss of natural resources.

Response 1.4

The TCAO and the DTR discuss the general concept of restoration of natural resources in the context of the San Diego Water Board's duty under Resolution No. 92-49 to ensure that any alternative cleanup levels above background must not unreasonably impact, and must reasonably protect, beneficial uses. The Cleanup Team expresses no opinion with regard to EHC's and Coastkeeper's statement that the San Diego Water Board lacks the authority to "conduct natural resource damage assessments" since the TCAO and DTR do not undertake a natural resource damage assessment in this case.

RESPONSE 1.5

DTR Section: 1
Comments Submitted By: NASSCO, BAE Systems
Comment IDs: 390, 391, 392, 393, 450

Comment

ID 390, 391, 392, 393
The Port District submitted a Declaration of Expert Dr. Michael Johns in support of the Port District's comments, evidence, and legal argument. NASSCO commented that Dr. John's Declaration constitutes untimely expert evidence that should have been submitted to the record on or before March 11, 2011. Accordingly, it must be excluded from the record. Furthermore, even if Dr. John's Declaration is accepted into the record, his conclusions should be given no

weight for the reasons set forth in NASSCO's Comment Nos. 380-384, Replying to Port Comment Nos. 17 - 21.

ID 450
Similarly, BAE Systems commented that the Port District's expert declarations were untimely and impermissible. As set forth in BAE Systems' concurrently filed Motion to Exclude Declarations of the Port District's Experts Michael Johns, Ph.D., Ying Poon, D.SC., and Robert Collacott, MBA M.S., the Regional Board should exclude and strike those untimely and impermissible expert opinion, and should disregard those portions of the Port District's May 26, 2011 comments that rely upon and discuss that expert opinion. In the event the Regional Board declines to grant BAE Systems' motion to exclude, BAE Systems joins in NASSCO's Reply to Comments by the San Diego Unified Port District filed on June 23, 2011 with respect to the substance of those three expert declarations.

Response 1.5

The Cleanup Team takes no position with respect to NASSCO's and BAE Systems' motions to exclude the expert declarations submitted by the Port District.

2. TCAO Finding 2 and DTR Section 2: National Steel and Shipbuilding Company (NASSCO), A Subsidiary of General Dynamics Company

Finding 2 of TCAO No. R9-2011-0001 states:

The San Diego Water Board alleges, but NASSCO denies, that NASSCO has caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs), polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH).

NASSCO, a subsidiary of General Dynamics Company, owns and operates a full service ship construction, modification, repair, and maintenance facility on 126 acres of tidelands property leased from the Port District on the eastern waterfront of central San Diego Bay at 2798 Harbor Drive in San Diego. Shipyard operations have been conducted at this site by NASSCO over San Diego Bay waters or very close to the waterfront since at least 1960. Shipyard facilities operated by NASSCO over the years at the Site have included concrete platens used for steel fabrication, a graving dock, shipbuilding ways, and berths on piers or land to accommodate the berthing of ships. An assortment of waste is generated at the facility including spent abrasive, paint, rust, petroleum products, marine growth, sanitary waste, and general refuse. Based on these considerations NASSCO is referred to as “Discharger(s)” in this Cleanup and Abatement Order (CAO).

The San Diego Water Board did not receive any comments regarding Finding 2 and DTR Section 2.

3. TCAO Finding 3 and DTR Section 3: BAE Systems San Diego Ship Repair Inc., Formerly Southwest Marine, Inc. (Southwest Marine)

Finding 3 of TCAO No. R9-2011-0001 states:

The San Diego Water Board alleges, but BAE Systems denies, that BAE Systems caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH.

From 1979 to the present, Southwest Marine, Inc. and its successor BAE Systems have owned and operated a ship repair, alteration, and overhaul facility on approximately 39.6 acres of tidelands property on the eastern waterfront of central San Diego Bay. The facility, currently referred to as BAE Systems San Diego Ship Repair, is located on land leased from the Port District at 2205 East Belt Street, foot of Sampson Street in San Diego, San Diego County, California. Shipyard facilities operated by BAE Systems over the years have included concrete platens used for steel fabrication, two floating dry docks, five piers, and two marine railways. An assortment of waste has been generated at the facility including spent abrasive, paint, rust, petroleum products, marine growth, sanitary waste, and general refuse. Based on these considerations BAE Systems is referred to as "Discharger(s)" in this CAO.

The San Diego Water Board did not receive any comments regarding Finding 3 or DTR Section 3.

4. TCAO Finding 4 and DTR Section 4: City of San Diego

Finding 4 of TCAO No. R9-2011-0001 states:

The San Diego Water Board alleges, but the City of San Diego denies, that the City of San Diego caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. From the early 1900s through February 1963, when the relevant tideland areas were transferred from the City of San Diego to the Port District, the City was the trustee of and leased to various operators, all relevant portions of the Shipyard Sediment Site. The wastes the City of San Diego caused or permitted to be discharged, or to be deposited where they were discharged into San Diego Bay through its ownership of the Shipyard Sediment Site contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH.

The City of San Diego also owns and operates a municipal separate storm sewer system (MS4) through which it discharges waste commonly found in urban runoff to San Diego Bay subject to the terms and conditions of a National Pollutant Discharge Elimination System (NPDES) Storm Water Permit. The San Diego Water Board alleges, but the City of San Diego denies, that the City of San Diego has discharged urban storm water containing waste directly to San Diego Bay at the Shipyard Sediment Site. The waste includes metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), total suspended solids, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes.

The San Diego Water Board alleges, but the City of San Diego denies that the City of San Diego has also discharged urban storm water containing waste through its MS4 to Chollas Creek resulting in the exceedances of chronic and acute California Toxics Rule copper, lead, and zinc criteria for the protection of aquatic life. Studies indicate that during storm events, storm water plumes toxic to marine life emanate from Chollas Creek up to 1.2 kilometers into San Diego Bay, and contribute to pollutant levels at the Shipyard Sediment Site. The urban storm water containing waste that has discharged from the on-site and off-site MS4 has contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay. Based on these considerations the City of San Diego is referred to as “Discharger(s)” in this CAO.

RESPONSE 4.1

DTR Sections: 4.7.1.3, 12, 30, 32, 33
Comments Submitted By: NASSCO, Port District, City of San Diego
Comment IDs: 32, 187, 284, 394, 475, 476
Comment

NASSCO expressed concern that, contrary to the conclusion in Finding 30 of the TCAO, it is neither technically feasible, nor prudent, to carry out the proposed cleanup while uncontrolled sources of pollution continue to impact the Site. Chollas Creek has been recognized as contributing to the accumulation of pollutants observed in marine sediments at the Site, and sources of pollution from Chollas Creek are not fully controlled. If source control of Chollas Creek is not achieved before the cleanup is conducted, pollutants from Chollas Creek "could influence contaminant levels in sediment" and possibly cause the Site to become recontaminated. Barker Depo, 172:4 – 174:11.

Chollas Creek is immediately adjacent to the NASSCO shipyard and discharges contaminated storm water at extraordinarily high volumes during rain events, along with dry weather run-off. The plume of contaminated water from Chollas Creek during rain events has been shown to extend more than a kilometer from the discharge point including the area within NASSCO's leasehold, and contributes an array of pollutants to the Site.

In rebuttal, the City of San Diego reiterated its comments that Chollas Creek is not a significant source of Shipyard Sediment Site COCs. See Response 4.2 below for responses to the City's comments on Chollas Creek contributions.

NASSCO commented that the storm water contains PCBs, pyrogenic hydrocarbons, oil and grease, synthetic organics, and heavy metals, among other pollutants, with estimated average annual pollutant loads of 429 kg copper, 301 kg lead, 2906 kg zinc, 2.7 kg PAH, 20g chlordane, 0.4g PCBs, 850 g arsenic, and 80g mercury.

In rebuttal the City of San Diego commented that PCBs have never been detected in Chollas Creek water and that PCBs found in the Chollas Creek mouth or Shipyard sediments are likely from sources other than Chollas Creek.

NASSCO commented that stations NA20 and NA22 – which are not associated with shipyard-related chemicals, but are within the area of apparent sediment deposition from the Chollas Creek stormwater plume – are the only stations in the NASSCO leasehold with apparent benthic effects under the DTR analysis.

In rebutall, the City of San Diego commented that stations NA20 and NA22 are located next to the piers where full thrust engine testing takes place, resulting in significant physical disturbance to the underlying sediments. U.S. Navy collected bathymetry data shows sediment elevation contours in this area suggesting of significant "blow-out" of sediments, likely from propeller activity during engine testing. The physical disturbance may be the factor affecting the benthic community. In fact, levels of chemicals of concern throughout the shipyard sediment site do not correlate with observed benthic community effects. However, at the only locations where significant physical disturbances take place routinely, benthic community effects are observed.

NASSCO commented that Chollas Creek has also been identified as a significant, if not exclusive, source of pesticides in the sediment at the leaseholds. (Exponent Report, at Section 19-1, Figures 4-18, 4-20). NASSCO commented that correlations are observed between pesticide concentrations and sediment toxicity and that there is clear evidence that pesticides – which are not shipyard-associated chemicals – may be responsible for adverse biological effects observed at the shipyards, particularly adverse effects to bivalves. Storm water containing similar pollutants also drains into the leaseholds both directly and indirectly, from a number of sources, including adjacent city streets, and large city storm drains. These discharges are associated with observed effects at the Site, and active remediation is therefore inappropriate unless and until these discharges are completely controlled.

In rebuttal, the City of San Diego commented that NASSCO's argument above is based on only four sample results which do not provide sufficient statistical power to conclude that there is or is not a correlation.

NASSCO further commented that the TCAO has proposed extensive dredging to unprecedented cleanup levels, at a cost of millions of dollars, despite the fact that ongoing uncontrolled discharges from Chollas Creek are impacting the Site, and are not expected to be controlled for at least 20 years. It is axiomatic that source control must be achieved prior to active remediation and common sense dictates that is a waste of resources to spend millions to remediate a site that is at risk of recontamination. It is also not technologically feasible to require compliance with the exceptionally stringent cleanup levels proposed in the TCAO while the Site continues to be impacted by uncontrolled discharges from Chollas Creek. Accordingly, Chollas Creek and other sources unrelated to NASSCO must be controlled before the cleanup goals in the TCAO can be achieved through active remediation. Ideally, source control should be achieved prior to active remediation because “the long-term effectiveness of any remedial option can be reduced if sediment transport acts to recontaminate the site.

In rebuttal the City of San Diego commented that it is committed to complying with the Chollas Creek metals TMDL. While actions are not required prior to 2018, 80% reduction is required by 2018. The City has analyzed and evaluated different means of achieving compliance and is currently developing a plan that the City believes should achieve compliance. There are numerous technologies more (and not more costly) than sand filters at removing metals, including dissolve fractions, that are being considered for implementation throughout the Chollas Creek watershed.

The Port District commented that the discharges from Chollas Creek do not significantly affect inner Shipyard sediments. Predictions of mass discharges from Chollas Creek of copper, zinc, and lead as the TMDL is being implemented suggest that there will be no measureable increase in sediment concentrations of these constituents after remediation of Shipyards is complete. Accordingly, there should be no concerns that remediation goals cannot be met because of any concerns regarding recontamination from Chollas Creek.

The Port District commented that PCBs have never been detected in Chollas Creek water. In fact, the RWQCB discontinued the requirement for PCB monitoring in Chollas Creek because PCBs had never been detected. PCBs found in Chollas Creek mouth or Shipyard sediments are likely from sources other than Chollas Creek.

Additionally, the Port's experts agree that the remedial footprint can go forward without delay. While some parties may claim that the remediation cannot go forward unless the Chollas Creek outfall area is included within the remedial footprint or otherwise addressed because of recontamination concerns, the Port's designated fate and transport expert (Dr. Poon) has concluded that any interim resedimentation from Chollas Creek discharges will be insignificant, and will not adversely impact the remediation efforts at the Shipyards. As such, the Port supports the exclusion of the mouth of Chollas Creek from the remedial footprint as well as the decision to move forward expeditiously with the remediation.

In rebuttal, NASSCO asserts that the Port's expert's conclusions should be given no weight because Dr. Poon's model, and the important data he used in the model are not available, thus his conclusions cannot be verified. Further, NASSCO asserts that Dr. Poon ignored sediment sampling results that show that silt and clay-sized particles do settle out at the mouth of Chollas Creek and are not dispersed throughout San Diego Bay with minimal deposition in the Shipyard Sediment Site. NASSCO reiterated its position that it is a basic concept of site cleanup that implementing measures to control the source of contaminants and to verify that control has been accomplished should proceed actual remediation. Accordingly, even if Dr. Poon's Declaration is accepted into the record and his testimony considered by the San Diego Water Board, his assertion that remediation can proceed prior to controlling storm water contaminant discharge to the Site contradicts basic tenets of site cleanup procedure.

Response 4.1

The Cleanup Team carefully considered source control in the development of the TCAO both in terms of eliminating continuing sources of sediment contamination to the Shipyard Sediment Site and to avoid recontamination of remediated sediments. The term "source control" in the context of contaminated sediment remediation refers to measures undertaken to identify and curtail continuing sources of contamination to ensure the permanence of contaminated sediment remedial actions and that remedial measures will not have to be repeated at a later date. Lack of source control might make sediment remediation efforts to reduce site-specific risks unsuccessful. In other cases, a continuing source, if not too significant, might simply limit the reduction that is achievable in contaminant levels.

Much of the contaminated sediment problems in San Diego Bay, including the Shipyard Sediment Site, are a legacy of the inadequate control of industrial and municipal discharges in both the years prior to the passage of the 1972 Clean Water Act and in subsequent years until effective control of the discharges was obtained. A major effort was launched to upgrade the NPDES requirements issued under the Clean Water Act for San Diego Bay discharges during the five year permit reissuance cycles beginning in the early 1990's and in subsequent cycles to eliminate or reduce pollutant mass emissions. Because of this continuing source control effort and the historic nature of the sediment contamination problem, the San Diego Bay sediments now largely serve as a contributor of contaminants to overlying water rather than as a sink for external sources. It is important to note that several major contaminated sediment sites were successfully cleaned up in San Diego Bay pursuant to San Diego Water Board CAOs during this period while source control efforts were underway.

Due to the stringent controls in NPDES permits and other regulatory measures, the volume of pollutants currently discharged from land based sources to the Shipyard Sediment Site is much less than in past decades. This is not to say that all land based sources of contaminants to the Shipyard Sediment Site are fully controlled, such as the MS4 discharges to Chollas Creek, and that further regulatory efforts to control them are not needed. Remediation efforts at the Shipyard Sediment Site, however, can proceed while regulatory steps are taken to improve source control as was successfully done in past years at other San Diego Bay contaminated sediment cleanup sites.

Ideally, abating all sources of pollution before conducting a cleanup is the preferred approach. In this case, any further delays in cleaning up the Shipyard Sediment Site are not recommended in light of the time taken to get the project to the point of adopting a CAO, the relative risk of recontamination from Chollas Creek sources, and the early detection of increasing COC concentrations trends that post remediation monitoring will provide. Furthermore, removing the contaminant mass from the Shipyards Sediment Site is one of the many incremental steps needed to restore the "fishable" beneficial uses of San Diego Bay as a whole and should not be delayed. The risk that sediment quality-related beneficial uses at the Shipyard Sediment Site will become impaired again by recontamination from Chollas Creek is low because the time period between completing the two cleanups will be short (five to six years). In consideration of all of these factors, the public interest is best served by moving forward with this cleanup, even if it will be slightly ahead of some of the Chollas Creek cleanup and abatement activities.

Chollas Creek and other offsite discharges are, or will be, controlled by increasingly stringent requirements through the various regulatory approaches discussed below. The TCAO require the City and the Port to investigate and mitigate pollutants and pollutant sources in the watershed that drains to the MS4 outfall at the Shipyard Sediment Site (TCAO Directives 3, 4, and 5). As described in DTR Section 33.4, the upland source control will include investigation of the storm drain system and surrounding environs to identify sources of pollutants, clean out of residual sediments in the storm drain, and structural treatment control Best Management Practices (BMPs), where feasible, in the storm drain system to mitigate entry of pollutants into the storm drain to the maximum extent practicable.

The discharges from Chollas Creek are regulated by a number of different NPDES permits including the San Diego County MS4 permit, the CalTrans MS4 permit, the Industrial and Construction Storm Water Permits, and the Naval Base San Diego individual permit to name a few. These permits have become more stringent with each reissuence, and are the regulatory tools through which the various Chollas Creek TMDLs are being, or will be implemented. The Chollas Creek Diazinon TMDL waste load allocations are being implemented through water quality based effluent limitations in the San Diego County MS4 permit. Due to the federal ban on diazinon, Chollas Creek water quality currently meets diazinon Water Quality Objectives (WQOs).

The Chollas Creek watershed dischargers will be working to reduce waste loads from the creek to San Diego Bay during and after the cleanup of the Shipyard Sediment Site. Although sources of waste constituents from Chollas Creek may not be 100 percent controlled at the completion of the Shipyard Sediment Site cleanup, implementation of the TMDLs should ensure that Chollas Creek will not recontaminate the Shipyard Sediment Site to the degree that the restored sediment quality becomes so degraded that beneficial uses are impaired again.

Post remediation monitoring of the Shipyard Sediment Site should be capable of revealing if COC concentration trends are increasing. If any increasing trends are discovered, and Chollas Creek is indicated as the source, the San Diego Water Board can require accelerated cleanup and abatement of the source before sediment quality at the Shipyards Sediment Site results in impaired beneficial uses.

RESPONSE 4.2

DTR Section: 4.7.1
Comments Submitted By: City of San Diego, NASSCO, Port District
Comment IDs: 11, 14, 16, 17, 18, 19, 376, 377, 378, 379, 380
Comment

ID 11
The City commented that the studies cited in the DTR do not support the DTR's conclusions regarding Chollas Creek's influence on chemicals of concern in shipyard sediments. The studies cited by the DTR in Section 4.3.1, page 4-3, provide insufficient support for the allegations in the DTR because they lack information that would allow a detailed peer review, thus preventing reproduction of the results, verification of all data and methods, and testing of hypotheses.

The data are not included in the reports, which prevents an independent scientific review of the information. The lack of data availability and independent review of such information, and its use in the DTR to assign responsibility to parties is particularly problematic since two of the three documents are authored by employees or contractors of the U.S. Navy, and one of the documents cited is published by the U.S. Navy, a party named as responsible for discharges to the Site.

ID 376
NASSCO rebutted the City's comment stating that the City has claimed no attempt to contact the authors of the studies to obtain the data they needed, despite the fact that the April 2008 DTR (p. 4-3) cited the same studies. The City also speculates, without basis, that the Katz, 2003 study, which was prepared by a Navy entity, could be biased because the Navy is a party. This type of speculation ignores that it is extremely common for potentially liable parties to prepare scientific and engineering studies for use by regulatory agencies in making determinations about remediation, and if given credence, would call into question virtually the entire body of environmental science. Furthermore, the City’s comments implicitly recognize that those three studies cited support the conclusion that Chollas Creek impacts the NASSCO site.

ID 14
The City commented that evidence does not support surface water toxicity from Chollas Creek being transported to depth at the Shipyard Sediment Site. Specifically, Purple Sea Urchin fertilization in waters associated with the bottom sediments of the Site was over 87 percent in all samples (See Table 18-8, page 18-16 in DTR Volume 2). This is a level significantly above that seen in Schiff (2003), and comparable to the reference samples. This contradicts the DTR's assertions that Chollas Creek is contributing toxic levels of any substance to the Site. Further, toxicity tests including the urchin fertilization test have been conducted on the Site's sediments and there was no correlation between the chemical concentrations of copper, zinc, or lead, which are the primary constituents found in Chollas Creek waters, and the toxic effects measured.

ID 377
NASSCO rebutted this comment by noting that Schiff, 2003 described storm water plumes "formed relatively thin lenses 1 to 3 m, floating on top of the more dense bay water." However, the City's logical jump from this observation to a conclusion that Schiff, 2003 cannot stand as evidence that COCs are transported to the sediment of the Site has no merit because how the thick the storm water plume was does not say anything about whether contaminated sediment in the plume settled out of the plume and down into the Site sediments.

ID 19
The City of San Diego challenged the conclusion in Schiff 2003 that in-channel and plume toxicity was primarily due to trace metals including zinc and copper. The City of San Diego also challenged Schiff's conclusions based on study methods and various data quality issues.

ID 16
The City commented that Schiff 2003 overstates the toxicity in the Chollas Creek freshwater plume because the plume map likely was based on geospatial extrapolations that don't account for advection, dispersion, or transformations.

ID 378
NASSCO rebutted this comment noting that the City of San Diego speculated that Schiff 2003 used a geospatial technique such as Kriging, but the City's speculative comments do not constitute substantial evidence.

ID 17
The City of San Diego commented that the hydrodynamic model reported in Chadwick et al. 1999 lacks important information influencing the fate and transport and therefore may be overstating impacts from Chollas Creek. The City states that the model does not appear to take into account physical obstructions to flow such as ships docked at piers at the mouth of Chollas Creek which typically touch bottom. Also, the half sine wave function of the tidal model does not match the creek discharges, hydrology, or storm functions of the region. The City states that it is not reasonable to conclude that Chollas Creek has introduced toxicity and pollutants to the Shipyard Sediment Site which is largely along the shoreline where physical obstructions occur.

ID 379
NASSCO rebutted this comment stating that even if this is true (the City provides no evidence for the point that storm events commonly last longer than one-half tidal cycles), the City provides no more sophisticated model itself, and has not shown that any potential inaccuracies would critically impair the Regional Board's reliance on Chadwick 1999.

ID 18
The City of San Diego commented that measured Chollas Creek discharge data, as referenced in Katz et al., 2003, are insufficient for drawing conclusions that Chollas discharges have significantly impacted Shipyard Sediments. According to the DTR's description of the Katz et al. (2003) study (DTR Section 4.7.1.3, page 4-15), the data in Katz (2003) included only one precipitation event over three days and data was generated using different collection methods for different areas. (Because the Katz (2003) study cannot be located, the City relies on the DTR's

description of its contents). The data were extrapolated to derive conclusions as to the proportion of total impacts caused by Chollas Creek stormwater discharge versus stormwater water discharge from NAVSTA. Upstream Chollas Creek stormwater samples were collected by the City of San Diego's contractor from two different tributaries on a flow-weighted basis and then composited into one sample. Stormwater samples from NAVSTA outfalls adjacent to the channel were collected on a time-proportional basis and composited into one sample. Flow weighted sampling provides a sample whose concentration represents the event mean concentration. Time proportional sampling does not, unless the flow rate is constant over the period of sampling. Storm flows are not constant. Therefore, the two sampling methodologies are not comparable and conclusions as to the difference (or lack thereof) in concentrations or mass loadings should not be made using this data.

ID 380
NASSCO rebutted this comment stating that it is important to note that the City's criticism does not affect one's ability to draw conclusions regarding the impact of Chollas Creek discharges on shipyard sediments. The poster prepared by Katz et al., 2003 also presents data in Figure 5 that characterize the plume emanating from Chollas Creek toward the Shipyard Site. It is this plume that potentially affects shipyard sediments. The City does not comment on this aspect of the Katz, 2003 poster. Accordingly, the City's comment has no merit with respect to conclusions of impact of Chollas Creek on the Shipyard Site. Attachment A, Exponent Critique, at 9.

Response 4.2

The City of San Diego's comments above deal with the significance of Chollas Creek discharges to sediment contamination at the Shipyard Sediment Site. The TCAO and DTR, however, do not make findings pertaining to the significance of the discharges. Further, the City's comments do not negate the fact that Chollas Creek is a source for the contaminants found at the Shipyard Sediment Site, and that pathways exist to transport sediment from the mouth of Chollas Creek area to the site. Detailed responses to the comments and rebuttal follow.

ID 11 and 376
The City commented that the scientific reports (journal articles, papers, reports, etc…) are insufficient and do not follow the scientific method because they do not allow for a detailed peer review that includes reproduction of the results, verification of all data and methods, and testing of hypotheses. What the comment fails to recognize is the basic goals reflected in the common research report format as related to the scientific method. The comment's requirement for journal articles to describe every action of the researcher and display all data collected and laboratory reports accumulated during a study is erroneous. Scientific reports reduce data to a manageable size for presentation (e.g. means, tables, etc…) and provide methods to a level of detail that enable colleagues to repeat the experiment, observation or study. Thus, the scientific method's incorporation into reports allows for experiments to be repeatable such that another scientist can understand the methodology and results to repeat the study and further test the hypothesis(es). Further, publications in peer-reviewed scientific journals serve to aid in maintaing the clarity of methodologies and reported results. The comment does not appear to be concerned with peer review for journal publication, or the scientific method and further hypothesis testing, but rather in conducting a "detailed peer review" that is simply an auditing of report data.

Regarding the Schiff et al. 2003 report (SAR286566), and its supporting data, as stated by NASSCO, any questions on the report could have been directed to Mr. Schiff. The Southern California Coastal Water Research Project (SCCWRP) is a recognized leader in sediment and water quality investigations, and the Cleanup Team is satisfied that the authors of Schiff et al. 2003 used appropriate data and methods. All geospatial techniques, such as kriging, have limitations. The Cleanup Team is satisfied that the authors of Schiff et al. 2003 understood the limitations of the methods they used, and did not report conclusions that couldn't be supported by the data and analytical techniques used.

The Katz et al. (2003) poster is in the Administrative Record and can be found at SAR375698. While the poster presentation may not be peer-reviewed in a scientific journal proccess, the information presented does prescribe to the principles of the scientific method and provides additional information regarding storm water related to the TCAO Finding.

The Cleanup Team agrees with NASSCO's comment that the reports authored by U.S. Navy employees and/or contractors are not implicitly biased for the U.S. Navy.

IDs 14, 16, 19
In Section 4, the DTR cites the conclusions of Schiff et al. (2003) to show a linkage between Chollas Creek in-channel toxicity and potential impairments in the receiving water of San Diego Bay. This study was cited, along with Katz et al. (2003; SAR375698), and Chadwick et al. (1999; SAR2811495), to show that Chollas Creek is a source for the COCs found at the Shipyard Sediment Site. The DTR does not draw the conclusion that the toxic Chollas Creek stormwater plume itself creates toxic conditions in sediments at the Shipyard Sediment Site, nor does it link the likely cause of toxicity in the stormwater plume to the cause of toxicity in the Shipyard sediments. In fact, no stressor identification studies were conducted at the Shipyard Sediment Site. The issue, as pointed out in NASSCO's rebuttal, is that the Chollas Creek stormwater plume is a pathway for the transport of contaminated sediment to the Shipyard Sediment Site. The accuracy of the measurement of the toxicity of the plume is not critical to the DTR's findings.

A recent study by the City showed that throughout the Chollas Creek watershed, toxic sediment was found within the MS4. A reasonable assumption is that this toxic sediment is discharged to San Diego Bay during storm events. The Chollas Creek and Paleta Creek Storm Drain Characterization Study (City of San Diego, 2010) concluded that the primary causes of sediment toxicity during dry weather events were 1) synthetic pyrethroids, 2) zinc for the North Chollas sites, and 3) the trace metals copper, lead, nickel, and zinc; PCB Aroclor 1254; PAHs; and chlordane. No wet weather sediment toxicity tests were performed.

ID 17 and 379
The City commented that Chadwick et al. (1999), did not take into account obstructions to flow that would limit the deposition of contaminated sediment from Chollas Creek stormwater plumes in the Shipyard Sediment Site. All hydrodynamic models have limitations. The potential limitations to the Chadwick et al. (1999) study, however, do not negate the DTR's finding that Chollas Creek stormwater plumes transport contaminated sediments to the Shipyard Sediment

Site. Whether or not Chadwick et al. (1999) overstates the contribution goes to allocation of responsibility and does not exculpate the City.

ID 18
The City criticized the Katz et al. (2003) study for using different storm water sample collection methods and stated that the measured Chollas Creek discharge data was insufficient for drawing conclusions that Chollas Creek discharges have significantly impacted the Shipyard sediments. The DTR does not make findings on the level of significance of Chollas Creek stormwater discharges as a source of contaminated sediment to the Shipyard Sediment Site. The DTR notes only the following conclusions from Katz et al. (2003):

1. During a single storm event in 2001, the sediment plume containing pollutants from Chollas Creek was measured to cover an area up to 1.2 km away from the mouth of Chollas Creek.

2. Storm water plumes developed off Chollas Creek quickly after the start of rainfall and were dispersed through tidal mixing 12 hours after runoff ceased.

3. Contaminants were primarily associated with particles and their strong association with Total Suspended Solids (TSS) provides a good first order approximation for their distribution.

4. Storm water is a continuing source of excessive levels of lead, zinc, chlordane, Dichlorodiphenyltrichloroethane (DDT), and PCBs, and possibly for TPAH and mercury to sediment at the mouth of Chollas Creek.

RESPONSE 4.3

DTR Sections: 4.6, 4.7.2, 4.7.3
Comment Submitted By: City of San Diego, NASSCO, BAE Systems
Comment IDs: 23, 25, 381, 382, 471
Comment

ID 23, 25
The City of San Diego commented that the DTR's conclusions that discharges from storm drain outfalls SW4 and SW9 have contributed to elevated levels of constituents of concern observed in shipyard sediments are not supported by adequate data. The City commented that Sections 4.6, 4.7.2, and 4.7.3 of the DTR set forth certain conclusions regarding the contents of storm water released through SW4 and SW9. None of these conclusions is based on reliable data.

No storm water samples have ever been collected from SW4. The watershed drained by SW4 differs in size and land use from the watershed drained by Chollas Creek. There are no data that would show that Chollas Creek storm water is chemically similar to SW4 storm water. Therefore, it is inappropriate to conclude that SW4 carried the same pollutants to the Shipyard that the Chollas Creek carries to its mouth.

With respect to the catch basin sampling event, following the sampling event in 2005, the catch basin was cleaned out by SDG&E per the requirements in the Notice of Violation issued by the City of San Diego to SDG&E (Zirkle, 2005; TN& Associates, 2006). There are no data showing that SW4 currently has any PCBs in it or that it is currently contributing to pollution of sediments at the Shipyards site.

The presence of chemicals of concern at sediment sampling stations SW20 through SW25 where ship building, ship repair, ship mooring, and ship moving operations took place does not indicate that the chemicals of concern came from SW4 in sufficient quantity to cause the observed concentrations or effects in those sediments. In fact, ship building, ship repair, ship mooring, and ship moving operations have been documented to have historically produced and discharged significant quantities of wastes containing the chemicals of concern found at the Shipyard site (RWQCB, 1972, 1994; USEPA, 1974; Pacific Northwest Pollution Prevention Resource Center, 1997; Schafran et ai, 1998; Anchor Environmental, 2005; United States Department of Navy (USDN), 2006), Science Applications International Corporation (SAIC), 2007)

Historically, prior to the year 2000 timeframe, SW4 drained the BAE leasehold. Based on the types and quantities of wastes produced in ship building and repair operations, runoff from the BAE leasehold is likely to have contained significant quantities of chemicals of concern found in Shipyards sediments.

First, no samples of storm water have ever been collected from the SW9 storm drain. Second, Section 4.7.3 of the DTR is basing its conclusions entirely on the results of a single sediment sample collected from the Bay at NA-22. Given NA-22's proximity to large ship repair, moorage, and other industrial waterfront operations, the DTR's claims that concentrations of chemicals found at NA-22 can be attributed to SW9 because urban runoff "typically" contains pollutants is inappropriate (RWQCB, 1972, 1994; USEPA, 1974; Pacific Northwest Pollution Prevention Resource Center, 1997; Schafran et ai, 1998; Anchor Environmental, 2005; United States Department of Navy (USDN), 2006), Science Applications International Corporation (SAIC), 2007). The toxins in the sediment data are attributable to nearby industrial activity, and there is no basis set forth in the DTR for attributing the pollutant levels to discharges from SW9. Third, SW9 discharges into the mouth of Chollas Creek. Water leaving SW9 will be subject to the same hydrodynamic forces as water leaving Chollas Creek during a storm event. As noted above (see Comment 1.1), the studies conducted to date do not show that suspended solids from this discharge cause toxicity in shipyard sediments.

Fourth, historically, prior to the year 2000 timeframe, SW9 drained the NASSCO leasehold, which, based on the types and quantities of wastes produced in ship building and repair operations, is likely to have contained significant quantities of chemicals of concern found in Shipyards sediments.

IDs 381, 382
In rebuttal, NASSCO provided the following comments. The City of San Diego contends that the DTR lacks "reliable data" to assert that the City is discharging COCs through storm water outfalls SW4 and SW9. The City bases this claim on the fact that there is no monitoring data available from either SW4 or SW9 to indicate specific quantities of COCs in the runoff.

As noted in the DTR, urban runoff itself is classified as a "waste" under the California Water Code § 13050(d). DTR at 11-8; see also Cal. Water Code §§ 13392 (State and Regional Boards to coordinate with Departments of Public Health and Fish & Game to develop "new programs to reduce urban and agricultural runoff"); 13396.7(a) (commissioning a study to determine adverse health effects of urban runoff on swimmers at urban beaches). In fact, the DTR includes substantial evidence that urban runoff in San Diego contains COCs at the Site, including "total suspended solids (TSS), sediment (due to anthropogenic activities), pathogens (e.g., bacteria, viruses, protozoa), heavy metals (e.g., copper, lead, zinc, and cadmium), petroleum products and polynuclear aromatic hydrocarbons (PAHs and HPAHs), synthetic organics (e.g., pesticides, herbicides, and PCBs), nutrients (e.g., nitrogen and phosphorus fertilizers), oxygen-demanding substances (decaying vegetation, animal waste), and trash." DTR at 11-8; see also 4-10 (San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Final Report submitted by the City indicating that "elevated levels of zinc, copper, and lead are present in the urban runoff outflow discharged from Chollas Creek into San Diego Bay").

Furthermore, the DTR demonstrates that samples taken in the SW4 catch basin, and laterals entering the catch basin, "indicate the presence of both PCBs and PAHs entering and exiting the municipal storm drain system catch basin . . . ." DTR at 4-16. Far from suffering from a lack of evidence, the DTR has presented substantial evidence that San Diego urban runoff contains relevant COCs, but simply did not take the extra step to quantify the amount of COCs that actually are present in storm water flows as they exit the SW4 and SW9 outfalls.

Notably, the City's comments do not allege that storm water discharges from SW4 and SW9 do not contain relevant COCs, and the City presents no affirmative evidence to show that they do not. Instead, the City attempts to skirt the issue by simply claiming that the DTR does not provide sufficient support.

Finally, as also noted in the DTR, "[i]n the absence of such direct evidence, the San Diego Water Board may consider relevant direct or circumstantial evidence in determining whether a person shall be required to clean up waste and abate the effects of a discharge or a threat of a discharge under CWC section 13304." DTR at 10-13, citing State Resolution 92-49, § I.A (directing the Regional Boards to use "any relevant evidence, whether direct or circumstantial", when determining whether a party should be required to investigate or cleanup a discharge of waste). Accordingly, even if storm water sampling data from SW4 and SW9 is unavailable, it is proper for the Regional Board to consider and rely on other direct and circumstantial evidence that leads to the conclusion that the City's storm water discharges have contaminated the NASSCO shipyard.

ID 417
In rebuttal to the City's comments, BAE Systems commented that substantial and reasonable evidence supports the DTR's assertion that the City's SW4 outfall has contributed to elevated levels of pollution at the BAE leasehold.

A. 2009 SW4 Sampling Data Detects PCBs, Copper, TBT and Mercury

On December 7, 2009, water quality data from SW4 were collected from a manhole on the BAE leasehold. (Calscience Environmental Laboratories, 2009). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site.

Laboratory analyses included a congener-level analysis of PCBs. Multiple congeners were detected, and the highest concentrations were of penta- and hexa-chlorinated biphenyls, similar to the profile of Aroclor 1254. (Id.) Copper, mercury, and TBT were also measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of 2009 there was an ongoing source of PCBs, copper, mercury and TBT from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2009 have dissipated, nor have upland source control measures been established, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain ongoing sources of these COCs to the Site.

B. 2005 SW4 Sampling Data from City Investigation Detects PCBs and PAHs

Further evidence of discharges from the City's storm drain SW4 into the Shipyard sediment site is provided by the results of a sampling investigation conducted by the City itself. As described in the DTR (section 4.7.2), on October 3, 2005, the City conducted an investigation and observed evidence of an illegal discharge into the SW4 catch basin on the north side of Sampson Street between Belt Street and Harbor Drive, approximately 10 feet east of the railroad line that runs parallel with Belt Street. Specifically, the catch basin is located immediately to the east of the BAE Systems' parking lot and the SDG&E Silver Gate Power Plant, which is adjacent to the parking lot. During the City's investigation, three sediment samples were collected and analyzed for PCBs and PAHs. The first sample was collected from inside and at the base of a six-inch lateral entering the catch basin from the east. The second sample was collected from inside and at the base of the 12-inch lateral entering the catch basin from the north. The third sample was collected from the 18-inch pipe exiting the catch basin. The results of these three samples, presented in DTR Table 4-4, indicate the presence of PCBs and PAHs entering and exiting the municipal storm drain system catch basin. The results of this sampling show significant concentrations of Aroclor 1254 and 1260. (DTR Table 4-4.)

The City's Comment 3.0 does not dispute any of the foregoing facts or findings. Instead, the City refers to alleged facts regarding SDG&E cleaning out the catch basin following the investigation. Those alleged facts are irrelevant under Water Code section 13304 for the reasons stated in Section I infra.

C. 2001 SW4 Sampling Data Detects TBT, Copper and Mercury

On November 29, 2001, water quality data from SW4 were collected from a manhole on the BAE leasehold. (AMEC, 2001). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. TBT, copper, and mercury were all measured and detected in the urban storm water conveyed by SW4. (Id.) These data indicate that as of late 2001 there was an ongoing source of TBT, copper, and mercury from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2001 have dissipated, nor have upland source control measures been established, and moreover the 2009 SW4 data again detects these same COCs in addition to PCBs, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain ongoing sources of these COCs to the Site.

D. Historical Discharges by the City through SW4 have Significantly Contributed to Contamination at the Site.

In 1974 the SCCWRP published the results of an EPA-funded study entitled "Marine Inputs from Polychlorinated Biphenyls and Copper from Vessel Antifouling Paints." (Young et al., 1974.) The project surveyed the usage of PCB-containing hull paint on recreational, commercial, and Navy vessels in San Diego Bay and other southern California bays, and as collected data on PCB releases in municipal wastewater and storm runoff. (Id.)

Contrasting the PCB mass release rates for different sources (Table 12 in Young et al. 1974) shows that municipal wastewater was a major source of Aroclor 1254 to San Diego Bay, contributing more than 99.9 percent of total PCBs. Thus, as of 1974, municipal wastewater carried by the City's MS4 system and discharged via SW4 was a major source of PCB contamination at the BAE Leasehold. (Id.) The City identifies no study or data indicating that the sources of PCBs to the San Diego Bay was by any means other than those identified by Young, et al. Absent findings to the contrary, it is reasonable to conclude that the City was a major contributor of PCBs to the San Diego Bay for decades.

E. EPA Guidance Confirms that Waste Water Discharged by the City through SW4 has Significantly Contributed to Contamination at the Site

Relevant EPA guidance supports the DTR's findings with respect to waste in urban storm water discharged through the City's SW4 outfall at the BAE Leasehold. In 1983 the EPA published "Results of the Nationwide Urban Runoff Program." The Executive Summary states that among the many objectives of the National Urban Runoff Program ("NURP") was to develop analytical methodologies to examine "the quality characteristics of urban runoff, and similarities or differences at different urban locations" and "the extent to which urban runoff is a significant contributor to water quality problems across the nation." (EPA, Results of the Nationwide Urban Runoff Program, Executive Summary at p. 1.) "The NURP studies have greatly increased our knowledge of the characteristics of urban runoff, its effects upon designated uses, and of the performance efficiencies of selected control measures." (Id. at p. 2.) The NURP Final Report reached several relevant conclusions, including:

- "Heavy metals (especially copper, lead and zinc) are by far the most prevalent priority pollutant constituents found in urban runoff. End-of-pipe concentrations exceed EPA ambient water quality criteria and drinking water standards in many instances. Some of the metals are present often enough and in high enough concentrations to be potential threats to beneficial uses." (Id. at p. 5.)

- "Total suspended solids concentrations in urban runoff are fairly high in comparison with treatment plant discharges. Urban runoff control is strongly indicated where water quality problems associated with TSS, including build-up of contaminated sediments, exist." "[T]he problem of contaminated sediment build-up due to urban runoff…undeniable exists." (Id. at p. 6.)

- "A summary characterization of urban runoff has been developed and is believed to be appropriate for use in estimating urban runoff pollutant discharges from sites where monitoring data are scant or lacking, at least for planning level purposes." (Id. at p. 7.)

  With respect to this last conclusion regarding the development of a summary characterization, the NURP Report states that "[a]lthough there tend to be exceptions to any generalization, the suggested summary urban runoff characteristics given in Table 6-17 of the report are recommended for planning level purposes as the best estimates, lacking local information to the contrary." (Id. at p. 7.) "[I]n the absence of better information the data given in Table 6-17 are recommended for planning level purposes as the best description of the characteristics of urban runoff." (EPA, Results of the Nationwide Urban Runoff Program, Volume I – Final Report, at p. 6-43.) Those characteristics of urban runoff include the presence of significant levels of pollutants including total suspended solids, heavy metals, inorganics, and pesticides. (Id., at Tables 6-17 through 6-21.) The NURP data supports and confirms the DTR's assertion that:
  "The City of San Diego has caused or permitted the discharge of urban storm water pollutants directly to San Diego Bay at the Shipyard Sediment Site. The pollutants include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), TSS, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes." (DTR, § 4.4.)

The NURP data also supports and confirms the DTR's assertion that "it is highly probable that historical and current discharges from [SW4] outfall have discharged heavy metals and organics to San Diego Bay at the Shipyard Sediment Site." (DTR § 4.7.2.)

Response 4.3

The City of San Diego argues that the DTR lacks "reliable data" to assert that the City storm water outfall SW4 and SW9 discharges contributed to elevated levels of COCs observed in shipyard sediments. The City based it's claim in part on the fact that there is no *in situ* monitoring data available for the SW4 or SW9 dischagres to fully characterize and document specific quantities of COCs in the discharges. The City's comments do not allege that storm water discharges from SW4 or SW9 do not contain relevant COCs, and the City presents no affirmative evidence to show that they do not. The Cleanup Team agrees with the rebuttals on this issue submitted by both NASSCO and BAE Systems.

As noted in DTR Section 1 at page 1-5 in the absence of direct evidence, Resolution No. 92-49 provides that the Regional Water Boards shall consider any relevant direct or circumstantial evidence in determining whether a person shall be required to clean up waste and abate the effects of a discharge or a threat of a discharge under Water Code section 13304. Accordingly, even if storm water sampling data from SW4 and SW9 is unavailable, it is proper for the San Diego Water Board to consider and rely solely on other relevant direct and circumstantial evidence to support the conclusion that the City's SW4 and SW9 storm water discharges has contributed to elevated levels of COCs at the Shipyard Sediment Site. The DTR presents substantial evidence consistent with the requirements of Resolution No. 92-49 to support the conclusion that the City's SW4 and SW9 discharges contained relevant COCs and contributed to elevated COC levels in Shipyard sediments.

The DTR provides at page 4-5 that urban runoff contains "*waste*" within the meaning of Water Code section 13050(d). The DTR subsequently notes that the discharge of urban runoff from an municipal separate storm sewer system (MS4) is also a "*discharge of a pollutan from a point source*" within the meaning of the CWA as defined in 40 Code of Federal Regulations (CFR) 122.2. DTR Section 4, page 4-3 notes that SW4 and SW9 are components of the City's MS4 conveyance system that convey urban runoff from upgradient source areas and discharge directly into the Shipyard Sediment Site within the BAE Systems leasehold via SW4 and the NASSCO leasehold via SW9 .

The DTR notes at page 4-5 that urban runoff typically contains …. " total suspended solids (TSS), sediment (due to anthropogenic activities), pathogens (e.g., bacteria, viruses, protozoa), heavy metals (e.g., copper, lead, zinc, and cadmium), petroleum products and polynuclear aromatic hydrocarbons (PAHs and HPAHs), synthetic organics (e.g., pesticides, herbicides, and PCBs), nutrients (e.g., nitrogen and phosphorus fertilizers), oxygen-demanding substances (decaying vegetation, animal waste), and trash." A finding to this effect, including underlying references and studies supporting the finding, is included in Municipal Phase 1 MS4 permits and fact sheets issued by the San Diego Water Board. (See for example SAR 259485, Finding 7 of Order No. 2001-001, NPDES Permit No. CAS)108758, *Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County and the San Diego Unified Port District.*) (See also DTR Section 4. Footnote 46 at 4-6). The San Diego Water Board's Basin Plan contains a similar finding at page 4-79 and goes on to conclude that urban runoff pollutant levels are high enough to severely degrade the beneficial uses of surface waters, and threaten the health of both humans and aquatic organisms. The Basin Plan also cites U.S. EPA *Nationwide Urban Runoff Program* (NURP) study (U.S. EPA, 1983. *Results of the Nationwide Urban Runoff Program, Volume 1- Final Report*, Office of Water. Washington, D.C.), which provides insight on what can be considered background levels of pollutants in typical urban runoff.

Because site specific studies providing a complete chemical characterization of the SW4 and SW9 discharges were not available, the Cleanup Team relied in part on broad based assessments in well known national studies of urban storm water runoff and related water quality impacts as a basis to chararcterize the SW4 and SW9 dischages including the U.S. EPA 1983 NURP study. A major element of the NURP study, executed between 1978 and 1983, was the collection of samples to characterize the quality of urban storm water. Data collected under the NURP study indicated in part that metals were the most prevalent priority pollutants found in urban runoff, and the concentrations for the metals were generally found to exceed freshwater aquatic life criteria. MS4 discharges from residential, commercial, and light industrial areas were characterized as carrying more than 10 times the annual loadings of total suspended solids (TSS) than discharges from municipal sewage treatment plants. Seventy-seven priority pollutants were detected, in samples of storm water discharges from residential, commercial and light industrial lands, including 14 inorganic and 63 organic pollutants. The table below taken from U.S. EPA, *National Pollutant Discharge Elimination System NPDES Regulations for Storm Water*

Discharges, FR 55 47990, Federal Register Publication, November 16, 1990, (U.S. EPA 1990) shows the priority pollutants detected in at least ten percent of the NURP discharge samples which were sampled for priority pollutants.

Table 4.1 - Priority Pollutants Detected in at Least 10 Percent of NURP Study Samples[1]

Constituent	Frequency of detection (in percent)
Metals and Inorganics	
Antinomy	13
Arsenic	52
Beryllium	12
Cadmium	48
Chromium	58
Copper	91
Cyanides	23
Lead	94
Nickel	43
Selenium	11
Zinc	94
Pesticides	
Alpha - hexachorocyclohexane	20
Alpha – endosulphan	19
Chlordane	17
Lindane	15
Halogenated aliphatics	
Methane , dichro	11
Phenols and creosols:	
Phenol	14
Phenol, pentachoro	19
Phthalate esters	
Phatlate, bis(2-ethythexyl)	22
Polycyclic aromatic hydrocarbons	
Chrysene	10
Fluoranthene	16
Phenanthrene	12
Pyrene	15

1. Table Taken From U.S. EPA (1990)

Table 4.1 above of NURP data shows that six COCs of concern at the Shipyard Sediment Site (copper, HPAHs, arsenic, cadmium, lead, and zinc) described in TCAO Finding 29 have significant frequencies of detection in urban runoff discharges. The table provides an additional basis for the Cleanup Team's conclusions that the SW9 and SW9 likely discharged these COCs and thereby contributed to the contaminant levels found at the Shipyard Sediment Site. Many other studies such as those cited in the federal register publication *National Pollutant Discharge Elimination System NPDES Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges,* FR 64 68722, Federal Register Publication, December 8, 1999 (U.S. EPA 1999) and NRC (2008) have since been conducted by U.S. EPA, states, academia, associations, and others which corroborate the NURP study findings and further characterize and report on the potential receiving water quality impacts of storm water from a variety of urban and nonurban sources.

The DTR cites at page 4-10 supporting discharge data in the San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Final Report and DTR Table 4-2 as evidence demonstrating that that elevated levels of zinc, copper, and lead are present in the urban runoff outflow discharged from Chollas Creek into San Diego Bay. The DTR also notes at page 4-19 that the surface sediment data at NASSCO sample station NA22, located near the SW9 outfall shows elevated concentrations of total HPAHs at 3,600 microgram/kilograms (ug/kg), DDT at 29.7 ug/kg, and chlordane at 21.1µg/kg. These pollutant levels are indicators of an urban runoff source and indicate that historical urban runoff discharges occurred from the SW9 outfall.

DTR Section 4 cites at page 4-16 and Table 4-4 storm drain sediment samples which indicate the presence of both PCBs and PAHs entering and exiting the SW4 municipal storm drain system catch basin. The DTR also notes at page 4-18 that sediment PCB levels, specifically Aroclors - 1254 and 1260, and sediment PAH levels reported in the storm water conveyance system are also reported in the bay sediment near the SW4 outfall as indicated by comparing DTR Tables 4-5 and 4-6.

These pieces of evidence constitute circumstantial evidence of the City of San Diego's contribution of relevant COCs to the Shipyard Sediment Site. Stated somewhat differently, the evidence supports a finding that relevant COCs are commonly discharged in urban runoff, and that the City of San Diego operates the SW4 and SW9 conveyances that present a plausible pathway for those COCs to be discharged to the Site. For all of these reasons the Cleanup Team asserts that there is substantial and credible evidence, consistent with the requirements of Resolution No. 92-49, to support TCAO Finding 4 and DTR Section 4 concluisons that the City's SW4 and SW9 discharges contained relevant COCs and contributed to elevated COC levels in Shipyard sediments.

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5. TCAO Finding 5 and DTR Section 5: Star & Crescent Boat Company

Finding 5 of TCAO No. R9-2011-001 States:

The San Diego Water Board alleges, but Star & Crescent Boat Company (hereinafter "Star & Crescent") denies, that Star & Crescent caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH. Between 1914 and 1972, San Diego Marine Construction Company operated a ship repair, alteration, and overhaul facility on what is now the BAE Systems leasehold at the foot of Sampson Street in San Diego. Shipyard operations were conducted at this site over San Diego Bay water or very close to the waterfront. An assortment of waste was generated at the facility, including spent abrasive blast waste, paint, rust, petroleum products, marine growth, sanitary waste and general refuse. In July 1972, San Diego Marine Construction Company sold its shipyard operations to Campbell Industries, and changed its corporate name, effective July 14, 1972, to Star & Crescent Investment Co. On March 19, 1976, Star & Crescent Boat Company was incorporated in California and on April 9, 1976, Star & Crescent Investment Co. (formerly San Diego Marine Construction Company) transferred all of its assets and liabilities to Star & Crescent. Accordingly, Star & Crescent is the corporate successor of and responsible for the conditions of pollution or nuisance caused or permitted by San Diego Marine Construction Company. Based on these considerations, Star & Crescent is referred to as "Discharger(s)" in this CAO.

RESPONSE 5.1

DTR Section: 5
Comments Submitted By: Star & Crescent, San Diego Unified Port District, City of San Diego
Comment IDs: 69, 283, 288, 290
Comment

Star & Crescent Boat Company (Star & Crescent) argues that it should not be named as a discharger under the TCAO because it did not directly contribute to the condition of pollution or nuisance at the Shipyard Sediment Site, and because it is not the legal successor in interest to San Diego Marine Construction Company (SDMCC) and Star & Crescent Investment Company (Invest Co), an entity that admittedly did contribute to the condition of pollution or nuisance. Campbell Industries Inc., the Port District and the City of San Diego counter that Star & Crescent should remain a named discharger because it is a legal successor to SDMCC and Invest Co based on one or more "corporate successor" theories established by California law.

Response 5.1

Introduction, Summary of Comments and Recommendation

Star & Crescent argues that it should not be named as a discharger under the TCAO because it did not directly contribute to the condition of pollution or nuisance at the Shipyard Sediment Site, and because it is not the legal successor in interest to San Diego Marine Construction

Company (SDMCC) and Star & Crescent Investment Company (Invest Co.),[1] an entity that admittedly did contribute to the condition of pollution or nuisance. Campbell Industries Inc., the Port District and the City counter that Star & Crescent should remain a named discharger because it is a legal successor to SDMCC and Invest Co. based on one or more "corporate successor" theories established by California law. **In light of the comments received by the Designated Parties, as set forth in detail below, the Cleanup Team continues to recommend that Star & Crescent be named as a discharger in the TCAO as the corporate successor of SDMCC and Invest Co.**

Legal Standards for Establishing Corporate Successor Liability

The Cleanup Team and all commentors, including Star & Crescent, agree on the law governing the establishment of corporate successor liability. A corporation that purchases the assets of another business entity does not assume the seller's liabilities unless: (1) the purchaser expressly or impliedly agrees to assume the seller's liabilities (assumption theory); (2) the transaction amounts to a consolidation or merger of the two entities (de facto merger theory); (3) the purchaser is a mere continuation of the seller (mere continuation theory); **or** (4) the asset transfer was made for the fraudulent purpose of avoiding liability (fraudulent transfer theory). *Ray v. Alad Corp.* (1977) 19 Cal.3d 22, 28. All parties further agree that SDMCC's name change to Invest Co. had no effect on its legal responsibility for causing and contributing to the condition of pollution or nuisance at the Shipyard Sediment Site.

Star & Crescent argues that none of these theories of corporate successor liability apply to it, and that Invest Co. retains the liabilities of SDMCC. The City of San Diego argues that the mere continuation and the fraudulent transfer theories apply to Star & Crescent's acquisition of Invest Co's assets. Campbell argues that the de facto merger theory applies to the transaction. The Port District argues that the assumption, de facto merger, and mere continuation theories apply to the transaction. As detailed below, record evidence establishes that Star & Crescent is the corporate successor and legally responsible for Invest Co's discharges to the Shipyard Sediment Site.

Substantial Evidence Indicates Star & Crescent Boat Assumed Invest Co.'s Liabilities

The Port District correctly notes that whether there has been an express or implied assumption of liabilities is a question of fact, citing *In the Matter of Petition of Purex Industries, Inc.*, State Water Board Order No. WQ 97-04. The facts are these. In 1976, Invest Co offered to sell Star & Crescent all of its "right, title and interest of every kind and description in and to its business and assets pertaining to its harbor excursion business," "but subject to all liabilities of said business as of March 31, 1976, as relate to its harbor excursion business." *See* Exhibit 17 to Star & Crescent's initial comments [4/9/1976 Minutes of Meeting of Board of Directors of Star & Crescent, p. S&C0050].

Star & Crescent argues that, despite the specific statement in the Meeting Minutes that it agreed to accept "**all liabilities**" of Invest Co, it did not agree to accept "all liabilities" because there is a discreet list of assets and liabilities attached to the offer sheet, and that list establishes a limit on

[1] In 1972, SDMCC changed its name to Star & Crescent Investment Company. The name change had no legal effect on Invest Co's legal responsibility for the acts and omissions of SDMCC.

the liabilities it agreed to assume. While the argument might have merit in a different context, it fails here. First, there is no list of assets or liabilities that Invest Co agreed to retain. If the parties to the transaction intended for some liabilities to pass through to the buyer, and others to remain with the seller, the logical manifestation of that intent would be two lists, one of liabilities transferred and one of liabilities retained. But there is only one list. As the Port District argues, "when read in full context, the exhibit list served as nothing more than a list of the known harbor excursion business assets and liabilities, not a limitation on the intended scope of the transfer." The asset purchase agreement and its exhibits contain no language that would indicate that Invest Co intended to transfer the known liabilities set forth on the list and retain any known liabilities or unknown liabilities such as the liability for future environmental cleanups. In short, there is no reason to conclude, as Star & Crescent urges, that the statement "all liabilities" in the document does not mean precisely what it says.

Second, evidence in the record indicates that Invest Co had no other business operations, assets, or liabilities, despite Star & Crescent's assertion that Invest Co continued to "own and operate its many other diverse assets." As the Port District notes, there is no evidence the Invest Co was involved in any business operations other than Star & Crescent's operations until over one and a half years after the asset purchase transaction. *See* Star & Crescent's Exhibit 11. Mr. Palermo, Star & Crescent's person most knowledgeable, further testified at his deposition that he was unaware of any Invest Co assets that were not transferred to Star & Crescent as part of the transaction. Accordingly, the only known Invest Co business operations, assets, or liabilities at the time of the transfer of all assets and all liabilities to Star & Crescent in 1976 were those relating to the sole remaining SDMCC operation owned by Invest Co – those of the boat division. Because Invest Co was not engaged in any business enterprises immediately after the transfer, it is more likely than not that, at the time of the transaction, the parties intended to transfer "all liabilities" both known and unknown, from Invest Co to Star & Crescent.

Substantial Evidence Indicates The Invest Co/Star & Crescent Transaction Was a De Facto Merger

A transaction the parties define as an asset sale may nevertheless be considered a de facto merger and result in the transfer of the seller's liabilities to the buyer as a matter of law when: (1) the consideration paid for the seller's assets consisted solely of the buyer's stock; (2) the purchaser continued the same business enterprise after the sale; (3) the shareholders of the seller became the shareholders of the buyer; (4) the seller liquidated; **and** (5) the buyer assumed the liabilities necessary to carry on the business enterprise of the seller. *Marks v. Minnesota Mining & Mfg. Co.* (1986) 187 Cal.App.3d 1429, 1436. Star & Crescent does not dispute that it transferred all of its stock to Invest Co in exchange for the boat division assets and liabilities, nor that there was no additional consideration paid to Invest Co Thus, the first element of the de facto merger theory is met. Since Invest Co owned all the stock of Star & Crescent, the shareholders of both entities were identical and the third element is also met.

The second element is met because the facts indicate that Star & Crescent continued the same business enterprise in which Invest Co was engaged after the transaction. Specifically, record evidence establishes that Star & Crescent operated the same harbor excursion business using the same Star & Crescent name with the same vessels and out of the same locations. With respect to the fourth element, there is no evidence in the record to indicate that Invest Co was engaged in any other business enterprises at the time of the transaction, and it effectively ceased all of its business operations at that time, even though it would engage in other business operations over a year and a half later. Thus, while Invest Co did not formally liquidate immediately after the transaction, it was effectively "out of business" for over a year and a half afterwards.[2] Finally, with respect to the fifth element, as discussed above, Star & Crescent expressly agreed in the asset purchase transaction to assume "all liabilities: of Invest Co "as relate to its harbor excursion business."

The evidence submitted largely by Star & Crescent itself indicates that it is the corporate successor of Invest Co under the de facto merger theory.

Substantial Evidence Indicates The Invest Co./Star & Crescent Transaction Was a Mere Continuation

Corporate successor liability passes to an asset purchaser under the mere continuation theory when: (1) no adequate consideration was given for the seller corporation's assets and made available to meet the claims of its unsecured creditors; or (2) one or more persons were officers, directors of stockholders of both corporations. *Ray v. Alad Corp.*, *supra*, 19 Cal.3d at 29. Record evidence supporting the mere continuation theory of successor liability for Star & Crescent is exceptionally strong.

On April 9, 1976, Star & Crescent's directors voted to acquire the significant harbor business related assets of Invest Co in exchange for 1,500 shares of newly created stock. Star & Crescent, Exhibit 23. The Star & Crescent directors valued the stock at $10 per share, while the Invest Co assets purchased were valued at about $800,000. Thus, Star & Crescent purchased the $800,000 worth of assets from Invest Co for $15,000 worth of stock. While it appears that Star & Crescent may also have assumed $86,000 of Invest Co's liabilities under the transaction, it is unclear which of the two entities ultimately satisfied those liabilities given that Invest Co was still paying Star & Crescent's directors' salaries and bonuses for a number of years following the transaction. In any event, even assuming Star & Crescent did assume and satisfy the entire $86,000 in listed liabilities, the consideration paid for the approximately $800,000 in assets would still have been a mere $101,000, or a small fraction of the actual value of the assets. This is not adequate consideration.

Star & Crescent appears to implicitly concede this point, instead arguing that adequate consideration was given because Invest Co later sold the stock that it received for $765,400. The argument lacks merit. First, this later transaction is irrelevant since adequate consideration must be given at the time of sale – not years later. Second, this "sale" involved issuance of a promissory note, under which Invest Co apparently agreed to relinquish the only consideration it

[2] In fact, as chronicled in detail by the City in support of its fraudulent transaction theory, it appears that Invest Co's "business enterprises" after the transaction consisted solely of managing and operating Star & Crescent, including, primarily, distributing its earnings and profits to O.J. Hall Jr. and his family members. Because the Cleanup Team believes that Star & Crescent is properly named as a discharger under the TCAO as the corporate successor of Invest Co under the assumption theory, the de facto merger theory and, most persuasively, the mere continuation theory, we see no need to discuss the merits of a potential fraudulent transfer theory.

received for its assets (the 1,500 shares of stock) in exchange for a promise to be paid five years later. Third, Invest Co sold the stock to the directors of Star & Crescent, Stephen P. Carlstrom, Judy Hall, and Janet Miles, who also were Hall, Jr.'s children and wife. (See Exhibit 22 [Shareholder certificates for Star & Crescent dated October 26, 1976] and Exhibit K [Hall, Jr. Obituary].) In fact, Hall, Jr. had long before expressed to the Port District his desire to transfer ownership of his harbor excursion business to his children. (Exhibit H [October 12, 1976 correspondence].)

While the exact mechanisms of the transactions are somewhat blurry because of Star & Crescent's failure to provide supporting documents, what can be determined is that Invest Co divested itself of all known assets in exchange for stock in a new company with no assets other than the Invest Co assets transferred to it in the transaction. It then later agreed, in essence, to front the price of the sale of this stock back to Star & Crescent's leaders, who were the children and spouse of the man that had been controlling Invest Co This simply does not constitute adequate consideration.

The City and Port District detail a number of additional facts in their respective comments regarding the inadequacy of the consideration paid by Star & Crescent that will not be repeated here, but that are incorporated herein by this reference. The evidence supporting the inadequacy of the consideration paid for Invest Co's assets alone is enough to support a mere continuation theory of liability for Star & Crescent.

However, there is an alignment of the identity of officers, directors and shareholders in Invest Co and Star & Crescent as well. As discussed above, the shareholders in Star & Crescent and Invest Co were identical. Star & Crescent was incorporated on Aril 7, 1976 and six directors, none of whom were on the Invest Co board of directors, were appointed that day. However, the transaction appeared to be a sham, as two days later they all resigned without explanation and were replaced by O.J. Hall Jr. (then-current director of Invest Co), Kenneth Beiriger (director of both Star & Crescent and Invest Co from at least 1977-1983), Stephen Carlstrom (O.J. Hall Jr.'s son), Janet Miles (O.J. Hall Jr.'s wife), Judy Hall (O.J. Hall Jr.'s daughter) and Raleigh Miles (O.J. Halls Jr.'s son-in-law). Star & Crescent Exhibit 17. As the Port District notes, this slate of Star & Crescent directors was nearly identical to Invest Co's board of directors at the time, and its corporate officers (President O.J. Hall Jr., Secretary Leona Jackson, Vice-President K.N. Beiriger) were identical.

O.J. Hall Jr. and his family controlled both Invest Co and Star & Crescent. Hall was on the board of directors of Invest Co at the time he was on the board of Star & Crescent, and also acted as its President. As the Port and City point out, Star & Crescent's own documents establish that; (1) salaries and bonuses for Star & Crescent directors were dictated and approved by Invest Co directors in 1978; (2) Invest Co directors reviewed Star & Crescent's operations and financial statements and set salaries, bonuses and stock dividends for Star & Crescent in 1979 and 1981; (3) Invest Co guaranteed a $300,000 loan to Star & Crescent in 1981; and (4) Invest Co agreed at its board of directors meeting in 1977 to increase salaries and bonuses for Star & Crescent. Basically, the "asset purchase" transaction between Invest Co and Star & Crescent was a mere continuation of Invest Co's prior business and it carries with it Invest Co's liability for cleanup costs at the Shipyard Sediment Site.

There Is No Need To Name Invest Co. To The TCAO At This Time

The Port Dsitrict requests that the San Diego Water Board name Invest Co to the TCAO. Because all of the relevant parties, including, but not limited to, Campbell Industries, Inc., Star & Crescent, Invest Co, the Port District and the City, are currently engaged in a federal lawsuit to determine appropriate shares of responsibility for the cost of cleanup under the TCAO should it be adopted, the Cleanup Team does not believe there is a need for the San Diego Water Board to add Invest Co to the CAO as a named discharger at this time. The Cleanup Team believes, based on record evidence, that it is far more likely that Star & Crescent is responsible for the acts and/or omissions of SDMCC and Invest Co under the corporate successor doctrines discussed above. However, theories of corporate succession are highly fact specific and, as here, involve considerable judgment as to the weight of sometimes conflicting evidence. Decisions about corporate succession are best left for determinations by courts, which are more nimble with the legal principles than administrative bodies, and which have defined discovery and trial mechanisms for parties to explore and develop fact-specific analyses. Fortunately, the pending federal litigation provides the San Diego Water Board with something of a “backstop” in this case. In other words, if Invest Co is determined to have a share of responsibility for cleanup costs by the federal court, it can be added to the CAO at that time. In the unlikely event that Star & Crescent is exonerated by the federal court, it can be deleted from the CAO before incurring cleanup costs.

RESPONSE 5.2

Comment Submitted By: Star & Crescent
DTR Section: 5
Comment ID: 289
Comment

The Port District’s Reference to S&C Boat’s Alleged Insurance Assets is Inaccurate and Improper.

S&C Boat submits this reply comment in response to Designated Party San Diego Unified Port District’s (“Port’s”) Comment No. III (A) (5), which states:

Based on its review of relevant documents, the Port believes that Star & Crescent has millions of dollars of liability coverage that would be potentially applicable to the remediation and monitoring efforts. Additionally, Star & Crescent has stipulated that it has assets totaling between $750,000 and $1 million. […]

The Port is aware that the Star & Crescent entity that is currently named in the TCAO and DTR disputes its successor liability for the other predecessor entities that operated at the Shipyard Sediment Site. […] Regardless of whether the current Star & Crescent entity is liable for the earlier operations at the Shipyard Sediment Site, the identified insurance assets would still apply, so long as the insured entity is named as a discharger under the TCAO and DTR. Thus, if the TCAO and DTR were amended to name all of the potentially liable entities - San Diego Marine Construction Company, Star and Crescent Boat Company and Star & Crescent Investment Co. --

the insurance assets should be available to address directly any established liability, whether or not these entities are still in existence.

("San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument," pp. 10-11 (citations omitted, emphasis added).)

The Water Board must reject the Port's assertion that certain additional entities be named to the TCAO and DTR purely based upon their potential insurance coverage. Consideration of such facts by the Water Board would be contrary to fact and would violate established legal doctrine regarding the admissibility of such insurance information.

The Water Board is charged with making a determination about whether S&C Boat is a "discharger" responsible for costs associated with remediating or monitoring contamination at the Shipyard Sediment Site. The only relevant inquiry in determining whether a party is a "discharger" is whether there is a basis in law to attach "discharger" or responsible party obligations. For the reasons stated in its May 26, 2011 submission of comments, S&C Boat is not liable because it did not directly contribute to the contamination and is not liable under the law for any contamination caused by any other entities.

Making inquiries and assumptions about whether S&C Boat has insurance proceeds available to pay for remediation of contamination for which it is not liable is inappropriate{This inquiry is just as inappropriate as, and no more unreasonable than, if the Water Board were asked to consider the status of Wal-Mart's insurance coverage for the purpose of paying for remediation of the Shipyard Sediment Site. Like Wal-Mart, S&C Boat has no liability for the contamination caused at the Shipyard Sediment Site, and therefore, any question about availability of insurance coverage is both inappropriate and irrevelant.}. Although S&C Boat understands that the possibility of accessing a large insurance policy's proceeds might seem attractive to the Port and the Water Board, where there is no right to those proceeds, the existence of insurance does not matter. The only proper question is that of legal liability.

A. The Port's Reference to the Existence and Amount of Alleged Insurance Coverage Is Not Factually Supported.

The Port alleges that S&C Boat has "millions of dollars of liability coverage" for remediation and monitoring activities. The Port's allegations are inaccurate to the extent they attempt to establish that S&C Boat has insurance coverage, or that a certain amount of insurance funds are available to respond to remediation efforts. That statement is not supported by any facts, is wildly speculative, and misleads the Water Board into believing that if it were to assign liability to S&C Boat, there would be ample funds available for cleanup efforts.

At this time, despite diligent efforts, S&C Boat has not obtained any insurance proceeds and, despite tendering claims to numerous insurance carriers, has received no agreement for defense or indemnity from any insurance carrier. Nevertheless, consideration of these facts by the Water Board is inappropriate.

B. Reference to Alleged Insurance Coverage Violates the Rules of Evidence, Is Irrelevant to the Shipyard Sediment Site Matter, and Is Prejudicial to S&C Boat.

Even assuming the Port District's allegations regarding insurance proceeds were true, the Water Board's consideration of this information would violate established legal doctrine regarding the admissibility of such evidence. Further, such evidence is irrelevant to the issue about which the Water Board is responsible for making a determination – the issue of liability. Finally, suggestion that such insurance coverage exists is prejudicial to S&C Boat.

The law is clear that evidence of insurance is inadmissible to prove wrongdoing. The California Evidence Code specifically states that "[e]vidence that a person was, at the time a harm was suffered by another, insured wholly or partially against loss arising from liability for that harm is inadmissible to prove negligence or other wrongdoing." (Cal. Evid. Code § 1155.)

Further, the question of insurance is irrelevant. Whether S&C Boat has insurance coverage has no bearing whatsoever on the issue before the Water Board - whether S&C Boat is legally responsible for the alleged acts of another corporate entity. The only appropriate inquiry is whether S&C Boat meets the legal requirements for liability, which it does not. The existence or absence of insurance coverage is of no consequence to the matter before the Water Board and is not relevant.

Courts routinely give juries specific instructions on this very issue. The standard rule provided to jurors is: "You must not consider whether any of the parties in this case has insurance. The presence or absence of insurance is totally irrelevant. You must decide this case based only on the law and the evidence." (Judicial Council of California Civil Jury Instructions (2011), No. 105 (emphasis added.) In this matter, the Water Board is subject to a similar requirement, and must consider only relevant facts and law.

Last, introduction of such evidence is prejudicial to S&C Boat. Discussion of this irrelevant information could improperly encourage the Water Board to make its decision regarding liability based on information having nothing to do with the facts or law regarding liability. Improperly (and inaccurately) suggesting that S&C Boat has the ability to pay for cleanup from insurance proceeds misdirects the Water Board's focus from the only legitimate issue before it – that is, liability – under which its task is to determine whether S&C Boat bears any responsibility for the contamination in the first place.

In a case where a trial court had discussed evidence of an alleged wrongdoer's insurance coverage, a California Court of Appeal reversed the judgment, stating that such evidence is both irrelevant and prejudicial. (Blake v. E. Thompson Petroleum Repair Co. (1985) 170 Cal.App.3d 823, 830 (citations omitted).) The courts have made specific findings that the existence of liability insurance is irrelevant to the question of liability. (Bell v. Bayerische Motoren Werke Aktiengesellschaft (2010) 181 Cal.App.4th 1108, 1122-1123.) In fact, attempts to introduce such evidence are sometimes considered so inappropriate and such a flagrant violation of the law that they can constitute grounds for attorney misconduct. (Blake at 830, citing Neumann v. Bishop (1976) 59 Cal.App.3d 451, 469; Witkin, Cal. Evidence (2d ed. 1966) § 374, pp. 332-333.)

Evidence regarding alleged insurance coverage has nothing to do with the Water Board's task of determining whether S&C Boat bears liability for the actions of a separate corporate entity. It is inadmissible, irrelevant, and prejudicial, and must be disregarded.

C. The Port's Suggestion to Name Additional Entities Is Inappropriate and Not Factually Supported.

The Port District's suggestion that the Water Board should name S&C Boat simply to access insurance proceeds, "regardless of whether the current Star & Crescent entity is liable for the earlier operations at the Shipyard Sediment Site" is inappropriate and lacks any factual basis. The Water Code requires a legal determination be made to name a party as a "discharger" in a Cleanup and Abatement Order. Only a person who discharges waste into the waters of the state, creating a condition of pollution or nuisance, is liable under the statutory mandates of the Water Code. (Cal. Water Code Sec. 13304(a).) The Water Code liability is without regard to insurance proceeds.

As documented in S&C Boat's May 26, 2011 submission, there is no evidence that S&C Boat is directly liable for the contamination, or that S&C Boat is the legal successor to any liable party. That should end the inquiry by the Water Board. The availability of insurance (or the lack thereof) is not a valid consideration in making that legal determination.

Response 5.2

The commentor correctly notes that the availability of insurance assets alone is not a basis for naming a discharger to a CAO. However, Star & Crescent is named as a discharger in the TCAO because substantial evidence in the record indicates it is the corporate successor of, and responsible for, the acts and omissions of SDMCC and Invest Co.

6. TCAO Finding 6 and DTR Section 6: Campbell Industries

Finding 6 of TCAO No. R9-2011-0001 states:

The San Diego Water Board alleges, but Campbell Industries denies, that Campbell caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. These wastes contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH. From July 1972 through 1979, Campbell's wholly owned subsidiaries MCCSD and later San Diego Marine Construction Corporation operated a ship repair, alteration, and overhaul facility on what is now the BAE Systems leasehold at the foot of Sampson Street in San Diego. Shipyard operations were conducted at this site by Campbell over San Diego Bay waters or very close to the waterfront. An assortment of waste was generated at the facility including spent abrasive blast waste, paint, rust, petroleum products, marine growth, sanitary waste, and general refuse. Based on these considerations, Campbell is referred to as "Discharger(s)" in this CAO.

RESPONSE 6.1

DTR Section: 6.3.1
Comment Submitted By: Campbell
Comment ID: 1
Comment

San Diego Marine Construction Company (subsequently Star & Crescent) did not sell its leasehold to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972.

In Finding 6 of the Draft Technical Report, in the first sentence of the second paragraph of Section 6.3.1, it states, "San Diego Marine Construction Company (subsequently Star & Crescent) sold its leasehold to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972." This statement is incorrect. San Diego Marine Construction Company (subsequently Star & Crescent) sold the business and assets of its Marine Division to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972. The minutes of the first meeting of Directors of MCCSD approving that transaction are attached for inclusion in the administrative record. The purchase did not include the leasehold. San Diego Marine Construction Company surrendered its leasehold to the San Diego Unified Port District (SAR 163149), and the Port District entered into a new lease with MCCSD (SAR 174131).

Response 6.1

The commentor is correct. The Finding will be revised as follows: "San Diego Marine Construction Company (subsequently Star & Crescent) sold the business and assets of its Marine Division to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972, as indicated in the minutes of the first meeting of Directors of MCCSD approving that transaction. The purchase did not include the leasehold. San Diego Marine Construction Company surrendered its leasehold to the Port District (SAR 163149), and the Port District entered into a new lease with MCCSD (SAR 174131)." Revisions will be provided on September 15, 2011, as required by the Third Amended Order of Proceedings.

RESPONSE 6.2

DTR Section: 6.3.1
Comment Submitted By: Campbell
Comment ID: 3
Comment

Refusal or failure to respond to State Water Board inquiries is not a basis for naming Campbell Industries as a Discharger.

In Finding 6 of the Draft Technical Report, in the third paragraph of Section 6.3.1, it states, "The stock of Campbell Industries was acquired by Marco Holdings, Inc. ("MARCO"), a Washington corporation, in 1979. Marco Holdings, Inc. is a wholly-owned subsidiary of Marine Construction and Design Company, a Washington Corporation." In the subsequent paragraph in Section 6.3.1 of Finding 6 in the DTR, it states:

On February 19, 2004 the San Diego Water Board issued Investigative Order R9-2004-0026 directing MARCO to submit a historical site assessment report that completely documented all leasehold information and activities in the vicinity of the BAE Systems leasehold that may have affected water quality, including chemical and waste handling and storage activities, discharges, and monitoring data.

That statement is incorrect. MARCO is defined in the preceding paragraph as Marco Holding, Inc. That company is not mentioned in Investigative Order R9-2004-0026 (SAR 193136). The subsequent paragraph in Section 6.3.1 of Finding 6 in the DTR recites the contents of a letter from H. Allen Fernstrom on behalf of MARCO, now defined as Marine Construction and Design Co. The letter first states that Marine Construction and Design Co. had conducted an internal search and had no records of any operations of its or Campbell Industries operations within the Southwest Marine leasehold. There is no evidence that statement was inaccurate at the time it was written in 2004. Marine Construction and Design Co. has never operated at the Southwest Marine leasehold. Even today Campbell Industries has not located any records of the operations of its subsidiary at the Southwest Marine leasehold. The letter then states that Marine Construction and Design Co. has no California operations or offices. That statement was true then and remains accurate today. It then states that Campbell Industries terminated all California operations in 1999 at Eight Avenue and Harbor Drive (the former Campbell Shipyard), and all available records from California-based operations pertain to that Campbell Shipyard. That statement is also correct. After reciting the contents of this letter, the paragraph ends with the statement, "MARCO was not responsive to the directives of the San Diego Water Board's Investigative Order and their lack of responsiveness forms part of the basis for the San Diego Water Board's determination that MARCO should be named as a discharger in the Cleanup and Abatement Order." This statement is erroneous in four respects. First, MARCO defined as Marco Holdings, Inc. was not under any directive from the San Diego Water Board, as discussed above. Second, MARCO if defined as Marine Construction and Design Co. truthfully responded to the Investigative Order based on the information available to it at the time. Third, Campbell Industries has been an active participant in the mediation proceedings with Timothy Gallagher which led to the drafting of the pending TACO and DTR, and voluntarily provided most of the evidence of its history at the Site recited in Section 6.3.1. It has not refused or failed to respond to any inquiry by the San Diego Water Board. Finally, the TCAO and DTR do not name MARCO (however defined) as a Discharger in the Cleanup and Abatement Order. Paragraphs 4 and 5 in Section 6.3.1 should be deleted. Not only are portions of these paragraphs inaccurate, but there is no basis or need for the San Diego Water Board to use refusal or failure to respond as a factor in naming Campbell Industries as a Discharger in the Cleanup and Abatement Order.

Response 6.2

While Resolution No. 92-49 states that "[r]efusal or failure to respond to Regional Water Board inquires[.]" is considered relevant evidence to support whether a person should be required to clean up waste and abate the effects of a discharge (section I A(10)), since Marine Construction and Design Co. (MARCO) is not named as a discharger in the TCAO, its failure to respond to San Diego Water Board inquires, whether accurate or not, is not relevant evidence. As the Commentor also notes, Campbell (a named discharger) has responded to San Diego Water Board inquiries. Accordingly, paragraphs 4 and 5 of section 6.3.1 of the DTR will be deleted. These revisions will be provided on September 15, 2011, as required by the Third Amended Order of Proceedings.

7. TCAO Finding 7 and DTR Section 7: Chevron, A Subsidiary of Chevron/Texaco

Finding 7 of TCAO No. R9-2011-0001 states:

Chevron, a subsidiary of ChevronTexaco (hereinafter, Chevron) owns and operates the Chevron Terminal, a bulk fuel storage facility currently located at 2351 East Harbor Drive in the City of San Diego adjacent to the NASSCO and BAE Systems leaseholds. Fuel products containing petroleum hydrocarbons have been stored at the Chevron Terminal since the early 1900s at both the currently operating 7 million gallon product capacity upper tank farm and the closed 5 million gallon capacity lower tank farm. Based on the information that the San Diego Water Board has reviewed to date, there is insufficient evidence to find that discharges from the Chevron Terminal contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, which create, or threaten to create, conditions of pollution or nuisance. Accordingly, Chevron is not referred to as "Discharger(s)" in this CAO.

The San Diego Water Board did not receive any comments regarding Finding 7 and DTR Section 7.

8. TCAO Finding 8 and DTR Section 8: BP as the Parent Company and Successor to Atlantic Richfield Company

Finding 8 of TCAO No. R9-2011-0001 states:

BP owns and operates the Atlantic Richfield Company (ARCO) Terminal, a bulk fuel storage facility with approximately 9 million gallons of capacity located at 2295 East Harbor Drive in the City of San Diego. Fuel products containing petroleum hydrocarbons and related constituents such as PAHs have been stored at ARCO Terminal since the early 1900s. ARCO owned and operated ancillary facilities include a wharf, fuel pier (currently BAE Systems Pier 4), and a marine fueling station used for loading and unloading petroleum products and fueling from 1925 to 1978, and five pipelines connecting the terminal to the pier and wharf in use from 1925 to 1978. Storm water flows from ARCO Terminal enter a City of San Diego MS4 storm drain that terminates in San Diego Bay in the Shipyard Sediment Site approximately 300 feet south of the Sampson Street extension. Based on the information that the San Diego Water Board has reviewed to date, there is insufficient evidence to find that discharges from the ARCO Terminal contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, which create, or threaten to create, conditions of pollution or nuisance. Accordingly, BP and ARCO are not referred to as “Discharger(s)” in this CAO.

The San Diego Water Board did not receive any comments regarding Finding 8 and DTR Section 8.

9. TCAO Finding 9 and DTR Section 9: San Diego Gas and Electric, A Subsidiary of Sempra Energy Company

Finding 9 of TCAO No. R9-2011-0001 states:

SDG&E owned and operated the Silver Gate Power Plant along the north side of the BAE Systems leasehold from approximately 1943 to the 1990s. SDG&E utilized an easement to San Diego Bay along BAE Systems' north property boundary for the intake and discharge of cooling water via concrete tunnels at flow rates ranging from 120 to 180 million gallons per day. SDG&E operations included discharging waste to holding ponds above the tunnels near the Shipyard Sediment Site.

The San Diego Water Board alleges, but SDG&E denies, that it has caused or permitted waste (including metals [chromium, copper, lead, nickel, and zinc], PCBs, PAHs, and total petroleum hydrocarbons [TPH-d and TPH-h]) to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. Based on these considerations SDG&E is referred to as "Discharger(s)" in this CAO.

RESPONSE 9.1

DTR Section: 9
Comments Submitted By: SDG&E, BAE Systems, City of San Diego
Comment IDs: 285, 451, 460, 495
Comment

SDG&E submitted a request for rescindment of discharger designation. BAE Systems Inc. and the City of San Diego submitted rebuttal comments on the request for rescindment. These comments are summarized below.

SDG&E commented that the Cleanup Team's recommendation to name SDG&E as a "person responsible" and Discharger under the TCAO is based on wholly unsubstantiated and speculative allegations, and entirely devoid of reasonable, substantial or credible evidence as required under California Water Code section 13304.

SDG&E owned and operated the Silver Gate Power Plant adjacent to the north side of the present-day BAE Shipyard beginning in the early 1940s. The SDG&E power plant facility operated continuously through 1974, and intermittently thereafter with minimal operations (and associated cooling water circulation) after 1983. The adjacent substation facility operated until 2005. Decommissioning of the power plant facility began in 1994, with power plant and substation closure and demolition thereafter completed by 2007.' The Regional Board generally alleges that SDG&E caused or permitted waste discharges from the Silver Gate Power Plant facilities into San Diego Bay and "created, or threatened to create, a condition of pollution or nuisance." (DTR § 9, at 9-1.) Based on these allegations, which SDG&E denies in their entirety, the Regional Board has designated SDG&E as a "Discharger" in the TCAO. There is no evidence that discharges from the Silver Gate Power Plant facilities contributed to the accumulation of pollutants in marine sediments at the Site to levels which create; or threaten to create, conditions of pollution or nuisance.6 Consequently, in so naming SDG&E, Regional Board staff has abused its discretion and acted unreasonably, inappropriately and erroneously by:

(i) basing its findings and conclusions in Sections 9 of the TCAO and DTR on pure speculation and conjecture;
(ii) failing to engage in any meaningful evaluation of extensive exculpatory evidence submitted by SDG&E;
(iii) failing to engage in any meaningful evaluation of the most likely (and readily-identifiable) sources of sediment impacts among the alleged Dischargers, and
(iv) relying on biased, unsubstantiated information provided by other responsible parties seeking to implicate SDG&E as an additional Discharger.

For the foregoing reasons, and those set forth below, SDG&E requests that the Regional Board rescind its status as a "person 'responsible" and "Discharger" under the final Cleanup and Abatement Order for the Site.

BAE rebuttal comments regarding SDG&E's request stating the following:

> The Regional Board was correct to designate SDG&E as a discharger and, for the foregoing reasons, and the reasons set forth in more detail below, the Regional Board should deny the Rescindment Request.

SDG&E’s Rescindment Request is based on two central arguments, neither of which have any merit. First, SDG&E claims that the Cleanup Team relied on “speculative” allegations in reaching its conclusion. There is nothing “speculative” about the evidence. The Silver Gate Power Plant was constructed in the 1940s and 1950s. It was a steam turbine power plant that operated at peak capacity for over thirty years. There were many sources of polychlorinated biphenyls (“PCBs”), copper, and mercury within equipment located throughout the plant. This equipment leaked and, along with other waste water, was discharged to the San Diego Bay (“Bay”) via the cooling water tunnels, storm water run-off, and SDG&E’s tidelands disposal ponds and oil/water separators. This is confirmed by the Administrative Record, deposition testimony of members of the Cleanup Team, data and documents prepared by SDG&E and its own consultants, and additional documents either produced by SDG&E and other parties in the pending United States District Court case or otherwise publicly available (which are filed herewith, augmenting the Administrative Record).

Second, SDG&E argues that the Cleanup Team “ignored the obvious.” That is, “BAE” is solely responsible for the contamination found on the Northern portion of the Shipyard Sediment Site. In making this argument, SDG&E fails to distinguish between BAE Systems and previous, distinct, shipyard entities that operated at the Northern portion of the Shipyard Sediment Site since 1914. BAE Systems only operated at the Shipyard Sediment Site since 1979 and has no responsibility for the discharges which occurred during the prior 65 years by other owners and operators that have no relationship to BAE Systems. Further, it is not appropriate for the Regional Board to allocate liability through these proceedings{SDG&E uses the Rescindment Request to argue that the Regional Board should allocate liability to BAE Systems by conflating it with prior owners and operators and by identifying evidence that it believes supports its position. As noted above, rather than refute every instance in the Rescindment Request, BAE Systems generally objects to the singular definition of “BAE” to include prior owners and operators. Further, BAE Systems generally, and in connection with the pending litigation, reserves its rights relative to the allegations and evidence cited in the Rescindment Request. The focus of this Response is on SDG&E’s status as a discharger, rather than on BAE Systems’ status as a discharger}. Finally, SDG&E relies on an expert opinion from ENVIRON that TBT should be a cleanup “driver.” This opinion, however, is wrong and untimely under the relevant discovery order and should be excluded{ BAE has filed herewith a Motion to Exclude ENVIRON’S Technical Comments submitted by SDG&E.}.

The Regional Board was correct to designate SDG&E as a discharger and, for the foregoing reasons, and the reasons set forth in more detail below, the Regional Board should deny the Rescindment Request. The Regional Board applied the proper legal standard in designating SDG&E as a discharger. The Regional Board designation of SDG&E as a discharger is supported by substantial, reasonable, and credible evidence.

The City of San Diego commented that SDG&E is appropriately named as a discharger.

a. There is sufficient evidence to show that PCBs were released from the SDG&E Silvergate substation/switchyard area and that the conditions at this substation/switchyard led to the subsequent discharge of PCBs into the storm drain in Sampson Street and, ultimately, to the Shipyard Site and San Diego Bay.

b. There is sufficient evidence to show that SDG&E discharged PCBs to the Shipyard Site and San Diego Bay via the cooling tunnels.

c. The PCBs detected in catch basin cb1 is further evidence that SDG&E had discharged PCBs to the Sampson Street storm drain and subsequently to the shipyards sediment site and San Diego Bay.

d. There is sufficient evidence to show that the SDG&E Silvergate power plant bilge pumping system through Nobles Lake discharged PCBs and other wastes to the Shipyard Site and San Diego Bay.

In conclusion, the evidence shows:

- PCBs were a component in oils within the Power Plant.
- Oils spilled within the boiler room side of the power plant were intentionally pumped to an oil/water separator called “Nobles Lake”
- Nobles Lake discharged oily waste to the Shipyards Sediment site and San Diego Bay, at a minimum, via a ditch observable in numerous aerial photos, and possibly via a discharge pipe.
- Aroclor ratios found in Shipyard sediments reflect the different types of wastes that were discharged from Nobles Lake and from the substation/switchyard.

The investigations conducted by SDG&E and their consultants to date have not adequately characterized the discharges or residual contamination left from these operations and do not refute the evidence showing the discharge of PCBs to the Site. The Aroclor mix in the Shipyard sediment site reflect the conceptual site model of the different waste types produced by SDG&E and their discharge locations and transport pathways.

Response 9.1

Introduction, Summary Of Comments And Recommendation

SDG&E argues that there is no substantial evidence in the record to support naming it as a discharger under the TCAO. The City and BAE Systems argue that there is. Reduced to its essence, SDG&E's claim is that there is no substantial evidence to support a finding that it made **any contribution whatsoever** to the condition of pollution or nuisance that currently exists at the Shipyard Sediment Site. SDG&E readily admits that large quantities of PCBs and other COCs were used at its Silver Gate facility from approximately 1943 through 1984, but claims there is no evidence that any of those PCBs ever made it to San Diego Bay during this over-forty-year period. **Because substantial record evidence demonstrates that PCBs and other relevant COCs were discharged by SDG&E directly to San Diego Bay through its cooling tunnels, were discharged to land at its switchyard where they were washed to San Diego Bay through the MS4 System, and were discharged to open pits in close proximity to the Bay where they overflowed to the Bay and were, at one time, conveyed from one pit directly to the Bay through a trench, SDG&E must remain a named discharger under the TCAO.**

Legal Standard

All commentors and the Cleanup Team agree that there must be substantial evidence in the record to support naming SDG&E as a discharger. As California's Supreme Court observed, substantial evidence is evidence of "ponderable legal significance," which is "reasonable in nature, credible and of solid value." *Ofsevit v. Trustees of California State Universities and Colleges* (1978) 21 Cal.3d 763, 773, n. 9.) "Substantial evidence" means facts, reasonable assumptions based on facts and expert opinions supported by facts. *Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004. 1019. Importantly, an agency may also rely on the opinion of its staff in reaching decisions, and "the opinion of staff has been recognized as constituting substantial evidence." *Browning-Ferris Industries v. City Council* (1986) 181 Cal.App.3d 852, 866 *citing Coastal Southwest Dev. Corp. v. California Coastal Zone Conservation Com.* (1976) 55 Cal.App.3d 525, 535-536.

SDG&E accurately cites the substantial evidence standard at the beginning of its Request for Rescindment but, as detailed below and documented by the City and BAE Systems in their comments, utterly fails to faithfully apply it to the "facts, reasonable assumptions based on facts and expert opinions supported by facts" in the record in the remainder of its Request.

State Water Board Resolution No. 92-49 further animates the types of evidence that may be considered substantial when naming dischargers in a CAO, including direct or circumstantial evidence. (Resolution No. 92-49, § II A.) Such direct or circumstantial evidence includes "[i]ndustry-wide operational practices that historically have led to discharges, such as leakage of pollutants from wastewater collection and conveyance systems, sumps, storage tanks, landfills and clarifiers." Id., at § II A(4). With respect to evidence of discharges from SDG&E, "industry-wide operational practices" would be those in effect in or about 1940 through 1984. As detailed below, there is substantial evidence in the record that industry-wide operational practices at steam turbine power plants such as SDG&E's Silver Gate routinely resulted in leaks of dielectric fluids containing PCBs varying from half a pound to sixty-four pounds from valves and seals on transformers.

Tellingly, as BAE Systems notes in its comments, SDG&E consistently misstates the deposition testimony of Cleanup Team members Barker and Carlisle, among others, and fails to note the objections of counsel, many of which qualify the deponents responses. An oft used tactic by counsel for SDG&E was to create a tautological hypothetical for a Cleanup Team member and then ask for a response. Valid "incomplete hypothetical" and "calls for speculation" objections were asserted. SDG&E attempts to leverage these Cleanup Team deposition responses into an argument that the Cleanup Team essentially agrees that BAE Systems and earlier operators at the northern portion of the Shipyard Sediment Site were 100 percent responsible for the creation of the condition of pollution or nuisance there. The Cleanup Team does not.

Even assuming solely *arguendo* that all of the deposition responses cited by SDG&E are true and faithful recitations of the deponents' testimony, which they are clearly not, SDG&E's argument still fails. SDG&E's attempt to divert attention from itself by casting aspersions towards other dischargers fails because there is substantial evidence in the record that SDG&E made at least some contribution to the condition of pollution or nuisance at the Shipyard Sediment Site. Its argument that BAE Systems and the previous operators at its leasehold contributed mightily to the condition of pollution or nuisance is, at bottom, simply one about allocation. As counsel for SDG&E, Jill A. Tracy notes in SDG&E's June 23, 2011 Rebuttal, which primarily addresses the need to name the Port as a discharger, "the state and regional boards are precluded from apportioning responsibility for remedial activities under a CAO." 6/23/11 SDG&E Rebuttal, pp. 10-11. Ms. Tracy argues that if the San Diego Water Board were to rescind its designation of the Port as a named discharger under the TCAO, it would "become engaged in a *de facto* allocation of harm." Id. The same *de facto* allocation of harm would occur if the San Diego Water Board agreed to rescind its designation of SDG&E as a discharger.

Moreover, SDG&E will have its opportunity to prove that its contribution to the condition of pollution or nuisance was negligible or deminimus in the currently-pending federal litigation specifically filed for the purpose of establishing an allocation of liability for cleanup costs under the TCAO. To rescind SDG&E's designation as a discharger now, even assuming it has made a showing that its responsibility is relatively minor, would go against State Water Board precedent. *See eg. In re County of San Diego, City of National City et al.;* State Water Resources Control Board Order No WQ 96-2, *cited with approval* by SDG&E in its 6/23/11 Rebuttal.

The Source Of Substantial Evidence – Even If Its Another Discharger – Does Not Make It Less Substantial

SDG&E agrees that State Water Board precedent requires substantial evidence to support naming a party responsible under a CAO. *See* SDG&E Request for Rescindment, p. 6, lines 7-12 (6:7-12) *citing In the Matter of the Petition of Exxon Company USA et al.*¸WQO No 85-7, p. 12 (*Exxon*). What SDG&E fails to note is that *Exxon* requires Regional Water Boards to name "all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility." *Exxon, supra*, at 11. In light of the Porter-Cologne's declared objective and the broad discretion granted to Regional Water Boards to issue CAOs under Water Code section 13304, State Water Board decisions suggest that a Regional Water Board should look at evidence with a view toward finding liability. To do otherwise would hinder their statutory mission to protect and enhance water quality.

SDG&E repeatedly attempts to malign the Cleanup Team by arguing that the record evidence is somehow less substantial because it has been gathered, in some cases, from the City and/or BAE Systems. *See* SDG&E Request for Rescindment, 1:14-16, 5:3-6, 16:16-19, 31:15-20. SDG&E's attempts to divert attention from its own discharges must fail. The record evidence of its responsibility for contributing to the condition of pollution or nuisance at the Shipyard Sediment Site is substantial, and it is made no less so by the efforts of the City and/or BAE Systems to bring it to the Cleanup Team's attention.

Substantial Evidence Establishes SDG&E Discharged Relevant COCs To San Diego Bay Through Its Cooling Water Tunnel

SDG&E admits it discharged copper and other metals at levels exceeding California Toxics Rule (CTR) levels from at least 1990 through 1994, after the plant had been shut down for several years. SDG&E Request for Rescindment, 8:19-22.[1] SDG&E then goes on to argue that the discharge of these constituents to San Diego Bay do not implicate it as a responsible party because CTR levels cannot be used as a basis to impose liability retroactively. But this is simply a red herring. The relevant evidentiary fact is SDG&E discharged copper and other metals to San Diego Bay directly from its cooling tunnels from 1990 through 1994.

SDG&E further admits that its cooling tunnel solids contained PCBs, HPAHs, copper and mercury. SDG&E Request for Rescindment, 10:2-6. It goes on to argue that shipyard operations, including the marine railways, are a source of COCs, and that because concentration levels of relevant COCs found in the cooling tunnel solids were comparatively low, it cannot be a contributing source to the condition of pollution or nuisance at the Shipyard Sediment Site. SDG&E's argument that the shipyard operations are the sole source of COCs at the Shipyard Sediment Site ignores the relevant facts – PCBs, HPAHs, copper and mercury were all detected in the cooling tunnel solids. Even if taken as completely accurate, SDG&E's argument is not exculpatory, but, rather, simply indicates it may have a small share of responsibility relative to the shipyards. Stated somewhat differently, this argument is not about responsibility, but is about allocation.

[1] SDG&E notes that the discharges did not violate its then-applicable NPDES permit. The Cleanup Team expresses no opinion about this assertion by SDG&E. However, SDG&E's argument is misplaced. The TCAO alleges that SDG&E's discharges contributed to a condition of pollution or nuisance at the Shipyard Sediment Site, which is an independent basis from permit violations for establishing responsibility for a cleanup under Water Code section 13304.

PCBs, HPAHs and copper are primary COCs impairing beneficial uses and driving the cleanup under the TCAO. Data gathered from the cooling tunnel outfalls (substantial evidence) establishes that SDG&E discharged copper directly to the San Diego Bay from 1990 through 1994. Data gathered from solids inside the cooling tunnels (substantial evidence) establishes that SDG&E discharged PCBs, HPAHs, copper and mercury directly to San Diego Bay. The Cleanup Team also believes it is reasonable to assume, based on these documented facts (substantial evidence), that during periods of peak operation from 1940 through 1984, even greater amounts of PCBs, HPAHs, copper, mercury and other metals were discharged by SDG&E through its cooling tunnels to San Diego Bay, where they accumulated and contributed to the current condition of pollution or nuisance at the Shipyard Sediment Site.

BAE System's Response to SDG&E's Request for Rescindment also contains overwhelming substantial evidence that SDG&E discharged PCBs through its cooling tunnels to San Diego Bay, and that SDG&E is responsible for at least some portion of the cleanup. Documentation of the kinds of equipment and historical activities at SDG&E's Silver Gate, when viewed in the light of industry-wide operational practices that are proven to have historically led to discharges of PCBs from steam turbine power plants constitute substantial evidence of SDG&E's discharges. *See e.g.*, Resolution 92, 49, §§ I A(1), (4); BAE Systems Response to SDG&E Request for Rescindment, pp. 4:14 – 6:13; 8:12 – 12:13. All of BAE Systems citations to historical documents and evidence of SDG&E's Silver Gate Power Plant components and operational practices, as well as its citations to documents and evidence establishing industry-wide practices with respect to power plants and the components and equipment thereof, are incorporated by reference in support of the summaries below as if set forth in full.

- **SDG&E Used Large Quantities Of PCBs At Silver Gate.** Large transformers existed at Silver Gate. Transformers contained PCBs from the 1950s through 1979 during Silver Gate's years of peak operation. Transformers containing PCBs were found at Silver Gate as late as April, 1997. According to the U.S. EPA, leaks of dielectric fluids containing PCBs from valves and seals on transformers were common, and leaks and spills varied in size from half a pound to sixty-four pounds of dielectric fluid.

- **SDG&E Commonly Spilled PCBs To The Turbine Room Floor And Routed Them To The San Diego Bay Through Its Cooling Tunnels.** PCBs were also commonly used in coolant oil, turbine lubricating oil and hydraulic fluids at steam generation plants from the 1940s through the late 1970s, during Silver Gate's years of peak operation. The turbine side of Silver Gate had eight turbine lubricating oil tanks with a capacity of 2,500 to 3,000 gallons each. According to industry documents and U.S. EPA documents, leaks and disposal of these types of fluids were common as the systems were only partially closed, and these fluids were rarely re-used. All leaks from the transformers, turbines, turbine lubricating tanks and any hydraulic equipment at Silver Gate collected in the trenches of the turbine side of the power plant and, for over 30 years before SDG&E installed a wastewater treatment facility in 1977, were discharged via the discharge cooling water tunnels directly to San Diego Bay. *See* Exponent Comments on 13267 Responses (September 29, 2004)(SAR156879-156889); ENV America, Technical Report for RWQCB Investigation Order No. R9-2004-0026 (July 14, 2004) (SAR193272-193329).

- **Environmental Investigations By SDG&E Confirm PCBs, Copper And Mercury Were Discharged Through SDG&E's Cooling Tunnels.** Periodic environmental investigations at the Silver Gate Power Plant, which consistently resulted in the detection of PCBs, copper, and mercury further demonstrate that SDG&E discharged PCBs, copper and mercury via the cooling water discharge tunnel. In 2005, SDG&E's consultants reviewed and summarized a prior Phase I and Phase II from Silver Gate from 2001, and concluded that the plant trench system, sumps, voids and cooling water tunnels contained metals and PCBs. Later sampling in 2006 by SDG&E's and the Port District's consultants confirmed that PCBs and copper were present in the cooling tunnels above reporting limits at all sampling locations, and mercury exceeded reporting limits in 3 of the 4 samples. In 2010, two of the three samples collected from the Silver Gate cooling discharge tunnel by consultants contained PCBs above the method detection limits, and copper and mercury above the reporting limits. The PCB Aroclors detected in the cooling tunnels were the same as the PCB Aroclors found in the tideland soils in the location of the former wastewater ponds and oil/water separators, the same as those found in the soil in the SDG&E switchyard area, the same as those found in transformer dielectric fluids in the transformers at Silver Gate. Moreover, the PCB Aroclors found in the cooling tunnel were detected in approximately the same ratio as those found in samples taken directly outside the tunnel and in the area of the Shipyard Sediment Site that was influenced by the tunnel outflow. The nearly identical ratio of co-occurrence of the Aroclors in the cooling water tunnel sediment samples and the San Diego Bay sediments influenced by the tunnel outfall indicates that the PCBs in the sediments had a common source -- the SDG&E discharge cooling water tunnel.

Substantial Evidence Establishes SDG&E Discharged Relevant COCs To Land At the Switchyard Area Of Its Facility Where They Were Conveyed By The MS4 System To San Diego Bay.

SDG&E admits that it discharged PCBs to soil at the switchyard area where it removed three 200,000 gallon underground storage tanks (USTs). SDG&E Request, 7:13-20. All of the samples contained PCBs, and SDG&E further admits that 11 of the 18 samples taken at the switchyard in 2006 contained PCBs in soil in excess of 1,000 ug/kg, with the hottest sample taken at 125,000 micrograms per kilogram. SDG&E Request, 11:2-24. Despite the fact that the Silver Gate Power Plant is located 10 to 30 feet upgradient from and only 900 feet from the San Diego Bay, SDG&E argues there is no possibility the PCBs found at very high concentrations at shallow depths in the switchyard soil could have made it to the Bay. SDG&E Request 12:2-3. But the argument not only defies the logic that "water flows downhill," it is belied by SDG&E's admission that "storm water runoff from the Silver Gate substation (switchyard) would have flowed from the substation to the gutter on the northwest side of Sampson Street[,]" SDG&E Request, 14:18-20. This gutter joins the 30-inch storm drain which eventually discharges at SW04, which is within the Shipyard Sediment Site. It is reasonable to assume based on the forgoing facts (substantial evidence) that PCBs admittedly discharged to soils in SDG&Es

switchyard, where storm water admittedly carried soils to the Sampson Street storm drain outlet that drains to the San Diego Bay, made their way to San Diego Bay.[2]

BAE Systems Response to SDG&E's Request for Rescindment also contains overwhelming substantial evidence that SDG&E discharged PCBs from its switchyard area through the MS4 system to the Shipyard Sediment Site, and that SDG&E is responsible for at least some portion of the cleanup. Documentation of the kinds of equipment and historical activities at SDG&E's switchyard, when viewed in the light of industry-wide operational practices that are proven to have led to discharges of PCBs historically from the types of equipment used at the switchyard constitute substantial evidence of SDG&E's discharges. *See e.g.*, Resolution 92, 49, §§ I A(1), (4); BAE Systems Response to SDG&E Request for Rescindment, pp. 4:14 – 6:13; 12:14 – 18:19. All of BAE Systems citations to historical documents and evidence of SDG&E's switchyard components and operational practices, as well as its citations to documents and evidence establishing industry-wide practices with respect to the equipment used at the switchyard, are incorporated by reference in support of the summaries below as if set forth in full.

- **SDG&E Discharged Substantial Quantities Of PCBs To Soils At The Switchyard.** SDG&E's switchyard had seventy-five oil circuit breakers and transformers containing dielectric fluid, which ordinarily contained PCB Aroclors 1254 and 1260 from the 1940s through the late 1970s. The transformers at SDG&E's switchyard held up to 6,000 gallons of the PCB-containing dielectric fluid, while the oil circuit breakers held up to 600 gallons. Transformers and circuit breakers of this type commonly leaked their PCB-containing dielectric fluids, and approximately ten percent of the dielectric fluids sold were to replace those that had leaked or spilled. SDG&E's own Daily PCB Inspection Reports confirmed leakage was common at the switchyard and, perhaps most importantly, SDG&E took no action to clean up the leaks or spills. The evidence of discharges of large volumes of PCB-containing dielectric fluids at SDG&E's switchyard is overwhelming.

- **SDG&E Did Not Adequately Contain PCB Leaks And Spills At The Switchyard.** SDG&E argues all of its PCB leaks were contained within a "sophisticated, multifaceted containment structure[]. SDG&E Request 13:16-18. While creative, this argument wholly lacks factual merit. In 1987, U.S. EPA's Inspection Report of the switchyard area documented deficient containment, including: (1) inadequate roof and walls to prevent rain water from reaching stored PCBs; (2) inadequate floor with a minimum six inch high curb to provide containment of a volume at least twice the internal volume of the largest stored container; (3) there are floor openings that would permit liquids to flow from the curbed area; (4) floors and curbing that are not constructed of smooth and impervious materials; and (5) spilled or leaked materials are not immediately cleaned up. U.S.

[2] SDG&E argues throughout its Request that PCBs and other COCs it discharged to the Bay are in such small amounts that they could not have caused the condition of pollution or nuisance by themselves. *See e.gs.* Request, 10:2-7, 15:2-5, 19:4-13, 20:7-9. This is not a defense to liability under the TCAO. The argument amounts to an admission that SDG&E *contributed* to the condition of pollution or nuisance by adding COCs that caused impairment to beneficial uses to San Diego Bay, even if some other discharger added more COCs to the Bay than it did. SDG&E's arguments are relevant to an allocation – not to whether it is properly named as a responsible party.

EPA's Inspection Report confirms that leaked and spilled PCBs in the switchyard were not adequately contained to prevent storm water run-off from carrying the PCBs to the storm drain system and then to the MS4 storm drain outfall, and directly contradicts SDG&E's claim that the switchyard containment system was a "sophisticated, multifaceted containment structure." Not surprisingly, samples gathered in the vicinity of SW04 contained the highest concentrations of PCB Aroclors 1254 and 1260 – the same Aroclors detected at high levels in the switchyard soils. Based on these facts, it is virtually impossible not to make the reasonable assumption (substantial evidence) that PCBs discharged by SDG&E made their way through the MS4 system to the Shipyard Sediment Site where they contributed to the condition of pollution or nuisance that exists there.

- **PCBs Detected At CB-1 Are Most Likely Attributable To SDG&E.** SDG&E argues that none of the PCBs detected at CB-1 can be attributed to it. SDG&E Request, pp. 14:7-23, 16:4-15. Ultimately, SDG&E's argument fails. CB-1 contained Aroclors 1260 and 1254, detected commonly throughout SDG&E's facilities. The six-inch lateral draining to CB-1 came from the turbine roof of Generating Unit 1 at Silver Gate, where subsequent investigation by SDG&E confirmed the presence of PCBs. During Silver Gate's peak operating years, PCBs were commonly found in various building materials, including paints, sealing and caulking compounds, cement and plaster additives, sealing liquids and fire retardants. PCBs in these building components are known to readily enter the environment. After entering CB-1, storm water runoff and the pollutants it collected from the Silver Gate roof went to the 30-inch culvert beneath Sampson Street and then to the SW04 outfall within the Shipyard Sediment Site. It is certainly reasonable to assume, based on these facts (substantial evidence), that the source of PCBs on SDG&E's power plant roof, and then in CB-1, is SDG&E, rather than some other, more remote source as SDG&E speculates.

Substantial Evidence Indicates SDG&E Discharged Relevant COCs To A Series Of Open Waste Pits At Its Tidelands Lease Area Where They Spilled Or Were Routed Through A Trench To San Diego Bay.

SDG&E admits soil data from one of the open waste pits in its tidelands lease area known as "Pond B" tested positive for COCs, including copper, PAHs and PCBs. SDG&E Request, 18:22-25. SDG&E further admits that PCBs persist in the soils today, over 25 years after the facility was closed. SDG&E Request, 19:4-13. Despite the documented presence of PCBs in soils in close proximity to the San Diego Bay, SDG&E argues that its waste pits are not a source of PCBs or other COCs at the Shipyard Sediment Site. SDG&E Request, 20:19-22. In order to make the argument, SDG&E engages in some revisionist history. SDG&E admits that its consultant stated in response to the San Diego Water Board's section 13267 Investigative Order (under penalty of law) that "[s]ome water from the pond discharged to the Bay[,]" but takes the Cleanup Team to task for allegedly "ignoring" a subsequent statement by the consultant that he did not really mean it. SDG&E Request, 20:12-14, n. 7. The Cleanup Team simply chose to place more weight on the contemporaneous statement made by the consultant at the time his report was finalized and made under penalty of law in response to a formal order. It properly chose to discount the "correction" he later submitted when commenting on the 2005 Tentative

Cleanup and Abatement Order at the request of SDG&E. Moreover, internal SDG&E correspondence authored in 1974 corroborates SDG&E's consultants initial statement about discharges. The waste pit is referred to as Nobles Lake, which is described as being in an "overflowing condition" and warning is given that "discharge from Silver Gate will eventually find a path to the San Diego Bay." The record not only establishes that these open, unlined waste pits overflowed to the Bay, but also that a trench from one of the pits conveyed wastes directly to the Bay.

BAE Systems Response to SDG&E's Request for Rescindment also contains overwhelming substantial evidence that SDG&E discharged copper, PCBs, and other COCs to its open, unlined waste pits in the tidelands area of its leasehold that were, in turn, discharged to the Shipyard Sediment Site, and that SDG&E is responsible for at least some portion of the cleanup. Documentation of the kinds of equipment and historical activities at SDG&E's boiler room and tidelands lease area, when viewed in the light of industry-wide operational practices constitute substantial evidence of SDG&E's discharges. *See e.g.*, Resolution No. 92-49, §§ I A(1), (4); BAE Systems Response to SDG&E Request for Rescindment, pp. 4:14 – 6:13; 18:20 – 24:6.[3] All of BAE Systems citations to historical documents and evidence of SDG&E's investigations of the open, unlined waste pits, as well as its citations to documents and evidence establishing industry-wide practices with respect to the boiler room equipment and operating procedures, are incorporated by reference in support of the summaries below as if set forth in full.

- **SDG&E Boiler Blowdown Contained COCs And Was Discharged To Open, Unlined Waste Pits In Its Tidelands Leasehold.** Maintenance protocols required the Silver Gate boilers to be cleaned using specific chemical cleaning products. The resultant waste contained dissolved metals such as iron, copper (one of the primary COCs in the TCAO), chromium, and nickel. Untreated boiler blowdown, bilge water on the boiler side of the plant and wastes from boiler cleaning collected in the trenches on the floor of the boiler side of the plant, were pumped to and/or disposed of in four unlined ponds or oil/water separators located on SDG&E's tidelands leasehold from 1950 through 1974. Aerial photographs of the area leased by SDG&E on the tidelands demonstrate that SDG&E began disposing of wastes in ponds and oil/water separators in 1950 and continued this practice until at least 1974. Both the trenches on the boiler room floor and the waste pits tested positive for PCBs (Aroclors 1254 and 1260), copper and mercury.

- **SDG&E's Waste Pits Were In Close Proximity To The Bay And Overflowed Or Discharged To The Bay Through A Trench.** Not only did SDG&E's consultant state under penalty of law that the waste pits overflowed, but also there is a letter dated May 1, 1950 in the record stating that SDG&E operated a trench from one of the ponds that extended to the edge of the tidelands to facilitate the discharge of SDG&E's stored wastes directly to the Bay. Internal SDG&E documents discuss "Nobles Lake," an oil/water settling pond located on the tidelands that received waste from the turbine room

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[3] These sections of BAE Systems comments also detail a number of SDG&E's mischaracterizations of testimony given by members of the Cleanup Team at their depositions. While the Cleanup Team does not belabor these points in this response since it is simply a summary of the substantial evidence that supports naming SDG&E to the TCAO, which stands on its own, irrespective of the deposition testimony, we adopt BAE Systems statements clarifying the deposition testimony.

and boiler room sump pumps. The correspondence notes that Nobles Lake "is filled to the brim and is at least 11 feet deep with a mixture of oil and earth" and that in its present overflowing condition a discharge will eventually find its way to the Bay. It is also reasonable to conclude that September 10, 1974 was not the first time that SDG&E's use of Nobles Lake created an overflowing condition and eventual discharge path to the Bay. In fact, photographs of Nobles Lake from 1955, also included as attachments to the ENV America July 14, 2004 Site Assessment Report, show that Nobles Lake had become filled to the brim in the past, and that SDG&E's solution was to remove water and sludge and dump it onto the ground adjacent to Nobles Lake where it likely ran into the Bay or was washed into the Bay by storm water run off. Further, a May 1, 1950 letter from Walter Zitlau, an engineer at the Silver Gate Power Plant who later became President of SDG&E, states that the "water disposal lake on the tidelands has been overflowing, and a ditch has been cut to the water's edge," which would permit "oil [to] be admitted to the bay." Aerial photographs from 1950 clearly show the trench that Mr. Zitlau refers to in his letter extending from the pond all the way to the edge of the tidelands and into the Bay.

10. TCAO Finding 10 and DTR Section 10: United States Navy

Finding 10 of CAO No. R9-2011-0001 states:

The San Diego Water Board alleges, but the United States Navy (hereinafter "U.S. Navy") denies, that the U.S. Navy caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. The U.S. Navy owns and operates a municipal separate storm sewer system (MS4) at Naval Base San Diego (NBSD), formerly Naval Station San Diego or NAVSTA, through which it has caused or permitted the discharge of waste commonly found in urban runoff to Chollas Creek and San Diego Bay, including excessive concentrations of copper, lead, and zinc in violation of waste discharge requirements. Technical reports by the U.S. Navy and others indicate that Chollas Creek outflows during storm events convey elevated sediment and urban runoff chemical pollutant loading and its associated toxicity up to 1.2 kilometers into San Diego Bay over an area including the Shipyard Sediment Site.

The San Diego Water Board alleges, but the U.S. Navy denies, that the U.S. Navy has caused or permitted marine sediment and associated waste to be resuspended into the water column as a result of shear forces generated by the thrust of propellers during ship movements at NBSD. The resuspended sediment and pollutants can be transported by tidal currents and deposited in other parts of San Diego Bay, including the Shipyard Sediment Site. The above discharges have contributed to the accumulation of pollutants in marine sediment at the Shipyard Sediment Site to levels that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay.

Also, from 1921 to the present, the U.S. Navy has provided shore support and pier-side berthing services to U.S. Pacific fleet vessels at NBSD located at 3445 Surface Navy Boulevard in the City of San Diego. NBSD currently occupies 1,029 acres of land and 326 water acres adjacent to San Diego Bay to the west, and Chollas Creek to the north near Pier 1. Between 1938 and 1956, the NBSD leasehold included a parcel of land within the Shipyard Sediment Site referred to as the 28th Street Shore Boat Landing Station, located at the south end of the present day NASSCO leasehold at the foot of 28th Street and including the 28th Street Pier. The San Diego Water Board alleges, but the U.S. Navy denies, that the U.S. Navy caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance at this location when it conducted operations similar in scope to a small boatyard, including solvent cleaning and degreasing of vessel parts and surfaces, abrasive blasting and scraping for paint removal and surface preparations, metal plating, and surface finishing and painting. Prevailing industry-wide boatyard operational practices employed during the 1930s through the 1980s were often not sufficient to adequately control or prevent pollutant discharges, and often led to excessive discharges of pollutants and accumulation of pollutants in marine sediment in San Diego Bay. The types of pollutants found in elevated concentrations at the Shipyard Sediment Site (metals, butyltin species, PCBs, PCTs, PAHs, and TPH) are associated with the characteristics of the waste the U.S. Navy operations generated at the 28th Street Shore Boat Landing Station site. Based on the preceding considerations, the U.S. Navy is referred to as "Discharger(s)" in this CAO.

RESPONSE 10.1

DTR Section: 10
Comment Submitted By: U.S. Navy
Comment IDs: 2, 4, 5, 6, 7, 8, 9, 10, 478

Comment

ID 478
The San Diego Water Board's allegation that significant contaminants from Naval Base San Diego migrated to the Shipyard Sediment Site, either through discharges to Chollas Creek, resuspension of sediments through propeller wash, or via tidal currents is unfounded.

ID 2
Ten IRP sites were identified in the CAO; nine of these sites were also identified in the Complaint. The potential for historical releases from four of the sites (IRP Sites 8, 9, 10, and 12) to San Diego Bay is low, and it is unlikely that these sites ever had a detectable impact on bay sediments. Historical transport pathways from six of the sites (IRP Sites 1, 2, 3, 4, 7, and 13) did exist or may have existed, although there is little direct evidence in bay sediments that is indicative of releases from these sites. Discharges to the bay from these sites would have declined over time due to cessation of site activities, improved environmental practices, and completion of remedial actions. Five of the sites (IRP Sites 7, 8, 9, 12, and 13) have been closed with no further action, with regulatory agency concurrence.

ID 4
Multiple dredging events from the 1940s through 2003 have removed sediments that accumulated in three areas of San Diego Bay adjacent to the IRP sites and in the main navigational channel between NBSD and the Shipyard Sediment Site, reducing the likelihood of potential impacts of any historical releases from IRP sites as well as the availability of COCs for potential resuspension and transport.

ID 5
At NBSD, COC concentrations in surface sediment in the three areas adjacent to the IRP sites tend to be higher closer to shore and lower outside the pier heads and in the main channel. At the Shipyard Sediment Site, COC concentrations in surface sediment also decrease with increasing distance from the shoreline. These concentration gradient patterns are consistent with the presence of separate, localized source areas at NBSD and the Shipyard Sediment Site and are not consistent with the transport of COCs from NBSD to the Shipyard Sediment Site. There are no reasonable physical or chemical mechanisms that can scientifically explain these chemical gradient patterns other than the existence of localized source areas at each site.

ID 6
Average COC concentrations in the three areas of San Diego Bay adjacent to the IRP sites are lower than average concentrations within the proposed remediation footprint at the Shipyard Sediment Site. In addition, COC concentrations in subsurface sediments adjacent to the IRP sites do not appear to be substantially higher than those in surface sediments. Based on the existing data reviewed for the site, there are no reasonable physical or chemical mechanisms that can scientifically explain higher chemical concentrations at a distant site that exceed the original source concentration.

ID 7
Because of its prevalent use as an antifouling coating on commercial ships and its lack of use on Navy ships, TBT is a strong, site-specific indicator of Shipyard Sediment Site releases. TBT concentrations in sediments adjacent to NBSD are about an order of magnitude lower than concentrations found at the Shipyard Sediment Site. Other Shipyard Sediment Site COCs, including arsenic, cadmium, copper, lead, zinc, and PCBs, are significantly correlated with TBT in sediments at the Shipyard Sediment Site. This correlation is consistent with co-occurring sources within the Shipyard Sediment Site and inconsistent with a significant source from NBSD.

ID 8
PCB fingerprinting of sediments at the Shipyard Sediment Site is consistent with the presence of two distinct, localized sources of PCBs. If these PCBs were derived from activities at NBSD, the signatures would be similar. The spatial distribution of PCBs at the Shipyard Sediment Site is consistent with the presence of two different sources, with concentrations found at the north end of the site higher than those at the south end.

ID 9
A modeling simulation was performed specifically to evaluate the claim that sediments adjacent to IRP sites may have been resuspended by propeller wash, transported to the Shipyard Sediment Site by tidal currents, and redeposited within the Shipyard Sediment Site. The modeling results indicate that net deposition to the Shipyard Sediment Site proposed remediation footprint due to resuspension and transport from areas adjacent to IRP sites at NBSD was between 0.17 percent and 0.37 percent of the total annual deposition, an amount that is negligible in the overall deposition of sediments at the Shipyard Sediment Site.

ID 10
Collectively, these lines of evidence indicate that the overall contribution of Installation Restoration Program (IRP) sites to contamination at the Shipyard Sediment Site is negligible.

Response 10.1

In general, the arguments put forth in the U.S. Navy's comment go to allocation of responsibility based on the level of significance of the Navy's contribution to contamination at the Shipyard Sediment Site. The comments do not, however, provide evidence that would exculpate the Navy from responsibility. Water Code section 13304 does not establish a discharge threshold below which a party cannot be ordered to cleanup and abate the affects of an unauthorized discharge of waste. Furthermore, the DTR does not make findings on the level of significance of the Navy's contribution to contamination at the Shipyard Sediment Site. Thus, the TCAO properly finds that the Navy caused or permitted a discharge of waste that contributed to the impairment of sediment quality-related beneficial uses in the Shipyard Sediment site. More detailed responses to the Navy's comments are provided below.

ID 2.
The Navy's statement that “the potential for historical releases from four of the sites (IRP Sites 8, 9, 10, and 12) at Naval Base San Diego to San Diego Bay is low” is not accurate. Soil samples

taken at IRP Sites 8 and 12 located adjacent to San Diego Bay were found to contain TPH, metals, SVOCs, and PAHs. Based on the contaminants detected in soil and proximity of the sites to the bay, historic releases from IRP Sites 8 and 12 could have affected San Diego Bay. The comment is correct that the potential for impacts from IRP Sites 9 and 10 to San Diego Bay are low based on the proximity of the sites to San Diego Bay (greater than 500 feet).

The comment is correct that historical transport pathways from six of the sites (IRP Sites 1, 2, 3, 4, 7, and 13) did exist or may have existed. The majority of these sites with the exception of IRP Site 7 are adjacent to either San Diego Bay or Paleta Creek. The San Diego Water Board's Department of Defense case files and related douments contained in the Shipyard Sediment adminstrative record show that some of these sites previously had exposed soil which could have been eroded into surface waters or a migration pathway for contaminants in groundwater to the bay. Groundwater elevations at the sites range from mean sea level (MSL) near the shoreline to a few feet above MSL near the east side of base. In addition, the Site Management Plan for the base identified hydraulic communication to San Diego Bay in the vicinity of IRP Site 1. Therefore, a high likelihood exists that IRP Sites 1, 2, 3, 4, 7, 8, 12, and 13 have, or may have, contributed to bay sediment contamination based on proximity of these sites to the bay, contaminants of concern detected at the sites, and past site management practices.

ID 4
Dredging events from the 1940s through 2003 likely did remove sediment derived from Navy sources from San Diego Bay. These events, however, were not conducted for environmental cleanups. Rather they were maintenance dredging projects designed to improve navigation. Thus, these dredging events likely did not remove all sediment derived from Navy sources. Additionally, the San Diego Water Board is not aware of any source control measures taken by the Navy since 2003 to eliminate sediment discharges from its sources to San Diego Bay.

ID 5
The existance of concentration gradients do suggest separate, localized sources of contaminated sediment at Naval Base San Diego and the Shipyard Sediment Site. The gradients, however, do not rule out the mobilization of sediment from Naval Base San Diego and redeposition at the Shipyard Sediment Site. As pointed out in NASSCO's rebuttal comment (Comment ID 374) sources in the Chollas Creek area may not be the largest sources of copper and zinc to the Shipyard Sediment Site, but they are still a source.

ID 6
Concentrations at the Shipyard Sediment Site are consistent with contributions of sediment from Navy sources. The DTR does not claim that the Navy is the only source and does not make findings on the level significance of Navy sources. Further, NASSCO points out in its rebuttal comment (Comment ID 374) that the Navy's concentration gradient study shows transport and deposition of silt and clay, the most important size fraction with respect to COC transport, in the Shipyard Sediment Site.

ID 7
The Navy concludes that the correlation of TBT with other COCs in sediment at the Shipyard Sediment Site are inconsistent with a significant source from Naval Base San Diego. As pointed

out previously, the DTR does not make findings on the level of significance of the Navy's contribution to the contamination at the site.

ID 8
The Navy concludes that the PCB fingerprinting data also indicate two localized sources of PCBs at the Shipyard Sediment Site. As discussed in the reponse to Comment ID 5 above, this conclusion does not rule out mobilization of PCB contaminated sediment from Naval Base San Diego and redeposition at the Shipyard Sediment Site.

ID 9
The Navy concludes that the deposition in the remediation footprint is negligible from resuspension and transport of sediment from propeller wash and tidal currents. Again, this argument doesn't exonerate the Navy and only addresses one potential transport pathway from Naval Base San Diego to the Shipyard Sediment Site.

ID 10
The Navy's conclusion that the overall contribution from Navy sources to the Shipyard Sediment Site is negligible is not relevant to whether or not it bears responsibility for the contamination. The DTR and TCAO did not make findings regarding the level of significance of the Navy's contribution to the contaminated sediment problem at the Shipyard Sediment Site.

RESPONSE 10.2

DTR Sections: 10.4.2, 10.6, 10.10
Comments Submitted By: U.S. Navy, NASSCO
Comment IDs: 375, 479
Comment

ID 479
The U.S. Navy commented that the San Diego Water Board’s allegation that historical Navy operations at the 28th Street Mole Pier contributed to the contamination at the Shipyard Sediment Site is unfounded, and the U.S. Navy’s 2004 comment submission on this subject incorrectly assumed that shipyard operations were part of the U.S. Navy leasehold. No documentation was found to support the allegation of U.S. Navy industrial use of the area currently leased by NASSCO. U.S. Navy use in this area appears to have been limited to temporary housing in two areas during the 1940s and operation of small landings, first on the north side of the 28th Street Mole Pier (near its western terminus) and later on the south side near the base (eastern end) of the pier. A summary of the U.S. Navy’s use of the 28th Street pier is given below, with a comprehensive review provided in Appendix A to this comment submission.

TEMPORARY HOUSING EAST OF 28TH STREET MOLE PIER.
East of the 28th Street Mole Pier, in an area east of 28th Street and south of Belt Street, temporary officers quarters were used by the Navy on leased City of San Diego property from approximately 1941 through 1946, in the area known as Parcel 1. During approximately 1941 and 1942 a Temporary Defense Housing Camp occupied a parcel located southwest of the intersection of Belt Street and 28th Street. Industrial development in both these areas appears to have taken place after Navy use had ended.

28TH STREET SHORE BOAT LANDING FACILITY.
The Navy operated a 28th Street Shore Boat Landing facility on the north side of the 28th Street Mole Pier from approximately 1939 through 1956. This facility, located near the western terminus of the 28th Street Mole Pier, consisted of a storage room, a waiting room, and a finger pier and floating docks used by ship launches to ferry sailors to and from Navy ships moored in San Diego Bay (Navy 2004). Non-Navy industrial activities on 28th Street Mole Pier during this time period included a shipbuilding and maintenance facility located partly on a wooden wharf extending along the north face of the 28th Street Mole Pier and partly on the shore north of the base (eastern end) of the pier. By 1946, Lynch Shipbuilding Company was operating the facility, and by 1956, National Marine Terminal Incorporated was operating it. Industrial operations shown for this facility include machine, woodworking, pattern, electric, and welding shops; a foundry; and a mold loft.

SMALL CRAFT LANDING, SOUTHERN END OF 28TH STREET
In 1956, a permit was granted to the Navy for use of a parcel located east of the 28th Street Mole Pier, at the southern end of 28th Street, apparently as a replacement for the loss of the Shore Boat Landing facility on the north side of the 28th Street Mole Pier. A small landing can be seen in this area in aerial photos from 1964, 1974, and 1978. No other Navy activities were seen in this parcel. Industrial development of the parcel appears to have occurred after Navy use had ended.

ID 375
NASSCO rebutted this comment with the following information and allegations. The Historical Document Review submitted by the Navy does not provide any evidence that the Navy's activities at the NASSCO leasehold did not result in discharges of contaminants of concern to the Site. The principle finding in the Historical Document Review is that "[t]he 2004 Navy Technical Report (Navy 2004) had previously associated many of the activities in the shipbuilding area with the Navy operated 28th Street Shore Boat Landing facility. However, this review indicates that these facilities were operated by the Lynch Shipbuilding Company and later by National Marine Terminal Incorporated." Navy Comments, Appendix A, Navy Historical Document Review, at 5-1.

Yet this conclusion does not contradict the findings in the DTR, which states that the "U.S. Navy concluded that the industrial activities it conducted on NASSCO's present day leasehold were limited to maintenance of small boat launches," and that the "U.S. Navy acknowledged the possibility that discharges from their boat launch maintenance operations on the north side of 28th Street Pier to the Shipyard Sediment Site may have occurred." DTR at 10-12. This is so because the Navy does not dispute that it operated a small boat launch facility at 28th Street, and the Historical Document Review does not present any evidence that contradicts the DTR's finding that discharges from those operations to the Shipyard Sediment Site may have occurred.

The Navy Apportionment Report also includes an analysis of the contribution of the Navy's facilities at 28th Street. The Navy presents historical evidence to clarify the extent of Navy facilities at that time. However, faced with a general lack of data, the Navy falls back to estimating its contribution from 28th Street based on the surface areas and periods of operation of the BAE, NASSCO, and 28th Street. The surface areas and periods of operation were multiplied by the Navy to obtain acre-years for each facility and then calculate the percentage of the total acre-years for each facility, which becomes the allocation that each facility.

This approach is completely irrelevant to contaminants in sediments near 28th Street because it presumes that all storm water-related COCs, derived from surface runoff, from the entire surfaces of the BAE and NASSCO facilities contributed to the small area near 28th Street (near the two sediment core locations), which they did not. Even if this were appropriate, the Navy biases the result further by limiting its area of contribution to just 28th Street (one acre) and disregarding the area of the rest of the NBSD. Finally, consideration of storm water runoff only from surfaces ignores inputs from historical point sources that were likely much more significant before implementation of both federal and state clean water point source permitting programs under the Clean Water Act and Porter-Cologne Act. Accordingly, the Navy's conclusion regarding its historical contribution from 28th Street is not credible and should not be considered. Attachment B, Apportionment Critique, at 3.

Response 10.2

As NASSCO rebuttal comments point out, the U.S. Navy's comment confirms the San Diego Water Board's allegations in the DTR that the Navy operated the former 28th Street Shore Boat Landing Station from 1936 through 1956. Based on circumstantial evidence, the DTR concluded that a reasonable assumption was that BMPs employed by the U.S. Navy at the 28th Street Shore Boat Landing Station during the years of operation were not adequate to prevent discharges to San Diego Bay (p. 10-14). The U.S. Navy provided no information to counter the DTR's conclusion. Accordingly no changes to TCAO Finding 10 or DTR 10.4.2 regarding discharges from the Navy operated former 28th Street Shore Boat Landing Station are warranted.

11. TCAO Finding 11 and DTR Section 11: San Diego Unified Port District

Finding 11 of CAO No. R9-2011-0001 states:

The San Diego Water Board alleges, but the Port District denies, that the Port District caused or permitted wastes to be discharged or to be deposited where they were discharged into San Diego Bay and created, or threatened to create, a condition of pollution or nuisance. The Port District is a special government entity, created in 1962 by the San Diego Unified Port District Act, California Harbors and Navigation Code Appendix I, in order to manage San Diego Harbor, and administer certain public lands along San Diego Bay. The Port District holds and manages as trust property on behalf of the People of the State of California the land occupied by NASSCO, BAE Systems, and the cooling water tunnels for SDG&E's former Silver Gate Power Plant. The Port District is also the trustee of the land formerly occupied by the Star & Crescent Boat Company and its predecessor, and by Campbell Industries at all times since 1963 during which they conducted shipbuilding and repair activities.[1] The Port District's own ordinances, which date back to 1963, prohibit the deposit or discharge of any chemicals or waste to the tidelands or San Diego Bay and make it unlawful to discharge pollutants in non-storm water directly or indirectly into the storm water conveyance system. The San Diego Water Board has the discretion to name the Port District in its capacity as the State's trustee as a "discharger" in the Shipyard Sediment Site CAO and hereby does so, consistent with its responsibility for the actions, omissions and operations of its tenants and to the extent indicated by previous State Water Board and San Diego Water Board orders

The wastes the Port District caused or permitted to be discharged, or to be deposited where they were discharged into San Diego Bay through its ownership of the Shipyard Sediment Site contained metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), butyl tin species, PCBs, PCTs, PAHs, and TPH.

The Port District also owns and operates a municipal separate storm sewer system (MS4) through which it discharges waste commonly found in urban runoff to San Diego Bay subject to the terms and conditions of a National Pollutant Discharge Elimination System (NPDES) Storm Water Permit. The San Diego Water Board alleges, but the Port District denies, that the Port District has discharged urban storm water containing waste directly to San Diego Bay at the Shipyard Sediment Site. The waste includes metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), total suspended solids, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs).

The urban storm water containing waste that has discharged from the on-site and off-site MS4 has contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay. Based on these considerations the San Diego Unified Port District is referred to as "Discharger(s)" in this CAO.

[1] Star & Crescent Boat Company and Campbell Industries owned and operated ship repair and construction facilities in past years prior to BAE Systems San Diego Ship Repair, Inc.'s occupation of the leasehold. See Sections 5 and 6 of the Technical Report.

RESPONSE 11.1

Comments Submitted By: Port District, City of San Diego
DTR Section: 11
Comment IDs: 13, 15, 20, 21, 22, 24, 26, 27, 28, 29, 286, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449

Comment

ID 13
Port Support During the TCAO/DTR Process

The Port also reiterates its willingness to provide appropriate support to the Regional Board in its efforts to implement the TCAO and DTR. The Port was instrumental in coordinating initial efforts to get the dischargers and interested parties into discussions and mediation to try to reach a consensus on remedial approach and scope. The Port has worked to locate and leverage dischargers' potentially applicable insurance policies that could assist in funding the remediation. The Port also made its experts available to the CUT to assist in the site assessment.

The Port remains committed to supporting the Regional Board in any appropriate manner afforded by law. The Port will continue to be engaged in any appropriate mediation process, to reach a resolution of any remediation and monitoring issues. Likewise, the Port is working with the CUT and supporting its efforts through the California Environmental Quality Act (CEQA) process. The Port is further working with the CUT to explore options for potential disposal or dewatering sites for the dredged sediment.

ID 15
Past and Present Port Support and Cooperation with the Regional Board

The Port is dedicated to protecting and improving the environmental conditions of San Diego Bay and the Port tidelands. The Board of Port Commissioners is committed to conducting Port operations and managing resources in an environmentally sensitive and responsible manner and ensuring that tenant operations do the same.

The Port was created by the State Legislature in 1962 to manage San Diego Bay and surrounding tidelands by balancing economic benefits, community services, environmental stewardship, and public safety. (California Harbors and Navigation Code, App. 1 [the Port Act].) The Port takes seriously its authority and responsibility to protect, preserve, and enhance San Diego Bay's physical access; natural resources, including plant and animal life; and water quality. (Port Act, §4(b).)

The Port has adopted as its mission statement the commitment to protecting the tideland resources through balancing economic benefits, community services, environmental stewardship, and public safety on behalf of the citizens of California. To this end, the Port has developed strategic goals to protect and improve the environmental conditions of San Diego Bay and surrounding tidelands. The Port currently has several programs in place to protect storm water, reduce pollutant sources, improve air quality, and reduce air emissions. For example, the Port has established an environmental committee with the goal of promoting environmental improvement projects throughout the San Diego Bay beyond ordinary compliance obligations. (Exhibit " 1 " [Gibson Deposition], 56:12-57:14.) Such Port programs have positively impacted water quality in bays and harbors throughout the state.

To the extent the CUT would designate the Port as a primary discharger because of perceived non-cooperation grounded in the Port's withdrawal from a voluntary mediation process that it suggested, such a position would be an inappropriate basis for Port primary liability as a matter of law. On the contrary, the Port's commitment to the above principles is reflected its long history of cooperating with the Regional Board in efforts to remediate sites at which the Port is a landlord, some of which are listed below.

1. Campbell Shipyard

The Port provided significant assistance and leadership at another large San Diego Bay dredging project, the Campbell Shipyard site. At that site, the Port worked cooperatively with and supported the Regional Board's cleanup approach. (See, Exhibit " 1 " [Gibson Deposition], 28:12-24; 48:18-49:9; Exhibit "5" [Barker Deposition], Vol. Ill, 539:11-25.) The Port assisted in pushing the site toward mediation and assisted in securing insurance proceeds from a number of dischargers as well as its own insurance. These funds were used to finance the dredging and capping of the impacted sediments. Ultimately, the Port performed the sediment dredging and capping work. (Exhibit "6" [Carlisle Deposition], Vol. I, 119:2-6.)

2. Shelter Island Yacht Basin TMDLs

The Regional Board has been implementing copper TMDLs at the Shelter Island Yacht Basin. As David Barker acknowledged in his deposition, the Port "is working very cooperatively with the [Regional B]oard" on this matter. (Exhibit "5" [Barker Deposition], Vol. Ill, 543:2-8.)

In particular, the Port has been working at phasing out copper-based hull paint and "taking a lead role in investigating the use of alternative vessel hull paints to curtail copper discharges into the [San Diego B]ay." (Exhibit "5" [Barker Deposition], Vol. Ill, 544:25-545:6.) The Port has sought grant funds to assist in the switching of hull paints and has been facilitating a discussion on this point between the Regional Board, the yacht owners and the marinas. (Exhibit "5" [Gibson Deposition], 31:20-32:15; Exhibit "5" [Barker Deposition], Vol. Ill, 545:7-10.) The Port has also made financial contributions to this effort. ((Exhibit " 1 " [Gibson Deposition], 32:

16-23.)

3. Teledyne Ryan/Convair Lagoon

The Port has worked cooperatively with the Regional Board at the Teledyne Ryan (TDY) and Convair Lagoon sites. These sites involve a former aeronautical facility that had landside contamination impacts (the TDY site) and San Diego Bay sediment contamination impacts (the Convair Lagoon site). Again, the Port is working cooperatively with the Regional Board at this site. (Exhibit "5" [Barker Deposition], Vol. Ill, 540:11-20.) In fact, the Port assisted in bringing historic specialized insurance assets to help pay for demolition and remediation costs on the TDY site. Further, the Port worked aggressively with Regional Board oversight to remediate the sediment in the Convair Lagoon.

4. South Bay Power Plant

The South Bay Power Plant is a complex decommissioning and demolition project related to a power plant facility. There are related environmental issues associated with this work, including issues relating to San Diego Bay sediment. The Port has been cooperative while working with the Regional Board at the South Bay Power Plant site. (Exhibit " 1 " [Gibson Deposition], 30:18-31:8.) The Port is also working with other responsible agencies and parties through a very complex process to implement the demolition and related processes.

5. Former BFGoodrich South Campus

BFGoodrich is a site involving investigation and remediation in an area adjacent to the San Diego Bay. The Port is working with the Regional Board in investigating potential areas of historic contamination, including sediment contamination.

6. Tow Basin

The Tow Basin is an area adjacent to the San Diego Bay involving PCB contamination associated with a former aeronautics facility. The Port has been working cooperatively with the Regional Board to conduct the necessary investigation and remedial work pursuant to the Sediment Quality Objectives.

ID 20
The Port Should Not be Primarily Responsible for its Tenants' Discharges

The DTR states that the Port may be named as a discharger due to its capacity as landlord of certain tenants identified as dischargers but also recognizes that "[i]n certain situations, the State Water Board has found it appropriate to consider a lessee primarily responsible and the lessor secondarily responsible for compliance with a cleanup and abatement order." (DTR, § 11.2, at p. 11 -4.) As the DTR further notes, while this determination requires an analysis of various factors, the general rule is "that a landowner or lessor party may be placed in a position of secondary liability where it did not cause or permit the activity that lead to the initial discharge into the environment and there is a primarily responsible party who is performing the cleanup." (Id) The Port agrees with the DTR's statements of the law in this regard.

While the DTR goes on to correctly note that "there is no evidence in the record that the Port District initiated or contributed to the actual discharge of waste to the Shipyard Sediment Site" it incorrectly concludes that "it is ... appropriate to name the Port District as a discharger in the CAO to the extent the Port's tenants, past and present, have insufficient financial resources to cleanup [sic] the Shipyard Sediment Site and/or fail to comply with the order." (DTR §11.2, at p. 11-4 [citing In the Matter of Petitions of Wenwest, Inc. et al., WQ 92-13, p. 9; In the Matter of Petitions of Arthur Spitzer, et al, WQ 89-8, p. 21.)

The DTR acknowledges that "[i]n the event the Port District's tenants, past and present, have sufficient financial resources to clean up the Shipyard Sediment Site and comply with the Order, then the San Diego Water Board may modify its status to secondarily responsible party in the future." (DTR §11.2, at pp. 11-4 to 11-5.) This anticipated modification is appropriate and should be implemented because there is substantial evidence of the Port District's tenants' abilities to fund the Order. In the same fashion, the evidence illustrates that the Port District's tenants are complying with the Order.

ID 21

The Port's Tenants Have Sufficient Assets to Conduct the Cleanup

The Port's tenants have more than sufficient assets to conduct the cleanup. In fact, prior iterations of the TCAO did not name the Port as a primary discharger because of its determination that the Port's tenants had adequate assets to conduct the cleanup and were cooperating. (SAR 375780, at 375818-375819.) Inexplicably, the latest draft of the TCAO reaches a contrary conclusion without presenting any new facts that would justify this change in position. Having acknowledged the correct legal analysis for determining whether the Port should be primarily or secondarily liable, the CUT bears an initial burden of establishing through evidence the facts necessary to conclude that the Port's tenants do not have adequate assets to fund the cleanup efforts. Yet, no such evidence has ever been presented.

In fact, the evidence establishes beyond question that the Port's tenants have adequate assets to fund the cleanup efforts. The DTR estimates the remedial cleanup and monitoring costs will total $58.1 million. (DTR §32.7.1, at p. 32-40.) During the discovery period, the Port sought and received responses from its tenants confirming that the tenants have adequate assets, whether in the form of traditional financial assets or insurance assets, to perform the cleanup. As detailed below, the Port's current and historic tenants have more than adequate financial and insurance assets - at least $800 million. This is exclusive of the available financial and insurance assets of other dischargers such as the Navy and the City of San Diego.

Additionally, the Port's tenants have lease and permit terms obligating the tenants to defend and indemnify the Port against this type of liability. (See, e.g., SAR 159273, 159289 at paragraph 21 [NASSCO Lease]; Exhibit "7" [SDG&E Tidelands Use and Occupancy Permit Excerpt], p. 5, paragraph lO; SAR 159307, 159324 at paragraph 20 [Southwest Marine Lease]; Exhibit "8" [Southwest Marine Lease Amendment No. 4 Changing Name to BAE Systems San Diego Ship Repair, Inc.].) Consequently, the tenants' significant assets would be applicable to the Port's responsibility for any alleged "orphan shares" under these indemnity agreements. There is, therefore, no basis to conclude that the Port's tenants will be unable to cover the costs of remediation.

1. BAE

During the administrative discovery process, BAE stipulated that "it has the financial assets to cover any amounts of the cleanup and remedial monitoring under [the TCAO] which are premised upon BAE's established liability for the time period 1979 to the present with
respect to the BAE leasehold only and that are ultimately allocated to BAE." (Exhibit "9" [BAE Stipulation].) Based on its review of BAE's insurance documents, the Port believes BAE has tens of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "10" [Summary of BAE Historic Liability Insurance].)

2. NASSCO

During the administrative discovery process, NASSCO stipulated that "it has the financial assets to cover the amount of the [TCAO] that are ultimately allocated to NASSCO." (Exhibit "11" [NASSCO Stipulation].) Additionally, based on its review of relevant documents, the Port believes that NASSCO has hundreds of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "12" [Summary of NASSCO Historic Liability Insurance].)

3. SDG&E

During the administrative discovery process, SDG&E produced documentation of its insurance profile. Based on its review of these and other relevant documents, the Port believes that SDG&E has hundreds of millions of dollars of liability coverage that would be potentially
applicable to the remediation and monitoring efforts. (Exhibit "13" [Summary of SDG&E Historic Liability Insurance].)

4. Campbell

During the administrative discovery process, Campbell produced documents regarding its insurance profile. Based on its review of these and other relevant documents, the Port

believes that Campbell has tens of millions of dollars of liability coverage that would be potentially
applicable to the remediation and monitoring efforts. (Exhibit "14" [Summary of Campbell Historic Liability Insurance].)

5. Star & Crescent Boat Company

Based on its review of relevant documents, the Port believes that Star & Crescent has millions of dollars of liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "15" [Summary of Star & Crescent Boat Company Historic Liability Insurance].) Additionally, Star & Crescent has stipulated that it has assets totaling between $750,000 and $1 million. (Exhibit "16" [Star & Crescent Stipulation].) Given Star & Crescent's likely limited share of liability for the Shipyard Sediment Site in comparison to the other dischargers, the combination of insurance and financial assets eliminate any likelihood that there will be any "orphan share" assigned to the Port.

The Port is aware that the Star & Crescent entity that is currently named in the TCAO and DTR disputes its successor liability for the other predecessor entities that operated at the Shipyard Sediment Site. However, this dispute does not present the risk of significant "orphan share" liability that could potentially be assigned to the Port. Regardless of whether the current Star & Crescent entity is liable for the earlier operations at the Shipyard Sediment Site, the identified insurance assets would still apply, so long as the insured entity is named as a discharger under the TCAO and DTR. Thus, if the TCAO and DTR were amended to name all of the potentially liable entities - San Diego Marine Construction Company, Star and Crescent Boat Company and Star & Crescent Investment Co. — the insurance assets should be available to address directly any established liability, whether or not these entities are still in existence. (See, California Insurance Code §11580(b)(2).)

ID 22

The Port's Tenants Are Cooperative

In addition to possessing more than adequate financial assets to conduct the remediation, the Port's tenants are currently cooperating with the Regional Board. Although the tenants have been proposing a remedial approach that differs in some respects from the remedial approach proposed by the CUT, the process is "proceeding cooperatively." (Exhibit "5" [Barker Deposition], Vol. Ill, 489:20-490:14.)

IV. There is no Evidence of Port Non-Cooperation

In contrast to the extensive evidence provided above regarding the Port's history of prior cooperation with the Regional Board in achieving remediation of numerous environmental challenges throughout the San Diego Bay area and cooperation with the Regional Board in the specific context of this matter, the CUT has contended in its administrative discovery responses that the Port was named as a discharger because it has not cooperated with the CUT during this process.

The Port notes that the allegation of non-cooperation is not contained in the TCAO or DTR. This absence confirms that, at least as of the date of the most recent TCAO and DTR, no issue regarding the Port's cooperation existed. In fact, the concern regarding Port cooperation is not grounded in fact. When asked to identify the basis for the allegations of non-cooperation, the witnesses testified to concerns that the Port was not supporting the remedial footprint and was not going to produce witnesses to confirm this support. (Exhibit "5" [Barker Deposition], Vol. Ill, 520:7-21, 521:23-522:24; Exhibit"1" [GibsonDeposition], 33:9-22.) As detailed above, the Port has produced expert witnesses to support the remedial footprint. Likewise, the witnesses testified that the Port had not been supportive of efforts to locate a site for dewatering or disposal of the dredged sediments. (Exhibit "5" [Barker Deposition], Vol. Ill, 523:4-21.) Again, as noted above, the Port is working with the CUT to explore solutions to this issue and is working to provide appropriate support in the CEQA process. (See, Exhibit "5" [Barker Deposition], Vol. Ill, 527:23-529:6.)

The only other basis for the allegation of non-cooperation was the Port's decision to withdraw from the mediation process. (Exhibit " 1 " [Gibson Deposition], 33:9-34:10, 44:5-13; Exhibit "6" [Carlisle Deposition], 110:20-23.) However, as noted, the Port's withdrawal from a voluntary mediation process that it initially proposed is an inappropriate basis for naming the Port as a primary discharger, as a matter of law. Further, any implication that the mediation withdrawal constitutes Port non-cooperation or opposition to the TCAO process is directly rebutted by the Port's cooperation cited above. In sum, the Port has provided and continues to provide appropriate cooperation during the TCAO process.

ID 24
The Port Has not Discharged Contamination from its MS4 Facilities

As a secondary basis for Port designation, the TCAO and DTR allege that the Port should be named as a discharger based upon its ownership and operation of MS4 facilities that have purportedly discharged contamination. Specifically, the TCAO and DTR allege that MS4 facilities owned or operated by the Port have discharged through the SW4 and SW9 outfalls and minor storm drains. However, the evidence in the record does not support this basis for Port discharger liability.

ID 26
The Port Does not Own or Operate SW4 or SW9

The DTR states that the Port "operates the following MS4 storm drains which convey urban runoff from source areas up-gradient of the Shipyard Sediment Site's property and discharge directly or indirectly into San Diego Bay within the NASSCO and BAE Systems leasehold: ... Storm Drain SW4; Storm Drain SW9." (DTR §11.3.1, at pp. 11-5 to 11-7.) Elsewhere, the DTR alleges that the Port has discharged pollutants 'through its

SW4 ... and SW9 MS4 conduit pipes, as well as other minor drains on its tidelands property and watershed." (DTR §11.4, at p. 11-8.)

These statements are incorrect. The Port does not own or operate the SW4 or SW9 outfall or the MS4 facilities leading to these outfalls. Rather, as the CUT has acknowledged in its administrative discovery responses, both outfalls (SW4 and SW9) and related MS4 facilities
are operated by the City under an easement, (Exhibit "17" [CUT Discovery Responses Excerpts], Responses to Special Interrogatories 28, 30.) The City has similarly acknowledged that its "storm drain system enters the NASSCO leasehold at the foot to 28* Street and terminates at the southeasterly comer" where it "discharges into Chollas Creek" at the SW9 outfall. (See, SAR 158787, 158971, 158806 [2004 City Storm Water Pollution Prevention Program Report].) The City has an easement for the MS4 facilities that terminate at the SW4 outfall. (Exhibit "18" [City Easement].) Moreover, the City retained easements for "all water, sewer and drainage facilities, known or unknown" located within the tidelands when the City first conveyed the tidelands in trust to the Port. (Exhibit "19" [Conveyance].) Because there is no evidence the Port has ever owned or operated SW4 and SW9 or the MS4 facilities that lead directly to these outfalls, the Port cannot be held liable for discharges from this portion of the MS4. (Exhibit "20" paragraph 7 [Collacott Declaration].)

The Cleanup Team's administrative discovery responses clarify that the TCAO and DTR "do not allege that the Port District manages or operates the portion of the City of San Diego's MS4 that drains to" SW4 and SW9. (Exhibit "17" [CUT Discovery Responses Excerpts], Responses to Special Interrogatories Nos. 28, 30.) Rather, the contention is that the Port "is responsible for controlling pollutants into and from its own MS4 system" and that "the Port District cannot passively allow pollutants to be discharged through its MS4 and into another Copermittees' MS4s, like the City of San Diego." (Id [emphasis added].) Yet, neither the DTR nor the administrative discovery responses identify what part of the MS4 owned or operated by the Port would ultimately lead to SW4 or SW9, much less how such MS4 facilities have discharged pollutants to SW4 or SW9.

ID 27
There is no Evidence that the Port's MS4 Facilities are Discharging Pollutants to the San Diego Bay

The DTR contains no evidence that Port discharges from its MS4 are contributing to the Shipyard Sediment Site contamination.

ID 28
There is no Evidence that SW4 and SW9 are Discharging Contaminants to the Shipyard Sediment Site

The TCAO and DTR fail to provide evidentiary support for the conclusion that SW4 and SW9 have discharged contaminants to San Diego Bay and the Shipyard Sediment Site. In fact, the DTR acknowledges that "no monitoring data is available" for either SW4 or

SW9. (DTR §§11.6.4, at p. 11-13 [SW4]; 11.6.5, at p. 11-15 [SW9].) In lieu of actual monitoring results, the DTR simply concludes that "it is highly probable that historical and current discharges from th[ese] outfalls have discharged" various contaminants. (Id.) Reliance upon assumption rather than evidence as a basis for liability is legally unsound.

In Natural Resources Defense Council, Inc. v. County of Los Angeles (2010) 2011U.S.App.LEXIS 4647, 41 Env.L.Rptr. 20109, the claimant alleged the co-permittees on an NPDES permit had discharged various pollutants in violation of the permit. (Exhibit "21" [NRDC Case].) The claimant argued initially that the "measured exceedances in the Watershed Rivers ipso facto establish Permit violations by Defendants." (NRDC, supra, at *44.) However, the Ninth Circuit noted that because "the Clean Water Act does not prohibit 'undisputed' exceedances; it prohibits 'discharges' that are not in compliance with the Act (which means in compliance with the NPDES) ... responsibility for those exceedances requires proof that some entity discharged a pollutant." (Id, at *44-45.)

Against this backdrop, the Ninth Circuit found that "the primary factual dispute between the parties is whether the evidence shows any addition of pollutants by Defendants" to the waterways. (NRDC, supra, at *45.) The claimant asserted that because "the monitoring stations are downstream from hundreds of miles of storm drains which have generated the pollutants being detected" it was "irrelevant which of the thousands of storm drains were the source of polluted stormwater - as holders of the Permit, Defendants bear responsibility for the detected exceedances." (Id, at *46.) The Ninth Circuit found this view unsatisfactorily simplistic as it "did not enlighten the district court with sufficient evidence for certain claims and assumed it was obvious to anyone how stormwater makes its way from a parking lot in Pasadena into the MS4, through a mass-emissions station, and then to a Watershed River." (Id, at *47.)

Ultimately, the Ninth Circuit found adequate evidence of discharges for two of the rivers, where mass emissions stations detecting the exceedances were located in a portion of the MS4 "owned and operated" by the defendant in question. (NRDC, supra, at *51-52.) In contrast with that conclusion, the Ninth Circuit found that "it is not possible to mete out responsibility for exceedances detected" in these waterways. (Id, at 52.) The Ninth Circuit was "unable to identify the relationship between the MS4 and these mass-emissions stations" and noted that "it appears that both monitoring stations are located within the rivers themselves." (Id.) The Ninth Circuit concluded that "[i]t is highly likely, but on this record nothing more than assumption, that polluted stormwater exits the MS4 controlled by the [defendants], and flows downstream in these rivers past the mass-emissions stations." (Id.) However, this assumption was inadequate because the claimant was "obligated to spell out this process for the district court's consideration and to spotlight how the flow of water from an ms4 'contributed' to a water-quality exceedance detected at the Monitoring Stations." (Id, at 52-53.)

Based on the foregoing, liability requires evidence the co-permittee "discharged" pollutants from an MS4 facility that the co-permittee owns or operates. Testing or monitoring taken from the affected waterway, rather than from the MS4 system, is not adequate. This is so regardless of how "probable" or "likely" the assumption that the defendant may have discharged pollutants. In the present case, there is no evidence that SW4 or SW9 discharged any pollutants. Rather, the TCAO and DTR merely assume such discharges as "highly probable" based upon monitoring results from Chollas Creek. This is indistinguishable from the inadequate approach in National Resources Defense Council and cannot form the basis for liability arising out of the ownership or operation of an MS4 system.

ID 28
There is no Evidence that the Port's MS4 Facilities are Discharging Contaminants to the Shipyard Sediment Site

Even if there was adequate evidence that SW4 and SW9 are discharging pollutants, there are no monitoring or test results establishing that there have been discharges from the Port's MS4 facilities into the City MS4 facilities that lead to the outfalls at SW4 and SW9. National Resources Defense Council makes clear that there must be evidence that the specific Port MS4 facilities, not the MS4 system generally, are discharging pollutants. This is true regardless of how "probable" it is that such discharges might be taking place. Contrary to the correct legal standard, the DTR broadly and incorrectly identifies the offending Port MS4 facilities as SW4 and SW9. The DTR contains no factual analysis of any actual Port MS4 facilities, much less the content of the discharges from the Port MS4 facilities. In fact, the Port has only very limited MS4 facilities that lead to SW4 and no MS4 facilities leading to SW9.

Furthermore, the Port's status as co-permittee under the NPDES permit since 1990 does not make it liable for any and all discharges from SW4 and SW9, regardless of whether the Port's MS4 facilities discharged pollutants. Likewise, the Port is not broadly liable under the NPDES permit for its tenants' discharges into a portion of the MS4 system that the Port does not own or operate. There is no language in the NPDES permit that purports to impose such broad joint liability upon the Port. Such an interpretation of the NPDES permit would be contrary to the terms of the Clean Water Act, which is the basis for the NPDES permit. Under the Clean Water Act, a "co-permittee" is defined as "a permittee to an NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator." (40 Code of Federal Regulations § 122.26(b)(1).) This is further reflected in the analysis in National Resources Defense Council, in which the Ninth Circuit focused on and required evidence of discharges from specific MS4 facilities owned and operated by the defendants, not from the MS4 system generally.

In sum, the Port is responsible only for discharges from MS4 facilities that it owns or operates. The Port's status as co-permittee under the NPDES permit does not support the conclusion that the Port owns or operates the entire MS4 system. Likewise, the Port's status astrustee of tidelands property does not support the conclusion that the Port owns or operates all MS4 facilities located on that property. In the absence of evidence linking discharges of pollutants from a specific portion of the MS4 system that the Port owns or operates, the Port is not responsible under the NPDES permit for those discharges.

ID 286
Comment by the City of San Diego

There is sufficient evidence to conclude that the port has responsibility for discharges from its MS4 facilities.

In its comments submitted on May 26, 2011, the Port argues that because it does not own SW4 and SW9 of the MS4 permits, that its status as co-permittee under the NPDES permit for MS4 discharges does not make it liable for discharges into or from that part of the MS4 system{(he San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument, p. 13-16).

The MS4 permit requires all co-permittees to prohibit discharges into its MS4 system. The agreement between the co-permittees is that each co-permittee will implement programs to prevent discharges to the MS4 that runs through its jurisdiction. The Port District is a unique entity in that it is an overlay entity. The land within the Port District is also incorporated in the City of San Diego. However, the Port District has all rights of inspection and action on the land within its jurisdictional boundaries – namely, the tidelands. The City may have the easement that allows the storm drain to pass through the tidelands to drain the upland areas and tideland areas. But, the Port District is fully responsible, both under the MS4 permit and under its agreements with the co-permittees, to take all necessary actions to prevent discharges of pollutants into the MS4 system that runs through lands that are under the Port District's jurisdiction. Thus, to the extent there is any determination that discharges of the subject pollutants from the MS4 system have caused or contributed to a condition or nuisance or pollution at the Site, the Port should be liable as a Discharger.

ID 395
Comment by NASSCO
Port Comment No. 6: To the extent the CUT would designate the Port as a primary discharger because of perceived non-cooperation grounded in the Port's withdrawal from a voluntary mediation process that it suggested, such a position would be an inappropriate basis for Port primary liability as a matter of law. On the contrary, the Port's commitment to the above principles is reflected its long history of cooperating with the Regional Board in efforts to remediate sites at which the Port is a landlord . . . .

The DTR does not suggest that the Port was named as a primary discharger "because of perceived non-cooperation grounded in the Port's withdrawal from a voluntary mediation . . .", however, the Port provides no legal authority why a failure to cooperate would not be a relevant factor in naming the Port to the TCAO. DTR at 11-1 – 11-5.

ID 396
Comment by NASSCO
Port Comment No. 7: The DTR acknowledges that "[i]n the event the Port District's tenants, past and present, have sufficient financial resources to clean up the Shipyard Sediment Site and comply with the Order, then the San Diego Water Board may modify

its status to secondarily responsible party in the future." (DTR §11.2, at pp. 11-4 to 11-5.) This anticipated modification is appropriate and should be implemented because there is substantial evidence of the Port District's tenants' abilities to fund the Order. . . . the CUT bears an initial burden of establishing through evidence the facts necessary to conclude that the Port's tenants do not have adequate assets to fund the cleanup efforts. Yet, no such evidence has ever been presented.

It is premature for the Regional Board to determine whether the Port's tenants, past and present, have sufficient financial resources to cleanup the Site, since those costs have not yet been determined with specificity and work has not yet begun. Until work progresses on the cleanup, it is reasonable for the Regional Board not to distinguish between primarily and secondarily liable parties. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 3 n.2.

ID 397
Comment by NASSCO
Port Comment No. 8: In fact, the evidence establishes beyond question that the Port's tenants have adequate assets to fund the cleanup efforts. . . . Additionally, the Port's tenants have lease and permit terms obligating the tenants to defend and indemnify the Port against this type of liability. (See, e.g., SAR 159273, 159289 at ¶21 [NASSCO Lease]; . . . .)

Whether a landlord's lease includes an indemnity clause is not determinative as to whether the landlord should be named primarily or secondarily liable. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 7-9 (whether lease includes indemnity clause not included as a factor in determining landlord liability).

Accordingly, it is irrelevant to the Regional Board's decision to name the Port as primarily liable at this time whether the lease agreement includes indemnity language. Finally, it bears mention that the Port only cites to NASSCO's lease for the period from January 1, 1995 to December 31, 2040, and not to any prior leases with NASSCO, which contain materially different language with respect to NASSCO's and the Port's obligations to one another.

ID 398
Comment by NASSCO
Port Comment No. 9: Additionally, based on its review of relevant documents, the Port believes that NASSCO has hundreds of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "12" [Summary of NASSCO Historic Liability Insurance].)

The information in Port Comments, Exhibit 12 (Summary of NASSCO Historic Liability Insurance) was submitted by the Port in breach of a Protective Order entered in Case No. 09 CV 2275-AJB (BGS) in the United States District Court, Southern District of California, regarding the allocation of costs for the cleanup of the Shipyard Sediment

Site. The Protective Order prohibited the Port from publicly disclosing any information, including insurance policies, that was designated as "protected" information by NASSCO, or from using "protected" information for any purpose other than prosecuting or defending the federal court lawsuit. NASSCO is presently contesting the Port's publication of NASSCO's insurance information in a motion pending before Mr. Timothy Gallagher, the Discovery Referee. For these reasons, NASSCO believes that the insurance information in Port Comments, Exhibit 12 is not properly before the Regional Board, and NASSCO may seek the withdrawal or removal of Exhibit 12 from the administrative record following Mr. Gallagher's ruling on NASSCO's motion.

ID 399
Comment by NASSCO
Port Comment No. 10: The Port's tenants are currently cooperating with the Regional Board. Although the tenants have been proposing a remedial approach that differs in some respects from the remedial approach proposed by the CUT, the process is "proceeding cooperatively." (Exhibit "5" [Barker Deposition], Vol. III, 489:20-490:14.)

It is premature for the Regional Board to determine whether the Port's tenants, past and present, are cooperating with the Regional Board as work has not yet begun. Until work progresses on the cleanup, it is reasonable for the Regional Board not to distinguish between primarily and secondarily liable parties. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 3 n.2.

Furthermore, as presented in NASSCO's Initial Comments, NASSCO maintains that monitored natural attenuation is the proper remedy for the Site. This position differs materially from the TCAO and DTR under consideration by the Regional Board.

ID 400
Comment by NASSCO
Port Comment No. 11: There is no evidence of Port non-cooperation.

See NASSCO's Comment No. 369 (See Appendix B, Comment ID 395), Replying to Port Comment No. 6.

ID 401
Comment by NASSCO
Port Comment No. 12: The Port does not own or operate SW4 or SW9 outfall or the MS4 facilities leading to these outfalls. . . . Rather, the contention is that the Port is "responsible for controlling pollutants into and from its own MS4 system" and that "the Port District cannot passively allow pollutants to be discharged through its MS4 and into another Copermittees' MS4s, like the City of San Diego." (Exhibit "17" [CUT Discovery Response Excerpts], Responses to Special Interrogatories Nos. 28, 30. [emphasis in the original].) Yet, neither the DTR nor the administrative discovery responses identify what part of the MS4 owned or operated by the Port would ultimately lead to SW4 or SW9, much less how such MS4 facilities have discharged pollutants to SW4 or SW9.

The Port's comments do not allege that storm water discharges from SW4 and SW9 do not contain relevant COCs, and the Port presents no affirmative evidence to show that they do not. Instead, like the City, the Port attempts to skirt the issue by simply claiming that the DTR does not provide sufficient support.

In fact, the Port's own most recent Jurisdictional Urban Runoff Management Program ("JURMP") document admits that the Port MS4 facilities have the potential to generate pollutants, including bacteria, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash. Attachment D, San Diego Unified Port District, Jurisdictional Urban Runoff Management Program (May 2008) ("2008 Port JURMP") Table 6-2 at 6-4. The JURMP goes on to state that the "MS4 receives pollutants generated by motor vehicles, namely, heavy metals, oil and grease, and other toxic pollutants from engine exhaust, brake linings, and leaking fluids. Waste liquids, such as oil and paint, can also be illegally dumped into conveyance system structures. Illegal connections can be made to the MS4 and potentially introduce a wide variety of pollutants to the system. Street curbs and gutters, stormwater inlets, culverts and channels typically collect litter discarded in urban areas. As such, all of these pollutants can reach the MS4 with each rainfall event, and in turn, be carried to receiving water bodies." Id. at 6-7. It also admits that "[u]rban runoff also appears to be a significant contributor to the creation and persistence of Toxic Hot Spots in San Diego Bay," including "the mouth of Chollas Creek . . . ." Id. at 1-6 – 1-7. This evidence substantiates the Regional Board's conclusion that the Port is a discharger based on its historical storm water discharges to the Site.

Furthermore, the Port's JURMP indicates that the Port has a sophisticated GIS map of its storm drains, which is not publicly available but could easily have been used by the Port to generate the necessary information to demonstrate whether the Port's MS4s connect to SW4 and/or SW9. See Attachment D, 2008 Port JURMP Table 6-2 at 6-4; Attachment E, Karen Richardson, GIS Gives Port a Common Operating Picture, ArcUser (Winter 2010) at 33 ("PortGIS Utilities is the central clearinghouse for the port's utilities data, including . . . storm drain . . . lines"). Accordingly, it is unfair for the Port to assert that the DTR and TCAO are insufficient because they do not specify what part of the Port's MS4 system connects to SW4 and/or SW9 when that information is uniquely in the possession of the Port itself.

ID 402
Comment by NASSCO
Port Comment No. 13: The DTR contains no evidence that Port discharges from its MS4 are contributing to the Shipyard Sediment Site contamination.

See NASSCO's Comment No. 375, 377 (See Appendix B, Comment IDs 401, 405), Replying to Port Comment No. 12 and 14.

ID 403
Comment by NASSCO

Port Comment No. 14: The TCAO and DTR fail to provide evidentiary support for the conclusion that SW4 and SW9 have discharged contaminants to San Diego Bay and the Shipyard Sediment Site. In fact, the DTR acknowledges that “no monitoring data is available” for either SW4 or SW9. (DTR §§11.6.4, at p. 11-13 [SW4]; 11.6.5, at p. 11-15 [SW9].)

The Port contends that there is “no [e]vidence” that storm water outfalls SW4 and SW9 are discharging contaminants to the Site. The Port bases this claim on the fact that there is no monitoring data available from either SW4 and SW9 to indicate specific quantities of COCs in the runoff.

The Port’s claim that there is “no [e]vidence” goes too far because, as noted in the DTR, urban runoff itself is classified as a “waste” under the California Water Code § 13050(d). DTR at 11-8; see also Cal. Water Code §§ 13392 (State and Regional Boards to coordinate with Departments of Public Health and Fish & Game to develop “new programs to reduce urban and agricultural runoff”); 13396.7(a) (commissioning a study to determine adverse health effects of urban runoff on swimmers at urban beaches). In fact, the DTR includes substantial evidence that urban runoff in San Diego contains COCs at the Site, including “total suspended solids (TSS), sediment (due to anthropogenic activities), pathogens (e.g., bacteria, viruses, protozoa), heavy metals (e.g., copper, lead, zinc, and cadmium), petroleum products and polynuclear aromatic hydrocarbons (PAHs and HPAHs), synthetic organics (e.g., pesticides, herbicides, and PCBs), nutrients (e.g., nitrogen and phosphorus fertilizers), oxygen-demanding substances (decaying vegetation, animal waste), and trash.” DTR at 11-8; see also 4-10 (San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Final Report submitted by the City indicating that “elevated levels of zinc, copper, and lead are present in the urban runoff outflow discharged from Chollas Creek into San Diego Bay”).

Furthermore, the DTR demonstrates that samples taken in the SW4 catch basin, and laterals entering the catch basin, “indicate the presence of both PCBs and PAHs entering and exiting the municipal storm drain system catch basin . . . .” DTR at 4-16. Far from suffering from a lack of evidence, the DTR has presented substantial evidence that San Diego urban runoff contains relevant COCs, but simply did not take the extra step to quantify the amount of COCs that actually are present in storm water flows as they exit the SW4 and SW9 outfalls.

Notably, the Port’s comments do not allege that storm water discharges from SW4 and SW9 do not contain relevant COCs, and the Port presents no affirmative evidence to show that they do not. Instead, like the City, the Port attempts to skirt the issue by simply claiming that the DTR does not provide sufficient support.

Furthermore, the Port’s citation to Natural Resources Defense Council v. County of Los Angeles, 636 F.3d 1235 (9th Cir. 2011) (“NRDC”), is unavailing with respect to allocating responsibility for storm water contamination to sediment to the Port. This is so because NRDC is a case under the Clean Water Act concerning whether a NPDES permittee was guilty of violating NPDES permit limits. Here, the issue is not whether the

Port violated NPDES permit limits, but rather, whether the Port discharged COCs to the Site that have contaminated sediment. In fact, the DTR does not allege that the Port has violated its NPDES permit, but rather, that the Port has discharged storm water containing contaminants to San Diego Bay, and that the "urban storm water containing waste that has discharged from the on-site and off-site MS4 has contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay." DTR at 11-1 – 11-2. As noted above, the Port fails to allege that storm water discharges from SW4 and SW9 do not contain relevant COCs.

Finally, as also noted in the DTR, "[i]n the absence of such direct evidence, the San Diego Water Board may consider relevant direct or circumstantial evidence in determining whether a person shall be required to clean up waste and abate the effects of a discharge or a threat of a discharge under CWC section 13304." DTR at 10-13, citing State Water Resources Control Board Resolution 92-49, Policies and Procedures for the Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304, § I.A (directing the Regional Boards to use "any relevant evidence, whether direct or circumstantial", when determining whether a party should be required to investigate or cleanup a discharge of waste). Accordingly, even if storm water sampling data from SW4 and SW9 is unavailable, it is proper for the Regional Board to consider and rely on other direct and circumstantial evidence that leads to the conclusion that the Port's storm water discharges have contaminated the NASSCO shipyard.

ID 404
Comment by NASSCO
Port Comment No. 15: Even if there was adequate evidence that SW4 and SW9 are discharging pollutants, there are no monitoring or test results establishing that there have been discharges from the Port's MS4 facilities into the City MS4 facilities that lead to the outfalls at SW4 and SW9. . . . In fact, the Port has only very limited MS4 facilities that lead to SW4 and no MS4 facilities leading to SW9.

See NASSCO's Comment No. 377 (See Appendix B, Comment ID 403), Replying to Port Comment No. 14.

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Comment by BAE Systems
BAE Systems San Diego Ship Repair, Inc.'s reply to the San Diego Unified Port District's comments.

I. INTRODUCTION AND FACTUAL BACKGROUND

A. Port District as Lessor
From the early 1900s until 1962, the City owned and leased what is now the BAE Systems Leasehold to a host of industrial tenants. The Port District, which was created by statute in 1962, now holds and manages the BAE Systems Leasehold as trust property

on behalf of the People of the State of California. The Port District likewise leased the BAE Systems Leasehold to industrial tenants unrelated to BAE Systems from 1962 to 1979 (1985 for the South end of the yard).

The lease agreement between BAE Systems and the Port District requires that BAE Systems use the leasehold exclusively for shipbuilding and repair and related marine activities, authorizes the Port District to suspend operations under certain circumstances, prohibits BAE Systems from assigning or subleasing the site without the Port District's permission, permits the Port District to inspect the leasehold, permits the Port District to approve or deny termination of the lease by BAE Systems, and permits the Port District to terminate the lease for violations of the lease's terms and conditions. (See SAR 057580-057608 [1979 Southwest Marine Lease]; SAR 057609-057640 [Southwest Marine Agreement for Amendment of Lease No. 1].) The lease further acknowledges that BAE Systems' tenancy provides to the community water front employment, tax revenue, as well as lease income. (Id.) A number of industrial tenants unrelated to BAE Systems previously leased the premises under lease terms similar to the Port District's lease with BAE Systems. Certain of those entities are defunct, recalcitrant and/or not participating in these proceedings.

In addition to its management of the land currently identified as the BAE Systems Leasehold, the Port District also manages land currently occupied by NASSCO, as well as the cooling water tunnels for SDG&E's former Silver Gate Power Plant. (TCAO Finding 11; DTR § 11.1.)

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BAE Systems San Diego Ship Repair, Inc.'s reply to the San Diego Unified Port District's comments

INTRODUCTION AND FACTUAL BACKGROUND

Port District's Primary Liability as Owner and Operator
Because the Port District (1) was responsible for the use and maintenance of the land currently leased by NASSCO, BAE Systems, and SDG&E and the land formerly leased by San Diego Marine Construction Co., Star & Crescent and Campbell; (2) had knowledge of the potential for discharges from the leased properties to materially contribute to accumulations of pollutants in the San Diego Bay; and (3) had the requisite degree of control over its tenants' activities, the DTR correctly concludes that the "the Port District caused or permitted waste to be discharged into San Diego Bay, creating a condition of pollution and/or nuisance in the Bay at the Shipyard Sediment Site . . . ." (TCAO Finding 11; DTR § 11.1.) As such, the DTR names the Port District as a "discharger, . . . consistent with its responsibility for the actions, omissions and operations of its tenants." (Id.)

As a separate and independent basis for primary liability, the Port District also owns and operates a municipal storm sewer system (MS4). (TCAO Finding 11; DTR § 11.3.) The Port District is a co-permittee of current and prior NPDES Storm Water Permits that regulate the MS4 drains which outfall on the BAE Systems Leasehold (SW4) and the NASSCO Leasehold (SW9). (Id.) The DTR concludes that the Port District, through its MS4 conveyances, has discharged urban storm water containing waste directly to San Diego Bay at the Shipyard Sediment Site. (TCAO Finding 11; DTR § 11.4.) The Port District admits the same. (Port District comments, at 17.)

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BAE Systems San Diego Ship Repair, Inc.'s reply to the San Diego Unified Port District's comments

II.LEGAL STANDARD FOR NAMING DISCHARGERS
In 1969, the California legislature enacted the Porter-Cologne Water Quality Control Act, Cal. Water Code §§ 13000-14958 (hereinafter, the "Act"), with the declared objective of ensuring "that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state." Cal. Water Code § 13000. With this objective in mind, the Act grants the Regional Board broad latitude to issue Cleanup and Abatement Orders ("CAOs") when necessary to protect California's valuable and limited water resources from contamination. Cal. Water Code § 13304(a). Specifically, the Act provides that the Regional Board may order cleanup and abatement by the following: (1) "any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board;" or (2) any person "who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance." Id.

The regulations governing the investigation and issuance of CAOs further require that the Regional Board name other dischargers to the maximum extent permitted by law. See 23 Cal. Code Regs. § 2907; See also State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304," at § II(A)(4).

The Regional Board is granted this broad authority precisely because of situations, such as the one here, where contamination is discovered many years after the events causing the contamination. As stated by a leading treatise on California environmental law: "Due to the passage of time and the difficulty of interpreting hydrogeologic evidence, it often is impossible to establish who is responsible for the contamination with a great degree of certainty." Kenneth A. Manaster and Daniel P. Selmi, California Environmental Law and Land Use Practice, § 32.32(1)(a), at p. 32-42.

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III. THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

The DTR properly concludes that the Port District "should not bear merely secondary responsible at this time." The DTR finds that the Port District should be held responsible "to the extent the Port's tenants, past and present, have insufficient financial resources to cleanup the Shipyard Sediment Site and/or fail to comply with the order." (TCAO Finding 11; DTR § 11.2.)

The Port District does not appear to dispute that it should be named as a discharger due to its capacity as a landlord of tenants identified in the TCAO as dischargers. (Port District Comments at 7.) Nevertheless, the Port District contends that it is entitled to status as a secondarily responsible party because "[t]he Port's tenants have more than sufficient assets to conduct the cleanup." (Id. at 8.) There are a number of issues with the Port District's position that render it incorrect.

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THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

A. The Port District Bears the Burden of Demonstrating That its Current and Former Tenants Have Sufficient Assets to Conduct the Cleanup

As an initial matter, the Port District's comments reflect a fundamental misunderstanding of the allocation of burdens in a secondary liability inquiry. The Port District asserts that the prior iterations of the TCAO did not name the Port District as a primary discharger "because of its determination that the Port's tenants had adequate assets to conduct the cleanup and were cooperating." (Port District Comments at 8.) To the contrary, the prior iterations of the TCAO noted only that there was "no evidence at this time indicating that [the Port's tenants] have insufficient financial resources to cleanup the Shipyard Sediment Site." (SAR 375780, at 372818-375819.) These prior iterations improperly placed the burden of demonstrating the Port District's entitlement to secondary liability status on the Port District's tenants. The Presiding Officer, however, has correctly ruled that as the party seeking status as a secondarily responsible party, it is the Port District's burden to demonstrate that its current and former tenants have sufficient assets to cover the cleanup. (October 27, 2010 Order Reopening Disc. Period, at § III.)

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THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

B. The Port District has Failed to Meet its Burden

The DTR's conclusion that the Port District should be named primarily responsible is correct because the Port District has failed to meet its burden of establishing that equitable reasons justify imposing secondary liability. Secondary liability is appropriate, if at all, in cases where there are equitable reasons that justify imposing different liability on the relevant parties. See, e.g., In the Matter of the Petitions of Arthur Spitzer et al., Order No. 89-8, at p. 25 (holding that it would be inappropriate to name a successor entity as "secondarily" liable when its predecessor entity released contaminants which polluted the waters of the State).

1. BAE Systems has No Liability for Any Pre-1979 Discharges Including "Orphan Shares"

BAE Systems does not dispute, and in fact has stipulated, that it has the financial assets to cover amounts of the cleanup and remedial monitoring under the TCAO which are based on BAE Systems' post 1979 tenancy at the Leasehold and which are ultimately allocated to BAE Systems. The Port District erroneously asserts that it believes BAE Systems should also have to fund cleanup and remedial monitoring costs that are attributable to former tenants of the BAE Systems Leasehold who are unable or unwilling to pay for their own share of the cleanup effort. That position is factually and legally incorrect.

Here, BAE Systems is not the successor entity to any of the entities that operated on the BAE Systems Leasehold prior to 1979. BAE Systems had no connection to the BAE Systems Leasehold prior to 1979 when it entered into its lease with the Port District. Accordingly, BAE Systems is not a "discharger" under section 13304 of the Act for any pre-1979 discharges. The Port District, on the other hand, remains primarily liable for any pre-1979 discharges to the extent its tenants for any applicable time period are unable or unwilling to fund the cleanup of discharges attributable to such time period.

Where the operator responsible for the discharge is no longer in existence or not cleaning up the site, thus creating a so called "orphan share," the landowner is considered the "discharger" and is primarily liable for remediating the site. In the Matter of the Petitions of Aluminum Company of America et al., Order No. 93-9, at pp. 16-18. "The Board has cited several factors which are appropriate for the Regional Water Boards to consider in determining whether a party should be held secondarily liable. These include: (1) whether or not the party initiated or contributed to the discharge; and (2) whether those parties who created or contributed to the discharge are proceeding with cleanup." Id. at p. 16 (citations omitted). As the DTR properly concludes, both factors cut against finding the Port District merely secondarily liable. As discussed above, the lease provisions gave the Port District significant control over the activities of the former tenants of the BAE Systems Leasehold. By permitting these entities to discharge, unabated, for a number of years, the Port District contributed to the discharge. As to the second factor, the ability of all of the parties to pay for their respective shares of the cleanup is far from clear at this time. Even the Port District concedes as much, noting that "the Star & Crescent entity that is currently named in the TCAO and DTR disputes its successor liability for the other predecessor entities that operated at the Shipyard Sediment Site." (Port District's comments at 11.) Indeed, the successor liability analysis utilized in the DTR to find Star & Crescent to be the successor to San Diego Marine Construction Company's liability is debatable, and is the subject of a pending motion for summary judgment by Star & Crescent in the federal action. Thus, to the extent these entities are not and cannot comply with the CAO, which certainly appears likely at least with respect to San Diego Marine Construction Company (1962-1972), and potentially Campbell (1972-1979), the Port District is responsible. Accordingly, it is appropriate for the Port District to be considered primarily liable for compliance with the TCAO unless and until those parties fully comply with the final order.

Although it appears to concede liability for any “orphan shares,” the Port District attempts to escape liability by claiming that its tenants, including BAE Systems, “have lease and permit terms obligating the tenants to defend and indemnify the Port against this type of liability.” (Port District’s comments at 9.) With respect to BAE Systems, this is patently false. The Hold Harmless provision in the Southwest Marine lease upon which the Port District relies, was superseded and replaced entirely with a different Hold Harmless provision that precludes the Port District’s argument. The Second Amendment to the lease expressly amends the First Amendment by “deleting therefrom Paragraphs…21…in [its] entirety and substituting in lieu thereof Paragraphs…21…as follows.” (See Second Amendment to Southwest Marine Lease, at ¶ 21.) It then states:

21. HOLD HARMLESS: Lessor, and its agent, officers, and employees shall, to the full extent allowed by law, be held by Lessee free and harmless from and indemnified against any liability pertaining to or arising out of the use and operation of the premises by Lessee and any costs of expenses incurred on account of any claim or claims therefore, including reasonable attorney’s fees. Nothing herein is intended to exculpate Lessor from its sole active negligence or willful misconduct.

(Id. (emphasis added).) This Hold Harmless provision requires only that BAE Systems indemnify and hold harmless the Port District for liability arising out of BAE Systems’ use and operation of the premises, not prior lessees’ use and operation of premises. A written modification of the terms of a contract “supersedes those terms to which it relates.” Thiele v. Merrill Lynch, Pierce, Fenner & Smith, 59 F. Supp. 2d 1060, 1064 (S.D. Cal. 1999). Because the Hold Harmless Provision in the Second Amendment completely superseded all prior Hold Harmless Provisions, BAE Systems has no obligation to defend and indemnify the Port District for any liability arising out of any “orphan shares.”

2. Mere Reference to Historical Insurance Policy Limits Fails to Demonstrate Applicability or Availability of Any Assets

The Port District asserts, without support, that it “believes BAE has tens of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts.” (Port District’s comments at 9 (emphasis added).) As support for its “belief,” the Port District relies exclusively on a summary of "BAE Historic Liability Insurance" that it includes in its comments to the Regional Board. The same reliance is made with respect to historical insurance summaries for other parties, also prepared by the Port District.

However, the Port District merely cites to what it says are policy limits for historical policies. The Port District makes no showing whatsoever (1) whether the policy provides actual coverage for the claims and anticipated obligations at issue here, (2) whether the insurer is defunct or insolvent, (3) whether any policy amounts have been sold back or are otherwise unavailable, and (4) most importantly, whether any insurer for any party has actually accepted coverage for indemnity obligations. This lack of evidence is unsurprising, as courts have consistently held that the obligation to indemnify does not arise until the insured's underlying liability is established. See, e.g., Montrose Chemical Corp. v. Admiral Ins. Co., 10 Cal. 4th 645, 659 n.9 (1995). Without any such evidence or showing, the Port District's "belief" as to BAE Systems' and other dischargers' "potential" insurance assets is unsupported, insufficient, and certainly is not evidence upon which the Regional Board can or should change the Port District's status to that of a secondarily responsible party.

The Regional Board has a broad duty to name all dischargers in CAOs to the maximum extent permitted by the Water Code. Because the Port District has failed to demonstrate that its tenants, including BAE Systems, are obligated to conduct the cleanup attributable to any orphan shares or have sufficient assets to do so, the DTR's conclusion that the Port be named a primarily responsible party is correct.

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BAE Systems San Diego Ship Repair, Inc.'s reply to the San Diego Unified Port District's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

C. Any Change in the Port District's Liability Status Would be Premature
It is premature for the Regional Board to determine whether the Port District's current and historical tenants have sufficient financial resources to remediate the Site because the remediation costs have not yet been finally or specifically determined. Until the remediation is underway, it is inappropriate for the Regional Board to alter the primarily versus secondarily liability of designated parties. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 3 n.2. Moreover, it cannot be determined whether any designated party "fails to comply with the order" unless and until the final CAO has been issued and a party fails to comply with those directives. (DTR § 11.2.) It is the Port District's burden to establish it is not primarily liable. See § III-A, infra. The Port District has failed to meet its burden.

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IV. THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

The Port District contends that it cannot be named as a discharger as a result of its ownership of its MS4 facilities because "[t]he DTR contains no evidence that Port discharges from its MS4 are contributing to the Shipyard Sediment Site contamination." (Port District's comments at 15.) "There is no evidence that SW4 or SW9 discharged any pollutants," the Port District claims. (Id. at 17.) The Port District's positions, however, are incorrect. There is substantial and reasonable evidence to support the DTR's assertion that the Port District's discharges into and through the SW4 storm drain outfall have contributed to elevated levels of pollution at the BAE Systems Leasehold.

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THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

A. Regional Boards Should Review Evidence with a View Towards Liability
To be named as a discharger, all that is required is "sufficient evidence" of responsibility. See The State Board Water Quality Enforcement Policy, No. 2002-0040, (Feb. 19, 2002). To this end, "a regional water board shall "[u]se any relevant evidence, whether direct or circumstantial" in order to establish the source of a discharge. State Water Board Resolution No. 92-49, at § II(A) (emphasis added). The resolution provides a number of potential sources of evidence, including site characteristics and location in relation to other potential sources of a discharge; hydrologic and hydrogeologic information, such as differences in upgradient and downgradient water quality; industry-wide operational practices that have led to discharges, such as conveyance systems; and physical evidence, such as analytical data. (Id.)

In light of the Act's declared objective and the broad discretion granted to regional water boards by the Act and its implementing regulations, State Water Board decisions suggest that a regional water board should look at evidence with a view toward finding liability. According to the State Water Board, "[g]enerally speaking it is appropriate and responsible for a Regional Board to name all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility." See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 11 (SWRCB 1985) (noting further that "substantial evidence" means "credible and reasonable evidence which indicates the named party has responsibility"); Stinnes-Western Chemical Corp., Order No. 86-16, at 12 (SWRCB 1986) (same).

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THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

B. NRDC is Inapposite and Does Not Apply the Evidentiary Standard Applicable in Administrative CAO Proceedings

The Port District heavily relies on Natural Res. Def. Council, Inc. v. County of Los Angeles, 636 F.3d 1235 (9th Cir. 2011) (hereafter "NRDC") to argue that the evidence upon which the DTR relies is inadequate. This case is of no relevance here. In NRDC, the plaintiffs sought to impose liability on municipal defendants for violations of the Federal Clean Water Act for what the plaintiffs contended were exceedances of the water-quality standards contained in the defendants' respective NPDES permits. (Id.) The evidence required to demonstrate an unlawful exceedance is different from the evidence required to be named as a discharger in a cleanup and abatement order. As noted, the Regional Board has broad discretion to name dischargers in a cleanup and abatement order, and all that is required to exercise that discretion is "credible and reasonable evidence which indicates the named party has responsibility." See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 12 (SWRCB 1985). It is for this reason that courts review agency decisions under an abuse of discretion standard. See Topanga Association for a Scenic Community v. County of Los Angeles, 11 Cal. 3d 506, 515 (1974) (noting that the agency which renders the challenged decision is only required to "set forth findings to bridge the analytic gap between the raw evidence and ultimate decision or order"). Thus, the Ninth Circuit's assessment of the degree of proof necessary to hold an entity liable for a NPDES Permit exceedance has no bearing on the evidence required to name the Port District as a discharger in the TCAO, and consequently Natural Res. Def. Council is fundamentally distinguishable and should be disregarded.

Moreover, Natural Res. Def. Council is inapposite because it is an action brought under the Clean Water Act centered on whether a NPDES permittee had violated the NPDES permit limits. Conversely, in the instant action, the issue is whether the Port District discharged contaminants to the Site that have contributed to the contamination. The DTR makes clear that urban runoff from the Port's MS4 facilities has been discharged to the Site, contributing to the contamination by exceeding applicable water quality objectives for the Bay. (DTR, Finding 11.) The DTR does not allege the Port District violated its NPDES permit.

Even if the Natural Res. Def. Council case has any applicability to these proceedings, the Ninth Circuit's ruling does not relieve the Port District of liability for contaminants it conveyed to the San Diego Bay. The Ninth Circuit made clear that the Clean Water Act "does not distinguish between those who add and those who convey what is added by others—the Act is indifferent to the originator of water pollution." NRDC, 636 F.3d

1235, 1252-53. In fact, according to the Ninth Circuit, the Clean Water Act bans "the discharge of any pollutant by any person" regardless of whether that "person" was the root cause or merely the current superintendent of the discharge." Id. at 1253 (internal quotations and citation omitted). Thus, as the Fifth Circuit has held, so long as the MS4 is "the means by which the pollutants are ultimately deposited into a navigable body of water," the party can be held liable for those discharges, regardless of any permit. Sierra Club v. Abston Constr. Co., 620 F.2d 41, 45-46 (5th Cir. 1980).

Accordingly, so long as there is sufficient evidence, either direct or circumstantial, to find that the Port District's SW4 outfall has contributed to elevated levels of pollution at the Site, the DTR's conclusion is correct.

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THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

C. Substantial and Reasonable Evidence Supports the DTR's Assertion That the Port District's SW4 Outfall has Contributed to Elevated Levels of Pollution at the Site

The DTR properly concludes that the Port District's SW4 outfall has contributed to elevated levels of pollution at the BAE Systems Leasehold. The Port District does not dispute that it has MS4 facilities that lead to SW4. (Port District's comments at 17.) In fact, the Port District's (untimely) proffered expert opinion of Mr. Collacott admits that the "portion of the Port District that is not leased to tenants and is tributary to outfall SW4 is limited to portions of Belt Street (approx. 1 acre) consisting of an estimated one-half mile (1/2 mile street) of curb and gutter, four storm drain inlets, and an estimated 770 feet of underground storm drains 24-inches in diameter and smaller." (Declaration of Robert Collacott In Support of the San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument, at 4:9-14.) Presumably the Port District has owned and operated this tributary system to outfall SW4 since 1962.

SW4 has historically received runoff from Belt Street (among other areas). (DTR, p. 11-6.) That fact, coupled with the Port District's own statements regarding the scope of portions of its MS4 facilities, reflects an admission by the Port District that municipal wastewater from its own MS4 facilities is discharged into SW4 where it is discharged to the Site at the BAE Leasehold. As reflected below, substantial and reasonable evidence exists that supports the DTR's MS4 allegations and findings against the Port District. Importantly, "a regional water board shall "[u]se any relevant evidence, whether direct or circumstantial" in order to establish the source of a discharge. State Water Board Resolution No. 92-49, at § II(A) (emphasis added).

1. 2009 SW4 Sampling Data Detects PCBs, Copper, TBT and Mercury

On December 7, 2009, water quality data from SW4 were collected from a manhole on the BAE leasehold. (Calscience Environmental Laboratories, 2009). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. Laboratory analyses included a congener-level analysis of PCBs. Multiple congeners were detected, and the highest concentrations were of penta- and hexa-chlorinated biphenyls, similar to the profile of Aroclor 1254. (Id.) Copper, mercury, and TBT were also measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of 2009 there was an ongoing source of PCBs, copper, mercury and TBT from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2009 have dissipated, nor have upland source control measures been established, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain an ongoing source of these COCs to the Site.

2. 2005 SW4 Sampling Data from City Investigation Detects PCBs and PAHs
Further evidence of discharges from storm drain SW4 into the Shipyard sediment site is provided by the results of a sampling investigation conducted by the City of San Diego. As described in the DTR (section 4.7.2), on October 3, 2005, the City conducted an investigation and observed evidence of an illegal discharge into the SW4 catch basin on the north side of Sampson Street between Belt Street and Harbor Drive, approximately 10 feet east of the railroad line that runs parallel with Belt Street. Specifically, the catch basin is located immediately to the east of the BAE Systems' parking lot and the SDG&E Silver Gate Power Plant, which is adjacent to the parking lot. As noted above, the Port District admits that its own MS4 facilities drain the Belt Street area and discharge to the Bay via SW4.

During the City's investigation, three sediment samples were collected and analyzed for PCBs and polycyclic aromatic hydrocarbons (PAHs). The first sample was collected from inside and at the base of a six-inch lateral entering the catch basin from the east. The second sample was collected from inside and at the base of the 12-inch lateral entering the catch basin from the north. The third sample was collected from the 18-inch pipe exiting the catch basin. The results of these three samples, presented in DTR Table 4-4, indicate the presence of PCBs and PAHs entering and exiting the municipal storm drain system catch basin. The results of this sampling show significant concentrations of Aroclor 1254 and 1260. (DTR Table 4-4.) The Port District has cited no evidence or even argument to the contrary. Thus this data is further evidence of the Port District's illicit discharges of contaminants through its MS4 facilities that discharged directly to the Site.

3. 2001 SW4 Sampling Data Detects TBT, Copper and Mercury
On November 29, 2001, water quality data from SW4 were collected from a manhole on the BAE leasehold. (AMEC, 2001). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. TBT, copper, and mercury were all measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of late 2001 there was an ongoing source of TBT, copper, and mercury from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2001 have dissipated, nor have upland source

control measures been established, and moreover the 2009 SW4 data again detects these same COCs in addition to PCBs, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain ongoing sources of these COCs to the Site.

4. Historical Discharges by the Port District into SW4 have Significantly Contributed to Contamination at the Site

In 1974 the Southern California Coastal Water Research Project ("SCCWRP") published the results of an EPA-funded study entitled "Marine Inputs from Polychlorinated Biphenyls and Copper from Vessel Antifouling Paints." (Young et al., 1974.) The project surveyed the usage of PCB-containing hull paint on recreational, commercial, and Navy vessels in San Diego Bay and other southern California bays, and also collected data on PCB releases in municipal wastewater and storm runoff. (Id.)

Contrasting the PCB mass release rates for different sources (Table 12 in Young et al. 1974) shows that municipal wastewater was a major source of Aroclor 1254 to San Diego Bay, contributing more than 99.9 percent of total PCBs. Thus, as of 1974, municipal wastewater carried by the Port District's MS4 system and discharged via SW4 was a significant source of PCB contamination at the BAE Leasehold. (Id.) The Port District identifies no study or data indicating that the sources of PCBs to the San Diego Bay was by any means other than those identified by Young, et al. Absent findings to the contrary, it is reasonable to conclude that the Port District was a significant contributor of PCBs to the San Diego Bay at least from its creation in 1962 through the 1974 date of the SCCWRP study, and likely longer.

5. EPA Guidance Confirms that Waste Water Discharged by the Port District into SW4 has Significantly Contributed to Contamination at the Site

Relevant EPA guidance supports the DTR's findings with respect to waste in urban storm water discharged by the Port District into the SW4 outfall at the BAE Leasehold. In 1983 the EPA published "Results of the Nationwide Urban Runoff Program." The Executive Summary states that among the many objectives of the National Urban Runoff Program ("NURP") was to develop analytical methodologies to examine "the quality characteristics of urban runoff, and similarities or differences at different urban locations" and "the extent to which urban runoff is a significant contributor to water quality problems across the nation." (EPA, Results of the Nationwide Urban Runoff Program, Executive Summary at p. 1.) "The NURP studies have greatly increased our knowledge of the characteristics of urban runoff, its effects upon designated uses, and of the performance efficiencies of selected control measures." (Id. at p. 2.) The NURP Final Report reached several relevant conclusions, including:

- "Heavy metals (especially copper, lead and zinc) are by far the most prevalent priority pollutant constituents found in urban runoff. End-of-pipe concentrations exceed EPA ambient water quality criteria and drinking water standards in many instances. Some of the metals are present often enough and in high enough concentrations to be potential threats to beneficial uses." (Id. at p. 5.)

- "Total suspended solids concentrations in urban runoff are fairly high in comparison with treatment plant discharges. Urban runoff control is strongly indicated where water quality problems associated with TSS, including build-up of contaminated sediments, exist." "[T]he problem of contaminated sediment build-up due to urban runoff…undeniable exists." (Id. at p. 6.)

- "A summary characterization of urban runoff has been developed and is believed to be appropriate for use in estimating urban runoff pollutant discharges from sites where monitoring data are scant or lacking, at least for planning level purposes." (Id. at p. 7.)

With respect to this last conclusion regarding the development of a summary characterization, the NURP Report states that "[a]lthough there tend to be exceptions to any generalization, the suggested summary urban runoff characteristics given in Table 6-17 of the report are recommended for planning level purposes as the best estimates, lacking local information to the contrary." (Id. at p. 7.) "[I]n the absence of better information the data given in Table 6-17 are recommended for planning level purposes as the best description of the characteristics of urban runoff." (EPA, Results of the Nationwide Urban Runoff Program, Volume I – Final Report, at p. 6-43.) Those characteristics of urban runoff include the presence of significant levels of pollutants including total suspended solids, heavy metals, inorganics, and pesticides. (Id., at Tables 6-17 through 6-21.) The NURP data supports and confirms the DTR's assertion that:

"The Port District has caused or permitted the discharge of urban storm water pollutants directly to San Diego Bay at the Shipyard Sediment Site. The pollutants include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), TSS, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes." (DTR, § 11.4.)

The NURP data also supports and confirms the DTR's assertion that "it is highly probable that historical and current discharges from [SW4] outfall have discharged heavy metals and organics to San Diego Bay at the Shipyard Sediment Site." (DTR § 11.6.4.)

Response 11.1

Summary Of Arguments And Recommendations.

The Port District argues that it should be named secondarily liable as a public-agency landowner because its current and former tenants have sufficient financial resources to undertake the cleanup the TCAO requires, and because those tenants are cooperating with the TCAO. The Port District further contends that it should not be named as a discharger because there is no substantial evidence to support the finding it caused or contributed to the condition of pollution or nuisance that exists at the Shipyard Sediment Site because of its responsibilities for discharges from its MS4 system. BAE Systems and NASSCO counter that the Port District has failed to demonstrate that all of its current and former tenants have the financial resources to pay their respective fair shares of cleanup costs. They further argue that the cleanup is not progressing, and that a number of dischargers named in the order are not cooperating with the TCAO and, in fact, are contesting its adoption. The City of San Diego, BAE Systems and NASSCO all argue the Port District should be named as a discharger because substantial evidence in the record supports the finding that it is responsible for discharges of relevant COCs from its MS4 system, which discharges have contributed to the condition of pollution or nuisance at the Site. **Because some former Port District Tenants may not have sufficient financial resources to account for their fair shares of cleanup costs, and because the cleanup is not progressing and a number of named dischargers are contesting the TCAO, the Port District should remain a primarily – not a secondarily – responsible party. Moreover, because substantial record evidence supports the finding that the Port District is legally responsible for the discharge of wastes through its MS4 system, it should remain a discharger under the TCAO.**

Legal Standards.

All commentors and the Cleanup Team agree that there must be substantial evidence in the record to support naming the Port District as a discharger. As California's Supreme Court observed, substantial evidence is evidence of "ponderable legal significance," which is "reasonable in nature, credible and of solid value." *Ofsevit v. Trustees of California State Universities and Colleges* (1978) 21 Cal.3d 763, 773, n. 9. "Substantial evidence" means facts, reasonable assumptions based on facts and expert opinions supported by facts. *Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004. 1019. Importantly, an agency may also rely on the opinion of its staff in reaching decisions, and "the opinion of staff has been recognized as constituting substantial evidence." *Browning-Ferris Industries v. City Council* (1986) 181 Cal.App.3d 852, 866 *citing Coastal Southwest Dev. Corp. v.* California Coastal Zone Conservation Com. (1976) 55 Cal.App.3d 525, 535-536.

The Port District faithfully cites governing State Water Board precedent on whether a landowner should be named as primarily, as opposed to secondarily liable, but fails to faithfully apply the facts at hand. It also fails to properly apply the substantial evidence standard with respect to facts in the record, reasonable assumptions based on those facts, and expert and staff opinions based on those facts regarding its responsibility for discharges of relevant COCs from its MS4 system.

The Port District Should Remain A Primarily Responsible Discharger Because Of Potential Gaps In Tenants' Financial Resources. [1]

[1] The Port District provides a lengthy discussion of its alleged history of cooperation with the San Diego Water Board on other cleanup projects, as well as its purported cooperation with the TCAO. The arguments in this vein are apparently provided to address the Cleanup Team's responses to the Port District's discovery requests regarding changes in circumstances between prior iterations of the TCAO and the current iteration. As NASSCO points out in its rebuttal comments, the DTR does not suggest that the Port was named as a primary discharger because of perceived non-cooperation grounded in the Port's

The Port District does not dispute that the TCAO establishes the elements for naming it as a discharger under applicable State Water Board landowner liability precedent. *See* DTR, § 11, p. 11-2, n. 102. Rather, it argues that it should be named secondarily liable. A public-agency landowner may be named secondarily liable if, but only if, its current and former tenants have the financial resources to undertake the cleanup *and* those tenants are cooperating with and implementing the applicable cleanup order. *In the Matter of Petitions of Wenwest, Inc., et al.*, (*Wenwest*) State Water Board Order No. WQ 92-13, p. 9; *In the Matter of the Petitions of Arthur Spitzer, et al.*,(*Spitzer*) State Water Board Order No. WQ 89-8, p. 21. As the Presiding Officer for these proceedings has previously articulated, the Port District bears the burden of proving the two elements. 10/27/10 Order Reopening Discovery Period, § III. Importantly, when reviewing the question of whether to name a party as a discharger under a cleanup and abatement order, regional water boards are to name parties to the maximum extent permitted by law. *See* 23 Cal. Code Regs., § 2907; Resolution No. 92-49, § II (A)(4). .

The Port District goes to great lengths to try to demonstrate that its current and former tenants have the financial resources to accomplish the cleanup proposed in the TCAO, introducing insurance policies and stipulations by some of its current tenants into the record. But, even if admissible, these facts are insufficient to meet the Port's burden to establish that each of the Port District's former and current tenants have the financial resources to satisfy their respective fair shares of responsibility. *See In the Matter of Petitions of Aluminum Company of America et al.*, State Water Board Order No. WQ-93-9, pp. 16-18 [where an operator no longer in existence is responsible for cleaning up a site, creating an "orphan share" or liability, the landowner becomes primarily responsible for the orphaned liability].

There is considerable controversy over which, if any, discharger named in the TCAO is responsible for discharges from the current BAE Systems leasehold from 1962 through 1979. BAE Systems contends it is responsible for discharges from 1979 to the present only. Star & Crescent Boat claims it has no responsibility for any discharges at the Site. Campbell Industries, Inc. claims it has responsibility for discharges from 1972 through 1979 only. Thus, even if the Port District could establish that Campbell Industries, Inc. and Star & Crescent Boat have sufficient financial resources to pay their respective fair shares of responsibility, which it cannot, the potential for an orphaned operator share of responsibility still requires the Port District to be named as a primarily responsible party under the State Water Board's guiding landowner liability precedents.

Moreover, the Port District's provision of potential insurance coverage "financial resources" for Star & Crescent Boat and Campbell Industries, Inc., among others, is not evidence of the ability to satisfy cleanup costs. The Port District's summary of potential insurance assets does not and cannot establish; (1) whether the policies summarized actually provide coverage for the cleanup costs; (2) whether the insurer is dissolved or insolvent; (3) whether any policy amounts have been sold back or have already been

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withdrawal from a voluntary mediation. Rather, the Port is named as a primary discharger based on an application of facts in the record to applicable legal precedents governing the issue.

depleted; or (4) whether any insurer has agreed to indemnify the insureds. As BAE Systems points out, it is not surprising this evidence has not been provided by the Port District since the obligation to indemnify an insured for loss does not arise until the insured's underlying liability is established. *See Montrose Chemical Corp. v. Admiral Ins. Co.* (1995) 10 Cal.4th 645, 659 n.9. That is, the TCAO must be adopted before insurers actually recognize a potential duty to indemnify.

The Port District also argues that it has indemnity agreements with its tenants which require them to reimburse it for cleanup costs. As NASSCO correctly observes, whether a lease includes an indemnity clause is not determinative as to whether the landlord should be named primarily or secondarily liable. *See In re Wenwest, Inc.,supra,* State Water Board Order No. WQ 92-13, pp. 7-9. Here, the indemnity clauses are irrelevant for a number of reasons. First, the Port District has not introduced indemnity agreements into the record for all of its current and former tenants. Second, even assuming, solely *arguendo* that the Port District has iron-clad indemnity agreements with all its current and former tenants, those indemnity agreements are only as good as the current and former tenants are solvent. Accordingly, the indemnity argument resolves nothing since it is unclear whether dissolved corporate dischargers such as Campbell Industries, Inc. and San Diego Marine Construction Company, and successor corporations such as Star & Crescent actually have sufficient financial resources with which to indemnify the Port District.

It bears noting that the issues relating to allocation of fair shares of responsibility for cleanup costs under the TCAO are currently being litigated by the dischargers in federal district court. Based on the current state of the record, it is premature to conclude that all of the Port District's current and former tenants have sufficient financial resources to undertake their respective fair shares of cleanup costs under the TCAO.

The Port District Should Remain A Primarily Responsible Discharger Because No Cleanup Is Taking Place.

Even if it could be demonstrated that the Port District's current and former tenants have the financial resources to undertake the TCAO, it would still be appropriate to name the Port District as a primarily responsible party because no work is progressing on the cleanup, and at least some of the Port District's current and former tenants are not cooperating with or supporting the TCAO. *See In re Spitzer, supra,* at p. 9 [landowner responsible for cleanup if lessor fails to cleanup]; *In re Wenwest, supra,* p. 3. n. 2 [upholding regional board's initial decision to name landowner primarily responsible, but agreeing to change status of landowner to secondarily liable where lessee making progress on cleanup]. The Port District's claim that its current and former tenants are cooperating with and implementing the TCAO is false. As EHC and Coastkeeper continuously point out in these proceedings, the San Diego Water Board has been trying to accomplish a cleanup at the Shipyard Sediment Site for over ten years. So far, no "progress on the cleanup" has taken place. SDGE disputes the TCAO's cleanup levels and its own liability. NASSCO admits to liability, but disputes the alternative cleanup levels. BAE Systems admits to some liability, disputes some liability, and disputes the alternative cleanup levels. Star& Crescent disputes its liability. The Port District itself argues that the alternative cleanup levels are not stringent enough and the cleanup footprint should be expanded. These facts can in no way be construed as "progress on the cleanup" is being made."

In sum, based on this record, it is premature to find that the Port District should be secondarily responsible. If the TCAO is successfully adopted and becomes final, and if the Port District's current and former tenants begin to make "progress on the cleanup" as was the case in *Wenwest,* then and only then may it be time to find the Port District secondarily responsible.

Substantial Evidence Supports Naming The Port District As A Discharger Under Its MS4 Permit.[2]

In addition to the case and statutory law set forth above governing what may constitute substantial evidence, Resolution No. 92-49 further animates the types of evidence that may be considered substantial when naming dischargers in a cleanup and abatement order, including direct or circumstantial evidence. Resolution No. 92-49, § I (A). Such direct or circumstantial evidence includes site characteristics and location in relation to other potential sources of discharge and hydrologic and hydrogeologic information, such as differences in upgradient and downgradient water quality. *Id.*, at §§ I (A)(2), (3). The Port District claims it does not own or operate any part of the MS4 system that discharges through storm water outfalls SW04 and SW09, and that, even if it did, there is no substantial evidence to support the finding that relevant COCs were discharged through that system. Both arguments fail.

The Port District's argument that it does not own or operate any of those portions of the MS4 system that outfall through SW04 and SW09 is based on the erroneous assertion that the City of San Diego's retention of an easement for its MS4 system to pass through the Port District's tideland properties foisted the responsibility for discharges from the tideland properties onto the City. The Port District is wrong. The City of San Diego correctly observed in its rebuttal comments that the Port District is a unique entity that overlays the City's jurisdictional boundaries. The Port District has all rights and obligations of inspection and action with respect to the MS4 within its jurisdictional boundaries – namely the tidelands. Indeed, the MS4 permit issued by the San Diego Water Board recognizes this. The City's easements merely allow its storm drains to pass through the tidelands to drain the upland areas into San Diego Bay. The Port District is fully responsible under the MS4 permit and its agreements with the co-permitees to take all necessary actions to prevent discharges of pollutants into the MS4 system from the tidelands areas, including both public areas *and* those leased to other entities. But, as outlined below, there is substantial evidence that relevant COCs were conveyed by the Port District's MS4 system to the Shipyard Sediment Site.

[2] There is some overlap with the discussion in these Response to Comments under Finding 4 relating to the City of San Diego's responsibility for its discharges from its portion of the MS4 system. Relevant portions of that response are incorporated herein by this reference.

The Port District argues that the DTR's finding that relevant COCs were discharged from the tidelands area to the MS4 system and then into the Site through outfalls SW04 and SW09 is not supported by substantial evidence. The Port District relies heavily on *Natural Resources Defense Council, Inc. v. County of Los Angeles* (9th Cir. 2011)(NRDC), 636 F.3d 1235 to support its argument. The case is not on point. *NRDC* specifically addresses the evidentiary threshold required for finding that an NPDES permittee exceeded the parameters of its permit. That inquiry necessarily requires some quantification of the discharged constituent since some level of discharge is permitted. The TCAO does not allege that the Port District violated its permit. Rather, the inquiry is whether substantial evidence supports the finding that the Port District caused or contributed COCs to the condition of pollution or nuisance at the Shipyard Sediment Site through its discharges from the MS4 system in the tidelands that it owns and operates. Even the *NRDC* court made it clear that those who convey pollutants to waters of the United States, even if initially "added" by others, are liable under the Clean Water Act. *Id.,* at 1252-1253. As BAE Systems correctly notes, so long as there is substantial evidence, direct or circumstantial, that the Port District caused or contributed to the condition of pollution or nuisance at the Site, it is properly named as a discharger under the TCAO.

Critically, the Port District fails to faithfully cite all of the substantial record evidence, direct and circumstantial, that supports the finding that it is responsible for discharges of relevant COCs through that portion of the MS4 system that lies within the tidelands. .

First, the Port District admits that it has "limited" storm water collection facilities that are not part of its tidelands properties leased to tenants and that lead to SW04. *See* Declaration of Robert Collacott, p. 4:9-14 [Port District operates one half mile of street curb and gutter, four storm drain inlets and an estimated 770 feet of underground storm drains 24-inches in diameter and smaller that drain to SW04].[3] It must be noted that the Port District's attempt to limit the MS4 system for which it is responsible to that which is not part of its tidelands leases to other entities is improper. The Port District is responsible for all storm water runoff collected from the tidelands area, whether it falls outside or within one of its leaseholds. The Port District's Jurisdictional Urban Runoff Management Plan (JURMP) admits the MS4 facilities, such as the one described by its Robert Collacott, have the potential to generate pollutants, including bacteria, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediments and trash. May 2008 JURMP, Table 6-2. All of these pollutants can reach the MS4 system with each rainfall event and, in turn, be carried to receiving water bodies. *Id.,* at p. 6-7. U.S. EPA documents cited by BAE Systems further establish that heavy metals, particularly copper, lead and zinc are priority pollutants found in urban runoff and total suspended solids are high in comparison to other point source discharges. This evidence is incorporated herein by this reference as if set forth in full. These pieces of evidence

[3] NASSCO notes that despite the ability to do so, the Port District fails to provide a GIS-based map that would show that storm water is not collected from the tidelands area and discharged through SW09. The TCAO alleges that it is. Because of the site characteristics of the area, it is reasonable to infer that SW09 does drain urban runoff from industrial facilities in the tidelands area leased by the Port District to others. As discussed above, it is also reasonable to assume that such runoff contains relevant COCs.

constitute circumstantial evidence of the Port District's contribution of relevant COCs to the Site. Stated somewhat differently, the evidence supports a finding that relevant COCs are commonly discharged in urban runoff, and that the Port District operates a conveyance at Belt Street that presents a plausible pathway for those COCs to be discharged.

Second, the Port District's leasehold to BAE Systems, which is within its jurisdictional tidelands area, directly overlies the SW04 outfall at the Shipyard Sediment Site. As the DTR already documents, relevant COCs, including PCBs and PAHs have been detected in the SW04 catch basin and laterals entering the catch basin. In 2009, samples were collected from a manhole on BAE's property that drains directly through SW04. The samples established the presence of PCBs, copper, mercury and TBT. In 2005, as described in the DTR, samples taken from the catch basin on the north side of Sampson Street between Belt Street and Harbor Drive (that portion over which the Port District admits responsibility) tested positive for PCBs and PAHs. This is direct evidence of COCs being present in the Port District's Belt Street MS4 conveyance, for which it admits responsibility. In 2001, water quality data was collected from the first manhole inside the BAE Systems leasehold that drains to SW04, which samples contained TBT, copper and mercury. It is reasonable to assume, based on the "site characteristics" (Resolution No. 92-49 I (A)(2)) and these facts documenting the detection of relevant COCs in manholes directly upgradient from the SW04 outfall, that COCs were discharged through SW04 after having been collected from the tidelands area. This makes the Port District a responsible party under *NRDC* because it is responsible for conveying wastes through its MS4 system to the Site.

As counsel for SDG&E, Jill A. Tracy notes in SDG&E's June 23, 2011 Rebuttal, "the state and regional boards are precluded from apportioning responsibility for remedial activities under a CAO." 6/23/11 SDG&E Rebuttal, pp. 10-11. Ms. Tracy argues that if the San Diego Water Board were to rescind its designation of the Port District as a named discharger under the TCAO, it would "become engaged in a *de facto* allocation of harm." *Id*. Whether the Port District should be named primarily responsible as a landowner, or whether it is entitled to indemnity from its current and former lessees for storm water and/or other discharges of relevant COCs, to the extent those entities are still viable, is best decided in an allocation proceeding such as the current federal litigation, not in this administrative forum. Accordingly, the Port District should remain a named discharger under the TCAO.

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12. TCAO Finding 12 and DTR Section 12: Clean Water Act Section 303(d) List

Finding 12 of CAO No. R9-2011-0001 states:

The San Diego Bay shoreline between Sampson and 28th Streets is listed on the Clean Water Act section 303(d) List of Water Quality Limited Segments for elevated levels of copper, mercury, zinc, PAHs, and PCBs in the marine sediment. These pollutants are impairing the aquatic life, aquatic-dependent wildlife, and human health beneficial uses designated for San Diego Bay. The Shipyard Sediment Site occupies this shoreline. Issuance of a CAO (in lieu of a Total Maximum Daily Load program) is the appropriate regulatory tool to use for correcting the impairment at the Shipyard Sediment Site.

The San Diego Water Board did not receive any comments regarding Finding 12 and DTR Section 12.

13. TCAO Finding 13 and DTR Section 13: Sediment Quality Investigation

Finding 13 of CAO No. R9-2011-0001 states:

NASSCO and BAE Systems conducted a detailed sediment investigation at the Shipyard Sediment Site in San Diego Bay within and adjacent to the NASSCO and BAE Systems leaseholds. Two phases of fieldwork were conducted, Phase I in 2001 and Phase II in 2002. The results of the investigation are provided in the Exponent report *NASSCO and Southwest Marine Detailed Sediment Investigation, September 2003 (Shipyard Report, Exponent 2003*). Unless otherwise explicitly stated, the San Diego Water Board's finding and conclusions in this CAO are based on the data and other technical information contained in the Shipyard Report prepared by NASSCO's and BAE Systems' consultant, Exponent.

The Shipyard Sediment Site is exempt from the Phase I Sediment Quality Objectives promulgated by the State Water Resources Control Board (State Water Board) because a site assessment (the Shipyard Report) was completed and submitted to the San Diego Water Board on October 15, 2003. See State Water Board, *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality*, II.B.2 (August 25, 2009).

The San Diego Water Board received a secondary comment from Coastkeeper and EHC on DTR Section 13 that was part of a broader comment on DTR Section 33. Please refer to Response 33.1 in this report for the comment and response concerning the sufficiency of the number of samples in the Sediment Quality Investigation.

14. TCAO Finding 14 and DTR Section 14: Aquatic Life Impairment

Finding 14 of CAO No. R9-2011-0001 states:

Aquatic life beneficial uses designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site. Aquatic life beneficial uses include: Estuarine Habitat (EST), Marine Habitat (MAR), and Migration of Aquatic Organisms (MIGR). This finding is based on the considerations described below in this *Impairment of Aquatic Life Beneficial Uses* section of the CAO.

RESPONSE 14.1

DTR Sections: 14 to 28
Comment Submitted By: NASSCO
Comment ID: 158
Comment

Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

The Regional Board is authorized to adopt CAOs based only on sound scientific evidence that a potentially responsible party has "discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance . . . ." Cal. Water Code §13304(a) . Here, Staff alleges that NASSCO "caused or permitted the discharge of waste to the Shipyard Sediment Site, resulting in an accumulation of waste in the marine sediment [that] has caused conditions of contamination or nuisance in San Diego Bay that adversely affect aquatic life, aquatic-dependent wildlife, human health, and San Diego Bay beneficial uses." TCAO, at ¶ 1. However, extensive scientific investigation conducted at the Site, including the sediment quality investigation upon which the findings and conclusions of the TCAO are purportedly based, indicates that beneficial uses at the Site are not unreasonably impaired and that active remediation, beyond monitored natural attenuation, is not warranted. Exponent Report, at 19-12 – 19-13; TCAO, at ¶ 13.

The Sediment Investigation Was Extensive and Unparalleled (Finding 13)

As documented in the TCAO and DTR, Staff's findings are based primarily upon the results of a "detailed" sediment investigation that was conducted at the site in 2001 and 2002 by NASSCO and BAE Systems San Diego Ship Repair Facility ("BAE Systems"), under the direction and supervision of staff. The investigation included sampling of five reference areas selected by Regional Board staff and fifteen triad stations within NASSCO's leasehold alone, resulting in a comprehensive data set that measured sediment chemistry, sediment toxicity, benthic macroinvertebrate communities, bioaccumulation in fishes and invertebrates, and fish health using multiple independent indicators. Evaluation of Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 for the NASSCO Shipyard Sediment Site, Expert Report of Thomas C. Ginn, Ph.D. ("Ginn Report"), at 11-12. For each sampling station, synoptic measurements were made of sediment chemistry, sediment toxicity, and the structure of benthic macroinvertebrate communities. Id. Sediment toxicity was evaluated using three different toxicity tests, and the structure of benthic macroinvertebrate communities was assessed by analyzing five replicate samples from each station. Id. In addition, bioaccumulation was measured in invertebrates and fish that are prey to aquatic-dependent wildlife, and fish health was assessed by comparing the condition of 100 fishes caught at, and near the NASSCO leasehold, across a variety of indicators, including weight, length, age, and microscopic evaluation of organs for evidence of lesions or other abnormalities. Id. As a result, the investigation—which was conducted with substantial oversight and input from Staff, stakeholders, and the public—contains ample site-specific evidence, and has been described by Staff as "the most extensive sediment investigation ever conducted for a site in San Diego Bay," if not California. Exponent Report, at 1-2 – 1-4 (summarizing the directives and guidance provided by Regional Board staff throughout the planning and execution of the sediment investigation and Exponent Report); Deposition of David Barker ("Barker Depo"), at 80:2 – 80:22, 82:3 – 82:4, 2:14 – 83:23 (discussing the scope, quality, and Staff involvement in the sediment investigation); DTR, at 13-2 – 13-3 (summarizing Staff and stakeholder involvement in the sediment investigation).

The results of this extensive and unparalleled investigation, as discussed in detail below, found that risks to human health and aquatic-dependent wildlife at the shipyards "are well within acceptable levels" and that the sediment toxicity and adverse effects on benthic communities observed at certain locations are attributable to pesticides, not metals, butyltins, PCBs, or PAHs. Exponent Report, at 19-1. Moreover, the report found that aquatic life, aquatic-dependent wildlife, and human health beneficial uses are at approximately 95 percent of ideal conditions, and that any benefits from active remediation, such as dredging, would provide minimal incremental benefit at a very high cost. Id. at 19-13. As a result, the report concluded that "monitored natural recovery is therefore the most technically and economically feasible approach to addressing current sediment conditions at the shipyard." Id. Yet, despite the favorable results and recommendations from this comprehensive multimillion dollar sediment investigation, overseen by Regional Board Staff, the Cleanup Team now seeks to require large-scale dredging of sediments within, and adjacent to, NASSCO's leasehold to achieve cleanup levels that are unprecedented in San Diego Bay. This aggressive approach violates the legal principles embodied in Section 13304 and Resolution 92-49, is contrary to existing scientific and technical evidence, and is not supported by the record.

Response: 14.1

In January 1991, the San Diego Water Board Executive Officer requested NASSCO and Southwest Marine (now BAE Systems), to participate in a sediment study to determine the quality of sediment within their respective leaseholds, areal extent of contamination, and appropriate cleanup levels. From that date the San Diego Water Board has been engaged in a long and difficult process to obtain sufficient information upon which to base decisions regarding the cleanup of the contaminated Shipyard Sediment Site.

Between the years 2001 to 2003, NASSCO and BAE Systems conducted a detailed sediment investigation at the Shipyard Sediment Site within and adjacent to their respective leaseholds with Phase I conducted in 2001 and Phase II conducted in 2002. The results of the investigation are provided in the Shipyard Report (Exponent 2003). Although the conclusions and recommendations of this industry funded report were that the San Diego Water Board should not require any cleanup of the sediments, many of the findings and conclusions of the TCAO and DTR are based on the data and other technical information contained in the report.

The final electronic administrative record supporting the TCAO and DTR assembled by the Cleanup Team consists of over 375,000 pages of information pertaining to the various parties and is fully indexed, text searchable, and available for use by both the tentatively named responsible parties and other interested parties, including nongovernmental environmental organizations. The extraordinary efforts of the Cleanup Team to prepare, assemble and make this record available to the parties were unprecedented and driven in large measure by vigorous and continuing resistance of the tentatively named responsible parties to undertake any cleanup at the site.

NASSCO continues to argue, as it has for many years now, that the contaminants accumulated in the sediment at the Shipyard Sediment Site, which are attributable in part to NASSCO'S discharges, do not cause pollution conditions. NASSCO also continues to argue for no-action or passive remediation alternatives. NASSCO is wrong. Based on the substantial record the Cleanup Team has concluded that aquatic life, aquatic dependent wildlife and human health beneficial uses are unreasonably impaired at the Shipyard Sediment Site and that cleanup should occur. The technical analysis addressing beneficial use impairment at the Shipyard Sediment Site is contained in DTR Sections 14 through 28. Cleanup Team responses to NASSCO's many specific comments on the TCAO and DTR conclusions regarding beneficial use impairment are contained in the Response to Comment Sections 15 and 18 for Aquatic Life Beneficial Uses, Section 24 for Aquatic-Dependent Wildlife Beneficial Uses, and Sections 25, 27, and 28 for Human Health Beneficial Uses.

15. TCAO Finding 15 and DTR Section 15: Multiple Lines of Evidence Weight-of-Evidence Approach

Finding 15 of CAO No. R9-2011-0001 states:

The San Diego Water Board used a weight-of-evidence approach based upon multiple lines of evidence to evaluate the potential risks to aquatic life beneficial uses from pollutants at the Shipyard Sediment Site. The approach focused on measuring and evaluating exposure and adverse effects to the benthic macroinvertebrate community and to fish using data from multiple lines of evidence and best professional judgment. Pollutant exposure and adverse effects to the benthic macroinvertebrate community were evaluated using sediment quality triad measurements, and bioaccumulation analyses, and interstitial water (i.e., pore water) analyses. The San Diego Water Board evaluated pollutant exposure and adverse effects to fish using fish histopathology analyses and analyses of PAH breakdown products in fish bile.

RESPONSE 15.1

DTR Section: 15
Comment Submitted By: NAASCO
Comment ID: 148
Comment

Any potential negative effects from Shipyard contaminants are not observed in fish beyond the leasehold. The DTR employed a weight-of-evidence approach to evaluate the exposure to and potential for adverse impacts from the Shipyard Site. As part of this approach, the DTR analyzed the tissue concentrations of contaminants of concern in fish caught inside the NASSCO leasehold, and compared them to concentrations in fish caught outside the leasehold and in reference conditions in San Diego Bay. (See DTR, at Table 28-9.). The results demonstrated that there was no significant difference in the level of tissue concentrations for contaminants of concern between fish caught inside the NASSCO Shipyard, and at reference areas around San Diego Bay. Rather, mercury in fish captured within the NASSCO leasehold was actually lower than reference conditions, and are not impacted for mercury at unsafe levels. (See DTR, at Table 28-9). In fact, the mercury levels of fillets from fish caught within the leasehold satisfy EPA's recommended guidance threshold for what constitutes "lower levels of mercury in fish." Additionally, the mean chemical concentrations measured in the edible fish tissues collected inside the NASSCO leasehold were not statistically different from those measured outside (but adjacent to) the leasehold. Similarly, the mean chemical concentrations in fish caught outside (but adjacent to) the leasehold were not statistically different from those caught at reference stations, which were specifically selected to represent background conditions. Thus, the fish tissue concentrations observed in fish did not vary significantly by location, suggesting that (1) spotted sand bass at the Site meet regional background conditions and (2) shipyard chemicals do not adversely affect fish inside, or beyond, the leasehold.

Response 15.1

The comment is correct that the DTR employed a weight-of-evidence approach to evaluate the impairment of beneficial uses at the Shipyard Site. However, the comment subsequently takes a different approach in evaluating the tissue data, specifically focusing the argument on (1) spotted sand bass and (2) fillet concentrations, which provide favorable results for the comment's line of reasoning. While fillet concentrations may well represent recreational human consumption, as the comment is citing section 28 of the DTR, it is not reasonable to assume that the fillet represents the health of an individual fish or that potential predators (see Table 24-5) would fillet the fish prior to consumption. Furthermore, in a weight-of-evidence approach, the spotted sandbass fillets should not be the only consideration when assessing aquatic-dependent wildlife, as they are not the only aquatic species that utilize the site or are present in the bay food web. Again, this is reflected in the Tier II Assessment for Aquatic Dependent Wildlife, which utilizes 5 species, including an invertebrates and eelgrass. The Cleanup Team also utilized a different approach in evaluation of the concentration data (see Response 28.1 for more information).

RESPONSE 15.2

DTR Section: 15
Comments Submitted By: NASSCO
Comment IDs: 266, 490
Comment

Survey of lesions in fish show a greater prevalence of lesions in fish caught in reference areas than in fish caught at NASSCO. Because no adverse effects to fish can be associated with specific chemical concentrations in the sediment, it would be inappropriate to derive specific chemical-based cleanup levels from the fish histopathology data in the DTR (Exponent 2003, p. 9-22). The DTR therefore correctly concludes that "the fish histopathology data does not indicate that the fish lesions observed in the data set can be conclusively attributed to contaminant exposure at the Shipyard Sediment Site." (DTR, Appendix for Section 15).

Overall, however, the results of the fish histopathology analysis do suggest that spotted sand bass are not adversely affected by chemicals present in the sediments, water, or prey at NASSCO. For example, as indicated above, the growth and condition of spotted sand bass near the shipyards were comparable to fish in reference areas. The survey also revealed a greater prevalence of lesions in fish caught in reference areas than in fish caught at the shipyards (i.e., the total number of lesions that were significantly elevated was greater in fish caught at the reference sites than caught at the shipyards). Exponent Report, at 9-22. Of the 70 lesions evaluated the incidence of only four were considered as being significantly elevated near the shipyards, whereas the incidence of six were significantly elevated at reference areas, when compared with one or more shipyard sites. Additionally, most of the lesions found in shipyard fish were "mild," and the pathologist observed no serious liver lesions of the types commonly associated with contaminated sites. Taken together, these results indicate that sediments at the shipyard do not pose risks to aquatic life.

Any potential negative effects from Shipyard contaminants are not observed in fish beyond the leasehold. In addition to assessing chemical concentrations in fish tissue, the DTR also analyzed fish histopathology results for fish caught (1) inside the leasehold, (2) just outside the leasehold, and (3) at reference stations. These data corroborated the results of the fish tissue analysis, and found that fish inside the leasehold were "healthy, with no elevation in significant liver lesions or other abnormalities related to chemical exposures at the site." As discussed previously in Section IV.a.2.b.(4), a conservative analysis of the results showed that only four of the 70 lesions were evaluated were found to be significantly elevated in shipyard fish (compared to six of 70 in reference fish). The results also indicated that the health of spotted sand bass was not adversely affected by proximity to the shipyards, and that fish caught just outside, but adjacent to, the NASSCO leasehold were generally no different from reference fish, with respect to both microscopic and macroscopic fish lesions. DTR, App. 15, at 15-8 – 15-9, Table A15-5. In fact, only one of the 70 types of lesions evaluated was found to be significantly elevated in fish caught just outside the NASSCO leasehold, compared to reference fish. DTR, at Tables A15-4 and A15-5. Accordingly, these results suggest that, even if there are potential negative effects on fish within the leasehold, shipyard contaminants are not affecting fish beyond the leasehold and potentially contaminated fish are not migrating beyond the leasehold.

Response 15.2

The Cleanup Team agrees with some aspects of NASSCO's comment regarding survey of lesions in fish, but disagrees with other aspects. The Cleanup Team does not agree that the data suggest that spotted sand bass are not adversely affected by chemicals present in the shipyards. NASSCO's comment does not characterize the full findings of the Shipyard Report (Exponent 2003) or the supporting March 25, 2003 Histopathology Report entitled "*Necropsy and Histopathology of Spotted Sand Bass Sampled from San Diego Harbor in September 2002*" (See SAR280360), and only focuses on the total number and "severity" of individual lesions as ranked on a 1-4 scale. The comment does not include a discussion of the potential significance of the lesions documented, nor does it discuss the possible causes (see DTR Appendix for Section 15 and 2003 Histopathology report). The DTR findings and 2003 Histopathology Report do suggest differences between sites that may be attributable to chemical exposure pathways. However, the comment is correct in that observed conditions in spotted sand bass cannot be directly attributed to shipyard pollutants. It is important to note, however, that the DTR Findings were taken out of context in the comment. The purpose of the fish histopathology study was not to determine a cause-and-effect between shipyard pollutants and fish condition, but to provide an additional assessment of biologic conditions for evaluation in a weight-of-evidence approach.

With regards to NASSCO'S comment on the potential negative effects in fish beyond the leasehold, the Cleanup Team does not agree with the assertion that fish within the shipyard site were "healthy". Contrary to NASSCO's assertion, the 2003 Histopathology Report (See SAR280360) does not conclude that fish within the shipyard site were "healthy". In fact, the report concluded on Page 8, in **Results and Significance,** that more fish from inside shipyard sites had evidence of tissue damage than did fish from outside the shipyard sites.

NASSCO'S also argues that "even if there are potential negative effects on fish within the leasehold, shipyard contaminants are not affecting fish beyond the leasehold and potentially contaminated fish are not migrating beyond the leasehold." While this may well be the case, this does not provide sufficient evidence to show that beneficial uses are not unreasonably impaired at the Shipyard Sediment Site, nor does it invalidate the Tier II aquatic-dependent wildlife results, which made specific assumptions regarding predator foraging whose purpose are laid out in the DTR Section 24.2.6. These assumptions are reasonable and consistent with Resolution No. 92-49. Lastly, it is important to again note that the spotted sand bass was only one of five species in the Tier II analysis.

RESPONSE 15.3

DTR Section: 15
Comments Submitted By: NASSCO
Comment ID: 267
Comment

The DTR correctly concludes that "the [fluorescent aromatic compound] concentrations observed in the fish collected cannot be conclusively attributed to contaminant exposure at the Shipyard Sediment Site." (DTR, p. A15-14). In fact, fish bile analyses conducted at the Site suggest that fish at the shipyards are no more greatly exposed to PAHs than fish at other locations in San Diego Bay. Exponent (2003, at p. 8-49). No statistically significant differences in PAH breakdown products were found at the shipyards relative to the reference location, and concentrations of bile breakdown products in fish from within the Site were generally less than concentrations in fish from outside the leaseholds. Taken together, these data support the conclusion that that Site sediments are not impairing aquatic life beneficial uses. (Exponent 2003, at xxxiii, p. 8-49).

Response 15.3

The Cleanup Team does not agree that the data, when taken together, support the conclusion that shipyard site sediments are not impairing aquatic life beneficial uses. The Cleanup Team found the data collected for fish bile to be inconclusive after conducting additional statistical evaluations beyond those cited in Exponent (2003, at p. 8-49), and when considering potential confounding factors associated with the species and testing.

16. TCAO Finding 16 and DTR Section 16: Sediment Quality Triad Measures

Finding 16 of CAO No. R9-2011-0001 states:

The San Diego Water Board used lines of evidence organized into a sediment quality triad, to evaluate potential risks to the benthic community from pollutants present in the Shipyard Sediment Site. The sediment quality triad provides a "weight-of-evidence" approach to sediment quality assessment by integrating synoptic measures of sediment chemistry, toxicity, and benthic community composition. All three measures provide a framework of complementary evidence for assessing the degree of pollutant-induced degradation in the benthic community.

The San Diego Water Board received secondary comments from NASSCO on DTR Section 16 that was part of a broader comment on DTR Section 18. Please refer to Response 18.1 in this report for the comment and response concerning the Triad weight-of-evidence results for the Shipyard Sediment Site stations.

17. TCAO Finding 17 and DTR Section 17: Reference Sediment Quality Conditions

Finding 17 of CAO No. R9-2011-0001 states:

The San Diego Water Board selected a group of reference stations from three independent sediment quality investigations to contrast pollution conditions at the Shipyard Sediment Site with conditions found in other relatively cleaner areas of San Diego Bay not affected by the Shipyard Sediment Site: (1) Southern California Bight 1998 Regional Monitoring Program (Bight 98), (2) 2001 Mouth of Chollas Creek and Mouth of Paleta Creek TMDL studies, and (3) 2001 NASSCO and BAE Systems Detailed Sediment Investigation. Stations from these studies were selected to represent selected physical, chemical, and biological characteristics of San Diego Bay. Criteria for selecting acceptable reference stations included low levels of anthropogenic pollutant concentrations, locations remote from pollution sources, similar biological habitat to the Shipyard Sediment Site, sediment total organic carbon (TOC) and grain size profiles similar to the Shipyard Sediment Site, adequate sample size for statistical analysis, and sediment quality data comparability. The reference stations selected for the Reference Sediment Quality Conditions are identified below.

Reference Stations Used To Establish Reference Sediment Quality Conditions

2001 Chollas/Paleta Reference Station Identification Number	2001 NASSCO/BAE Systems Reference Station Identification Number	1998 Bight'98 Reference Station Identification Number
2231	2231	2235
2243	2243	2241
2433	2433	2242
2441	2441	2243
2238		2256
		2257
		2258
		2260
		2265

The San Diego Water Board received a secondary comment from NASSCO on DTR Section 17 that was part of a broader comment on DTR Section 18. Please refer to Response 18.1 in this report for the comment and response concerning the grain size and total organic carbon differences between the Site stations and the reference pool stations.

18. TCAO Finding 18 and DTR Section 18: Sediment Quality Triad Results

Finding 18 of CAO No. R9-2011-0001 states:

The San Diego Water Board categorized 6 of 30 sediment quality triad sampling stations at the Shipyard Sediment Site as having sediment pollutant levels “Likely” to adversely affect the health of the benthic community. The remaining triad stations were classified as “Possible” (13) and “Unlikely” (11). These results are based on the synoptic measures of sediment chemistry, toxicity, and benthic community structure at the Shipyard Sediment Site.

RESPONSE 18.1

DTR Section: 18
Comments Submitted By: NASSCO, BAE Systems, Coastkeeper and EHC (1 comment)
Comment IDs: 119, 261, 407, 462, 481
Comment

Staff’s framework is replete with excessively conservative assumptions and structural biases towards finding impairment to aquatic life. As a result, the conclusions in the TCAO are not reflective of the true condition of the Site, and lead to an overly conservative result, which should instead have been based upon a realistic site-specific risk assessment, as is required under Section 13304 and Resolution 92-49.

Although the use of a weight of the evidence assessment based upon multiple lines of evidence (MLOE) is a generally accepted approach to evaluating sediment quality, the particular weight of the evidence framework described in the DTR does not follow accepted standards of practice for sediment assessments, resulting in a consistent bias in favor of finding impairment. Because any weight of the evidence analysis necessarily requires the use of “best professional judgment,” accuracy is dependent upon the expertise of the personnel interpreting the data, and may be flawed if based on unreasonable assumptions, or manipulation of the individual lines of evidence (“LOE”) used in the analysis.

The excessively conservative assumptions and structural biases towards finding impairment to aquatic life include:

1. **Undue Weight on Sediment Chemistry LOE (Comment ID 117 and 282).** The MLOE analysis supporting the TCAO is inconsistent with other published decision frameworks, and places undue emphasis on the sediment chemistry line of evidence in violation of sound scientific and technical principles. Specifically, the TCAO and DTR framework is fundamentally flawed because it concludes that adverse effects on benthic macroinvertebrates are “likely” or “possible” whenever sediment chemistry is characterized as “high”—regardless of whether significant sediment toxicity or adverse effects on benthic invertebrates are also observed. DTR, at Table 18-4. As a result, the chemistry line of evidence unilaterally trumps the others, causing the TCAO and DTR reach conclusions about conditions at the Site that are not technically justified. Staff’s framework is further biased by its lack of a “no” effects category – meaning that stations

will be characterized as having at least “low” levels of effects, even where results are indistinguishable from reference conditions – contrary to methods published by others, including the State Water Resources Control Board.

Another major flaw with the WOE approach used in the DTR is the failure to give the benthic community leg of the Triad more weight than the sediment chemistry and sediment toxicity legs, since the benthic evaluations at the Site directly addressed the potential effects of chemical contamination in in-place sediments on the native benthic macroinvertebrates that reside at the site. The benthic analyses are therefore the most relevant leg of the Triad for assessing effects on the in situ benthic macroinvertebrate communities at the Site.

The failure of the DTR to give the benthic community leg of the Triad more weight than the sediment chemistry and sediment toxicity legs, ignored the greater importance of that leg, as documented in Bay et al. (2007b) and CWSWRCB (2009), and led to an overly conservative assessment that gave unwarranted weight, in particular, to the sediment chemistry leg of the Triad.

2. **Grain Size and Total Organic Carbon Differences (Comment ID 474).** Sediment chemistry results at NASSCO are overstated because the reference pool does not accurately represent the chemical and biological conditions at the shipyards in the absence of site-related discharges. This is because reference stations (1) contain coarser sediments, (2) more organic carbon, and (3) tend to be located far from the shoreline (and associated generalized sources of contaminants). For these reasons, some of the elevated chemistry and apparent effects detected in toxicity tests and benthic community analyses likely are attributable to differences between reference and shipyard sediments that are unrelated to shipyard discharges. The TCAO is therefore overly conservative in assuming that all observed differences from reference result from shipyard discharges.

3. **Toxicity Preponderance of Evidence (Comment ID 262**). The DTR is overly-conservative because it concludes that there are impacts on aquatic life, even though the preponderance of sediment toxicity results show that Site sediments are nontoxic. In fact, sediment toxicity at NASSCO is not only objectively low, but also lower than most other locations in San Diego Bay (as well as most other bays and estuaries nationwide). Of 42 total toxicity tests conducted (excluding NA22), 37 tests showed conditions at NASSCO were as protective as background, with respect to toxicity.

4. **Bivalve Larval Development Test (Comment ID 118).** The results of the bivalve larvae sediment toxicity test are given an inappropriate amount of weight in the Triad analysis. The bivalve larvae test indicates that Site sediments do not pose risks to aquatic life, because the results showed that 10 of 15 stations had high percentages of normal larvae that exceeded the reference range. Although the remaining 5 stations were below reference, the two other toxicity tests showed that amphipod survival and sea urchin fertilization were not significantly different from reference for those stations. These latter indicators should be given more weight because of the experimental nature and

variable results of the bi-valve larvae tests, both within replicates at the Site stations and at reference stations.

5. **Amphipod Survival Test (Comment ID 263).** The amphipod survival test, which is the most reliable and widely-used of the three toxicity tests conducted, indicates that Site sediments do not pose risks to aquatic life. DTR, at Table 18-8. Amphipod toxicity was found at only 1 of 15 stations measured at NASSCO (NA11). DTR, at Table 18-8.

   It is overly conservative to conclude that NA 11 is "moderately" toxic based solely upon the amphipod survival result described above, when six of the seven direct lines of evidence show that NA11 is equivalent to reference, and the single line of evidence not meeting the reference condition differs by only a few percentage points.

6. **Echinoderm Fertilization Test (Comment ID 264).** The echinoderm fertilization test indicates that Site sediments do not pose risks to aquatic life, because the results showed that there were no statistically significant differences between background reference conditions and Site sediment with respect to sea urchin fertilization. DTR, at Table 18-8.

7. **Benthic Community Preponderance of Evidence (Comment ID 268).** In sum, nearly all of the benthic macroinvertebrate sampling stations at NASSCO show no adverse effects when compared with reference conditions based on the DTR assessment (and one of the two stations showing effects was inappropriately classified based on one metric). Multiple measures indicate that there are healthy benthic macroinvertebrate communities at the Site, with the possible exception of one station located adjacent to Chollas Creek. Accordingly, the direct assessment of benthic macroinvertebrate communities at NASSCO directly refutes the conclusion in the DTR that some areas at NASSCO have "likely" or "possible" effects on benthic macroinvertebrates as a result of shipyard discharges.

8. **Sediment Profile Images (Comment ID 138).** Photographs of sediments at the Site provide additional direct confirmation that the benthos is mature and thriving. Exponent Report, at 8-5. In addition to benthic community analyses, sediment profile images were collected throughout the Site and at reference stations. Exponent Report, at Appendix A. These photographs confirm the presence of mature benthic communities at the Site, and refute Staff's conclusions that benthic macroinvertebrates at the Site are impaired.

9. **Number of Taxa (Comment ID 137).** The benthic community analyses indicate that the number of taxa in Site sediments is not significantly different from reference. DTR, at Table 18-12. The only station to show statistically significant differences from reference with respect to number of taxa is NA22. The number of taxa at NA20 was incorrectly identified as statistically different, despite falling within the reference range. Accordingly, with the minor exception of NA22, which is not part of the cleanup footprint, none of the stations at NASSCO differed significantly from reference in terms of number of taxa.

10. **Assemblages of Organisms (Comment ID 136).** The benthic community analyses indicate that the assemblage of organisms in Site sediments is not significantly different from reference. DTR, Table 18-12. If substantial alterations of benthic communities were occurring, one would expect to see sparse communities, comprised of the few organisms and taxa able to tolerate chemical toxicity; however, such conditions were not observed at any of the NASSCO stations. Exponent Report, at 8-38. Instead, communities at the Site are similar to communities in reference areas. Exponent Report, at 8-8. Of particular note, the number of crustaceans, which are known to be especially sensitive to sediment pollutants, are present in similar percentages at Site and reference stations, and the overall abundance of benthic macroinvertebrates in Site and reference stations are not statistically different.

11. **Multiple Statistical Comparisons (Comment ID 140).** Staff's failure to adjust for multiple statistical comparisons is excessively conservative because it increases the probability of false-positive results. As a result, some of the apparently significant results for toxicity and benthic community comparisons in the DTR may be erroneous, since failure to adjust for multiple comparisons across 15 comparisons for each toxicity and benthic community metric at NASSCO results in a 54% probability that at least one apparently significant result will occur as a result of chance alone.

12. **Site-Specific Bioavailability (Comment ID 116, 260, 461, and 463).**

    Site-Specific Bioavailability of Chemicals is Not Adequately Addressed (NASSCO and BAE Comments). Another key flaw in Staff's weight of the evidence approach is the absence of an evaluation of the chemical bioavailability information in Staff's decision framework, which the EPA has recognized as "critical" to the success of weight of the evidence assessments. Rather than using causal criteria to determine whether site contaminants are bioavailable, the DTR improperly equates high concentrations of chemicals with possible impacts to aquatic life. DTR, at Table, 18-1. Specifically, the DTR simply assumes that site chemicals are bioavailable, and causing adverse impacts to aquatic life, when chemistry exceeds empirical Sediment Quality Guidelines ("SQGs"), or when any statistically significant difference from reference is observed in toxicity tests. DTR, at 16-1, 18-3. Staff's failure to consider the bioavailability of chemicals at the Site is both "unscientific" and inconsistent with current standards of practice for sediment assessments.

    The DTR recognizes that causal criteria are preferred in the assessment of sediments, but concludes that contaminants in the sediment are bioavailable using empirical Sediment Quality Guidelines, without applying causal criteria that consider bioavailability. Using empirical SQGs based on total sediment pollution concentrations as screening levels, rather than causal SQGs, can lead to inaccurate risk predictions because empirical SQGs often mischaracterize sediments as toxic when they are not, and vice versa, and are not predictive of toxicity.

    Staff's failure to consider bioavailability in the DTR is arbitrary and capricious, especially in light of the fact that toxicity and benthic community test results do not show significant impacts to aquatic life. Without an appropriate bioavailability analysis, Staff's assumption that contaminants are bioavailable based on empirical SQGs, and the corresponding conclusion that aquatic life at the Site is therefore impaired, are unjustified—particularly in light of Staff's recognition that direct evidence, including toxicity and benthic community data, suggest that contaminants are, in fact, not bioavailable.

The DTR Sufficiently Addressed Biovailability (Coastkeeper & EHC Comments). Bioavailability is often assessed via modeling of the ratio of the acid-volatile sulfide content of sediment versus the simultaneously extracted metal concentration (AVS-SEM). While the Exponent Report does contain AVS-SEM data, other external experts in sediment chemistry and assessment have determined that this data is "largely unusable." See Letter from Russell Fairey to San Diego Regional Water Quality Control Board dated June 17, 2002 SAR 065523. While bioavailability is one of many possible and useful tools used to ascertain risk to aquatic organisms, it is not the only tool. In fact, the state-approved guidelines for assessing sediments do not rely on determining bioavailability with modeling approaches like the AVS-SEM approach. See Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1. Sediment Quality, State Water Resources Control Board, 2009.

More importantly, Regional Board staff elected to rely on evidence of bioaccumulation in Macoma nasuta, a standard test organism used to evaluate whether chemicals in sediments can be taken up by organisms. In other words, staff chose a direct measurement of bioavailability – the extent to which a living organism accumulates chemicals in their tissues – as opposed to a model (AVS-SEM) to evaluate bioavailability.

Response 18.1

DTR Sections 16, 17 and 18 describe a weight of evidence (WOE) framework for integrating chemical concentration, sediment toxicity, and benthic infaunal community condition lines of evidence (LOE) to create a station assessment. The use of a WOE assessment based upon multiple lines of evidence (MLOE) is a well accepted approach recognized by U.S. EPA (See SAR283146 and SAR283124) and is considered to be a standard method for qualitatively assessing the relationship between chemical concentrations and biological effects. The Triad WOE framework approach is also an integral sediment quality tool used to assess sediment quality under the State Water Board's Bays and Estuaries Plan. As discussed in further detail in the responses below the DTR WOE framework was developed based on sound scientific and technical principles and reasonably conservative assumptions designed to ensure that aquatic life beneficial uses will be protected. Its use as a tool to determine what sediments within a specific area at the Shipyard Sediment Site are protected or degraded for benthic communities and to draw conclusions concerning impairment of the aquatic life beneficial use at the Shipyard Sediment Site is reasonable, appropriate, and scientifically defensible. Based on these considerations the DTR WOE framework can be applied to support a cleanup action at the Shipyard Sediment Site under Water Code Section 13304 and is consistent with the requirements of Resolution 92-49 pertaining to the investigation and determination of cleanup goals.

Sediment Chemistry LOE is Appropriately Weighted

NASSCO and BAE Systems argue that MLOE analysis supporting the TCAO is inconsistent with other published decision weight of evidence (WOE) frameworks, and places undue emphasis on the sediment chemistry line of evidence in violation of sound scientific and technical principles. The DTR WOE framework is based on a WOE approach developed for another San Diego Bay Site by well qualified scientists knowledgeable in the sediment quality assessment field. The DTR WOE framework is fully documented in SAR286743 and is consistent with other published WOE frameworks. The Cleanup Team maintains that adaptation of this framework for use in assessing sediment quality at the Shipyard Sediment Site (See DTR Section 18.5) is reasonable, appropriate, and scientifically defensible.

The Triad provides a weight-of-evidence approach to sediment quality assessment by integrating synoptic measures of sediment chemistry, toxicity, and benthic community composition. The DTR sediment quality assessment framework is the same as, and was based on, the sediment quality assessment framework developed in 2004 - 2005 and used in the TMDL development work for the mouths of Chollas Creek and Paleta Creek in San Diego Bay. The derivation and basis for the Chollas Creek and Paleta Creek sediment quality assessment framework is fully documented in the May 2005 report, *Sediment Assessment Study For The Mouths Of Chollas And Paleta Creek San Diego, Phase I Final Report*, prepared by SCCWRP and Space and Naval Warfare Systems Center San Diego US Navy (See SAR286580, SAR286581, SAR286582, SAR286743, and SAR286959) (hereafter referred to as the Phase I Final Report for the mouths of Chollas Creek and Paleta Creek). Mr. Steve Bay, an environmental scientist with SCCWRP was a lead architect of the Chollas and Paleta Creek sediment quality assessment framework and was also the Principal Scientist on the State Water Board team that developed the sediment quality assessment framework adopted by the Bays and Estuaries Plan.

The Phase I Final Report for the mouths of Chollas Creek and Paleta Creek (SAR286743) provides the rationale in Section 4.2.4. at Pages 16 and 17 that the Cleanup Team relied on for the station classifications used in the DTR WOE framework. The following text is quoted directly from the Phase I Final Report, Section 4.2.4 to illustrate the key elements of the framework relied on by the Cleanup Team in the development of DTR WOE approach:

"**4.2.2.4 Triad Analysis of Impairment to Aquatic Life Beneficial Use**

The three LOE described above were integrated into an overall WOE assessment focused on identifying the likelihood that site-specific aquatic life beneficial use is impaired at given station due to the presence of known CoPC related to the site. The approach follows the general principles of WOE analysis described by Chapman 1990 1996 and others. Potential combinations of the ordinal rankings for individual LOE were assessed and assigned relative overall likelihood of impairment using three categories Unlikely Possible and Likely based on consideration of four key elements as described by Menzie et al, 1996

- the level of confidence or weight given to the individual LOE
- whether the LOE indicates there is an effect
- the magnitude or consistency of the effect
- the concurrence among the various LOE

The three categories of impairment are defined below:

Unlikely - A station was classified as "Unlikely" if the individual LOE provided no evidence of biological effects due to elevated COPCs relative to the baseline condition at the site. This category was assigned to all stations with a "Low" chemistry LOE ranking, regardless of the presence of biological effects because there was no evidence that effects were related to site specific contamination. Similarly, stations having a "Moderate" ranking for chemistry and a "Low" ranking for biological effects were also classified as "Unlikely". The category of "Unlikely" does not mean that there was no impairment but that the impairment was not clearly linked to site related contamination.

Possible – A station was classified as "Possible" when there was lack of concurrence among the LOE, which indicated less confidence in the interpretation of the results. This category was assigned to stations with moderate chemistry and lack of concurrence among the biological effects LOE (i.e. effects present in only one of two LOE). Intermediate chemistry rankings have less certainty for predicting biological effects and the lack of concurrence between the toxicity and benthic community measures indicates lower degree of confidence that the biological effects observed were due to COPCs at the site; these effects could have been caused by other factors (e.g. physical disturbance or natural variations in sediment characteristics.) The category of "Possible" represents situations where impairment was indicated but there was less confidence in the reliability of the results. Of the three categories listed stations in this group would be more likely to change their category as a result of natural variability, changes in the composition of the reference stations used for comparison, or to differences in the criteria used to classify each LOE.

Likely – A station was classified as "Likely" if there was high level of agreement between observed biological effects and elevated COPCs at the site. Concurrence among the three LOE (i.e. the presence of moderate or high rankings for chemistry toxicity and benthic community) always resulted in classification of likely impairment. This classification was also assigned when the chemistry LOE was "High" and biological effects were present in either the toxicity or benthic community LOE.

For example a station with a high ordinal ranking for chemistry, toxicity and benthic community would indicate a high likelihood of site-specific aquatic life impairment because each LOE indicates an effect, the magnitude of the effect is consistently high, and there is clear concurrence among the LOE. Alternatively a station with low ordinal ranking for chemistry and moderate or high rankings for toxicity and benthic community would indicate unlikely site specific aquatic life impairment from site CoPCs because there is no concurrence with site CoPCs. This does not mean that there is no impairment but that the impairment is not clearly linked to site related contamination. The framework shown in Table 4-1 was used to interpret the results and is consistent with other published WOE frameworks."

The existing DTR Text at 18.5, Page 18-26 will be revised to provide further supporting documentation of the weight of evidence approach presented in Table 18-14. The revision will be provided on September 15, 2011 consistent with the Third Amended Order of Proceedings.

Under the DTR approach, the three LOE, chemical concentration, sediment toxicity, and benthic infaunal community, are integrated into an overall Weight of Evidence (WOE) assessment focused on identifying the likelihood that the aquatic life beneficial use is impaired at a given station due to the presence of a known contaminant related to the Shipyard Sediment Site. The framework approach follows the general principles of WOE analysis described by Chapman and others (See SAR286743, Page 16).

The Cleanup Team's WOE approach described in DTR Table 18-14 does not require adjustment to give the benthic community LOE more weight than the sediment chemistry and sediment toxicity LOEs as suggested by some commentors. At the time the DTR WOE approach was developed in 2003 there was no single, universally accepted method in California for interpreting sediment triad data and classifying sediments based on an MLOE approach. The State Water Board did adopt a comprehensive sediment quality assessment WOE approach for statewide implementation in the Bays and Estuaries Plan; however, the Shipyard Sediment Site is exempt from that requirement under Provision II.B-2 of the Bays and Estuaries Plan because the Shipyard Report (Exponent 2003) was completed and submitted to the San Diego Water Board on October 15, 2003. (See DTR 15 at Page 15-3.)

The DTR WOE approach and the State Water Board's Bays and Estuaries Plan WOE approach are similar in that they both use a scientifically defensible logic system to integrate MLOE data based on a transparent set of criteria used to infer the likelihood of causality for contaminant-related impacts. NASSCO expressed a preference for the State Water Board's Bays and Estuaries Plan WOE approach because it incorporates a direct integration of benthos and toxicity LOE to assess the severity of biological effects at a station and that benthos is given greater weight in this assessment. Although the DTR and the Bays and Estuaries Plan WOE approaches incorporate different schemes for weighing the benthic community LOE, both approaches generally yield similar assessments when compared side by side. For example under the triad data scenario indicating “high” chemistry, “reference” benthic communities, and “nontoxic” or “low” sediment toxicity, the station would be designated as “Likely Unimpacted” under the Bays and Estuaries Plan WOE approach and “Possibly” impacted, under the DTR WOE approach. Note that both the definition for "Likely Unimpacted" (under the Bays and Estuaries Plan WOE approach) and "Possible" (under the DTR WOE approach) include assessment results where there is a disagreement or lack of concurrence among the LOE, which indicate less confidence in the interpretation of the results that in turn reduces certainty in classifying the station.

NASSCO and BAE Systems argue that the Cleanup Team relied solely on chemical concentration data in its WOE assessments and did not account for factors that affect bioavailability of contaminants in sediment. NASSCO and BAE Systems also argue that the Cleanup Team failed to further investigate stations that were designated as "possible” or “likely” impaired due to “high” chemistry results (such as NA 17, NA19 and NA22), stations designated as possible or to sufficiently evaluate alternative causal explanations.

The Cleanup Team did do the follow-up analysis on the WOE results for NA17, NA19 and NA22 and other stations suggested by NASSCO and BAE Systems before deciding if they should be included in the remedial footprint. For example, NA17 ranked as "Likely" under the DTR WOE framework (See DTR Table 18-1 at Page 18-1.) and had high COC concentrations relative to reference and benchmarks, no significant toxicity relative to reference and controls, and benthic community conditions consistent with reference areas. Because multiple biological tests showed no significant impact relative to reference, the follow-up interpretation for NA17 was that COCs are not sufficiently bioavailable to benthic organisms to cause impairment significantly different from reference areas of the bay. (See DTR Section 32 at Page 29.). NA17 was ultimately included in the remedial footprint in order to achieve the post-remedial SWACs for human health and aquatic dependent wildlife protection (See DTR Section 32.2). NA19 was ranked as "Likely" under the DTR WOE framework with high COC concentrations relative to reference and benchmarks, moderate toxicity relative to reference and controls, and benthic community conditions consistent with reference areas. (See DTR Table 18-1 at Page 18-1). The station was interpreted to have the potential to impact aquatic life beneficial uses and ultimately was targeted for remedial action to address aquatic life concerns as well as to achieve site wide post remedial post-remedial SWACs protective of aquatic dependent wildlife and human health beneficial uses. (See DTR Section 32 and DTR Section 33). NA22 was ranked as "Likely" under the DTR WOE framework with moderate COC concentrations relative to reference and benchmarks, moderate toxicity relative to reference and controls, and moderate impacts to benthic community conditions relative to reference areas. Further follow-up analysis noted that NA22 was in an area where propeller testing occurs routinely, suggesting that physical impacts could be causing the impaired benthic condition and were not contaminant induced. The Cleanup Team also noted additional samples from the mouth of Chollas Creek TMDL will allow a better assessment of the causes of potential impairment in the mouth of Chollas Creek area, which would allow a more effective remediation decision to be made regarding NA22. Therefore, the polygon represented by the station NA22 was excluded from the remediation footprint. (See DTR Section 33.1.1).

<u>The Reference Pool Stations are Appropriate for Site Comparisons</u>
NASSCO argues that the reference pool does not accurately represent the chemical and biological conditions at the shipyards in the absence of site-related discharges because the reference stations contain coarser sediments, more organic carbon, and are located far from shore. The Cleanup Team agrees that there are some key differences in the physical characteristics between the Shipyard Sediment Site stations and the reference pool stations (referred to also as reference pool) as shown in the Table below:

Sediment Physical Characteristic	Reference Pool Stations	NASSCO Triad Stations
Percent Fines (mean)	45%	79%
Percent Total Organic Carbon (mean)	1.9%	0.9%

The criteria for selecting the DTR reference pool described in DTR Section 17 included low levels of anthropogenic pollutant concentrations, locations remote from pollution sources, similar biological habitat to the Shipyard Sediment Site, sediment total organic carbon (TOC) and grain size profiles similar to the Shipyard Sediment Site, adequate sample size for statistical analysis, and sediment quality data comparability. The DTR reference pool was also selected to represent contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination. Selection of the reference pool required some degree of compromise to meet the somewhat ambiguous requirement of a reference site “substantially free” of contaminants, yet having physical and chemical characteristics and biological parameters “broadly similar” to the contaminated marine sediment, and reflective of conditions “that existed before the discharge.” (See DTR Section 17.1, Page 17-3).

Metals contaminants have a greater affinity to fine grain sediments than to coarse grain sediments and consequently can remain tightly bound to fine grain sediments. In recognition of the grain size difference between the Shipyard Site Sediment stations and the reference pool stations, an approach was developed in the DTR to address the issue. In the DTR, a key step to evaluating the sediment chemistry LOE is to determine if there are statistically significant differences between chemical concentrations in the impacted Site sediment and chemical concentrations in reference station sediment (See DTR Section 18.2). The DTR statistical procedure consists of identifying chemical concentrations in Site stations outside the boundaries established by the 95% upper predictive limit (UPL) of the reference pool chemical concentrations. To address grain size effects on metals and to help identify concentrations of metals that were enriched at the Site, a range of 95% UPL values for metals were calculated based on fines content (See DTR Table 18-3). This allows a direct comparison of Site stations with specific percent fines.

Multiple Lines of Evidence Should Drive the Triad Data Analysis

NASSCO argues that the DTR is overly conservative because it concludes that there are impacts on aquatic life, even though the preponderance of sediment toxicity results show that Site sediments are nontoxic. NASSCO also argues that the direct assessment of benthic macroinvertebrate communities at NASSCO directly refutes the conclusion in the DTR that some areas at NASSCO have “likely” or “possible” effects on the benthic macroinvertebrates as a result of shipyard discharges. The Cleanup Team disagrees with all of these assertions.

The DTR did not assess the risk to aquatic life (i.e., benthic community) solely on the basis of toxicity tests or benthic community measures. Rather, the DTR used multiple lines of evidence organized into a sediment quality triad (Triad) to evaluate potential risks to the benthic community from pollutants present at the Shipyard Sediment Site (See DTR Section 16 through 18). The Triad provides the basis for a “weight-of-evidence” approach to sediment quality assessment by integrating synoptic measures of sediment chemistry, toxicity, and benthic community composition. All three measurements played a role in the framework of complementary evidence for assessing the degree of pollutant-induced degradation in the benthic community.

The Bivalve Larval Development Toxicity Test is Appropriately Weighted

NASSCO argues that the results of the bivalve development test are given an inappropriate amount of weight in the DTR's triad analysis and that bivalve development test results should be discounted because of the experimental nature and variable results of the tests. The bivalve development test results are, in fact, reliable and weighted appropriately in the DTR triad analysis based on several considerations.

First, the laboratory that conducted the bivalve development tests concluded that “[t]he tests were validated and are acceptable for interpretation with the caveat that the Batch 2 organisms may have been more responsive to fine-grained sediments than expected” (MEC Analytical Systems, 2001). The Cleanup Team further evaluated the relationship between percent fines and percent bivalve development and determined that there was no clear evidence that fine-grained sediments were directly affecting the Batch 2 results as shown in Figure 18-1 below).

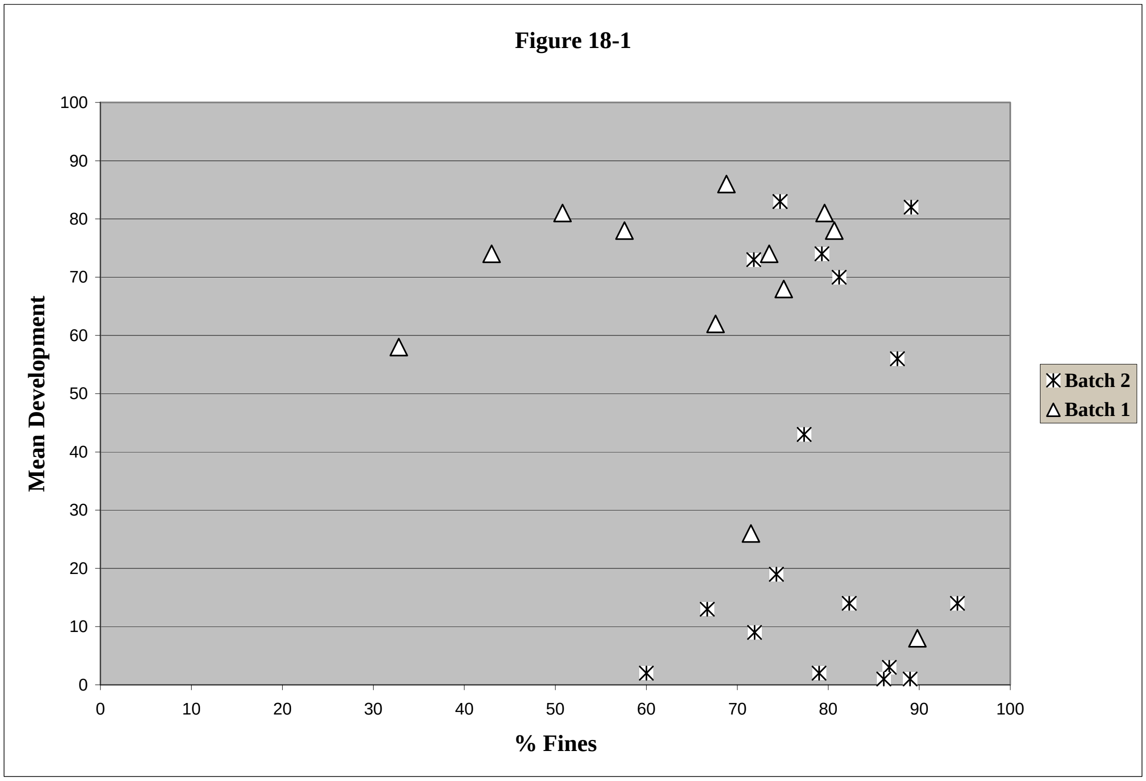

Figure 18-1 shows that while low percent bivalve development was observed with high fines content for certain Site stations, the opposite was also true. There was about an equal amount of Site stations that had high development with high fines content.

Second, while it is correct that "Bay et. al. (2007a) note that the bivalve larvae sediment-water interface test has only fair reproducibility among laboratories and has a low relative precision of the response as referenced in the comment," (SCCWRP, 2007), these two criteria do not provide the full picture of the overall analysis and most importantly, the results and recommendations. The objectives of the SCCWRP 2007 Report was to (1) evaluate a variety of acute and sublethal toxicity tests based on feasibility, performance, and cost and identify those tests that were best suited for use in a California statewide regulatory program, and (2) develop a system to classify the toxicity test results into a series of categories of effect. Of the seven sublethal tests evaluated, the bivalve larvae sediment-water interface test was one of four that was rated "Yes" for the "Overall Feasibility" criteria and had a total score of 29 for the "Performance and Cost" criteria. Only two other sublethal tests had higher total scores. (See Table 4 of Bay et. al. 2007a). Finally, based on the comparative analysis of the acute and sublethal tests using the feasibility, performance, and cost criteria, the SCCWRP 2007 Report recommended five tests as best suited for use in a California statewide sediment quality assessment program. The bivalve larvae sediment-water interface test was one of two recommended sublethal tests. The State Water Board adopted these five recommended acute and sublethal toxicity tests for use in the toxicity LOE assessment in the Bays and Estuaries Plan.

While several Shipyard Sediment Site station samples exhibited high variability among the replicates, this variability is to be expected because of how the replicates are collected in the field for the bivalve development test. Typically, replicates for toxicity tests are based on a homogenized sample where, for example, sediment from a specific Site station is collected using a clamshell bucket, the top few centimeters of sediment are scraped off, and then placed into a bowl where the sediment is mixed and distributed accordingly for the replicates. High variability among the replicates using this procedure is considered unusual because of the homogenization process. The replicates for the bivalve development test, however, were collected differently (See SAR106283, Appendix H). For each Site station, five replicates were produced by driving five individual core tubes into the sediment to approximately 4-6 inches. These replicates often represent discrete sediment core samples as opposed to replicates of a homogenized sample, which may explain the reason for increased variability among the replicates (SCCWRP 2007).

<u>Sediment Profile Images Were Appropriately Considered</u>

NASSCO argues that the sediment profile images (SPI) collected throughout the Site "confirm" the presence of mature benthic communities at the Site, and refute Staff's conclusions that benthic macroinvertebrates at the Site are impaired. The Cleanup Team considered the SPI photographs collected at the Shipyard Sediment Site as an additional line of evidence for evaluating benthic community health. The traditional benthic community measures (e.g., the Bight'98 Benthic Response Index for Embayments, total abundance, total taxa richness, and Shannon-Weiner Diversity Index) used in the DTR were given greater weight than the SPI because the traditional measures are more well-established and consistently used in sediment quality investigations throughout the United States. For example, the State Water Board's Bays and Estuaries Plan requires grab samples to assess the benthic community condition and not SPI images. Moreover, the traditional measures provide quantitative measures of the benthic community health while the SPI is qualitative. There is a lack of published studies that confirm the reliability of SPI in accurately predicting sediment quality as defined by the traditional measures. The Cleanup Team understands that such a study, the first of its kind in California, is currently underway in Los Angeles Harbor, Long Beach Harbor, and San Diego Bay and is being conducted by the Southern California Coastal Water Research Project. This effort is currently in the third year of a four-year study.

<u>Number of Taxa at NA20 Was Correctly Identified as Statistically Different</u>

NASSCO argues that the number of taxa at NA20 was incorrectly identified as statistically different, despite falling within the reference range. While the Cleanup Team agrees that the number of taxa at NA20 is equal to the number of taxa for the reference pool, NA20 is "bold faced and shaded" in DTR Table 18-12 because the number was "less than or equal to" the reference pool 95 percent prediction limit. The "less than or equal to" criteria is used in the DTR flow chart to categorize the stations for the benthic community line-of-evidence (DTR Figure 18-3). This flow chart, as well as the sediment chemistry and toxicity flow charts, were originally developed for the sediment quality site assessment work for the mouth of Chollas Creek and Paleta Creek TMDLs (SAR286743 and SAR286582).

Assemblage of Organisms in NASSCO Sediments is Not Significantly Different from Reference

NASSCO commented that the benthic community analyses indicate that the assemblage of organisms in Site sediments is not significantly difference from reference. The Cleanup Team agrees with the comment. Table 18-12 of the DTR compares the benthic community metrics data for each shipyard station to the reference pool. None of the stations exceeded the reference pool's 95 percent predictive limit values.

Adjusting for Multiple Statistical Comparisons is Conservative and Protects Aquatic Life

NASSCO commented that Staff's failure to adjust for multiple comparisons is excessively conservative because it increases the probability of false-positives. As stated in the DTR Section 18.2, the Cleanup Team made a decision to not correct for multiple comparisons so that the Shipyard Site/Reference comparisons would remain conservative and ensure the protection of aquatic life beneficial uses.

Several Different Approaches were Used in the DTR to Assess Site-Specific Bioavailability

NASSCO commented that the WOE approach used in the DTR erroneously equates chemical exposure with chemical toxicity, and ignores the fact that the site-specific bioavailability of the chemicals may be limited. In such cases, exposure to elevated chemical concentrations would not necessarily result in sediment toxicity or adverse effects on benthic macroinvertebrate communities.

The State Water Board defines bioavailability as: "The fraction of a chemical pollutant or contaminant that can be absorbed by an organism through gills or other membranes, potentially causing an adverse physiological or toxicological response. Bioavailability is dependent on the chemical form of the pollutant in the media, the physical and biogeochemical processes within the media, the route and duration of exposure, and the organism's age, metabolism, size and sensitivity." (SWRCB 2008, Page 8-1) The principal objective of bringing bioavailability considerations into contaminated sediment management is to reduce the extent of cleanup required while still being protective of aquatic life, aquatic dependent wildlife and human health beneficial uses. In addition, incorporating bioavailability information in the calculation of risk can be an important factor in balancing the risks caused by remedial action with those addressed by the remedial action.

The WOE does not explicitly incorporate site-specific bioavailability considerations, such as total organic carbon (TOC), pH, acid volatile sulfides (AVS), and simultaneously extracted metals (SEM) which can provide better insight on benthic effects than measured bulk sediment chemical concentrations. However, the DTR uses several different approaches to assess bioavailability in the benthic pathway including:

Contaminant Concentrations -- Chemical concentrations in bulk sediment were compared to commonly used sediment quality guidelines (SQGs) which have predictive ability with respect to biological effects. (See DTR Section 18.2). Pore water chemistry levels were measured and compared to California Toxics Rule (CTR) water quality criteria (See DTR Appendix for Section 15).

Biological Effects -- Three types of toxicity tests were compared to negative controls and to reference (DTR Section 18.3) and four benthic metrics were compared to the thresholds and to reference (DTR Section 18.4). Toxicity tests provide a measure of the bioavailability and toxicity of sediment contaminants from direct exposure and are not affected by many of the environmental factors that confound benthic community analyses or other measurements of effect in the field.

Bioaccumulation -- Chemical concentrations were measured in clam tissue (See DTR Section 19). The clam tissue test is the most convincing and direct test that indicates sediment pollutants at the Site are bioavailable. This test involves the exposure of the clam Macoma nasuta to Site sediments for 28 days using the protocols specified by ASTM. Macoma was selected as the test species to represent benthic organisms at the Site because it is native to the West Coast and actively ingests surface sediment (likely to be the most direct route of exposure to contaminants that accumulate in tissues). The results indicate that for several pollutants, concentrations in the Macoma tissue increase as pollutant concentrations in sediment increases. Statistically significant tissue:sediment relationships were found for arsenic, copper, lead, mercury, zinc, TBT, PCBs, and HPAHs and thus, these pollutants have a bioaccumulation potential at the Site and are considered bioavailable to benthic organisms.

Follow-up Analysis on NA17, NA19, and NA22 -- The Cleanup Team did do follow-up analysis on the WOE results for NA17, NA19 and NA22 suggested by NASSCO and BAE Systems and considered the site-specific bioavailability of the chemicals before deciding if they should be included in the remedial footprint. (See DTR Sections 32 and 33).

RESPONSE 18.2

DTR Section: 18
Comments Submitted By: BAE Systems, Coastkeeper and EHC
Comment IDs: 178
Comment

Coastkeeper and EHC and their retained expert, Donald MacDonald argue that "Virtually all of the SQT stations evaluated had concentrations of contaminants that indicated the benthic invertebrates receive moderate to high exposure to contaminants at the Shipyard Sediment Site" is Invalid (DTR §§ 32.5, 32.5.1, and 32.5.2; DTR Tables 32-17 through 32-22; DTR § 33.1.3; Table 33-2).

In rebuttal, BAE Systems argue that this conclusion is invalid because exposure of benthic macroinvertebrates to certain contaminant concentrations at a site does not necessarily imply that ecological effects will result, as MacDonald implies. A major reason for this lack of direct relationship between exposure and effects is that the bioavailability of contaminants at a site often is less than 100 percent. Moreover, the fact that the SQT relies on two kinds of biological indicators, in addition to sediment chemistry, is related largely to uncertainties regarding contaminant bioavailability. A major use of the two kinds of biological indicators (i.e., sediment toxicity tests and evaluations of in situ benthic macroinvertebrate communities) is to determine whether the measured chemical concentrations in bulk sediment are sufficiently bioavailable to result in adverse ecological effects. Therefore, because the use of sediment contaminant concentrations as standalone indicators of sediment toxicity is invalid for definitive assessments of sediment quality, MacDonald's assertion is incorrect.

Response 18.2

The Cleanup Team concurs with BAE Systems rebuttal comments that the use of sediment contaminant concentrations as stand-alone indicators of sediment toxicity is invalid for definitive assessments of sediment quality. The DTR used the sediment quality triad (Triad) to evaluate the potential risks to the benthic community from pollutants present at the Shipyard Sediment Site. The Triad framework is recommended by U.S. EPA (SAR283146 and SAR283124) and is considered to be a standard method for qualitatively assessing the relationship between sediment chemical concentrations and biological effects. The Triad provides a weight-of-evidence approach to sediment quality assessment by integrating synoptic measures of sediment chemistry, toxicity, and benthic community composition. Additionally, the DTR uses site-specific chemical thresholds for evaluating non-Triad stations (i.e., chemistry-only stations). These thresholds consisted of site-specific Lowest Apparent Effects Thresholds (LAETs) for individual COCs and a site-specific Median Effects Quotient (SS-MEQ) to address combined effects of multiple COCs. See Responses 18.4, 33.1 and 34.2 for details on these thresholds.

RESPONSE 18.3

DTR Section: 18, 32.5.2
Comments Submitted By: NASSCO
Comment IDs: 168
Comment

NASSCO'S COMMENT The TCAO and DTR should be corrected to identify the correct number of likely stations (Findings 18, 32). Table 18-1 in Volume II of the DTR, and the sections that follow, correctly summarize the outcome of the DTR Triad analysis. According to this analysis, there are six "likely" stations, two of which are at NASSCO (NA19 and NA22), and four of which are at BAE (SW04, SW13, SW22, and SW23). NA22 is footnoted in Table 18-1 as being excluded from the TCAO.

Response 18.3

There are 6 "likely" stations and not 3 "likely" and 3 "possible." The referenced DTR section 35.5.2 will be revised to reflect this change. The revision will be provided on September 15, 2011 consistent with the Third Amended Order of Proceedings.

RESPONSE 18.4

DTR Section: 18
Comments Submitted By: NASSCO, BAE Systems, SDG&E, Coastkeeper and EHC
Comment IDs: 83, 160, 169, 280, 281, 383, 384, 385, 386, 387, 389, 472, 473
Comment

This comment is based on SDGE Comment Letter dated May 26, 2011 Section 1.0 (1.1 to 1.5) and NASSCO and BAE Rebuttal Comments.

See Sections 14, 15, 18, and 19 for more analysis of aquatic life beneficial uses impairment analysis.

SDG&E commented that the aquatic life beneficial use impairment (BUI) analysis in the CAO and DTR is critically flawed and should be replaced with a causal approach. The DTR evaluated aquatic life impairment by two approaches: the Triad Approach and the non-Triad approach. The sediment chemistry lines of evidence used do not represent a complete characterization of chemical risk because they do not include all COCs and they are not based on cause-and-effect toxicity endpoints. As a result, the current Triad and non-Triad Data approaches set forth in the DTR are not scientifically valid or supportable, and should not be used to identify aquatic life beneficial use impairment (BUI). The Triad approach did not provide evidence regarding the specific chemicals responsible for the BUI. Such an analysis would be problematic because TBT, a primary Site chemical of concern, was not included in the chemical screening step in this analysis.

The non-Triad Data Approach used by CRWQCB (2010) to address benthic risk potential using sediment chemistry results is likewise critically flawed and cannot be used to quantify or understand the relative causal contribution of the five COCs to adverse toxic effects on macroinvertebrate communities (Conder, 2011a). More specifically, SDG&E commented that a primary flaw in the use of the SQGQ1 metric in the Triad WOE approach is that tributyltin (TBT) is not considered by the SQGQ1 metric, despite the fact that TBT was selected as a primary constituent of concern (COC). In addition, SDG&E commented that a second critical flaw in the Triad approach concerns the nature of the sediment quality guidelines (SQGs) used in the SQGQ1 because with that approach alone it is impossible to know which chemical, group of chemicals, or physical condition may be responsible for the presence of adverse effects. This leads to an absence of causality between concentrations of individual chemicals and adverse effects. Therefore the SQGs are not useful in predicting toxicity from individual chemicals.

SDG&E commented that the non-Triad approach in the DTR is flawed because the use of the 60% LAET value is arbitrary and not supported by any technical or regulatory guidance. Additionally, the LAET does not establish causality between chemicals and adverse effects because it is developed using an arbitrary mixture of chemicals. This deficiency also applies to the SS-MEQ portion of the non-Triad approach. The toxic unit approach outlined in Conder (2011a) is a causal approach that is superior to an empirical evaluation in assessing benthic risk and should replace the sediment chemistry line of evidence used in the DTR’s Triad approach, and should be used for understanding aquatic life risk potential where Triad data are unavailable, replacing the current Non-Triad Data Approach.

The toxic unit approach was used to revise the remedial footprint to address potential aquatic life BUI. Stations identified by the revised toxic unit-based Triad and non-Triad data approaches were assumed to represent polygons exhibiting aquatic life BUIs and should be considered for inclusion into the remedial footprint to address potential aquatic life BUI (Figure 1). This footprint should be fully evaluated on the basis of overall technical and economic feasibility in a manner consistent with the approaches discussed in CRWQCB (2010).

NASSCO rebuts the SDG&E's comments that the aquatic life beneficial use impairment analysis in the CAO and DTR is flawed and should be replaced with a newly proposed toxic unit approach. The proposed toxic unit approach would do nothing to improve understanding of causality in the assessment of benthic impacts at the Shipyard Site, and would in fact be misleading and inferior to the DTR approach in this regard. The alternative approach advocated would, at most, be appropriate only as a screening tool for potential BUI if site-specific biological information was unavailable. Any characterization of aquatic life BUI based on the proposed alternative approach would be seriously flawed, and unnecessary, since extensive site-specific biological information exists for the Site.

The rebuttal comments point out that the AET component used in the non-Triad approach does provide causal information; contrary to SDG&E's comment. Furthermore, the SS-MEQ is an integrated index of multiple chemical exposure that quantitatively relates exposure at any non-Triad station to the exposure level at which evidence of impairment was observed in the Triad stations. While chemical causality can only be inferred from the SS-MEQ analysis rather than measured directly, the same is true of the toxic unit method's reliance on literature effect thresholds, and the SS-MEQ has the advantage of being based on site-specific data, for multiple lines of evidence. The proposed alternative approach would substitute a generic, theoretical causal assessment approach for an empirical, site-specific causal assessment approach, resulting in an inferior aquatic life BUI assessment. All of the aforementioned evidence for causality was available as part of the shipyard sediment studies using a Triad approach. Notwithstanding this evidence, SDG&E embarked on an independent assessment of causation using a novel theoretical approach that ignores all of the other available data. This represents a scientifically flawed assessment that is inconsistent with the current standards of practice in environmental investigations and frameworks established by the U.S. EPA and published in the available scientific literature.

SDG&E's proposed toxic unit approach has several erroneous assumptions including:

- Exposure-response relationships exist for primary COCs in sediments and sediment toxicity at the Shipyard Site.
- Sediments are at equilibrium with pore water at the Shipyard Site.
- Equilibrium partitioning accurately predicts pore water concentrations at the Shipyard Site.
- Exposure to pore water is continuous and is the most important pathway of exposure for benthic organisms.
- Selected literature benchmarks of aquatic toxicity accurately predict benthic toxicity of shipyard sediments when compared to estimated or measured pore water concentrations.

NASSCO also rebuts SDG&E's use of the toxic unit approach to derive an alternative remedial foot print. A standard tenet of environmental Site assessment is that site-specific empirical data are more reliable and preferred for remedial decision-making purposes than use of generic benchmarks, and should be preferentially used for site characterization. Attachment A, Exponent Critique, at 14 (citing U.S. EPA 1989, U.S. EPA1997). The toxic unit approach is not site-specific, and is therefore far less scientifically valid than the DTR approach, which relies on both direct causal analysis and inferences drawn from empirical site-specific observation to establish the presence or absence of biological impacts and causality with regard to aquatic life BUI. The toxic units approach relies completely on theoretical exposure estimates and generic benchmarks, and is little more than a screening approach.

NASSCO rebuttal comment (Comment ID 387) provides a station by station review of the site-specific data available for the seven additional polygons SDG&E's analysis proposes to add to the remedial footprint.

NASSCO also rebuts SDG&E's revised economic feasibility analysis based on their proposed alternative remedial footprint since it is based on the flawed toxic unit approach. Any economic feasibility analysis based on this assessment approach will be similarly flawed. Furthermore, the use of reduction in site-wide SWAC as the metric of benefit for benthic invertebrate species is inappropriate. Unlike mobile human and wildlife receptors, which spatially average exposure over relatively large areas, benthic invertebrate communities are largely sessile, and must be assessed on a station-by-station basis. Site-wide average sediment conditions are not meaningful in measuring aquatic life BUI or BUI mitigation, and the alternative economic feasibility analysis presented is therefore invalid. NASSCO responds to MacDonald's comment that ""There is insufficient evidence to demonstrate that the 60% LAET values provide a reliable basis for identifying polygons that are 'Likely' impacted." MacDonald states that "the 60% LAET values presented in Table 32-19 are substantially higher than the sediment quality guidelines that were used in the Triad assessment presented in the DTR and those that have been routinely used to evaluate sediment quality conditions at marine and estuarine sites throughout the United States." He then presents a table that compares the 60% LAET values with the ERM values of Long et al. (1995). (It should be noted that McDonald is a co-author of the Long article and as such the reference point is suspect.) The statement and comparisons made by MacDonald are flawed, because the 60% LAET values were derived as site-specific sediment quality values that reflect the mixtures of chemicals at the Site, in addition to other important factors such as the site-specific bioavailability of those chemicals. By contrast, the ERM values were derived from sediment chemistry and toxicity data collected throughout the U.S., without any consideration of bioavailability. They are therefore more suitable as initial screening values for a site, rather than values that can reliably predict the presence or absence of sediment toxicity on a site-specific basis. In fact, Long et al. (1995) recognized the limited usefulness of the ERM values when they concluded that the values "should be used as informal screening tools in environmental assessments", and "they are not intended to preclude the use of toxicity tests or other measures of biological effects." Because the ERM values are generic screening values that do not consider bioavailability, it is not surprising that the 60% LAET values are greater than the ERM values, as the former values reflect the site-specific conditions that occur at the Site. Therefore, MacDonald's statement described above has no bearing on the usefulness of the site-specific 60% LAET values for identifying polygons that are likely impaired at the site.

NASSCO also comments in response to MacDonald that the use of lowest apparent effects threshold (LAETs) and site-specific median effects quotient (SS-MEQ) benchmarks ensured that the remediation footprint was overly protective (Finding 32) The site-wide Triad study measured synoptic chemistry, toxicity, and surveyed the benthic community at 30 of the 66 Shipyard sediment investigation stations. Potential impacts of sediment chemicals to the benthic community at the 36 Non-Triad stations, for which no biological data were collected, was inferred through the use of site-specific chemistry benchmarks, developed from the Triad data.

Two independent benchmarks were developed: The Site-Specific Median Effects Quotient (SS-MEQ) and Lowest Adverse Effects Threshold (LAET). The SS-MEQ is a multiple chemical benchmark calculated from the median sediment concentration of the five primary COCs at the six stations that were scored as “likely impacted” in the DTR Triad analysis (NA19, NA22, SW04, SW13, SW22, and SW23). For each station, effects quotients (the ratio of measured concentration to median “likely impacted” concentration) were calculated for each of the primary COCs, and these were averaged to yield the multi-chemical SS-MEQ. See DTR at 32.5.2. Furthermore, for each primary COC, apparent effects thresholds (AETs) were developed for each of the seven biological endpoints evaluated in the DTR Triad analysis (three toxicity tests and four benthic community parameters or indices). The AET is simply the concentration above which adverse effects always occur. Accordingly, the lowest adverse effects threshold (LAET) is the lowest concentration of any of the seven AETs calculated for a given chemical. Both the SS-MEQ and LAET values were used as benchmarks to identify the possibility of adverse effects on benthos at the non-Triad stations. Both benchmarks were tested and determined to be conservative measures for benthic community conditions at non-Triad stations. To test the protectiveness of the SS-MEQ and LAET values, SS-MEQ and LAET values were calculated for the 30 Triad stations (for which actual benthic condition assessment had been performed) to determine how well the SS-MEQ and LAET values predicted “likely” impacts to benthic communities. When compared to the 30 Triad stations, the 60% LAET results were completely protective with respect to predicting “likely” benthic impairment, since an AET is, by definition, a no-effect level, while inaccurately identifying one “false positive” (at NA07, as discussed above), where the LAET analysis suggested possible benthic impairment but the Triad analysis demonstrated no such impairment. Notably, the DTR used a benchmark equal to 60% of the LAET, which is highly protective because it builds in a buffer below the established no-effect level. The SS-MEQ benchmark (which was set equal to 90% of the SS-MEQ) had only one false negative out of 30 Triad stations, with respect to predicting “likely” impairment of the benthic community (at Station NA22, which is being addressed outside the current remedial design), and eight false positives, which indicates that using 90% of the SS-MEQ is overly protective by including stations that were not in fact likely impaired stations. Accordingly, the proposed cleanup was judged to be protective of benthos because it includes all non-Triad stations that exceed either of the 60% LAET or 90% SS-MEQ benchmarks, and both metrics incorporate a significant safety factor. It is worth noting that the highest LAET and SS-MEQ multiples found outside the cleanup footprint at NASSCO occur at Station NA07 (HPAH = 63% LAET; SS-MEQ = 0.91).

Station NA07 is a Triad station for which no impacts to the benthic community were identified, however, and a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks. In fact, NA07 is one of the “false positives” identified above, because the benthic community assessment demonstrates “unlikely” benthic impacts. Therefore, no risk-based justification for remediating NA07 exists, and NA07 was properly excluded from the proposed remedial footprint in the DTR. Mr. MacDonald notes that Table 33-6 is incorrect in that it states that for NA07, “All COCs [fall] below 60% LAET values.” DTR, at Table 33-6. Mr. MacDonald is correct, and Table 33-6 should be edited to state, “Only one All COCs slightly abovebelow 60% LAET values (HPAH = 63% LAET).” Triad data demonstrates that there are no impacts to aquatic life at this station.

Response 18.4

SDG&E's argues that the DTR's analysis for benthic (aquatic life) beneficial use impairment is critically flawed and should be replaced with a causal approach to adequately identify risk. NASSCO argues in rebuttal that SDG&Es proposed alternative causal approach would do nothing to improve understanding of causality in the assessment of benthic impacts at the Shipyard Sediment Site, and would in fact be misleading and inferior to the DTR approach in this regard.

SDG&E comments presenting their recommended causal approach referred to as the "toxic unit approach" are based on the report by their retained expert, Jason Conder, entitled “Analysis of Causality Between Aquatic Life Beneficial Use Impairment and Site Primary CoCs at the San Diego Shipyard Sediment Site”, March 11, 2011 (Conder 2011) submitted with SDG&Es comments. The Introduction section of the Conder Report states that “This report presents an analysis of the relative contributions of the five chemicals of concern…at the Shipyard Sediment Site (Site).” Similarly, the conclusion in the Conder Report states that “The [DTR] evaluation of chemicals in sediment with respect to characterizing Aquatic Life BUI [beneficial use impairment] is inappropriate for determining the specific contaminants responsible for Aquatic Life BUI at the Site.” The Conder Report approach proposes an evaluation of the relative contributions of various chemicals in causing biological effects while the objective of the Triad and Non-Triad approaches in the DTR is to evaluate potential overall effects to the benthic community from pollutants, regardless of their relative contribution, and to provide a sound basis for development of alternative cleanup levels in the TCAO that are protective of aquatic life beneficial uses.

Contrary to the assertions of SDG&E and their expert Mr. Conder, the DTR's approach to assessing benthic beneficial use impairment at the Triad and Non-Triad stations is not critically flawed and should not be replaced with a causal approach to adequately identify risk. The DTR approach is reasonable, complete, and scientifically supportable. The various empirical, consensus based, and site derived SQGs used to support the assessment are technically and scientifically sound, appropriately applied, and well suited for overall assessment of potential biological effects. The casual approach advocated by SDG&E's expert uses partitioning models designed to determine cause of biological effects through the identification of specific pollutant stressors. While this type of approach may have applications in the assessment and management of contaminated sediment where determination of cause is needed, the DTR approach differs in that it is based on the probability of biological effects due to chemical contamination levels and is well suited for overall assessment of impacts. Stressor identification is not a required element of the DTR approach for either beneficial use impairment assessment or development of protective alternative cleanup levels consistent with the requirements of Resolution No. 92-49.

The Cleanup Team agrees with NASSCO's and BAEs comments and rebuttals that support the DTR Triad WOE and Non-Triad SS-MEQ/60%LAET derived approaches for determining aquatic life beneficial use impairment and for designing a remedial dredge footprint that is protective of beneficial uses. See Section 33 for more details on the Triad and Non-Triad approaches, including specifics on the metrics SQGQ1, SS-MEQ, and 60%LAET. The Cleanup Team also agrees with those rebuttal comments that identify potential weaknesses in the toxic unit approach proposed by SDG&E.

The Cleanup Team response below is subdivided into 3 topics to address SDG&E's chief concerns with the DTR's approach for aquatic life beneficial use impairment assessment : SQGQ1 Metric, Tributyltin (TBT) Exclusion, and Non Triad Data Approach..

The SQGQ1 Metric is Appropriately Used in the Sediment Chemistry LOE Analysis.
The SQGQ1 value for a sediment is estimated by dividing concentrations of cadmium, copper, lead, silver, zinc, total chlordane, dieldrin, total polycyclic aromatic hydrocarbons (PAHs; normalized by sediment organic carbon content), and total PCBs (sum of 18 congeners) in sediment by each chemical's empirical SQG and subsequently averaging the individual quotients (See SAR280606). The SQGQ1 uses two SQG types that are based on the chemical constituent: empirical and consensus midpoint effect concentrations (MEC). Examples of empirical SQGs for the marine environment used in the SQGQ1 metric include the effects range-median (ERM) and probable effects level (PEL) for metals. The published empirical ERM and PEL SQGs employed in the SQGQ1 calculation are derived from the statistical analysis of large databases of matched sediment chemistry and biological effects data collected at sites across the United States. The consensus MEC SQGs used in the SQGQ1 metric for total PAHs and total PCBs were obtained from Schwartz 1999 (See SAR286325) and McDonald et al 2000 (See SAR280497) respectively. Consensus MEC values are the geometric mean of three or more SQGs that correspond to the same biological effect level. The mean consensus quotient is calculated for a sample by dividing each chemical concentration by its respective SQG and subsequently averaging the individual quotients.

Both the empirical SQGs and consensus MEC SQGs employed in the SQGQ1 metric provide an estimate of the probability of effects due to chemical contamination levels and are thus well suited for overall assessment of potential biological effects. The Cleanup Team selected the SQGQ1 approach as one of three metrics in the sediment chemistry LOE analysis in DTR Section 18.2. because it was a scientifically valid metric that could be used as a central tendency indicator of the potential for adverse biological effects from chemical mixtures in a complex sediment matrix. The use of the SQGQ1 metric fits well in the conceptual framework of the sediment quality triad analysis employed in the DTR WOE approach to sediment quality assessment. Mechanistic SQGs such as what is proposed in the Conder Report use partitioning models to determine cause and effect and are thus suited for applications where determination of cause is needed. A determination on the chemical specific cause of potential biological impacts is not needed to complete a scientifically valid sediment chemistry LOE analysis. Accordingly the CleanupTeam does not need to incorporate a mechanistic SQG approach in the DTR sediment chemistry LOE analysis such as that advocated in SDG&E's Conder Report.

Furthermore the empirical SQGs and consensus MEC SQGs used in the SQGQ1 calculation are widely used in sediment quality investigations throughout the United States. In California alone, empirical SQGs and consensus MEC SQGs have been used in the following programs and investigations (including but not limited to):

(1) State Water Board's Bay Protection and Toxic Cleanup Program in San Francisco Bay, Los Angeles Harbor, Long Beach Harbor, Newport Bay, Anaheim Bay, Huntington Harbor, and San Diego Bay.

(2) Southern California Bight 1994, 1998, and 2003 Regional Marine Monitoring Programs.

(3) Campbell Shipyard Sediment Investigation in San Diego Bay.

(4) Naval Station San Diego Sediment Investigation in San Diego Bay.

(5) Naval Amphibious Base Sediment Investigation in San Diego Bay

(6) Former Naval Training Center - Boat Channel Sediment Investigation in San Diego Bay.

(7) TMDL Program for Toxic Pollutants in San Diego Marine Sediments - Mouth of Chollas Creek, Seventh Street Channel, Switzer Creek, B Street/Broadway Piers, Downtown Anchorage, and Naval Station Submarine Base.

(8) TMDL Program for Toxic Pollutants in Newport Bay Sediments.

(9) TMDL Program for Toxic Pollutants in Los Angeles Harbor and Long Beach Harbor Sediments.

(10) Hunters Point Shipyard Sediment Investigation in San Francisco Bay.

Empirical SQGs derived from California sediment data are also used in the Stae Water Board’s Bays and Estuaries Plan (see Section IV.H. Sediment Chemistry). The Bays and Estuaries Plan represents the first phase of the State Water Board's sediment quality objective effort and focuses primarily on the protection of benthic communities in California's enclosed bays and estuaries.

Tributyltin was Appropriately Considered in the Sediment Chemistry LOE Analysis.
There were a number of considerations involved in the Cleanup Team's decision to exclude TBT from the sediment chemistry LOE analysis described in DTR Section 18.2. despite the fact that it was ultimately selected as a Primary COC at the Site in DTR Section 29.3. The research paper,documenting the SQGQ1 metric (Fairely et. al., 2001 at SAR280606) used in the sediment chemistry LOE analysis, evaluated the type and number of analytes to be included in the SQGQ1 calculation to find chemical combinations that predict biological effects as indicated by marine amphipod mortality in sediment toxicity tests. The combination of chemicals used in the SQGQ1 calculation found to be the most predictive of acute toxicity to amphipods included cadmium, copper, lead, silver, zinc, total chlordane, dieldrin, total PAH-OC normalized, and total PCBs. Under the SQGQ1 approach these chemicals are assumed to be representative of, or

the surrogates of, the toxicologically significant chemical mixture regardless of which chemicals were quantified in the sediment chemistry analyses. This is a reasonable approach given the seemingly infinite number of chemicals present in marine sediment and it is not at all uncommon to exclude a specific chemical(s) in the chemistry LOE analysis for determining potential aquatic life beneficial use impairment. In fact, if the Bays and Estuaries Plan was implemented at the Shipyard Sediment Site, TBT would not be considered in the sediment chemistry LOE even though it might be present in the sediment sample being considered. Furthermore TBT is not on the Bays and Estuaries Plan required list of chemicals to analyze to assess exposure using the two sediment chemistry guidelines (Chemical Score Index and California Logistic Regression Model).

The Cleanup Team also had additional considerations in not explicitly including TBT in the sediment chemistry LOE analysis. The LOE analysis method described in DTR Figure 18-1 included a step for comparing sediment chemistry levels against published empirical SQGs and consensus MEC values as part of the process for determining the likelihood of aquatic life beneficial use impairment caused by sediment chemistry levels. The Cleanup Team is not aware of any published empirical SQGs or Consensus MEC values for TBT and hence this comparison could not be made for TBT. Another key step in the DTR Figure 18-1 sediment chemistry LOE analysis methodology was to determine statistically significant differences in sediment chemistry levels between Shipyard Sediment Site stations and reference stations. As shown in DTR Figure 18-4, TBT sediment chemistry levels were only available for 4 of the 18 sampling stations (SY 2231, SY2243, SY2433 and SY2441) selected for the reference pool thus preventing a comprehensive comparison of TBT levels at the Shipyard Sediment Site to the entire reference pool similar to what was done for the other CoCs.

The existing DTR Text in Section 18.2 will be revised to document the supporting rationale for not including TBT in the sediment chemistry LOE analysis. The revision will be provided on September 15, 2011 consistent with the Third Amended Order of Proceedings.

The exclusion of TBT in the sediment chemistry LOE analysis does not indicate a shortcoming in the Cleanup Team's overall consideration of TBT levels at the Shipyard Sediment Site. TBT was identified as one of several pollutants at the Shipyard Sediment Site that bioaccumulated in Macoma nasuta tissue and was therefore considered bioavailable to benthic organisms. (See DTR Section 19.1) The DTR also noted that TBT pre-remedial SWACs exceeded background levels at the reference stations by a factor of 7.3, the highest exceedance level of any of the COCs and describes TBT as having a high degree of association with the Shipyard Sediment Site. (See DTR Table 29-5) TBT was also identified as having a strong positive correlation with other pollutants suggesting that alternative cleanup levels for TBT would also achieve exposure reductions in other pollutants. (See DTR Section 29.3). Based on all of these considerations TBT was ultimately selected as one of five primary CoC's targeted for the development of alternative cleanup levels based on its high potential for exposure reduction.

Non-Triad Approach Thresholds Are Appropriate.
There are a total of 66 sample stations at the Shipyard Sediment Site. The Non-Triad Data Approach summarized in DTR Section 32.5.2 is based on an empirical evaluation of sediment contaminant concentrations at the 36 sample stations where toxicity and benthic community data

was not collected. The approach consists of the evaluation of the five primary COCs (copper, mercury, HPAH, PCBs and TBT in surface sediments at the site using two chemical threshold referred to as 1) Site-Specific Lowest Apparent Effects Thresholds (LAETs) for individual CoCs, and 2) Site-Specific Median Effects Quotient (SS-MEQ) to address combined effects of multiple COCs. Seven of the 36 Non-Triad stations were classified as "Likely" for chemically-associated impairment (SW01, SW05, SW10, SW16, SW20, SW24, and SW28). Stations SW01, SW05, SW16, and SW20 were identified based on an exceedance of the SS-MEQ threshold. Stations SW10, SW24, and SW28 were identified based on an exceedance of 60% of the LAET value for HPAHs (and exceedance of SS-MEQ threshold). (See DTR Table 32-23.) All of the polygons represented by these stations are included in the proposed remedial footprint (See DTR Figure 33-1).

Apparent Effects Threshold (AET). The first line of evidence in the Non-Triad Data Approach, the AET, is a nationally recognized empirical SQG used for identifying concentrations of a pollutant in sediment above which adverse biological effects are always expected. When multiple site-specific effects endpoints are measured, several AET values can be combined to derive a single set of AET values by conservatively applying the lowest of any of the individual AET values for each chemical. This is known as the lowest AET or LAET. (See DTR Section 32 at page 32-31). Under the DTR approach, correlations were developed between COC contaminant levels and seven separate empirical measures of adverse effects on benthic macro invertebrates: amphipod survival, echinoderm fertilization, bivalve larval development, total abundance, number of taxa present, benthic response index (BRI), and Shannon-Weiner diversity index. As pointed out by BAE Systems in its rebuttal "three of these tests (i.e., all except the echinoderm test) are identified as the preferred tests for use as part of the California Sediment Quality Objectives (SQOs) although, as described in the DTR, the Site is explicitly exempt from regulation by the SQOs". BAE Systems also correctly points out in their comment letter that there is strong precedent for using LAET SQGs, as they form the basis of the Sediment Management Standards for Washington State (Ecology 1995) and the approach used to develop the LAETs, has been reviewed and approved for site-specific use by U.S. EPA's Science Advisory Board.

To provide an additional margin of protection, the LAETs derived from the site-specific Triad data were reduced to 60 percent of the calculated value (60%LAETs), and these 60%LAETs were used to assess individual chemicals at the Non-Triad stations. (See DTR Section 32 at page 32-31). The 40 % safety factor obtained from the 60 percent reduction of the LAET calculated value was applied by the Cleanup Team based on best professional judgement considerations to account for potential overestimates of toxicity thresholds in the LAET calculation. This buffer could for example address the possibility of outlier sediment samples such as suggested by SDG&E in their comment letter that exhibit extremely high contaminant concentrations and a lack of adverse biological effects resulting in an inappropriately high AET value. Another consideration warranting a safety buffer is the uncertainties inherent in using an empirical SQG method that does not provide a definitive cause and effect relationship in the analysis of matched sediment chemistry and biological effects data to reliably predict toxicity thresholds. The Cleanup Team concurs with NASSCO's rebuttal comments that although the AET methodology does not, by itself, prove causality; it provides valuable site-specific causal information on individual substances. AET methodology is both chemical specific and entirely reliant on site-specific empirical data. Based on all of these considerations the Cleanup Team concluded that the 60%LAET threshold is an appropriate tool for assessing contaminant concentrations to predict the likelihood of sediment chemical-derived effects on the benthic macroinvertebrate community at the 36 Non-Triad stations.

Site-Specific Median Effects Quotient (SS-MEQ). As described in DTR Section 32.5.2, the second line of evidence used in the Non-triad data approach is the Site-Specific Median Effects Quotient (SS-MEQ). SS-MEQ values for each of the 36 Non-Triad stations were derived by dividing concentrations of each of the five primary Site CoCs in sediment by Site-specific "SS-Median" values. SS-Median values were derived by calculating the median concentrations of the five COCs at the six stations identified with a "Likely" Triad classification. If the SS-MEQ value at a Non-Triad Data station exceeded a value of 0.9, it was considered to indicate a result similar to a Triad "Likely" classification, and thus, was assumed to indicate aquatic life beneficial use impairment. The SS-MEQ threshold of 0.9 was established by conservatively optimizing the performance of the quotient in predicting likely effects based on Site data. This scientifically credible approach for the development of a sediment chemistry threshold is based upon site specific relationships between the stressor pollutant exposure and biological response and is one of several approaches supported under the Bays and Estuaries Plan. (See Section H. Development of Site Specific Sediment Quality Guidelines, Page 27.)

SDG&E correctly points out that chemical causality can only be inferred from the SS-MEQ analysis rather than measured directly. SDG&E comments also correctly point out that the SS-MEQ does not explicitly incorporate bioavailability considerations, such as total organic carbon (TOC), pH, acid volatile sulfides (AVS), and simultaneously extracted metals (SEM) which can provide better insight on benthic effects than measured bulk sediment chemical concentrations such as normalization of concentrations of organic compounds in sediment by the amount of organic carbon. However the SS-MEQ is an effects based tool that indirectly incorporates bioavailability considerations. The predictive reliability of the SS-MEQ was evaluated, and the threshold value of 0.9 was selected, using the site-specific effects determinations for the 30 Triad stations, as well as the 5 supplemental Triad stations sampled at the Site. The data presented in DTR Table 32-21 and the supporting calculations in DTR Table A32-11 demonstrate that the SS-MEQ has an overall reliability of 70 percent, for identifying station polygons that are “likely” impacted. Moreover the SS-MEQ 0.9 threshold was demonstrated by other data in DTR 32-21 and DTR Table A32-11 to be biased toward being environmentally protective by minimizing “false negatives" (i.e., predicting that a station is not likely impaired when triad data indicate it is likely impaired).

For example the predictive ability of the SS-MEQ 0.9 threshold to accurately predict sediment locations that are "not likely" impaired was calculated at 94 percent (i.e., 16 of 17 predictions) based on the data contained in DTR Table A32-11. The ability of the threshold SS-MEQ of 0.9 to accurately predict “likely impairment” (referred to as likely efficiency in Table A32-11 of the DTR) was only 38 percent (i.e., 5 of 13 predictions). The Cleanup Team agrees with BAE Systems’ assessment in its comment letter that the predictive reliability data indicate there is a high degree of confidence that polygons with SS-MEQ values less than 0.9 are not likely to be impaired. Therefore the decision to exclude all polygons with SS-MEQ values less than 0.9 in from the remedial footprint is protective of the aquatic life beneficial use. Conversely there is less confidence that polygons with SS-MEQ values greater than 0.9 are likely to be impaired. Thus the conservative decision to include all polygons areas with SS-MEQ values greater than 0.9 in the remedial footprint is also appropriately protective of the aquatic life beneficial use because it is weighted in the direction of including polygon areas that may not be impaired along with those that are impaired.

***Supplemental Triad Study to Confirm* Thresholds.** The validity of the SS-MEQ/60%LAET approach is protective for the aquatic life beneficial use at the Non-Triad stations for and was further confirmed in the supplemental Triad study described in DTR Section 35.5.2. At all five stations considered in the study, the SS-MEQ/60% LAET thresholds successfully predicted the absence of "Likely" benthic community impacts.

Regarding the comment about the error in Table 33-6, the table has been revised to delete the bullet point "All CoCs below 60% LAET values" for Polygon NA07. Revisions to the DTR will be provided on September 15, 2011, as required by the Third Amended Order of Proceedings.

RESPONSE 18.5

DTR Section: 18
Comments Submitted By: BAE Systems
Comment IDs: 163
Comment

Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

Comment C.2.6 that "The procedures that were used to designate sediment samples from the Shipyard Sediment Site as 'Likely'impacted are not protective" is Misleading and Unsupported (DTR § 18.3; DTR Table 18-7)

The methods used in the DTR to evaluate sediment at the Site were selected in large part to be consistent with those recommended by EPA, as well as those commonly used to evaluate contaminated sediment sites in the U.S. by sediment quality practitioners. Comment C.2.6 of MacDonald 3/11/11 Expert Report states that "The procedures that were used to designate sediment samples from the Shipyard Sediment Site as "Likely" impacted are not protective."

MacDonald states that "the approach to defining the normal range of amphipod responses is not consistent with the practices that are currently recommended by the Science Advisory Group on Sediment Quality Assessment", and cites Sustainable Fisheries Foundation (2007) as the basis for that assertion. This statement is highly misleading because it provides the impression that there exists a formal science advisory group (potentially with governmental agency endorsement), and that the citation is a substantive document. In his October 2010 deposition, MacDonald stated that this advisory group was "an informal group of individuals who have a common interest in sediment quality assessments, that share information, meet from time to time to discuss technical issues." (MacDonald Deposition, at pp. 82-85.) He also stated that "all of the participants fund their own participation", "there is no headquarters", and "there is no website." (Id.) MacDonald further acknowledged that there is no formal group structure, no president, and no official list of members other than an email list. The citation provided by MacDonald is the unpublished proceedings of a workshop convened in British Columbia by the Sustainable Fisheries Foundation, a non-profit environmental organization of which MacDonald is one of the two Executive Directors. The purpose of the workshop was to advise the British Columbia Ministry of the Environment on sediment quality issues.

The “Science Advisory Group” referred to by MacDonald is simply an informal group of people with a common interest in sediment quality that has no formal charter, no endorsement or support by a governmental resource agency, no independent funding, no regulatory authority, and no formal advisory role. In addition, the citation referred to by MacDonald above is an unpublished summary of a workshop designed to advise a Canadian governmental agency, and sponsored by a non-profit environmental organization of which MacDonald is an Executive Director. It is clear that there is little independent and substantive support for MacDonald’s assertion that the methods used for the Site are inconsistent with the common practice.

In contrast to MacDonald’s assertion and citation discussed above, EPA has provided clear guidance on the selection of reference areas for environmental assessments (e.g., U.S. EPA 1994, 1997, 1999, 2000, 2005, 2006). A number of these EPA guidance documents are summarized in Section 17.2 of the DTR. Briefly, the EPA guidance recommends that reference areas reflect the habitat conditions and background levels of chemical contamination that would exist at a study site in the absence of site-related sediment contamination. The background conditions can incorporate levels of chemical contamination or biological responses that are considered representative of the general conditions in a water body removed from major contaminant sources. Therefore, consistent with EPA guidance (and stated Section 17.2 of the DTR), the selection of the reference areas for the Site was “consistent with the San Diego Water Board’s goal of establishing a reference condition that represents contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination.” MacDonald’s assertion that the selection of reference areas for the Site was inconsistent with current guidance is therefore incorrect, because the selection process was consistent with EPA guidance.

MacDonald states that the inclusion of reference stations with values of amphipod survival less than 80 percent is inappropriate. However, if such a selection criterion was used at the Site, it could potentially ignore the full range of amphipod responses that may occur in valid reference areas of San Diego Bay, and bias the reference envelope to fit a pre-conceived notion of what the minimum level of survival in a reference area should be. In contrast, the Washington State Sediment Management Standards (Ecology 1995), recognize that survival in the 10-d amphipod test based on Rhepoxynius abronius from reference areas can be as low as 75 percent, based on a survey conducted in multiple reference areas of Puget Sound, Washington. In addition, Phillips et al. (2001) identified control-adjusted survival thresholds as low as 75 and 77 percent for amphipod tests based on Eohaustorius estuarius and Rhepoxynius abronius, respectively.

In addition to MacDonald’s unwarranted definition of the acceptable levels of amphipod survival in reference areas, his focus only on the sediment toxicity results for the reference stations is inappropriate because it ignores the additional information on sediment chemistry and benthic macroinvertebrate communities that was used to identify the reference stations for the Site. As documented in Table 17-2 of the DTR, each reference station was carefully evaluated using multiple lines of evidence before it was selected for use. MacDonald's focus on a single line of evidence (i.e., sediment toxicity) is therefore inconsistent with a weight-of-evidence evaluation and therefore inappropriate.

Response 18.5

The Cleanup Team generally agrees with the comment. The approach taken in the TCAO and DTR is consistent with U.S. EPA guidance and is a reasonable approach in accordance with Resolution No. 92-49.

The criteria for selecting the DTR reference pool described in DTR Section 17 included low levels of anthropogenic pollutant concentrations, locations remote from pollution sources, similar biological habitat to the Shipyard Sediment Site, sediment total organic carbon (TOC) and grain size profiles similar to the Shipyard Sediment Site, adequate sample size for statistical analysis, and sediment quality data comparability. The DTR reference pool was also selected to represent contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination. Selection of the reference pool required some degree of compromise to meet the somewhat ambiguous requirement of a reference site "substantially free" of contaminants, yet having physical and chemical characteristics and biological parameters "broadly similar" to the contaminated marine sediment, and reflective of conditions "that existed before the discharge." (See DTR Section 17.1, Page 17-3).

If amphipod survival of less than 80% were excluded from the reference pool, the analysis would ignore valid reference areas data in San Diego Bay indicating biological effects which are reflective of the natural variability in toxicity and benthic conditions that can occur from factors other than sediment contamination. Benthic community composition for example can be affected by stress factors that are not contaminant induced such as natural variations in habitat (e.g. sediment grain size and organic content) environmental factors (e.g. water depth, salinity, and temperature) and physical disturbance (e.g. anchor or prop wash). Measurements of sediment toxicity can also be influenced by variety of factors besides sediment contamination such as test imprecision, and the presence of natural factors such as hydrogen sulfide or ammonia. Sediment toxicity test results may also not have a consistent correlation with biological effects because the toxicity test species and species that compose the benthic communities may have different sensitivities to different contaminants. The exclusion of stations exhibiting amphipod survival of less than 80% would inappropriately bias the analysis to in favor of a pre-conceived notion concerning what the minimum level of survival in reference areas should be. These considerations are described in further detail in DTR section 17.2.

The Cleanup Team was also unable to locate information on the "Science Advisory Group on Sediment Quality Assessment," and documentation on guideline recommendations from the group (see Section 32, Response 32.8).

RESPONSE 18.6

DTR Section: 18
Comments Submitted By: BAE Systems
Comment IDs: 179
Comment

Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

Conclusion C.3.5 that "The calculations of the 95% prediction limits were unduly influenced by inclusion of data for reference sediment samples that had unacceptably low amphipod survival, bivalve normal development, and/or sea urchin fertilization…For the bivalve toxicity test endpoint, insufficient data were compiled to support calculation of a valid reference envelope" is Invalid (DTR § 18.3; DTR Tables 18-7, 18-8 and 18-9)

The DTR describes how the reference stations for the sediment toxicity tests were carefully selected to represent the range of chemical concentrations and biological responses found in areas removed from contaminant sources in San Diego Bay. Conclusion C.3.5 of MacDonald 3/11/11 Expert Report states that "The calculations of the 95% prediction limits were unduly influenced by inclusion of data for reference sediment samples that had unacceptably low amphipod survival, bivalve normal development, and/or sea urchin fertilization." "For the bivalve toxicity test endpoint, insufficient data were compiled to support calculation of a valid reference envelope."

These conclusions are invalid, as described in detail in the response to Comments C.2.6. The methods used for the Site are consistent with EPA guidance, as well as the methods commonly used to assess sediment toxicity at contaminated sediment sites in the U.S. In addition, as described in Section 17.2 of the DTR, the methods are "consistent with the San Diego Water Board's goal of establishing a reference condition that represents contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination." MacDonald's assertion regarding the reference area data is therefore invalid.

Response 18.6

The Cleanup Team agrees with the comment that identifies the rationale provided in Section 17.2 of the DTR regarding the approach used to identify reference sediment quality conditions found in other relatively cleaner areas of San Diego Bay not affected by the Shipyard Sediment Site. Also, see Response 18.5, above.

19. TCAO Finding 19 and DTR Section 19: Bioaccumulation

Finding 19 of CAO No. R9-2011-0001 states:

The San Diego Water Board evaluated initial laboratory bioaccumulation test data to ascertain the bioaccumulation potential of the sediment chemical pollutants at the Shipyard Sediment Site. Examination of laboratory test data on the chemical pollutant concentrations in tissue of the clam *Macoma nasuta* relative to the pollutant concentrations in sediment indicates that bioaccumulation of chemical pollutants is occurring at the Shipyard Sediment Site. The data indicates for several chemical pollutants that concentrations in *Macoma nasuta* tissue increase proportionally as chemical pollutant concentrations in sediment increase. Statistically significant relationships were found for arsenic, copper, lead, mercury, zinc, tributyltin (TBT), PCBs, and high molecular weight polynuclear aromatic hydrocarbons (HPAHs). These chemical pollutants have a bioaccumulation potential at the Shipyard Sediment Site and are therefore considered bioavailable to benthic organisms. No statistically significant relationships were found for cadmium, chromium, nickel, selenium, silver, or PCTs.

RESPONSE 19.1

DTR Section: 19
Comments Submitted By: NASSCO, BAE Systems, Port District, Coastkeeper and EHC
Comment IDs: 119, 261, 407, 462, 481
Comment

The bioaccumulation data is incorrectly interpreted (NASSCO and BAE). The DTR cites the finding that "bioaccumulation is occurring at the shipyard" as one basis for concluding that aquatic life at the site is impacted. DTR, at 14-1, 19-1. However, the DTR's conclusion that Site sediments impact aquatic life is overly-conservative, since substances may bioaccumulate in laboratory tests, but not adversely affect the benthic community and because not all shipyard chemicals were found to bioaccumulate.

Narrative water quality objectives applicable to the Site require that "all waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life." DTR, at 1-13 (citing the Water Quality Control Plan for the San Diego Basin, September 8, 1994). However, Staff's Macoma tissue bioaccumulation testing indicates only that chemicals are present in the exposed Macoma; it does not assess whether the presence of such chemicals are at levels sufficient to cause toxicity or detrimental physiological responses, in violation of the water quality objective.

Considering the possibility that a substance could bioaccumulate in a laboratory test, yet not be associated with actual adverse effects to the benthic community, these results (together with direct evidence showing a mature and thriving benthic community at the Site), suggest Staff's conclusions concerning benthic harms are overstated.

San Diego Coastkeeper and EHC commented that the DTR correctly interpreted the bioaccumlation data. The Port District conclude's that the contaminants are bioaccumulating in biota relevant to human health.

CoCs are bioaccumulating in biota (Port District). COCs are bioaccumulating in biota for the following reasons:

a. Laboratory exposures to site-collected sediments established that statistically significant accumulations of selected contaminants (arsenic, copper, lead, mercury, zinc, TBT, total PCBs, and high molecular weight PAHs) occur in clams that are in direct contact with and ingest contaminated sediments, providing evidence that Site sediments contribute to the contaminant residues in the tissues of benthic organisms.

b. Benthic organisms are an important component of marine food webs and are a major component of the diet for both the sand bass and spiny lobster as well as many other fish, invertebrate and bird species.

c. Many of the fish and shellfish that prey upon contaminated benthic organisms within the Site can be consumed by people, are highly mobile and can migrate off the Site throughout large portions of San Diego Bay. These mechanisms contribute to the transfer of contaminants from the sediment to higher order receptors (including those relevant to human exposure) outside of the Site. The life histories of sand bass and spiny lobster, the two species targeted for human health evaluation at the Site, involve migration over large portions of San Diego Bay?

d. PCBs are bioaccumulative, and cleanup is necessary for incremental improvement in the beneficial use of San Diego Bay by recreational and subsistence fishers.

The bioaccumulation data is correctly interpreted (Coastkeeper and EHC). Both BAE and NASSCO criticize the DTR's use of the Macoma bioaccumulation data as "contrary" to San Diego Bay's narrative water quality objective for toxicity. This argument is unconvincing, irrelevant, and weak for several reasons. First, the DTR and Order address the narrative water quality objective through the evaluation of multiple lines of evidence. The Macoma data demonstrates that potentially harmful chemicals in the sediments at the Shipyard Site are in a form that can accumulate in tissues of organisms. See DTR Finding 19. This critical information supplements the assessments done to measure compliance with the narrative toxicity water quality standard—it is not "contrary" to it. Further, a sediment quality assessment need not be limited to collecting the information that is required to support evaluation of attainment of the water quality objectives.

Response 19.1

TCAO Finding 19 and the supporting DTR Section 19 were not intended to further determine whether the pollutants are adversely affecting benthic organisms in violation of the Basin Plan's narrative toxicity water quality objective. Potential adverse effects to the benthic community were analyzed using the Sediment Quality Triad approach as described in TCAO Findings 16 through 18. The Sediment Quality Triad approach provides the basis for the Cleanup Team's conclusion that the pollutants present in sediment at the Shipyard Sediment Site are impairing the benthic community (See TCAO Findings 16-18).

TCAO Finding 19 and the supporting DTR Section 19 describe the Cleanup Team's evaluation of the bioaccumulation of contaminants at the Shipyard Sediment Site in the benthic pathway. The bioaccumulation tests involved the exposure of the clam Macoma nasuta to site and reference sediment for 28 days using the protocols specified by ASTM (2000). Macoma was selected as the test species for the bioaccumulation tests because it is native to the West Coast and actively ingests surface sediment (likely to be the most direct route of exposure to contaminants that accumulate in tissues). The evaluation of the chemical pollutant concentrations in Macoma tissue relative to the chemical pollutant concentrations in the sediment indicates that bioaccumulation of chemicals is occurring at the Shipyard Sediment Site. Statistically significant tissue: sediment relationships (at $p = 0.05$) were found for arsenic, copper, lead, mercury, zinc, TBT, PCBs, and HPAHs. These chemical pollutants have a bioaccumulation potential at the Shipyard Sediment Site and are therefore considered bioavailable to benthic organisms. These pollutants are available for biological uptake by benthic organisms at the Site and can accumulate in their tissues. DTR Section 19 (p.19-1) specifically provides that the bioavailability does not necessarily indicate the presence of adverse effects in benthic organisms.

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20. TCAO Finding 20 and DTR Section 20: Indicator Sediment Chemicals

Finding 20 of CAO No. R9-2011-0001 states:

The San Diego Water Board evaluated the relationships between sediment chemical pollutants and biological responses to identify indicator chemical pollutants that may be impacting aquatic life and would therefore be candidates for assignment of cleanup levels or remediation goals. A two-step process was conducted. The first step in the selection of indicator chemicals was to identify chemicals representative of the major classes of sediment pollutants: metals, butyltins, PCBs and PCTs, PAHs, and petroleum hydrocarbons. The second step was the evaluation of relationships between these chemicals and biological responses. Results of the three toxicity tests, benthic community assessment, and bioaccumulation testing conducted in Phase 1 of the Shipyard study were all used to evaluate the potential of such relationships. Chemical pollutants were selected as indicator chemicals if they had any statistically significant relationship with amphipod mortality, echinoderm fertilization, bivalve development, total benthic macroinvertebrate abundance, total benthic macroinvertebrate richness, or tissue chemical concentrations in *Macoma nasuta*. Chemical pollutants selected as indicator chemicals include arsenic, copper, lead, mercury, zinc, TBT, total PCB homologs, diesel range organics (DRO), and residual range organics (RRO).

The San Diego Water Board did not receive any comments regarding Finding 20 and DTR Section 20.

21. TCAO Finding 21 and DTR Section 21: Aquatic-Dependent Wildlife Impairment

Finding 21 of CAO No. R9-2011-0001 states:

Aquatic-dependent wildlife beneficial uses designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site. Aquatic-dependent wildlife beneficial uses include: Wildlife Habitat (WILD), Preservation of Biological Habitats of Special Significance (BIOL), and Rare, Threatened, or Endangered Species (RARE). This finding is based on the considerations described below in the *Impairment of Aquatic-Dependent Wildlife Beneficial* Uses section of this CAO.

The San Diego Water Board did not receive any comments regarding Finding 21 and DTR Section 21.

22. TCAO Finding 22 and DTR Section 22: Risk Assessment Approach for Aquatic-Dependent Wildlife

Finding 22 of CAO No. R9-2011-0001 states:

The San Diego Water Board evaluated potential risks to aquatic-dependent wildlife from chemical pollutants present in the sediment at the Shipyard Sediment Site based on a two-tier approach. The Tier I screening level risk assessment was based on tissue data derived from the exposure of the clam *Macoma nasuta* to site sediments for 28 days using the protocols specified by American Society of Testing Material (ASTM). The Tier II baseline comprehensive risk assessment was based on tissue data derived from resident fish and shellfish caught within and adjacent to the Shipyard Sediment Site.

The San Diego Water Board did not receive any comments regarding Finding 22 and DTR Section 22.

23. TCAO Finding 23 and DTR Section 23: Tier 1 Screening Level Risk Assessment for Aquatic-Dependent Wildlife

Finding 23 of CAO No. R9-2011-0001 states:

The Tier I risk assessment objectives were to determine whether or not Shipyard Sediment Site conditions pose a potential unacceptable risk to aquatic-dependent wildlife receptors of concern and to identify whether a comprehensive, site-specific risk assessment was warranted (i.e., Tier II baseline risk assessment). The receptors of concern selected for the assessment include: California least tern (*Sterna antillarum brownie*), California brown pelican (*Pelecanus occidentalis californicus*), Western grebe (*Aechmophorus occidentalis*), Surf scoter (*Melanitta perspicillata*), California sea lion (*Zalophus californianus*), and East Pacific green turtle (*Chelonia mydas agassizii*). Chemical pollutant concentrations measured in clam tissue derived from laboratory bioaccumulation tests were used to estimate chemical exposure to these receptors of concern. Based on the Tier I screening level risk assessment results, there is a potential risk to all receptors of concern ingesting prey caught at the Shipyard Sediment Site. The chemical pollutants in *Macoma* tissue posing a potential risk include arsenic, copper, lead, zinc, benzo[a]pyrene (BAP), and total PCBs. The results of the Tier I risk assessment indicated that a Tier II baseline comprehensive risk assessment was warranted.

The San Diego Water Board did not receive any comments regarding Finding 23 and DTR Section 23.

24. TCAO Finding 24 and DTR Section 24: Tier II Baseline Comprehensive Risk Assessment for Aquatic-Dependent Wildlife

Finding 24 of CAO No. R9-2011-0001 states:

The Tier II risk assessment objective was to more conclusively determine whether or not Shipyard Sediment Site conditions pose an unacceptable risk to aquatic-dependent wildlife receptors of concern. The receptors of concern selected for the assessment include: California least tern (*Sterna antillarum brownie*), California brown pelican (*Pelecanus occidentalis californicus*), Western grebe (*Aechmophorus occidentalis*), Surf scoter (*Melanitta perspicillata*), California sea lion (*Zalophus californianus*), and East Pacific green turtle (*Chelonia mydas agassizii*). Based on the Tier I screening level risk assessment results, there is a potential risk to all receptors of concern ingesting prey caught at the Shipyard Sediment Site and so a Tier II assessment was conducted. To focus the risk assessment, prey items were collected within four assessment units at the Shipyard Sediment Site and from a reference area located across the bay from the site. Chemical concentrations measured in fish were used to estimate chemical exposure for the least tern, western grebe, brown pelican, and sea lion and chemical concentrations in benthic mussels and eelgrass were used to estimate chemical pollutant exposure for the surf scoter and green turtle, respectively. Based on the Tier II risk assessment results, ingestion of prey items caught within all four assessment units at the Shipyard Sediment Site poses an increased risk above reference to all receptors of concern (excluding the sea lion). The chemicals in prey tissue posing a risk include BAP, PCBs, copper, lead, mercury, and zinc.

RESPONSE 24.1

DTR Section: 24
Comments Submitted By: NASSCO, BAE Systems, SDG&E, Coastkeeper and EHC
Comment IDs: 105, 120, 143, 144, 147, 468, 489
Comment

NASSCO, BAE Systems, and SDG&E commented that the DTR's Tier II risk assessment conducted for human health was overly conservative, employed unrealistic assumptions, and did not comply with relevant state and federal guidance. The overly conservative and unrealistic assumptions include:

1. **Area Use Factor (Comment ID 105, 120, 144, and 468).** Staff assumed an area use factor ("AUF") of 1.0 for all receptors. This means that Staff assumed that the six receptors of concern—including the California least tern, California brown pelican, Western grebe, Surf scoter, California sea lion, and East Pacific green turtle—all derived 100% of their diet from prey obtained from the Shipyard. DTR, at Section 24.2.2, Table 24-6. This assumption is wholly unrealistic for all six receptors, and significantly magnified the hazard quotient for ever single receptor. Not only are the home ranges of all six species substantially greater than the 43 acre NASSCO Shipyard area, but also it defies belief that any receptor would choose to only forage an active industrial Shipyard where the

habitat quality is low for all six indicator species.

Staff's failure to consider the actual AUF for the six indicator species did not comport with U.S.E.P.A. or California Department of Toxic Substances Control guidance documents on how to perform an ecological risk assessment. Nor did Staff rely on any studies, guidelines, or agency documents when it made this policy decision, or conduct any study of its own to determine the actual use the six receptors at the NASSCO Shipyard. Accordingly, not only did Staff's resolve to utilize an AUF of 1.0 lead to the conclusion of impairment, but also it was an arbitrary policy decision, which neither comports with realistic assumption nor standard ecological risk assessment guidance. Therefore, it is an arbitrary and capricious determination in the TCAO and DTR that should be reversed and aquatic-dependent wildlife conclusions reworked.

Coastkeeper & EHC also provided comments related to the security measures and wildlife exposure: Even if the Site will remain as a secured shipyard until at least 2040, security measures will not prevent humans and wildlife from being exposed to pollutants from the Site. While security measures may limit human exposure to the pollutants at the Site, they will not prevent wildlife exposure to the contaminants that occur at the Site. Securing the Site does not prevent fish or other aquatic life from swimming in and out of the site, nor does it prevent people or wildlife from catching and consuming wildlife exposed to contaminants at the Site. Therefore, people are still at risk of being exposed to pollutants remaining at the Site despite security measures at the Site.

2. **Tissue Residue Value Geometric Mean (Comment ID 489).** It is standard practice to set a limit for acceptable dietary exposure for any chemical by picking a point between an established no-observed-adverse-effect-level ("NOAEL") (a level of exposure that is believed to have no adverse effects on receptors of concern) and the lowest-observed-adverse-effect-level ("LOAEL") (the lowest level of exposure shown to have adverse effects on receptors of concern). In fact, "[e]xposure levels between the no-effect and expected effect thresholds fall into an undefined area with regard to predicted risk, in which careful interpretation and professional judgment are required to assess risk." ("the actual threshold of adverse effects is predicted to lie somewhere between these two thresholds").

   Instead of carefully exercising such judgment, however, the Staff simplistically looked for any chemical that exceeded a hazard quotient of 1.0 for any effect threshold—whether it be a no-effect or expected-effect threshold—that was also higher than reference exposure. Neither the DTR nor the TCAO provide any rationale for this approach, despite the fact that U.S.E.P.A. staff have recommended using the geometric mean between no-effect and expected-effect thresholds as an appropriate way to calculate hazard quotients.

3. **No Studies Cited (Comment ID 147).** Moreover, it is worth noting that the neither the DTR nor the TCAO cite any studies demonstrating adverse impacts on

the California least tern, California brown pelican, Western grebe, Surf scoter, California sea lion, or East Pacific green turtle in San Diego Bay.

Response 24.1

The DTR describes a two-tiered approach in DTR Sections 21 through 24 to evaluate potential risks to aquatic-dependent wildlife from chemical pollutants present at the Shipyard Sediment Site. The Tier I screening level risk assessment used conservative exposure and effects assumptions in the risk assessment calculations. The Tier II comprehensive risk assessment (also referred to as the baseline risk assessment) used the same risk assessment equations to calculate risk as Tier 1 but substituted site-specific exposure parameters for the conservative assumptions used in Tier I to more accurately characterize potential risk to receptors.

The Tier II risk assessment objective was to more conclusively determine whether or not the current conditions at the Shipyard Sediment Site pose unacceptable risk to aquatic-dependent wildlife receptors of concern and to identify the need for remedial action (DTR Section 24.2). Risks were characterized by: (1) quantifying the risks at the Shipyard Sediment Site, and (2) comparing the Site risks to the risks calculated at the reference areas. Fish-eating marine birds and mammals, mollusk-eating birds, and sea grass-eating reptiles were identified as important groups of aquatic-dependent wildlife that could be at risk due to exposure of chemicals in prey species at the Shipyard Sediment Site. Six species were identified as suitable representatives for assessing potential risk to these groups with the concurrence of U.S. Fish and Wildlife Services, California Department of Fish and Game, and National Oceanic Atmospheric Administration (collectively known as the “Natural Resource Trustee Agencies”). The six species are shown in Table 24-4 of the DTR. In the Tier II risk assessment, the primary routes of exposure to pollutants at the Shipyard Sediment Site are through the ingestion of prey items and the incidental ingestion of sediment during foraging. The exposure assumptions for these six species contained in Table 24-6 of the DTR are reasonably conservative and realistic in terms of beneficial use impairment.

A recurring theme in NASSCO, BAE Systems, and SDG&E arguments is that the DTR Tier II aquatic dependent wildlife risk assessment is overly conservative, employs unrealistic assumptions, and does not comply with relevant state and federal guidance. The Cleanup Team conducted key elements of the Tier II risk assessment in accordance with the approach described in the relevant federal guidance, U.S. EPA’s “*Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final)*”.(See SAR293004). This document provides guidance to U.S. EPA Regions concerning how the Agency intends to exercise its discretion in implementing one aspect of the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy selection process at CERCLA-based cleanup sites. The Shipyard Sediment Site is not a CERCLA based cleanup site and any San Diego Water Board decisions regarding beneficial use impairments, risk assessments, remedial selection and other aspects of the TCAO will be made based on the requirements of the Water Code and applicable California Code of Regulations. The U.S. EPA guidance document is not a regulation itself and it does not impose any legally-binding requirements on the conduct of the Cleanup Team's aquatic dependent wildlife risk assessment for the Shipyard Sediment Site or on the San Diego Water Board's issuance of a Cleanup and Abatement Order pursuant to Water Code Section 13304. The Cleanup Team had full discretion to adopt approaches and assumptions on a case-by-case basis that differ from the U.S. EPA guidance document and it did so where appropriate to meet California Water Code requirements. One example of this was in the Cleanup Team's conservative assumptions about exposure and consumption in the Tier II risk assessment calculations. The duty to ensure restoration and enhancement of beneficial uses under Division 7 of the California Water Code *demands* that the San Diego Water Board make more conservative assumptions about exposure, consumption, and risk than would be appropriate under CERCLA's cost-driven remediation scheme for which the federal risk assessment guidance document was designed. (See Response 1.1 for additional details on key differences between the Water Code and CERCLA).

The Cleanup Team also conducted elements of the Tier II risk assessment in accordance with the approach described in the relevant state guidance, California Department of Toxic Substances Control (DTSC) "*Guidance for Ecological Risk Assessment at Hazardous Waste Sites and Permitted Facilities*" (See SAR281171). This document provides guidance to DTSC Regional Offices, and other government employees and contractors on a general framework for conducting ecological risk assessments at CERCLA AND Health and Safety Code based hazardous waste sites and facilities sites regulated by DTSC. The guidance does not constitute rule making by DTSC and should not be interpreted as an enforceable standard. The Shipyard Sediment Site is not a DTSC based cleanup site and any San Diego Water Board decisions regarding beneficial use impairments, risk assessments, remedial selection and other aspects of the TCAO will be made based on the requirements of the California Water Code and applicable California Code of Regulations. The DTSC guidance document is not a regulation itself and it does not impose any legally-binding requirements on the conduct of the Cleanup Team's aquatic dependent wildlife risk assessment for the Shipyard Sediment Site or on the San Diego Water Board's issuance of a Cleanup and Abatement Order pursuant to Water Code Section 13304.

The basis for the exposure and effects characterization parameters used in the Tier II assessment is discussed below.

<u>The Area Use Factor in the DTR Provides Full Protection of Aquatic-Dependent Wildlife Beneficial Uses</u>

The purpose of the Tier II aquatic dependent wildlife assessment described in TCAO Finding 24 and DTR Section 24 is to characterize the threat of pollutant bioaccumulation in aquatic life to levels that are harmful to aquatic dependent wildlife by indirect contaminant exposure. Indirect contaminant exposure of aquatic dependent wildlife at the Shipyard Sediment Site can result from the wildlife consumption of contaminated prey via bioaccumulation and trophic transfer. Shipyard Sediment Site pollutants accumulated in the tissue of organisms in the aquatic food web can be passed on to feeding aquatic dependent wildlife. The Cleanup Team considered the prey tissue route of contaminant exposure to wildlife by assessing the risk to wildlife posed by indirect exposure using accepted U.S. EPA and California DTSC guidance for conducting ecological risk assessments of this type (See DTR 24.2).

The general equations used in the risk analysis to provide exposure estimates for aquatic dependent wildlife employ an area use factor (AUF) to adjust the estimated total daily contaminant intake to account for food obtained by wildlife. (See DTR Section 24.2.2.) The AUF term is used to adjust estimated total daily intake to account for food obtained from outside the area of concern. The value assigned to the AUF can be determined by computing the ratio of the species foraging range acres or hectares to the size of the study area. Depending on the species and the study area the AUF may be any value ranging from 0 to 1.0. An AUF value of 1.0 indicates that the species conducts all of its foraging and therefore obtains all of its food from within the area of concern.

The Cleanup Team selected six wildlife species as suitable representative receptors for conducting the risk analysis: CA least tern, CA brown pelican, Western grebe, Surf scoter, CA sea lion, and East Pacific green turtle. The six wildlife species all have documented foraging areas much larger than the 143 acre Shipyard Sediment Site and thus would likely consume only a portion of their food from the Shipyard Sediment Site. (See Exponent Report 2003). The Cleanup Team's selection of an AUF of 1.0 in the risk analysis may overestimate the exposure of the receptors to Site contaminants based on the likely extent of their foraging areas, but is nonetheless a reasonable protective assumption to employ in the aquatic dependent wildlife risk analysis based on the following considerations:

1. San Diego Bay provides important habitat for myriad of aquatic and aquatic-dependent wildlife species. The Bay serves as an integral migratory stopover and wintering area for shorebirds seabirds and waterfowl in the Pacific flyway. It also supports significant breeding colonies of elegant tern (*Sterna elegans*), royal tern (*Sterna maxima*), Forsters tern (*Sterna forstari*), gull-billed tern (*Sterna nllotica*), Caspian tern (*Sterna caspia*), black skimmer (*Rhynchops niger*), and double-crested cormorant (*Phalacrocorax auritus*). Federally listed endangered species that are dependent upon the Bay include Western snowy plover (*Charadrius alexandrinus nivosus*), California brown pelican (*Peficanus occidentalis californicus*), light-footed clapper rail (*Rallus longirostris levipes*), California least tern (*Stema antillarum browni*) and the threatened green sea turtle (*Chelonia mydas*). The USFWS established Sweetwater Marsh and South San Diego Bay National Wildlife Refuges NWRs are in close proximity to the Shipyard Sediment Site and encompass most of what remains of San Diego Bay historic salt marsh and intertidal mudflat habitats. All of these species and resources could potentially be affected by poor water quality and sediment contamination in San Diego Bay (See SAR281726).

2. Evaluation of the contamination exposure of the six representative receptors is influenced by many species specific and site specific factors such as sediment organic content, complexity of the food web, contaminant distribution and

bioavailability, and variability in species-specific age, feeding habits, home range and lipid content. Assessing these factors in evaluating the specific contaminant exposure from a site is challenging and the estimation of receptor exposures only to contaminants at a site is typically highly uncertain.

3. Due to the uncertainties involved, the exposure factors used for receptors in the risk analysis include the conservative assumption that the receptors are present at the Shipyard Sediment Site year-round and that they obtain all of their food from the Shipyard Sediment Site. The receptor specific fraction of foraging that may occur at the Site was not factored into the risk analysis, an AUF of 1 was assumed and dietary exposure was calculated on a site-wide basis. Although the conservative AUF assumption may overestimate the risk of exposure of wildlife it helps to ensure that contaminant tissue levels used in the risk analysis are not under-predicted and are biased in a beneficial use protective direction.

4. The AUF of 1 assumption should be protective of all wildlife receptor species some of which may reside in the area year round and for which the San Diego Bay constitutes 100% of the foraging range.

5. The DTR Tier II assumption that all six receptors of concern ingest 100% of their prey from the Shipyard Sediment Site ensures the reasonable protection of aquatic-dependent wildlife beneficial uses designated for San Diego Bay. While the DTR deviated from U.S. EPA Superfund guidance and DTSC guidance by not comparing the foraging range of the six receptors to the size of the Site, the DTR use of an area use factor of 100% is based primarily on providing full protection of the Wildlife Habitat (WILD), Preservation of Biological Habitats of Special Significance (BIOL), and Rare, Threatened, or Endangered Species (RARE) beneficial uses. WILD, BIOL, and RARE beneficial uses at the Shipyard Sediment Site would not be considered fully protected if a receptor is limited to only ingesting prey items a fraction of the time (e.g., 0.4 percent for the CA brown pelican within the area inside the NASSCO leasehold [Exponent 2003]).

6. Although the Shipyard Sediment Site is currently a heavily industrialized shipyard area which may discourage aquatic-dependent wildlife from foraging at the Site, it is not unreasonable to assume that in the future NASSCO and BAE Systems may not occupy the Site, the land use may change, and the Site may become an attractive spot for wildlife feeding. Eel grass beds exist at both NASSCO and BAE Systems which provide rich feeding areas for fish and marine birds and mammals. This scenario, to a certain extent, recently occurred at a former shipyard facility located just north of the Site in San Diego Bay. Campbell Shipyard ceased operations and the site was redeveloped into a public and commercial recreational area.

<u>The Tissue Residue Value Geometric Mean in the DTR Provides Full Protection of Aquatic-Dependent Wildlife Beneficial Uses</u>

Characterizing potential adverse effects to aquatic-dependent wildlife receptors of concern requries a comparison of the exposure estimates to an appropriate toxicity reference value (TRV). As recommended by the Natural Resource Trustee Agencies, the DTR used TRVs developed by the U.S. Navy/U.S. EPA Region 9 Biological Technical Assistance Group (BTAG) (DTR Section 23.2.3). The BTAG TRVs are presented as an upper and lower estimate of effects thresholds (low-TRVs and high-TRVs, respectively). The low-TRV is based on no-observed-adverse-effects levels (NOAELs) and represents thresholds below which no adverse effects are expected. Conversely, the high-TRV is based on an approximate midpoint of the range of effects levels and represents a threshold above which adverse effects are likely to occur. The range between the low-TRV and high-TRV is commonly viewed as a "gray area" because the actual threshold of adverse effects is predicted to lie somewhere between these two thresholds. It should be noted that the terms low-TRV and high-TRV are interchangeable with the terms NOAEL and lowest-observed-adverse-effects-level, respectively. As such, to simplify the terminology, NOAELs and LOAELs will be used from this point out to respond to the comment.

NOAELs and LOAELs were used in two separate sections of the DTR: DTR Section 24.2.3 - Tier II risk assessment to determine if aquatic-dependent wildlife beneficial uses are impaired, and DTR Section 32.3 - Risk analysis to determine if the alternative cleanup levels are protective of aquatic-dependent wildlife beneficial uses. In DTR Section 24.2.3 a point was not selected between the NOAEL and LOAEL in the beneficial use impairment analysis. In DTR Section 32.3 a point was selected using the geometric mean between the NOAEL and LOAEL for the protective verification analysis of the alternative cleanup levels. While it may appear there is a disconnect between the two DTR sections, selecting a point for the alternative cleanup level analysis only is consistent with the recommendations made by the U.S. EPA ecological risk assessors cited in Comment ID 489 and quoted below (SETAC, 2005. Abstract 225, Page 53).

"Ecological risk assessment (ERA) guidance for Superfund states that clean-up goals for contaminants should be selected within the risk range or between the no observed and low observed effect levels (NOAEL and LOAEL). The Rule of Five, a visual tool based on a geometric progression of five nodes between the NOAEL and LOAEL, provides a flexible framework for selecting a defensible, clean-up goal for ecological risk receptors."

The Cleanup Team’s decision to not select a point between the NOAEL and LOAEL for the DTR section 24.2.3 beneficial use impairment analysis is due to the "gray area" between the NOAEL and LOAEL. The actual threshold of adverse effects is predicted to lie somewhere in this gray area and as such; it is not unreasonable to assume that the threshold is just above the NOAEL. The NOAEL is the highest concentration at which chronic exposure causes no observed adverse effects; adverse effects begin to be observed at exposure concentrations greater than the NOAEL.

This assumption was used in DTR Section 24.2.3 in order to remain conservative, to ensure risks are not underestimated, and to ensure the full protection of aquatic-dependent wildlife beneficial uses.

Citing Studies Showing Adverse Effects to the Tier II Receptors of Concern is not Necessary

The Cleanup Team disagrees that aquatic life and aquatic-dependent wildlife beneficial uses are not impaired. See responses pertaining to aquatic life beneficial use impairment in Sections 14 to 19. While it would be desirable to cite studies showing adverse effects on the receptors of concern used in the Tier II analysis, the Cleanup Team is not aware of any such studies. More importantly, the Tier II risk assessment provides a sufficient basis to support TCAO Finding 21 that aquatic-dependent wildlife beneficial uses are impaired.

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25. TCAO Finding 25 and DTR Section 25: Human Health Impairment

Finding 25 of CAO No. R9-2011-0001 states:

Human health beneficial uses designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site. Human health beneficial uses include: Contact Water Recreation (REC-1), Non-contact Water Recreation (REC-2), Shellfish Harvesting (SHELL), and Commercial and Sport Fishing (COMM). This finding is based on the considerations described below in this *Impairment of Human Health Beneficial Uses* section of the CAO.

RESPONSE 25.1

DTR Section: 25
Comments Submitted By: BAE Systems
Comment IDs: 121
Comment

Human Health Beneficial Uses REC-1 and REC-2 are Not Adversely Impacted by Concentrations of Pollutants Present in the Marine Sediment At the Site (TCAO Finding 25; DTR § 25.1).

Finding 25 of the TCAO concludes that four identified beneficial uses (REC-1, REC-2, SHELL, and COMM) are "impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site." Section 25.1 of the DTR identifies the same four beneficial uses, and states "concentrations of the pollutants present in the marine sediment within and adjacent to the Shipyard Sediment Site causes or threatens to cause a condition of pollution or contamination that adversely impacts these four beneficial uses and thereby constitutes a threat to the public health." (DTR, § 25.1) (emphasis added.

Finding 25 of the TCAO and § 25.1 of the DTR Section 25.1 should be revised to clarify that the Cleanup Team did not find human health risks associated with the beneficial uses Contact Water Recreation (REC-1) and Non-Contract Water Recreation (REC-2) to be impaired by the pollutants present in the marine sediment within and adjacent to the Site.

Response 25.1

DTR Section 27.2.1 states that the most significant potential source of human exposure to chemical pollutants at the Shipyard Sediment Site is through consumption of fish and shellfish that may have bioaccumulated chemicals either directly from site sediment or through the food web. This conclusion was based on several considerations including:

1. Risks associated with dermal contact and incidental ingestion of contaminated sediment by swimmers were considered minimal based on available U.S. EPA literature, and

2. Direct contact with sediment chemical pollutants at the Shipyard Sediment Site was not considered a likely exposure pathway to humans because the industrial nature of the site

and the lack of a beach make swimming and wading a highly unlikely event.

Accordingly, the DTR human health risk assessment was directed towards evaluation of human health risks associated with fish and shellfish consumption. Finding 25 will be revised by deleting REC1 and REC-2 beneficial uses from the finding. This revision will be provided on September 15, 2011 consistent with the Third Amended Order of Proceedings.

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26. TCAO Finding 26 and DTR Section 26: Risk Assessment Approach for Human Health

Finding 26 of CAO No. R9-2011-0001 states:

The San Diego Water Board evaluated potential risks to human health from chemical pollutants present in the sediment at the Shipyard Sediment Site based on a two-tier approach. The Tier I screening level risk assessment was based on tissue data derived from the exposure of the clam *Macoma nasuta* to site sediments for 28 days using ASTM protocols. The Tier II baseline comprehensive risk assessment was based on tissue data derived from resident fish and shellfish caught within and adjacent to the Shipyard Sediment Site. Two types of receptors (i.e., members of the population or individuals at risk) were evaluated:

a. Recreational Anglers – Persons who eat the fish and/or shellfish they catch recreationally; and

b. Subsistence Anglers – Persons who fish for food, for economic and/or cultural reasons, and for whom the fish and/or shellfish caught is a major source of protein in their diet.

The San Diego Water Board did not receive any comments regarding Finding 26 and DTR Section 26.

27. TCAO Finding 27 and DTR Section 27: Tier I Screening Level Risk Assessment for Human Health

Finding 27 of CAO No. R9-2011-0001 states:

The Tier I risk assessment objectives were to determine whether or not Shipyard Sediment Site conditions potentially pose an unacceptable risk to human health and to identify if a comprehensive, site-specific risk assessment was warranted (i.e., Tier II baseline risk assessment). The receptors of concern identified for Tier I are recreational anglers and subsistence anglers. Recreational anglers represent those who eat the fish and/or shellfish they catch recreationally and subsistence anglers represent those who fish for food, for economic and/or cultural reasons, and for whom the fish and/or shellfish caught is a major source of protein in the diet. Chemical concentrations measured in *Macoma nasuta* tissue derived from laboratory bioaccumulation tests were used to estimate chemical exposure for these receptors of concern. Based on the Tier I screening level risk assessment results, there is a potential risk greater than that in reference areas to recreational and subsistence anglers ingesting fish and shellfish caught at the Shipyard Sediment Site. The chemicals in *Macoma* tissue posing a potential risk include arsenic, BAP, PCBs, and TBT.

RESPONSE 27.1

DTR Section: 27
Comments Submitted By: NASSCO
Comment IDs: 153
Comment

The Tier I Risk Assessment conducted by Staff used Macoma nasuta tissue from laboratory exposures to conduct the screening level assessment for human health risk. This was inappropriate because an appropriate "surrogate" species should show ecological and physiological similarities to a species that would naturally occur at the Shipyard and be harvested by humans. In fact, Macoma nasuta is relatively rare at the NASSCO Shipyard, and is not subject to recreational harvesting by humans in California or elsewhere.

Response 27.1

The use of Macoma tissue as a surrogate to estimate exposures to chemicals in seafood for the Tier I risk analysis is both reasonable and scientifically valid. The DTR recognizes that use of Macoma tissue is a conservative approach because Macoma is not the primary seafood harvested from the Shipyard Sediment Site and because Macoma are directly exposed to pollutants in the sediment. Macoma actively ingests sediment to feed on detritus and burrows into the sediment. This is the most likely direct route of exposure to contaminants that accumulate in tissues. However, the use of Macoma tissue to evaluate the bioaccumulation potential of the chemical pollutants present in sediment at the Shipyard Sediment Site and the degree to which these chemicals may enter the aquatic food web is a valid tool to both evaluate the potential for human heath beneficial use impairment attributable to bioaccumulation and to ensure the protection of human health beneficial uses. Furthermore, Macoma tissue has been commonly used for this purpose in other Tier I human health risk assessments including the TMDL study for the mouths of Chollas Creek and Paleta Creek in San Diego Bay (SCCWRP and U.S. Navy, 2005; SAR286743 and SAR286582) and Hunters Point Shipyard in San Francisco Bay (Battelle et. al. 2002).

28. TCAO Finding 28 and DTR Section 28: Tier II Baseline Comprehensive Risk Assessment for Human Health

Finding 28 of CAO No. R9-2011-0001 states:

The Tier II risk assessment objective was to more conclusively determine whether Shipyard Sediment Site conditions pose unacceptable cancer and non-cancer health risks to recreational and subsistence anglers. Fish and shellfish were collected within four assessment units at the Shipyard Sediment Site and from two reference areas located across the bay from the Shipyard Site. Chemical concentrations measured in fish fillets and edible shellfish tissue were used to estimate chemical exposure for recreational anglers and chemical concentrations in fish whole bodies and shellfish whole bodies were used to estimate chemical exposure for subsistence anglers. Based on the Tier II risk assessment results, ingestion of fish and shellfish caught within all four assessment units at the Shipyard Sediment Site poses a theoretical increased cancer and non-cancer risk greater than that in reference areas to recreational and subsistence anglers. The chemicals posing theoretical increased cancer risks include inorganic arsenic and PCBs. The chemicals posing theoretical increased non-cancer risks include cadmium, copper, mercury, and PCBs.

RESPONSE 28.1

DTR Section: 28
Comments Submitted By: NASSCO, BAE Systems, SDG&E, Coastkeeper and EHC
Comment IDs: 11, 99, 122, 123, 125, 126, 128, 150, 151, 154, 182, 270, 271, 272, 273, 274, 485, 486, 487, 488
Comment

NASSCO, BAE Systems, and SDG&E commented that the DTR's Tier II risk assessment conducted for human health was overly conservative, employed unrealistic assumptions, and did not comply with relevant state and federal guidance (IDs 99, 122, 150, 154, 487, and 488). The overly conservative and unrealistic assumptions include:

1. **Fractional Intake (IDs 11, 123, 125, 151, 274, and 486).** The DTR assumed that the Fractional Intake ("FI") of recreational and subsistence anglers that catch and eat fish and/or lobster from San Diego Bay would come entirely from fish and/or lobsters caught at the Shipyard Sediment Site. The Shipyard Sediment Site is a high-security area due to its work for the U.S. Navy, and is characterized by a lack of public access. In San Diego Bay, a security boom prevents unauthorized vessels from approaching any closer than 300 feet from the Shipyard. From the shore, unauthorized personnel are prohibited from accessing the Shipyard by security guards, buildings, eight foot fences with razor wire, video surveillance, and alarm systems, and even approved guests are escorted around the site at all times. These security measures absolutely prevent any unauthorized access to the Shipyard.

2. **Maximum Tissue Chemical Concentrations (ID 273).** The use of maximum chemical concentrations to represent tissue chemical concentrations yields a biased and potentially inaccurate estimate of health risk. Staff assumes that maximum measured chemical

concentrations are representative of typical exposure for recreational and subsistence fishers, despite the fact that multiple samples were collected at each sampling station. DTR, at 28-17. This simplistic approach "gives no insight as to the potential variability in the risk estimates as a function of the range and frequency of measured contaminant levels. In essence, each of the risk estimates presented by the RWQCB relies on a single measured (in this case, maximum) value, which can yield a highly biased risk estimate, particularly if the underlying data set is skewed."

3. **Consumption Rate (IDs 126 and 271).** Staff assume that subsistence anglers always consume the entire fish or shellfish, including the skin, guts, filter organs, etc., and not just the filet or edible portion. DTR, at 28-17. However, assuming that all subsistence anglers always consume the entire fish is excessively conservative, particularly when Staff has not shown that any subsistence anglers actually fish at or near the shipyard, or investigated how often such anglers, if any exist, would consume the entire fish. With respect to lobsters, there is no evidence in the DTR that subsistence anglers could harvest enough lobsters from the shipyard to maintain a 30 year daily consumption rate of 161 g/day, or that all such lobsters would be eaten whole, including the shell, internal organs and meat. Regarding fish, while it is true that certain ethnic groups may use the whole body of harvested fish in soups or stews, members of such groups typically "gut" the fish to remove the liver and other soft organs prior to consumption. In fact, the Santa Monica Bay seafood consumption study—which formed the basis for the consumption rates used in the DTR—found that only one percent of surveyed anglers consumed whole fish that had not been gutted. Thus, rather than blindly assuming that all anglers always consume un-gutted whole body fish, it would have been more reasonable to assume that a certain proportion of harvested seafood is consumed in this manner based on site-specific data.

4. **Exposure Duration (ID 128).** The RWQCB used the highest EPA default point estimate for exposure duration with no discussion, no explanation, and no justification. The RWQCB could have reviewed local census or creel angler data to develop a more accurate and site-specific estimate. They also could have explored alternative (and lower) default EPA estimates or used a distribution of estimates. Current EPA guidance recommends using an estimate of 9 years, which represents the 50th percentile (U.S. EPA 1997). The studies that this value are derived from reported average exposure duration times ranging from 4.6 years to 12 years (Israeli and Nelson 1992; Johnson and Capel 1992; U.S. Bureau of the Census 1993). It should be noted that the EPA is currently proposing that the default average duration be lowered to 8 years (U.S. EPA 2009). It does not appear that the RWQCB reviewed or considered any of this information.

5. **Inorganic Arsenic (ID 270).** Staff assume that four percent of arsenic is in the inorganic form. This is a highly conservative assumption. Staff chose this estimate without any justification, and Staff did not collect or analyze fish tissue from the NASSCO Shipyard for inorganic arsenic.

6. **Type of Fish and Shellfish (ID 272).** Staff assume that subsistence anglers only consume spotted sand bass or lobster, even though data from other species commonly available to anglers were available. For example, topsmelt (atherinops affins) and jacksmelt (atherinops californiensis), both of which had much lower maximum concentrations of PCBs than spotted sand bass, typically comprise a significant proportion of the sport catch from shore and pier areas. Accordingly, to avoid overestimating exposure, the dietary portion assumed to be comprised of un-gutted whole body fish should have been apportioned across species according to expected catch rates since (1) San Diego Bay anglers very likely will catch many species other than lobster or spotted sand bass, and (2) chemical concentrations vary widely amongst different fish species. Moreover, it is clear from San Diego Bay-specific fishing reference materials that fish are not equally distributed throughout the Bay, but rather, fish are "attracted to certain habitats based on prey availability, physical structures, and hydrodynamic conditions."

7. **Tier II Risk Assessment Recalculations (IDs 182 and 485).** Even if Staff assume that security restrictions do not make it impossible for the public to fish and collect shellfish in the Shipyard Sediment Site, using realistic exposure estimates to prepare a Tier II Risk Assessment reveals that fish and shellfish caught at the Shipyard Sediment Site do not pose a significant risk to human health.

Response 28.1

The DTR describes a two-tiered approach in DTR Sections 25 through 28 to evaluate potential risks to human health from chemical pollutants present at the Shipyard Sediment Site. The Tier I screening level risk assessment used conservative exposure and effects assumptions in the risk assessment calculations. The Tier II comprehensive risk assessment (also referred to as the baseline risk assessment) used the same risk assessment equations to calculate risk as Tier 1 but substituted site-specific exposure parameters for the conservative assumptions used in Tier I to more accurately characterize potential risk to receptors. (DTR Section 26.1).

The Tier II human health risk assessment objective was to more conclusively determine whether or not current conditions at the Shipyard Sediment Site pose unacceptable cancer and non-cancer health risks to human health and to identify the need for remedial action (DTR Section 28.2). Risks were characterized by: (1) quantifying the cancer and non-cancer risks at the Shipyard Sediment Site, and (2) comparing the Site risks to the risks calculated for the reference areas.

A recurring theme in NASSCO, BAE Systems, and SDG&E arguments is that the DTR's Tier II human health risk assessment is overly conservative, employs unrealistic assumptions, and does not comply with relevant state and federal guidance. The Cleanup Team conducted key elements of the Tier II risk assessment in accordance with the approach described in the relevant federal guidance, U.S. EPA's "*Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)*" (U.S. EPA, 1989; SAR285909). This document provides guidance to U.S.EPA Regions concerning how the Agency intends to exercise its discretion in implementing one aspect of the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy selection process at CERCLA-based cleanup sites. The Shipyard Sediment Site is not a CERCLA based cleanup site and any San Diego Water Board decisions regarding beneficial use impairments, risk assessments, remedial selection and other aspects of the TCAO will be made based on the requirements of the California Water Code and applicable California Code of Regulations. The U.S. EPA guidance document is not a regulation itself and it does not impose any legally-binding requirements on the conduct of the Cleanup Team's human health risk assessment for the Shipyard Sediment Site or on the San Diego Water Board's issuance of a Cleanup and Abatement Order pursuant to Water Code Section 13304. The Cleanup Team had full discretion to adopt approaches and assumptions on a case-by-case basis that differ from the U.S. EPA guidance document and it did so where appropriate to meet Water Code requirements. One example of this was in the Cleanup Team's conservative assumptions about exposure and consumption in the Tier II risk assessment calculations. The duty to ensure restoration and enhancement of beneficial uses under Division 7 of the Water Code *demands* that the San Diego Water Board make more conservative assumptions about exposure, consumption, and risk than would be appropriate under CERCLA's cost-driven remediation scheme for which the federal risk assessment guidance document was designed. (See Response 1.1 for additional details on key differences between the California Water Code and CERCLA).

The most significant potential source of human exposure to pollutants at the Shipyard Sediment Site is through consumption of fish and shellfish that may have bioaccumulated chemicals either directly from site sediments or through the food web. (See DTR Section 27.2.1) In the Tier II risk assessment, exposure was based on an estimate of the reasonable maximum exposure (RME) expected to occur under both current and future land-used conditions in accordance with U.S. EPA risk assessment guidance (1989; SAR285909). The RME is defined as the highest exposure that is reasonably expected to occur at a site. Two types of receptors were evaluated in the assessment:

1. Recreational angler – represents those who eat the fish and/or the shellfish they catch; and

2. Subsistence angler – represents those who fish for food, for economic and/or cultural reasons, and for whom the fish and/or shellfish caught is a major source of protein in the diet.

The RME assumptions for these two receptors contained in DTR Table 28-7 are reasonably conservative, realistic and appropriate for making risk based decisions on human health beneficial use impairment. Additional considerations regarding the selection of exposure characterization parameters used in the risk assessment are discussed below.

<u>Fractional Intake Value of 1 is Appropriate, Reasonably Conservative, and Environmentally Protective</u>

COMM and SHELL are designated as existing beneficial uses for all of the waters of San Diego Bay and at all points within San Diego Bay regardless of property access restrictions in bay waters. In designating these uses for San Diego Bay and other waters, the San Diego Water Board made the finding that fishing, swimming, or other uses have actually occurred since November 28, 1975; or the water quality and quantity is suitable to allow the use to be attained (Basin Plan at p. 2-7). COMM and SHELL beneficial uses are designated for protection as existing uses throughout San Diego Bay, including the Shipyard Sediment Site, even if no one is actually catching fish or harvesting shellfish at that location.

Federal and State antidegradation polices (see U.S. EPA 40 CFR 131.12(a)(1) and State Water Board Resolution No. 68-16) require the San Diego Water Board to protect existing and potential beneficial uses such as COMM and SHELL and the level of water quality needed to protect those uses. Full protection of the water and sediment quality needed to protect these uses requires protection throughout San Diego Bay including areas of the bay where public access is restricted. An activity or discharge that lowers water quality in San Diego Bay such that a buffer zone (e.g. site access restriction) must be implemented within COMM and SHELL beneficial use areas is inconsistent with the aforementioned federal and state antidegradation polices. NASSCO and BAE Systems do not own the waters of the State even if those waters happen to be currently surrounded by a security boom.

The Cleanup Team's selection of a fractional intake value of 1 for the DTR' Tier II assessment is based on an appropriate, reasonably conservative, and environmentally protective assumption that recreational and subsistence anglers catch and consume 100 percent of their seafood from the Shipyard Sediment Site. This assumption is used as a basis to both identify COMM and SHELL beneficial use impairment, and to minimize the potential for human exposure to pollutants through the food chain thereby ensuring the restoration and enhancement of COMM and SHELL beneficial uses at the Shipyard Sediment Site. The Cleanup Team considered the various arguments that (1) there is not a complete exposure pathway due to the security measures that prevent public access to the Shipyard Sediment Site, (2) there is no documentation in the administrative record that employees or U.S. Navy personnel fish at the Site, and (3) that the heavy industrial use at the Site described in the Port's Master Plan should be heavily weighed in the analysis. These arguments are simply not relevant to the San Diego Water Board's obligations to make conservative assumptions about exposure, consumption, and risk in order to ensure the restoration and enhancement of COMM and SHELL beneficial uses at the Shipyard Sediment Site. The use of a fractional intake of 100 percent in the DTR Tier II assessment is based primarily on the San Diego Water Board's statutory mandate under the Clean Water Act and California Water Code to ensure that the level of cleanup at the Shipyard Sediment Site will be protective of the COMM and SHELL beneficial uses.

Site access restrictions such as those at the Shipyard Sediment Site in San Diego Bay do not, preclude or limit the San Diego Water Board from taking action to preserve and enhance water quality and protect beneficial uses. The COMM and SHELL beneficial uses at the Shipyard Sediment Site would not be considered fully protected if an angler is limited to only catching and consuming fish and shellfish a fraction of the time (e.g., 3.4 percent from the area inside the NASSCO leasehold [Exponent 2003]). Furthermore, it is not unreasonable to assume that an angler, perhaps one who lives in the immediate vicinity of the Site, would return to the same location day after day to catch fish and shellfish for consumption. For example, in the future the Site may be available for recreational use and a public pier erected. It would not be unusual for an angler to do most or all of their fishing from one particular pier, especially if it is convenient to their residence. It is the San Diego Water Board's statutory responsibility under Water Code section 13241 to protect both existing and potential COMM and SHELL beneficial uses for the benefit of present and future generations.

The Cleanup Team recognizes that restricting Shipyard Sediment Site access is one type of institutional control sometimes applied to a National Priorities List "Superfund" site under CERCLA to reduce risk. However, the Shipyard Sediment Site is not a CERCLA "Superfund" site and restricting access doesn't result in improvements in water quality nor protect beneficial uses. Limiting public access to enjoy the COMM and SHELL beneficial use in San Diego Bay waters doesn't supersede the San Diego Water Board's statutory mandates under the Clean Water Act and California Water Code to protect water quality and beneficial uses and ensure that water quality standards are attained. To argue otherwise would be to say that a factory owner may discharge excessive levels of pollutants to a stream and impair beneficial uses as long as the factory owner restricts access to the stream.

<u>Use of Maximum Tissue Chemical Concentrations are Reasonable</u>
U.S. EPA guidance (1989; SAR285909) recommends that the tissue chemical concentrations for the RME be either the 95 percent upper confidence level (95% UCL) on the arithmetic average concentration or the maximum concentration (whichever is lesser). However, the Cleanup Team used the maximum concentration to simplify the risk calculations and to avoid the uncertainties associated with calculating the 95% UCL using such a small sample size (n = 5). This same statistical issue came up during the development of the Reference Pool for determining aquatic life beneficial use impairment at the Shipyard Sediment Site (DTR Section 17). Originally, five reference stations were used to represent the reference sediment quality conditions, however, in order to conduct a robust statistical analyses an adequate sample size was needed. Therefore, the Reference Pool was increased from five reference stations to 18 reference stations.

Furthermore, the Tier II risk assessment results in the DTR remain the same for the recreational angler at NASSCO when using the lesser value of the 95% UCL and the maximum concentration. Table 2 of NASSCO's expert report (Finley, 2011; the Finley report) provides the exposure point concentrations for spotted sand bass fillet and lobster edible tissue and uses either the 95% UCL or the maximum concentration (whichever is lesser). The Cleanup Team used these exposure point concentrations to recalculate the potential cancer and non-cancer health risks to recreational anglers at NASSCO (inside and outside leasehold) and determined that there were no changes to the Tier II results presented in Table 28-1 of the DTR (See Appendix for Section 28 for calculations). While the Finley report did not provide exposure point concentrations for whole body sand bass and whole body lobster, it is reasonable to assume that the Tier II risks assessment results will likely remain the same for the subsistence angler at NASSCO.

Figure 28-1

RISKS TO THE RECREATIONAL ANGLER FROM FISH INSIDE THE NASSCO LEASEHOLD
(based on tissue chemical concentrations from Finley 2011)

Inside NASSCO
Fillet Sand Bass

Recreational Angler:	C	CR	FI	ED	EF	BW	AT	CF	Dose (mg/kg - day)	RfD	CSF	Cancer Risk	Noncancer Risk
Metals													
Inorganic Arsenic (carcinogenic)	16	0.021	1	30	365	70	25550	1000	2.06E-06	--	1.5	3.09E-06	--
Polychlorinated Biphenyls													
Total PCBs (carcinogenic)	42.77	0.021	1	30	365	70	25550	1000	5.50E-06	--	2	1.10E-05	--
Total PCBs (noncarcinogenic)	42.77	0.021	1	30	365	70	10950	1000	1.28E-05	0.00002	--	--	6.42E-01

Reference 2240
Fillet Sand Bass

Recreational Angler:	C	CR	FI	ED	EF	BW	AT	CF	Dose (mg/kg - day)	RfD	CSF	Cancer Risk	Noncancer Risk
Metals													
Inorganic Arsenic (carcinogenic)	16	0.021	1	30	365	70	25550	1000	2.06E-06	--	1.5	3.09E-06	--
Polychlorinated Biphenyls													
Total PCBs (carcinogenic)	47.8	0.021	1	30	365	70	25550	1000	6.15E-06	--	2	1.23E-05	
Total PCBs (noncarcinogenic)	47.8	0.021	1	30	365	70	10950	1000	1.43E-05	0.00002	--		7.17E-01

NOTES:
C = Tissue chemical concentrations from Appendix A, Table 2 - Expert Report of Brent L. Finley, Ph.D., DABT dated March 11, 2011.

Figure 28-2

RISKS TO THE RECREATIONAL ANGLER FROM FISH OUTSIDE THE NASSCO LEASEHOLD
(based on tissue chemical concentrations from Finely 2011)

Outside NASSCO
Fillet Sand Bass

Recreational Angler:	C	CR	FI	ED	EF	BW	AT	CF	Dose (mg/kg - day)	RfD	CSF	Cancer Risk	Noncancer Risk
Metals													
Inorganic Arsenic (carcinogenic)	20	0.021	1	30	365	70	25550	1000	2.57E-06	--	1.5	3.86E-06	--
Polychlorinated Biphenyls													
Total PCBs (carcinogenic)	49.18	0.021	1	30	365	70	25550	1000	6.32E-06	--	2	1.26E-05	--
Total PCBs (noncarcinogenic)	49.18	0.021	1	30	365	70	10950	1000	1.48E-05	0.00002	--	--	7.38E-01

Reference 2240
Fillet Sand Bass

Recreational Angler:	C	CR	FI	ED	EF	BW	AT	CF	Dose (mg/kg - day)	RfD	CSF	Cancer Risk	Noncancer Risk
Metals													
Inorganic Arsenic (carcinogenic)	16	0.021	1	30	365	70	25550	1000	2.06E-06	--	1.5	3.09E-06	--
Polychlorinated Biphenyls													
Total PCBs (carcinogenic)	47.8	0.021	1	30	365	70	25550	1000	6.15E-06	--	2	1.23E-05	
Total PCBs (noncarcinogenic)	47.8	0.021	1	30	365	70	10950	1000	1.43E-05	0.00002	--		7.17E-01

NOTES:
C = Tissue chemical concentrations from Appendix A, Table 2 - Expert Report of Brent L. Finley, Ph.D., DABT dated March 11, 2011.

<u>It is Reasonable to Assume that Subsistence Anglers Consume the Entire Fish and Shellfish</u>

The DTR's assumed exposure parameter in DTR Section 28.2.2.1 that subsistence anglers always consume the entire fish and shellfish represents a reasonable RME scenario for subsistence anglers. There is evidence provided in the Santa Monica Bay Seafood Consumption Study (SCCWRP and MBC, 1994; SAR287043, Page 41) and the San Diego Bay Health Risk Study (County of San Diego, 1990; SAR281255, p. IV-17) that anglers consume the entire fish. The Santa Monica Bay study reported that about one percent of Hispanic and Asian anglers eat fish whole with intestines, while the San Diego Bay study reported that approximately 6 percent of Caucasians and approximately 40 percent of both Filipinos and Asians consume the entire fish. Furthermore, the DTR's assumption has been used in other human health risk evaluations for contaminated sediments in San Diego Bay. OEHHA, California's lead state agency charged with assessing health risks posed by hazardous substances throughout the State, provided comments on the Exponent 2003 report (SAR104180). The comments included calculations performed by OEHHA that used whole body lobster exposure parameters to determine cancer and non-cancer risk levels for subsistence anglers at the Shipyard Sediment Site. Additionally, whole body fish exposure parameters were used in the human health risk assessment for subsistence anglers at the former Naval Training Center (NTC) Boat Channel site in San Diego Bay (U.S. Navy, 2003, Page 7-7).

<u>It is Reasonable to Assume a 30-Year Exposure Duration</u>

The DTR's assumption of a 30-year exposure duration represents a reasonable RME scenario in accordance with the U.S. EPA guidance document (1989; SAR285909, Exhibit 6-15, p. 6-42). It is not unreasonable to assume that an angler, perhaps one who lives in the immediate vicinity of the Shipyard Sediment Site, would return to the same spot day after day to catch and consume seafood for 30 years. For example, in the future the Site may be available for recreational use and a public pier erected. It would not be unusual for an angler to do most or all of their fishing from one particular pier, especially if it is convenient to their residence. It would not be unusual for the same angler to catch and consume whole fish and whole lobster for 30 years due to their culture and financial situation. As demonstrated in the data summarized below, Barrio Logan and National City are located in close proximity to the Site where the residents in these two areas (1) represent a relatively large population of minorities, specifically Hispanics and Filipinos, as compared to San Diego County, (2) have a lower median income as compared to San Diego County, (3) and have a higher percentage of residents below the poverty line as compared to San Diego County. As such, these residents may rely upon seafood in San Diego Bay as a major food source.

Geographic Area	Ethnicity Percent of Community		Median Household Income	Individuals Below Poverty Line
	Hispanic	Asian		
Barrio Logan[1]	86%	2%	$20,604	41%
National City[2]	59%	19% (of which, 17% are Filipino)	$29,826	22%
San Diego County[3]	27%	9% (of which, 4% are Filipino)	$47,067	12%

1. SANDAG, 2000 Census
2. U.S Census Bureau, 2000a and 2000b
3. U.S Census Bureau, 2000c and 2000d

Moreover, the San Diego Bay Health Risk Study (County of San Diego, 1990), summarized in DTR Section 1.5.3.2, reported that 74 percent of people who catch and consume fish from San Diego Bay are people of color. The 1990 study reported that consumption patterns of ethnic populations indicate that they tend to eat more fish in their diet and eat parts of the fish that have higher pollutant accumulation. This group of anglers, including their family members that may also consume fish and shellfish caught in San Diego Bay, has a disproportionately higher health risk from pollution in the San Diego Bay than other San Diego Bay anglers. (See DTR Section 1.5.3). Consistent with the principles of environmental justice defined in California law (Government Code Section 65040.12(e), the San Diego Water Board must protect San Diego Bay beneficial uses in a manner that ensures the fair treatment of people of all races, cultures, and income levels. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

A failure to use appropriately conservative assumptions about exposure, by the San Diego Water Board in risk assessments and considerations of beneficial use impairment would violate principles of environmental justice because the health risk from regular consumption of fish caught in the San Diego Bay falls disproportionately on minority groups. Based on all of the foregoing considerations the Cleanup Team's conservative assumption about exposure duration is fully consistent with the San Diego Water Board's statutory responsibility to protect for COMM and SHELL beneficial for the benefit of present and future generations.

It is Reasonable to Assume that 4 Percent Arsenic is in the Inorganic Form

The DTR's assumption that four percent arsenic is in the inorganic form is a reasonable assumption to ensure the protection of human health beneficial uses. The DTR Section 27.2.5 at page 27-13 recognizes that four percent is considered to be conservative because some studies have reported much smaller percentages. However in 1993 the U.S. Food and Drug Administration proposed a much higher percentage (10 percent) for converting measurements of total arsenic in shellfish to estimates of inorganic arsenic (U.S. FDA, 1993). In fact, this percentage has been used in various fish and shellfish studies throughout the United States. For example, the 10 percent conversion factor was used by the U.S. Fish and Wildlife Service at Painted Turtle Pond (U.S. FWS, 2003), the U.S. EPA at Columbia River (U.S. EPA, 1996-1998, pp. 5-81) and by the Texas Department of State Health Services at Nueces Bay (Texas Department of State Health Services, 2005, p. 4). Additionally, U.S. EPA provides inorganic arsenic exposure estimates for high and average fish and shellfish consumers and assumes four percent arsenic is in the inorganic form for several exposure scenarios -- e.g., General Population/High Arsenic Scenario: average person who consumes fish or shellfish only occasionally but selects species with the high concentrations of inorganic arsenic (U.S. EPA, 1997a, Table 2, p. 13).

The Cleanup Team disagrees that the DTR cannot conclude that inorganic arsenic in seafood theoretically harvested at the NASSCO site ‘poses a theoretical increased’ cancer risk when compared to reference areas. The DTR uses reasonably conservative assumptions for the Tier II risk analysis to ensure protection of human health beneficial uses. As such, the chemicals posing theoretical increased cancer risks at the Shipyard Sediment Site include inorganic arsenic and PCBs and the chemicals posing theoretical increased non-cancer risks at the Shipyard Sediment Site include cadmium, copper, mercury, and PCBs (Finding 28).

Use of Spotted Sand Bass and Lobsters in the Tier II Risk Assessment is Reasonable
While the Cleanup Team recognizes that anglers may catch other species besides spotted sand bass and lobsters at the Shipyard Sediment Site, these two species are representative of fish and shellfish that have direct exposure to the pollutants in sediment. Topsmelt and jacksmelt are pelagic fish (i.e., fish that live near the surface or in the water column) that do not come in contact with bottom sediments. BAE Systems provided a response to the MacDonald (2011) expert report that supports the use of spotted sand bass and lobsters in the Tier II human health risk analysis (MacDonald, 2011, Section V.A.9., lines 16-27, page 47). The response specifically addresses spotted sand bass; however, it is also applicable to lobsters.

> "The species selected for detailed evaluation at the Shipyard Sediment Site was the spotted sand bass (Paralabrax maculatofasciatus) because, as stated in Exponent (2003), this species preys primarily on benthic macroinvertebrates, exhibits limited spatial movements, and is abundant in numerous kinds of habitats within San Diego Bay, including the Shipyard Sediment Site (i.e., as documented during the fish sampling effort prior to the 2001/2001 sampling events). These characteristics of the spotted sand bass make it an appropriate species for assessing contaminant exposure at the Site. This determination is reinforced by the results of tissue chemistry analyses. Spotted sand bass were collected at four locations, inside and outside the leaseholds of both shipyards, and the results showed that chemical concentrations in fish tissue from inside the leaseholds were greater than concentrations in fish collected immediately outside the leaseholds

> (Exponent 2003). The data therefore clearly indicate that spotted sand bass are sensitive to spatial differences in sediment chemistry concentrations at the Site."

Furthermore, use of spotted sand bass is consistent with other human health risk assessments. For example, spotted sand bass and barred sand bass (also a benthic fish) were used in the risk analysis at the Former Naval Training Center - Boat Channel sediment investigation located in San Diego Bay (U.S. Navy, 2003). Spotted sand bass was used for the assumption on fillet consumption and barred sand bass was used for the assumption on whole body consumption.

Tier II Exposure Assumptions are Reasonable and Ensures Protection of Human Health Beneficial Uses

The Cleanup Team disagrees with the exposure assumptions used in the recalculation of human health hazard and risk estimates for the Shipyard Sediment Site. The input parameters used in the DTR's Tier II human health analysis are reasonable and ensure the protection of human health beneficial uses as previously discussed.

RESPONSE 28.2

DTR Section: 28
Comments Submitted By: NASSCO
Comment IDs: 152

Comment

It would be a concern if fish and shellfish picked up contaminants at the NASSCO Shipyard, and then migrated into areas where they could be caught by San Diego Bay anglers. Accordingly, fish and lobster were caught inside the NASSCO Shipyard and at reference areas around San Diego Bay, and tissue concentrations of contaminants of concern were compared. The results demonstrated that there was no significant difference in the level of tissue concentrations for contaminants of concern between fish caught inside the NASSCO Shipyard, and at reference areas around San Diego Bay. The fact that fish tissue data collected from the NASSCO Shipyard is no different from tissue data collected from the reference areas "strongly suggests the discharges from the leasehold do not appear to have influenced fish tissue concentrations."

Response 28.2

This comment was submitted as part of NASSCO's argument that there is no significant risk to human health from consumption of fish attributable to Shipyard Sediment Site contaminants. NASSCO's comment lacks merit. The comment is specific to spotted sand bass. To support the comment, NASSCO references certain tables that reflect the results of a statistical test on the difference of means for fish tissue (fillet) inside of NASSCO relative to the reference sites. The comment is limited to an assessment of the means of fish fillet data and does not include an evaluation of whole body data, which, DTR Table 28-1 demonstrates would result in a cancer risk. Accordingly, NASSCO'S comment and the referenced tables do not support a TCAO finding that there is no significant risk to human health from consumption of fish attributable to Shipyard Sediment Site contaminants.

RESPONSE 28.3

DTR Section: 28
Comments Submitted By: NASSCO
Comment IDs: 406
Comment

None of Dr. Johns' (expert for the Port District) four assertions regarding human wildlife exposure and risk constitute scientifically valid evidence of existing or likely future beneficial use impairment from Site sediment contamination for the following reasons (Exhibit No. 3, Declaration of Expert Michael Johns, ¶ 5):

¶ 5.a. "Sediment contaminants are present, bioavailable, and bioaccumulative." Although this statement is supported by available data in the DTR in a qualitative sense, the presence, bioavailability, and bioaccumulative potential of chemicals do not, in and of themselves, constitute a human health risk or beneficial use impairment. Impairment cannot be assessed without a quantitative assessment of exposure and toxicity, which Dr. Johns does not provide.

¶ 5.b. "Fish and shellfish at the site contain harmful levels of contaminants to human anglers." This conclusion requires an exposure and toxicity assessment. Because Dr. Johns does not provide any such assessment, it appears he is relying solely on the Tier II human health risk assessment contained in the DTR, which is critically flawed. See Exponent, Evaluation of Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 for the NASSCO Shipyard Sediment Site, Expert Report of Thomas C. Ginn, Ph.D. (March 11, 2011) ("Ginn 2011"); Chemrisk, Brent Finley, Ph.D., Expert Opinion Letter Regarding the Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 (March 11, 2011) ("Finley 2011"). The DTR Tier II human health risk assessment for both recreational and subsistence anglers assumes a highly unrealistic fractional intake from the Site of 100 percent. A quantitative assessment with more realistic assumptions concerning fractional intake, conducted in a manner consistent with regulatory guidance and precedents, would conclude that no unacceptable risk for human anglers exists.

¶ 5.c. "The mobility of fish and lobsters indicates a risk to anglers who fish outside the Site boundaries." No quantitative exposure analysis is presented to substantiate this claim, and no analysis of off-site angler exposure is contained in the DTR. Site-related contaminants carried by motile fish and lobsters to areas frequented by anglers can only pose a risk to human consumers if they are caught and consumed in sufficient quantity and frequency to exceed chemical-specific toxicity thresholds. Without data to support this claim, it is purely speculative, and without scientific basis. Furthermore, the Ginn and Finley expert reports document that there is no risk to recreational or subsistence anglers.

¶ 5.d. "Shipyard activities disturb sediments, creating beneficial use impairment throughout the Bay." While it is likely, and Site-specific data support the notion that a certain degree of vertical mixing and resuspension of buried sediments takes place within the Shipyard leasehold in areas where vessel movements and engine testing take place, there is no analysis of any kind presented to support Dr. Johns' assertion of Bay-wide impacts. The DTR does not contain any quantitative analysis of sediment transport beyond the site boundaries, and Dr. Johns does not claim to have performed any such analysis or present any evidence that would support his allegation of beneficial use impairment beyond the Shipyard Site boundaries.

Response 28.3

The analysis supporting the conclusions in Dr. Johns' declaration appear to be based on the data and analysis set forth in the DTR and TCAO. The Cleanup Team agrees with Dr. Johns' conclusions which support the TCAO's findings that aquatic life and human health beneficial uses designated for San Diego Bay are impaired due to the elevated levels of pollutants present in the marine sediments at the Shipyard Sediment Site (Findings 14 and 28, respectively). Following are more detailed responses to NASSCO's comments:

5.a. Finding 19 of the TCAO states that "… chemical pollutants have a bioaccumulation potential at the Shipyard Sediment Site and are therefore considered bioavailable to benthic organisms." The Cleanup Team agrees that this Finding alone does not indicate beneficial use impairment. Rather, it provides supporting information on the bioaccumulation potential of the chemical pollutants present in sediment at the Shipyard Sediment Site and the degree to which these chemicals may enter the aquatic food web. Finding 19 was used as part of the multiple lines of evidence to evaluate the potential risks to aquatic life (Finding 15 of the TCAO). The Triad approach was primarily used to determine aquatic life impairment which qualitatively assessed the relationship between chemical concentrations and biological effects at the Shipyard Sediment Site (Section 18 of the DTR). For human health impairment, a tiered approach was used. The Tier I screening level risk assessment was based on bioaccumulation data in Finding 19 (tissue data derived from exposure of clams to site sediments) and the Tier II baseline risk assessment was based on tissue data from resident fish and shellfish (Sections 27 and 28 of the DTR, respectively).

5.b. The Cleanup Team disagrees that the DTR's Tier II human health risk assessment is critically flawed and that the fractional intake of 100 percent is unrealistic. See Response 28.1 to "Fractional Intake" comment above.

5.c. The Cleanup Team agrees that the DTR does not provide an analysis of the risk to anglers who fish outside the Site boundaries from the mobility of fish and lobsters. However, it is reasonable to assume that fish and lobsters that are exposed to the pollutants in Site sediments will travel elsewhere especially when physical disturbances occur within the leasehold (e.g., engine tests, propeller wash, and ship movements).

5.d. While the Cleanup Team agrees that the DTR does not contain any qualitative analysis of sediment transport beyond the site boundaries, it is reasonable to assume that this could occur due to the Shipyard activities within the leasehold.

RESPONSE 28.4

DTR Section: 28
Comments Submitted By: BAE Systems
Comment IDs: 127

Comment

The Regional Board cites to the Environmental Health Coalition ("EHC") having conducted an "Opportunity" sample survey in 2002 of people fishing from piers near the Shipyard Sediment Site (the "EHC Fisher Survey"). (DTR, § 1.5.3.3.) The Regional Board adopts the EHC description of the survey as a "…selected sample that is highly exposed to fish from near the shipyards, Naval Station San Diego, and the Southern portion of the San Diego Bay.

The EHC Fish Survey should be disregarded entirely because it was not designed or conducted in a manner consistent with appropriate standards of survey design. (U.S. EPA 1992, 1998.) As a consequence, the survey results are most likely biased, are not representative, and do not provide any useful estimates of fish consumption.

Response 28.4

The DTR contains text on p. 1-22 documenting that the San Diego Water Board recognizes the limitations of the EHC Survey of Fishers Report (EHC, 2005) that is cited in DTR Section 1.5.3.3. The Cleanup Team considered, but did not rely on the Survey of Fishers Report in developing any TCAO Finding, or in the selection of exposure parameters and supporting calculations used in the DTR human health risk assessment. For example, the fish and shellfish consumption rates used in the human health risk assessment (DTR Section 28) for recreational and subsistence anglers were based on a Santa Monica Bay Seafood Consumption Study (SCCWRP and MBC, 1994; SAR287043).

The San Diego Bay Health Risk Study (County of San Diego, 1990; SAR281255) and the Survey of Fishers Report (EHC, 2005) were both relied on to qualitatively support the conclusion that there are both recreational and subsistence anglers from a variety of ethnic groups consuming fish from San Diego Bay.

29. TCAO Finding 29 and DTR Section 29: Chemicals of Concern and Background Sediment Quality

Finding 29 of CAO No. R9-2011-0001 states:

The San Diego Water Board derived sediment chemistry levels for use in evaluating the feasibility of cleanup to background sediment quality conditions from the pool of San Diego Bay reference stations described in Finding 17. The background sediment chemistry levels based on these reference stations are as follows:

Background Sediment Chemistry Levels Chemicals of Concern

Chemicals of Concern	Units (dry weight)	Background Sediment Chemistry Levels[1]
Primary COCs		
Copper	mg/kg	121
Mercury	mg/kg	0.57
HPAHs[2]	μg/kg	663
PCBs[3]	μg/kg	84
Tributyltin	μg/kg	22
Secondary COCs		
Arsenic	mg/kg	7.5
Cadmium	mg/kg	0.33
Lead	mg/kg	53
Zinc	mg/kg	192

1. Equal to the 2005 Reference Pool's 95% upper predictive limits shown in Section 18 of the Technical Report. The background levels for metals are based on the %fines:metals regression using 50% fines, which is conservative because the mean fine grain sediment at the Shipyard Investigation Site is 70% fines.
2. HPAHs = sum of 6 PAHs: Fluoranthene, Perylene, Benzo[a]anthracene, Chrysene, Benzo[a]pyrene, and Dibenzo[a,h]anthracene.
3. PCBs = sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206.

The San Diego Water Board identified constituents of primary concern (primary COCs), which are associated with the greatest exceedance of background and highest magnitude of potential risk at the Shipyard Sediment Site. A greater concentration relative to background suggests a stronger association with the Shipyard Sediment Site, and a higher potential for exposure reduction via remediation. Secondary contaminants of concern (secondary COCs) are contaminants with lower concentrations relative to background, and are highly correlated with primary COCs and would be addressed in a common remedial footprint. Based on these criteria, the primary COCs for the Shipyard Sediment Site are copper, mercury, HPAHs,16 PCBs, and TBT, and the secondary COCs are arsenic, cadmium, lead, and zinc.

The San Diego Water Board did not receive any comments regarding Finding 29 and DTR Section 29.

30. TCAO Finding 30 and DTR Section 30: Technological Feasibility Considerations

Finding 30 of CAO No. R9-2011-0001 states:

Although there are complexities and difficulties that would need to be addressed and overcome (e.g. removal and handling of large volume of sediment; obstructions such as piers and ongoing shipyard operations; transportation and disposal of waste), it is technologically feasible to cleanup to the background sediment quality levels utilizing one or more remedial and disposal techniques. Mechanical dredging, subaqueous capping, and natural recovery have been successfully performed at numerous sites, including several in San Diego Bay, and many of these projects have successfully overcome the same types of operational limitations present at the Shipyard Sediment Site, such as piers and other obstructions, ship movements, and limited staging areas. Confined aquatic disposal or near-shore confined disposal facilities have also been employed in San Diego Bay and elsewhere, and may be evaluated as project alternatives for the management of sediment removed from the Shipyard Sediment Site.

RESPONSE 30.1

DTR Sections: 30, 32, 34
Comments Submitted By: NASSCO
Comment ID: 159
Comment

NASSCO commented that monitored natural attenuation is the proper remedy and that implementing the Order will cause greater harm to beneficial uses than no action.

According to NASSCO, implementing the large-scale dredging described in the TCAO will result in greater harm to beneficial uses than leaving sediments in place and allowing contaminants to attenuate naturally. See Exponent Report, at § 18.

First, sediments buried below approximately 10 cm do not impact the water or marine environment because they are below the biologically active zone, and are therefore not biologically available. Gibson Depo, at 156:3 – 157:12. However, if dredging is required, these contaminants may be re-suspended in the water column, causing the concentrations of contaminants in the water phase to increase. Response to NASSCO's RFAs, at RFA No. 42 – 43.

Second, Site sediments are currently supporting a mature and thriving benthic community, with total abundance and richness comparable to reference areas. See discussion at Section III.A.2.c., supra. Sediment profile imaging also shows the that the benthic community has attained a "mature equilibrium," as classified by an independent testing organization. Id. Dredging sediments from portions of the leasehold would (1) result in the immediate destruction of many of the existing mature benthic macroinvertebrate communities located at the Site; (2) destroy existing eelgrass beds; (3) risk re-suspension of buried contaminants; and (4) risk re-colonization of Site sediments by invasive species. See Exponent Report, at 18-9; Barker Depo, at 306:22 – 307:21. Accordingly, if significant portions of the leasehold are dredged, there is no guarantee that the healthy, mature benthic communities presently occupying the Site will return. Barker Depo, at 912:6 – 915:19 (confirming that Staff is unable to predict with any level of confidence what type of benthic community may be reestablished after dredging.

Further, any positive impacts resulting from dredging would depend on the extent and timeframe in which dredged sediments recover to the equivalent of reference conditions following the cleanup. Id. at 18-8. Because observed impairments are attributable to continuing off-site discharges from storm drains and Chollas Creek, the recovery of benthic communities in dredged areas could be impeded as contaminants from urban runoff continue to be deposited at the Site, resulting in minimal benefits. Id., at 18-9.

Thus, dredging confers minimal benefits over natural attenuation, and risks serious detriment to beneficial uses. These negative impacts can and should be avoided, without compromising beneficial uses, by selecting monitored natural attenuation as the recommended remedy.

Additional discussion refuting MNA as an appropriate remedy is found in Response 1.1 at page 1-27, and in Response 32.1.

Response 30.1

NASSCO'S argues that implementing the large-scale dredging described in the TCAO will result in greater harm to beneficial uses than leaving sediments in place and allowing contaminants to attenuate naturally. While the Cleanup Team disagrees with this assertion, it acknowlodges that there are significant issues associated with dredging that could cause temporary adverse environmental effects at the Site while dredging is underway. All dredging equipment disturbs sediment and resuspends some fraction of it in the water column. Resuspended sediment and the associated contaminants can settle back to the bottom in the dredge cut; finergrained materials can remain in the water column and be transported to other locations. Those materials are deposited as residuals and result from dredging. Dissolved contaminants may also be released to the water during dredging from resuspended or exposed contaminated sediment. Dredging of contaminated sediment also disrupts the bottom substrate, thereby destroying the existing benthic community.

These adverse effects and risks can be mitigated through mandatory implementation of best management practices that limit resuspension and residual contamination during dredging in accordance with the following objecitves:

- Sediment dredging should be conducted with sufficient accuracy such that contaminated sediment is removed and cleanup levels are met without unnecessary removal of clean sediment;

- Sediment dredging should be completed in a reasonable period of time under conditions compatible with subsequent transport for treatment or disposal;

- Sediment dredging should be conducted in a maaner that minimizes and/or controls resuspension of contaminated sediments, downstream transport of resuspended sediments, and releases of contaminants of concern to water and air; and

- Sediments dredging should be conducrted such that generation of residual contaminated sediment is minimized or controlled.

The removal of contaminated sediments via dredging will provide greater confidence in the long-term effectiveness of the cleanup in restoring and protecting benficial uses.

The citation attributed to Mr. David Gibson's deposition on the biologically active zone (BAZ), is taken out of context. Mr. Gibson's response was commenting on the general depth of biologically active zones in soft-bottomed bays. It should be noted that the depth of the BAZ is site-specific and dependent upon multiple factors including, but not limited to, sediment grain size, organic material, current velocity, and disturbance. To illustrate this point, sediment profile imaging (SPI) in the 2003 Exponent Report (see Appendix A) was able to produce imaging at up to roughly 20 cm sediment depths within the Shipyard Sediment Site. The SPI documented organisms and burrows at depths deeper than 10 cm, and found burrows to at least 20 cm sediment depth. Similar results were also found in a sediment investigation at a different San Diego Bay site in 1999 (ARCADIS Geraghty & Miller, Inc., 1999), with the BAZ estimated at 20 cm.

NASSCO commented that, if dredging is required, these contaminants may be re-suspended in the water column, causing the concentrations of contaminants in the water phase to increase. Contaminants normally associated with environmental dredging tend to remain tightly bound to sediment particles, so control of resupension will aid in the control of contaminant release (U.S. Army Corps of Engineers, 2008). This was found to be the case for U.S. EPA Case Studies of Environmental Dredging Projects (U.S. EPA, 2004), which found that when proper BMPs were implemented, dredging did not result in the release of PCBs to the water column (via water column sampling, acute toxicity testing and bioaccumulation). The data showed that if turbidity was contained, the sediment-related contamination was also contained.

NASSCO commented that dredging at the Shipyard Sediment Site would result in the immediate destruction of many of the existing mature benthic macroinvertebrate communities located at the Site and that if significant portions of the leasehold are dredged, there is no guarantee that the healthy, mature benthic communities presently occupying the Site will return. Destruction of the benthic community and removal of habitat is unavoidable with all dredging projects and represents an immediate negative effect to the existing benthic community. The US Army Coprs of Engineers has noted that recovery after disturbance is typically relatively rapid with estimates of benthic recovery rates ranging from several months to several years. Immediately after destruction of the habitat, hardy, opportunistic organisms such as polychaetes and small bivalves can be expected to recolonize surficial sediments. Subsequently the population increases in diversity and abundance. Recovery occurs when the site returns to pre-disturbance conditions or does not differ significantly from a reference area. (NRC, 2007).

NASSCO also commented on the risk of re-colonization of the Site sediments by invasive species following dredging. It is important to note that the benthic community results (Exponent, 2003; Appendix K) clearly document that invasive species are already a part of what the NASSCO states is a "thriving" benthic community within the Shipyard Sediment Site. Musculista senhousia, for example, is a tolerant invasive mussel that causes benthic habitat alteration. This species is documented in all 29 polygons sampled within the Shipyard Sediment Site, often in high abundance. Of the five reference sites sampled, two found no M. senhousia and three reported numbers lower than most shipyard polygons.

NASSCO commented that dredging sediments from portions of the leasehold would destroy existing eelgrass beds. The removal of eelgrass (*Zostera marina*) beds will require mitigation to establish beds in accordance with the National Marine Fisheries Service Southern California Eelgrass Mitigation Policy. Thus, the adverse effect resulting from the removal of eelgrass with be temporal, and mitigated according to the "Mitigation Rule" either on-site or at an appropriate off-site location. (Note the term "Mitigation Rule" refers to new rules amending 40 CFR Parts 325 and 332 issued by U.S. EPA and the U.S. Army Corps of Engineers on March 31, 2008 governing compensatory mitigation for authorized impacts to wetlands, streams, and other waters of the U.S. under Section 404 of the Clean Water Act.)

NASSCO commented that because observed impairments are attributable to continuing off-site discharges from storm drains and Chollas Creek, the recovery of benthic communities in dredged areas could be impeded as contaminants from urban runoff continue to be deposited at the Site. There are several important factors to consider in evlauating NASSCO'S issue. The TCAO and DTR include requirements that the direct storm water dischagres to the Site be investigated and mitigated (see TCAO Directive A.3-5), and Chollas Creek is currently undergoing a TMDL evaluation process. These actions will improve storm water runoff quality and prevent MS4 discharges from impairing benthic community recovery. Even if these actions did not occur, the commenters logic is unsound. A lack of remedial dredging and sand cover, combined with additional MS4 discharges, would theoretically result in continued impairment of the Shipyard Sediment Site. The combination of MS4 monitoring and post-remedial monitoring at the Shipyard Sediment Site (which occurs over time) should be able to detect changes attributable to MS4 discharges.

Lastly, it should be pointed out that many polygonal areas at the Shipyard Sediment Site were determined to not need remedial dredging or sand cover. "Natural attenuation" will be relied on in these areas to maintain or reduce pollutant concentrations. The long term trend of contaminant levels in these areas will be assessed under the TCAO's post-remedial monitoring effort.

31. TCAO Finding 31 and DTR Section 31: Economic Feasibility Considerations

Finding 31 of CAO No. R9-2011-0001 states:
Under State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*, determining "economic feasibility" requires an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions. Resolution No. 92-49 provides that "[e]conomic feasibility does not refer to the dischargers' ability to finance cleanup." When considering appropriate cleanup levels under Resolution No. 92-49, the San Diego Water Board is charged with evaluating "economic feasibility" by estimating the costs to remediate constituents of concern at a site to background and the costs of implementing other alternative remedial levels. An economically feasible alternative cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits.

The San Diego Water Board evaluated a number of criteria to determine risks, costs, and benefits associated with no action, cleanups to background sediment chemistry levels, and alternative cleanup levels greater than background concentrations. The criteria included factors such as total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife, and human health), effects on shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources. The San Diego Water Board then compared these cost criteria against the benefits gained by diminishing exposure to the primary COCs to estimate the incremental benefit gained from reducing exposure based on the incremental costs of doing so. As set forth in detail herein, this comparison revealed that the incremental benefit of cleanup diminishes significantly with additional cost beyond a certain cleanup level, and asymptotically approaches zero as remediation approaches background. Based on these considerations, cleaning up to background sediment chemistry levels is not economically feasible.

RESPONSE 31.1

DTR Sections: 31, 32.7.1
Comments Submitted By: Coastkeeper and EHC, NASSCO, BAE Systems, SDG&E
Comment IDs: 43, 44, 45, 46, 47, 49, 51, 52, 53, 55, 54, 56, 57, 58, 95, 96, 97, 98, 110, 294, 295, 296, 297, 298, 300, 301, 302, 303, 304, 305, 366, 370, 388, 421, 422, 423, 424, 435,

Comment

Coastkeeper and EHC submitted a series of comments on the economic feasibility analysis in Section 31 (cleanup to background) and Section 32.7.1 (lowest alternative cleanup levels). A comment by SDG&E was also submitted. These comments, along with rebuttal, are organized below in the following sub-groups;

1. San Diego Water Board's findings are arbitrary,
2. Assumptions and data used,

3. Data analysis and presentation,
4. Cost versus benefit,
5. Alternate cleanup levels,
6. Constituent by constituent analysis, and
7. Benthic risk exposure

1. San Diego Water Board's Findings are Arbitrary

ID 43

Coastkeeper and EHC commented that the Order's conclusion that cleanup to background water quality levels is economically infeasible, is arbitrary and capricious, and not supported by substantial evidence in the record.

The first step in determining appropriate cleanup levels—background or some other level—is assessing the technological and economic feasibility of cleaning to background pollutant levels. The Order determined that cleaning to background is technologically feasible. This means that the economic feasibility analysis determines whether alternative cleanup levels will be considered, and if so, what that level should be.

Because the economic feasibility analysis drives the entire cleanup, it is imperative that the economic feasibility is a fair analysis, supported with evidence in the record cited to its sources, which is fairly presented. But the economic feasibility analysis in Section 31 of the DTR fails to provide support for its assumptions, fails to provide the source of data used in the analysis, analyzes the cleanup arbitrarily in eleven groups of six polygons, presents the analysis in four arbitrary groups, and then arbitrarily proclaims that $33 million is the cut-off for where the incremental costs exceed the incremental benefits.

This arbitrary and unsupported economic feasibility analysis leads to an arbitrary determination that cleanup to background is not economically feasible. More importantly, it has also lead to an arbitrary determination of what level of cleanup is the "best water quality reasonable" given all considerations.

ID 294, 295

In rebuttal, NASSCO commented that Resolution 92-49 defines the term "economic feasibility" as follows:

Economic feasibility is an objective balancing of the incremental benefit of attaining further reductions in the concentrations of constituents of concern as compared with the incremental cost of achieving those reductions. The evaluation of economic feasibility will include consideration of current, planned, or future land use, social, and economic impacts to the surrounding community including property owners other than the discharger. Economic feasibility, in this Policy, does not refer to the discharger's ability to finance the cleanup. Availability of financial resources should be considered in the establishment of reasonable compliance schedules.

Additionally, as discussed in the DTR, analyzing economic feasibility involves "estimating the costs to remediate constituents of concern at a site to background and the costs of implementing other alternative remedial levels. An economically feasible cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits."

NASSCO also commented that no other sediment sites in San Diego bay have been remediated to background. Moreover, EHC/Coastkeeper cannot point to a single sediment site in San Diego Bay that has been remediated to background levels; rather the consensus is clear, and the Regional Board's Sediment Site Cleanup Team ("Cleanup Team") admits, that cleanup to background is technologically and economically infeasible.

ID 421, 422
In rebuttal, BAE Systems commented that SDC and EHC correctly note that the Regional Board's findings must be supported by the weight of the evidence in the record. Their position, however, that the Regional Board's alternative cleanup levels are insufficiently protective, and the corresponding implication that cleanup to background on a constituent-by-constituent basis is technologically and economically feasible, are without merit. As set forth more fully below, the Regional Board has complied with the State Water Board Resolution No. 92-49 in setting alternative cleanup levels that do not unreasonably interfere with the beneficial uses of the water and are economically feasible.

Contrary to SDC and EHC's position, the Regional Board and the other Designated Parties have complied with the State Water Board Resolution No. 92-49. As already noted, the law allows designated parties to remediate a site based on alternative cleanup levels, rather than to background, if the parties can demonstrate that it is economically infeasible to remediate a site to background. Not only do the TCAO and accompanying DTR demonstrate that it is economically infeasible to remediate the site to background, but two other experts, Arcadis, Inc. ("Arcadis") and Integral Consulting, Inc. ("Integral"), have also so opined. Arcadia and Integral used different methodologies to assess cost-effectiveness than did the Regional Board but nonetheless each derived the same conclusion. Cleanup to background was not only substantially more expensive to achieve than cleaning to the DTR's established cleanup levels, but also cleaning to background is substantially less cost-effective than cleaning to the DTR-established cleanup levels.

SDC and EHC argue that the alternative cleanup levels set forth in the TCAO and the DTR are not appropriately protective of the Bay's beneficial uses. SDC and EHC submitted an analysis that primarily focuses on the efficacy of the alternative cleanup standards as opposed to analyzing whether achieving background sediment quality is economically feasible. It is only the latter question, whether cleanup to background is economically feasible, that must be answered in assessing whether the Designated Parties have appropriately met the terms of State Water Board Resolution No. 92-49.

2. Assumptions and Data Used

ID 45
Coastkeeper and EHC commented that the Regional Board's conclusions must be supported by substantial evidence in the record. However, the economic feasibility analysis is not supported by substantial evidence in the record. The key information, including cost assumptions, pollution

reduction assumptions, and dredging volume assumptions are either not provided or have been provided without a citation as to the source of the information. Failing to provide this information prevents the public from fully vetting the analysis and renders any Regional Board decision based on incomplete information or information not in the record arbitrary and capricious.

ID 47
Coastkeeper and EHC commented that the record fails to identify the source of the cost data in Table A31-1.

Table A31-1 contains cost data. The record fails to identify the source of data or itemize the costs so that the public can analyze the cost assumptions and the elements that underlie the cost conclusions.

Counsel for San Diego Coastkeeper and Environmental Health Coalition were provided an excel spreadsheet labeled "Economic Feasibility Source data" by counsel for the Cleanup Team on March 24, 2011. The document was provided without an administrative record citation and therefore it is assumed that this information is not currently a part of the administrative record. The file fails to indicate the source(s) for this economic feasibility data and this information has not been provided to the public.

This spreadsheet contains cost assumptions that are suspect. For example, the spreadsheet assumes that eelgrass mitigation will be required for five percent of the total dredging area for each six-polygon scenario. There is no showing that this is an appropriate assumption, nor is there any information about the source of the costs assumptions for "Eelgrass Habitat Mitigation" and "Eelgrass Land Lease Costs (in perpetuity)/' Without this information, the public cannot evaluate the reliability of that data and assumptions.

ID 46
Coastkeeper and EHC commented that the economic feasibility analysis fails to identify the source of data for the surface weighted average concentration of the five priority pollutants. The source of the data, in Table A31 -1 column labeled "SWAC." DTR Appendix 31, has not been provided in the record. It must be provided to allow the public to evaluate the economic analysis and to perform additional analysis.

ID 49
Coastkeeper and EHC commented that there is no explanation in the economic feasibility analysis why polygons identified with a "depth to clean" as the undefined term "sur" have differing "dredging depth|s|."

Table A31-2 includes the undefined term "sur" for several polygons in the "depth to clean" column. Determining what the term "sur" is supposed to mean becomes challenging because the dredging depth varies for polygons with "depth to clean" listed as "sur." For example, "Depth to clean" for SW05 is "sur" while the "Dredging Depth" is 5; "Depth to clean" for SW23 is "sur" while the "Dredging Depth" is 3: and "Depth to clean" for NA15 is "sur" while the "Dredging Depth" is 7. The record provides no explanation as to why these three polygons that all have

"Depth to Clean" listed as "sur," have such varied dredging depths or how "Dredging Depth" was determined for rows where "Depth to Clean (ft)'" is listed as "sur."

If "sur" means that only surficial data is available, the record must explain why additional sampling to determine appropriate dredging depth was not collected. Further, if dredging depth from polygons labeled "sur" was assumed based on dredging depth at an adjacent polygon, the record must explain how such an assumption could be valid and explain the consequences of that assumption to the cost assumptions.

ID 297
In rebuttal, NASSCO commented that the term “sur” indicates polygons in which only surface chemistry is available (i.e., from the upper 2 centimeters of sediment). In most cases, a 3-foot dredging depth was assumed, with an additional one-foot overdepth allowance, representing the minimum practicable thickness of dredging.

There are four exceptions to this assumption, involving cases where immediately adjacent polygons had better-defined depths to clean material. These cases are as follows: (1) the dredging depth at polygons SW13 and SW16 were assumed to be 5 feet because of their position adjacent to SW08 (dredged to 6 feet based on sediment core) and SW17 (dredged to 7 feet based on sediment core); (2) the dredging depth at polygon SW05 was assumed to be 5 feet because of its position adjacent to SW04 and SW02 (both dredged to 5 feet based on sediment cores); (3) the dredging depth at polygon NA15 was assumed to be 7 feet because of its position between NA09 (dredged to 9 feet based on sediment core) and NA17 (dredged to 5 feet based on sediment core).

ID 482
Coastkeeper and EHC commented that the DTR Contains Incorrect Statements. In performing the economic feasibility analysis, the Cleanup Team created a worst-to-least contaminated ranking of each of the 66 polygons in the Shipyard Sediment Site. The DTR claims that the ranking process "used Triad data and site-specific median effects quotient (SS-MEQ)." However, the Excel file used to create the worst-to-least contaminated ranking only includes the SS-MEQ and not Triad data.

ID 366
In rebuttal, NASSCO commented that the economic feasibility analysis relied on the composite SWAC ranking to determine remedial order, not the Triad data or SS-MEQ values.

3. Data Analysis and Presentation

ID 44
Coastkeeper and EHC commented that the economic feasibility analysis arbitrarily assessed costs in six-polygon groups. The DTR admits that the economic feasibility of remediating the Shipyard Sediment Site to background levels was assessed using a "series of cumulative cost scenarios, starting with the "six most contaminated stations, then adding the six next most contaminated stations, progressing sequentially down the list until the entire Shipyard Sediment Site was included in the scenario."

The DTR provides no explanation or rationale as to why stations were evaluated in groups of six. There is no biological or economic reason for the polygons to be evaluated in groups of six, particularly when the polygons are different sizes and six polygon groups do not necessarily represent one construction season or other grouping in which a consideration of economies of scale could have reduced costs.

Furthermore, by lumping the polygons together in groups of six, the analysis fails to provide the data to allow the Regional Board to determine that the alternative cleanup level should be set at a level that falls in between the groups of six polygons.

ID 294, 296
In rebuttal, NASSCO commented that cleanup levels below the proposed alternative cleanup levels are not justified given the favorable site conditions, and are economically infeasible regardless of whether the eleven cost scenarios are analyzed independently, or in groups of six.

As discussed in NASSCO's Initial Comments, the alternative cleanup levels are overly conservative, based on a series of excessively cautious assumptions concerning potential impacts to aquatic life, aquatic-dependent wildlife, and human health. The proposed economic feasibility analysis is similarly overly conservative, and requires cleanup well beyond the point at which the incremental benefits are justified by the incremental costs of further cleanup, considering that it has been demonstrated that monitored natural attenuation will ensure that the (excessively conservative) alternative cleanup levels are met within a reasonable time. Thus, any cleanup beyond the point identified in the DTR is similarly economically infeasible, given the favorable conditions observed at the Site. This is so regardless of whether cleanup scenarios are assessed independently, or in groups of six, as discussed below.

The economic feasibility analysis was a theoretical exercise designed for a single purpose – to provide an incremental cost-benefit analysis for the full spectrum of cleanup possible at the Shipyard Site, including cleanup to background conditions. Eleven scenarios were evaluated based upon the Cleanup Team's best professional judgment that eleven data points would be sufficient to establish a cost-benefit relationship. Additionally, the analysis required that each scenario represent a comparable incremental increase in the level of remedial effort necessary; thus, because 11 divides evenly into 66 (whereas 10 or 12 or 15 does not), using 11 data points facilitated assurance that each scenario represented a comparable incremental increase in level of effort. As described in the DTR, the Regional Board ordered all 66 polygons according to their composite SWAC ranking, which it determined was the best single metric for comparing relative Chemicals of Concern ("COC") levels. As described in the DTR, the sediment chemistry data used to calculate SWAC values for the economic feasibility analysis were the same data set used to asses all aspects of risk and beneficial use impairment at the Shipyard Site. Contrary to EHC/Coastkeeper's assertions, there are no "pollution reduction assumptions," other than the assumption that remediation areas under all scenarios will eventually equilibrate to background COC concentrations. Exposure reduction, as defined in the DTR, is simply the reduction in Sitewide SWAC that results from complete remediation of any specified area. It is an objective value, calculated mathematically from sediment chemistry data alone, and is not dependent on any given exposure scenario or assumptions. The exposure scenario evaluated in both the human and aquatic-dependent wildlife risk assessments in the DTR are generally proportional to the Sitewide SWAC, therefore SWAC reduction is an appropriate metric for general conclusions about reduction of exposure and risk to human and wildlife receptors.

Each scenario was defined to be incrementally larger than the previous scenario by six polygons. Scenario 1 included the six most contaminated polygons (based on composite SWAC ranking), Scenario 2 included the 12 most contaminated polygons, Scenario 3 the 18 most contaminated polygons, etc. Scenario 11 included the entire Shipyard Site (66 polygons). This “worst first” approach provides a rational and direct manner in which to assess incremental net benefits of the full spectrum of potential cleanup effort.

ID 51, 52
Coastkeeper and EHC commented that the DTR Appendix 31 Table A31-2 groups the economic feasibility results together in an arbitrary manner. The economic feasibility analysis evaluated the 66 polygons in eleven "cost scenarios," with each scenario representing a group of 6 polygons. DTR Table A31-2 provided information relative to cost, such as total dredging area, total dredging volume, under pier area, and rock protection area for each polygon.

For each 6-polygon cost scenario, Table A31 -1 presented data for: (1) the resulting surface weighted average concentration of each pollutant following remediation of those polygons and (2) the cumulative percent exposure reduction for each pollutant. The economic feasibility analysis averaged the cumulative exposure reduction for all five pollutants and calculated the percentage "exposure reduction per $10 million spent" based on the average pollutant levels. The DTR presents the data in a chart labeled Figure 31-1.

The graphic representation of the economic feasibility presented in DTR Figure 31-1 is arbitrary. Instead of graphing each of the eleven cost scenarios separately, the DTR grouped some of the scenarios together, presenting the data in the following way:

Coastkeeper/EHC Table 1. Description of DTR Figure 31-1 by Cost Scenarios and Polygons[1]

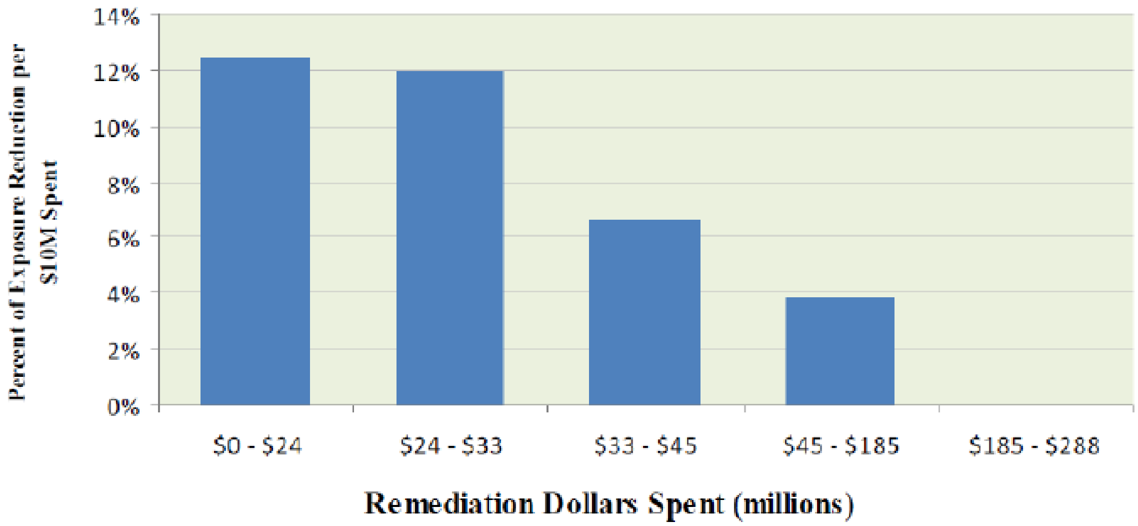
“Remediation Dollars Spent” in Table 31-1	Cost Scenarios	Additional Polygons	Total Polygons
$0 - $24	1, 2	12	12
$24 - $33	3	6	18
$33 -$45	4	6	24
$45 - $185	5, 6, 7, 8, 9	30	54
$185- $288	10, 11	12	66

By grouping multiple groups of six polygons scenarios together in an inconsistent and arbitrary way, the economic feasibility analysis fails to present a fair representation of the data, making the analysis arbitrary.

DTR Figure 31-1 would have looked different if results had been presented for each of the eleven cost scenarios.

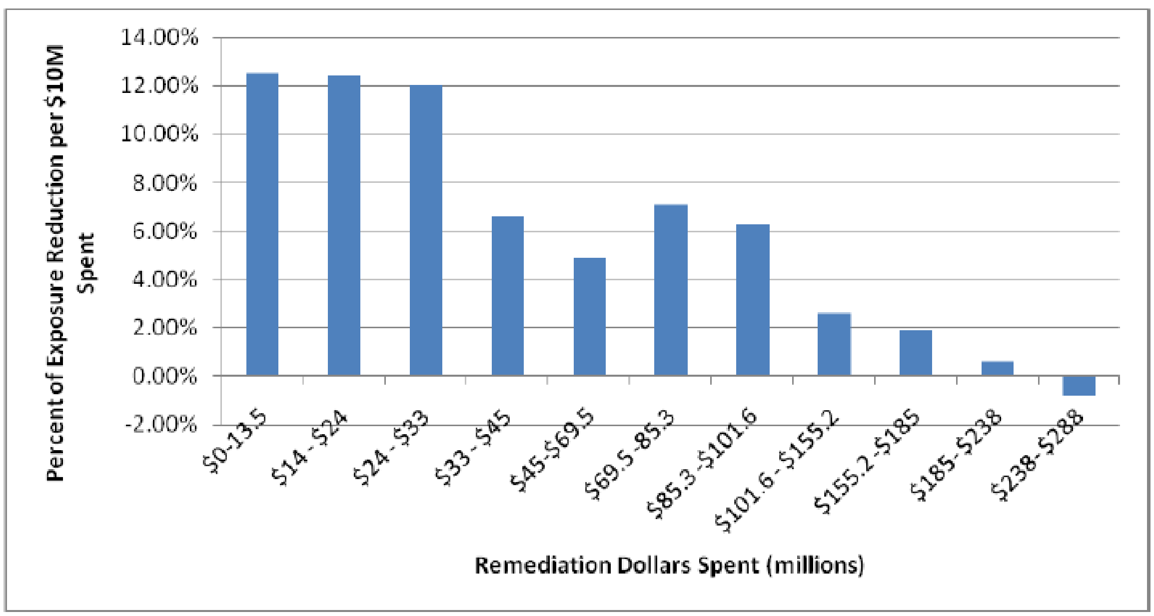
When the cost scenarios are arbitrarily grouped, they look like this:

Figure 31-1 Percent Exposure Reduction versus Remediation Dollars Spent



Note: See Appendix for Section 31 for supporting calculations

Each of the eleven cost scenarios graphed individually looks like this:



ID 294, 298
In rebuttal, NASSCO commented that Resolution No. 92-49 requires economic feasibility to be considered in setting appropriate cleanup levels, and requires the Regional Board to use best professional judgment in evaluating the point at which the incremental benefits of further cleanup are no longer justified by the incremental costs. Thus, selection of the point at which incremental benefits no longer justify incremental costs is primarily a policy decision, requiring best professional judgment, not a simple mathematical determination.

Here, however, regardless of whether the 11 hypothetical cost scenarios are grouped into five ranges or presented as 11 independent calculations, the underlying cost-benefit relationship is the same. In fact, EHC/Coastkeeper's Figure 1, which depicts the eleven cost scenarios graphed individually, illustrates the same trend that is apparent in DTR Figure 31-1, and lends credence to Regional Board's determination that cleanup to background is economically infeasible. Specifically, under both scenarios, the benefit per dollar spent is relatively high and flat for the first three scenarios, but decreases dramatically with the additional cleanup associated with scenario 4 (i.e., above $33 million total cost), suggesting that cleanup above $33 million total cost is not economically feasible, given the minimal incremental benefits. In fact, cleanup beyond the economically feasible point as defined in the DTR results in an exposure reduction of less than 7 percent per $10 million spent after $33 million; less than 4 percent after $45 million; and zero at $185 million. Exposure reductions of merely a few percentage points do not justify the expenditure of tens of millions of dollars, and would clearly violate Resolution 92-49's economic feasibility provisions.

Moreover, the Cleanup Team's analysis is based on chemical concentrations only. If the best measure of water quality is used (i.e., direct measurements of toxicity and benthic community analyses at NASSCO), then there is no incremental benefit of dredging any areas at NASSCO; thus, the economically feasible remedy is natural attenuation.

4. Cost versus Benefit

ID 53
Coastkeeper and EHC commented that the DTR incorrectly summarizes cumulative exposure reduction percentages per $10 million spent. The DTR states "exposure reduction drops below 7 percent per $10 million after $33 million, below 4 percent after $45 million, and drops to zero at $185 million." This response is consistent with supporting calculations in "2010-07-27 Economic feasibility 07-27-lO.ng.xls" (SAR384569). But the Cleanup Team's own discovery response indicates that those numbers are incorrect and shows that the average exposure reduction per $10 million is 10.8% after $33 million, 8.7% after $45 million, and at 5.5% at $185 million. See Response to San Diego Coastkeeper and Environmental Health Coalition Economic Feasibility Question, attached as Exhibit D. [Cleanup Team Response at Page 6:]

Likewise, the DTR states that "the total cost of the cleanup is estimated to be $58 million and asserts that "cleaning up additional areas beyond the proposed remedial footprint would yield about 4 percent additional exposure reduction per $10 million spent." The Cleanup Team's own discovery response proves these statements to be incorrect, as the chart above illustrates that the cumulative exposure reduction per $10 million for a $69.4 million cleanup is actually 8.7%.

ID 300
In rebuttal, NASSCO commented that EHC/Coastkeeper argues that the cumulative exposure reduction calculations provided in the Cleanup Team's discovery response to EHC/Coastkeeper contradicts the assertion in the DTR that "exposure reduction drops below 7 percent per $10 million after $33 million, below 4 percent after $45 million, and drops to zero at $185 million."

DTR, at 32-40. However, in doing so, EHC/Coastkeeper blatantly ignores the distinction between incremental and cumulative costs and benefits.

Consistent with Resolution No. 92-49, Section 31.2 of the DTR clearly states that the economic feasibility analysis is based on a comparison of incremental costs and benefits, and the conclusion presented is also clearly labeled as having an incremental cost basis, not cumulative. This is appropriate given that an economic feasibility analysis conforming to Resolution No. 92-49 must determine the point at which additional remediation no longer produces an additional benefit that is sufficient to justify the associated additional expense of such remediation.

ID 423
In rebuttal, BAE Systems commented that Section 31 of the DTR sets forth the Regional Board's analysis of the economic feasibility of cleaning the site to background. On May 20, 2011, the Regional Board made clear in its answers to questions posed by SDC and EHC that "[t]he objective of section 31 [of the DTR] is to determine whether achieving background sediment quality is economically feasible – not what the cleanup levels will be." The Regional Board evaluated a number of criteria to determine risks, costs, and benefits associated with no action, cleanups to background sediment chemistry levels, and alternative cleanup levels greater than background concentrations. The criteria included factors such as total cost, volume of sediment dredged, the exposure pathway of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife and human health), effects on shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources. The Regional Board then compared these cost criteria against the benefits gained by diminishing exposure to the primary COCs to estimate the incremental benefit gained from reducing exposure based on the incremental cost of doing so. This comparison revealed that the incremental benefit of cleanup diminishes significantly with additional costs beyond a certain cleanup level, and asymptotically approaches zero as remediation approaches background. Based on those considerations, the DTR concludes that cleaning up to background chemistry sediment levels is not economically feasible.

The Regional Board assessed economic feasibility by ranking the 65 shipyard sediment stations according to the contaminant levels found in surficial sediment samples. This process used Triad data and site-specific median effects quotient (SS-MEQ). The Regional Board then evaluated a series of cumulative cost scenarios by starting with the six most contaminated stations, then adding the six next-most contaminated stations, progressing sequentially down the list until the entire Shipyard Sediment Site was included in the scenario.

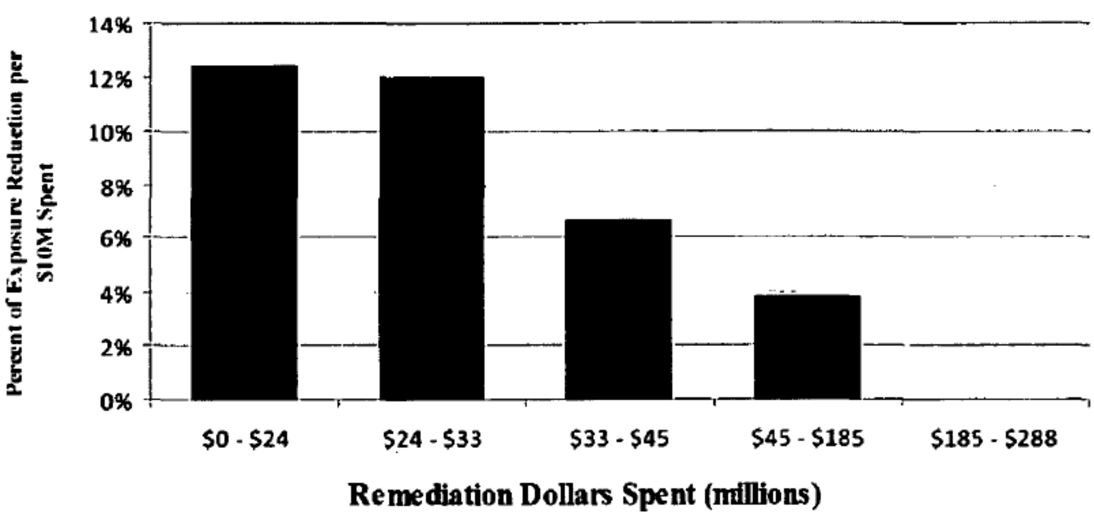
The following chart measures the incremental benefit from cleaning up various polygons, cleaning 66 polygons on a worst basis first. The benefit of remediating polygons is in exposure reduction per $10 million of cost. The chart further measures the likely cost, per million dollars, to clean up the various polygons.

Table 1

Scenario	Number of Ranked Polygons	Incremental Probably Likely Cost per million	Cumulative Probable Likely Cost per million	Incremental Exposure Reduction per $10 million*	Cumulative Exposure Reduction per $10 million**
1	6	$13.5	$13.5	12.5%	12.5%
2	12	$10.8	$24.3	12.3%	12.4%
3	18	$08.6	$32.9	12.0%	12.3%
4	24	$12.0	$44.9	6.6%	10.8%
5	30	$24.5	$69.4	4.9%	8.7%
6	36	$15.8	$85.2	7.1%	8.4%
7	42	$16.3	$101.5	6.3%	8.1%
8	48	$53.6	$155.1	2.6%	6.2%
9	54	$29.7	$184.8	1.9%	5.5%
10	60	$53.1	$237.9	0.6%	4.4%
11	66	$50.3	$288.2	-0.8%	3.5%

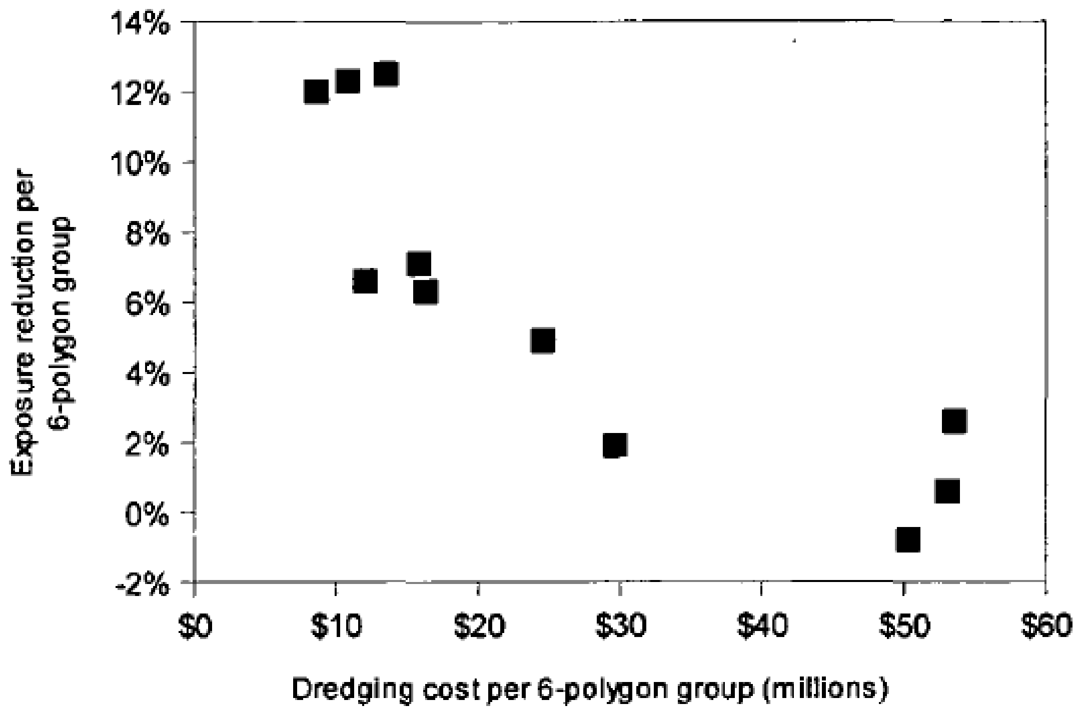
The Regional Board concluded that initial expenditures returned a relatively high exposure reduction benefit, but additional expenditures yield progressively lower returns per dollar spent on remediation. Figure 1, which is an accurate reflection of Figure 31-1 in the DTR, graphically demonstrates the percent exposure reduction versus remediation dollars spent.

Figure 1 Percent Exposure Reduction versus Remediation Dollars Spent



The highest net benefit per remedial dollar spent occurs for the first $33,000,000 (18 polygons remediated), based on the fact that initial exposure reduction is above 12% per $10,000,000 spent. Beyond $33,000,000, however, the exposure reduction per dollar spent drops consistently as the cost of remediation increases. For cleanup to background, overall exposure reduction is only 3.5% per $10,0000,000 spent, and there is effectively no net exposure reduction for the last sets of polygons that would be included in such a remediation. Figure 2 illustrates the increasing costs and diminishing benefits associated with cleanup to background. Data shown in this figure are from Table 1.

Figure 2



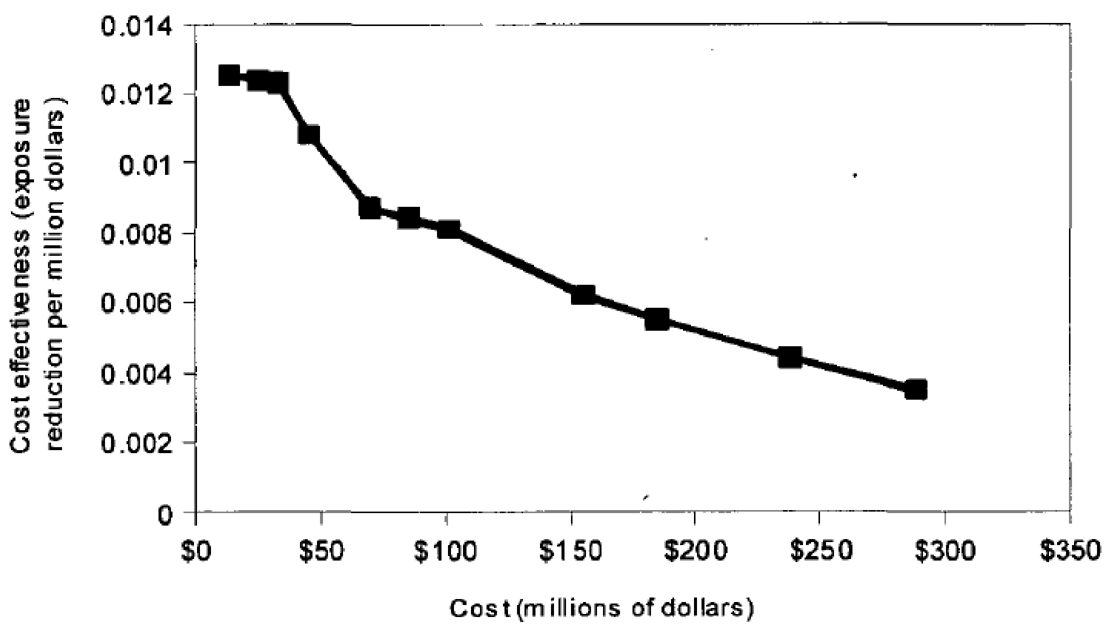
The data table above shows the incremental and cumulative benefits and costs of conducting a sequential, "worst-first" cleanup of shipyard sediments. Remediation of the polygons with the highest chemical concentrations—those in the upper left of the figure—would yield not only the greatest exposure reduction (more than 12% for each set of polygons), but also the most cost-effective cleanup. Remediation of the polygons in the lower right of the figure, which would be the last addressed in a cleanup to background, would produce little or no exposure reduction, yet would be among the most costly to clean up. The marginal benefit of cleaning up to background is small or zero, whereas the marginal costs are the highest.

Further expenditures eventually reach a point where exposures reduction benefits become negligible. SDC and EHC assert that the Regional Board needs to identify the exact point where exposure reductions become negligible. The Regional Board is not so required. The objective of Finding 31 is merely to determine whether achieving background sediment quantity is economically feasible. It is sufficient to point where the incremental cost of achieving further reductions and contaminant concentrations exceed the incremental benefit of so doing.

In several of their comments, SDC and EHC claim that cleanup scenarios costing more than the remedial footprint identified in the DTR are, or may be, economically feasible. Included in these comments is the criticism that the grouping scenarios in Figure 31-1 of the DTR (Figure 1 above) have obscured the relationship between costs and benefits. These comments are based on a desire to analyze individual alternative cleanup levels rather than to address the essential question before the Regional Board, whether achieving background sediment quality is economically feasible.

The Regional Board therefore correctly concluded that, based on the incremental costs versus incremental benefits, cleanup to background sediment quality levels is not economically feasible. In addition to evaluating incremental cost effectiveness, as illustrated in the preceding figure and discussion, the data in Table 1 can also be used to calculate the overall cost effectiveness of each scenario. Overall cost effectiveness refers to the total exposure reduction per million dollars spent for an entire cleanup scenario rather than for incremental areas of a cleanup. This measure of cost effectiveness can then be contrasted with the total cost of each different scenario as shown in the following figure.

Figure 3



Cost effectiveness, expressed as the fractional reduction in exposure per million dollars spent, is shown in the Y axis of Figure 3. Cost is shown on the X axis. The data points are those tabulated in the May 20, 2011 Response to San Diego Coastkeeper and Environmental Health Coalition's Economic Feasibility Questions.

In this figure, the polygons at the upper left have the highest chemical concentrations, and thus are the most cost-effective to remediate. Cost effectiveness decreases steeply for more extensive remedial scenarios. Moving from left to right across this figure (i.e., to successively larger cleanup areas), a consistent drop in cost effectiveness is seen. This occurs even though the larger scenarios include the areas that are most cost-effective to remediate. As with the evaluation of incremental cost effectiveness, overall cost effectiveness drops most rapidly after the first three groups of polygons have been remediated. The decreasing cost-effectiveness with increasing costs is the basis of the Regional Board's determination that cleanup to background is not cost effective. This is summarized in Section 32.7.1 of the DTR as follows: "The highest net benefit per remedial dollar spent occurs for the first $33,000,000." After this point, the cost effectiveness of further dredging actions drops steeply. Cleanup scenarios costing more than approximately $33,000,000 (which corresponds to the proposed remedy) are considerably less cost effective. Cleanup to background is only about one third as cost effective as the proposed remedy, at a cost that is almost ten times higher. The Regional Board's determination that cleanup to background is not economically feasible relative to the proposed remedial footprint is well supported by the analysis of cost effectiveness.

ID 424
In rebuttal, BAE commented that additional economic feasibility analysis confirm cleaning to background is not economically feasible.

Arcadis and Integral undertook two additional economic feasibility analyses, and while they used slightly different methodologies, both concluded that a cleanup based on the DTR's alternative cleanup standards was far more cost effective than cleaning to background.

Arcadis Evaluation.

Arcadis, in its March 11, 2011 Expert Report on Economic Feasibility Shipyard Settlement Site ("Arcadis Report"), presented cost and benefit information for three alternative cleanup scenarios: the DTR-recommended Option, cleanup to background ("Background Remedial Option"), and cleanup to a third alternative ("Alternative Remedial Option"). The Alternative remedial Option establishes alternative cleanup standards that are protective of designated beneficial uses by eliminating the shipyards as designated impaired waterways under the Clean Water Act. Arcadis applied an Office of Management and Budget cost-effectiveness guidance analysis in evaluating its three options. Arcadis' analysis of the first two options is similar in approach to those used by the Regional Board in the DTR. The approach for implementing the Alternative Remedial Option is similar to the approach provided for the other two options, with the exception of exhibiting a reduced remedial footprint. Under the Alternative Remedial Option, 12 polygons will be targeted for remediation as compared to 23 polygons for the DTR-recommended Option and 66 for the Background Remedial Option.

As is allowed under State Water Board Resolution No. 92-49, Arcadis' analysis included consideration of social costs, habitat impacts and business costs associated with the different cleanup options. Arcadis' analysis of non-dredge related costs was premised on an assumption that a remediation project of this magnitude would necessarily generate social costs that the Regional Board did not factor into its economic feasibility analysis. Such costs include impacts on the community, habitat, and businesses. The magnitude and duration of these impacts is directly related to the size and duration of the selected remedial option. (Arcadis 2011.) Potential community impacts associated with remedial implementation include noise, increased traffic, air quality, and the potential for release of contaminants into the bay. The Alternative Remedial Option would have a little less than half of the trucks and mileage required for the DTR-recommended option and approximately 6% of the trucks and mileage required for the Background Remedial Option. The DTR-recommended option will require 12% of the trucks and mileage required for the Background Remedial Option. In short, the Background Remedial

Option would have a significantly larger impact on traffic than the other two options, leading to significantly greater risks of accidents and accident-related injuries. (Arcadis 2011.)

Dredging will resuspend contaminated sediment which will act to elevate the suspended solids and the concentration of contaminants in the water column. While remedial design will include measures to reduce the potential for suspension, resuspension cannot be eliminated completely. The potential for resuspension is a function of remedial method and quantity and will therefore be far greater for the Background Remedial Option than the other two remedial options. Furthermore, the Background Remedial Option would have the greatest potential for air emissions over the impact period of time.

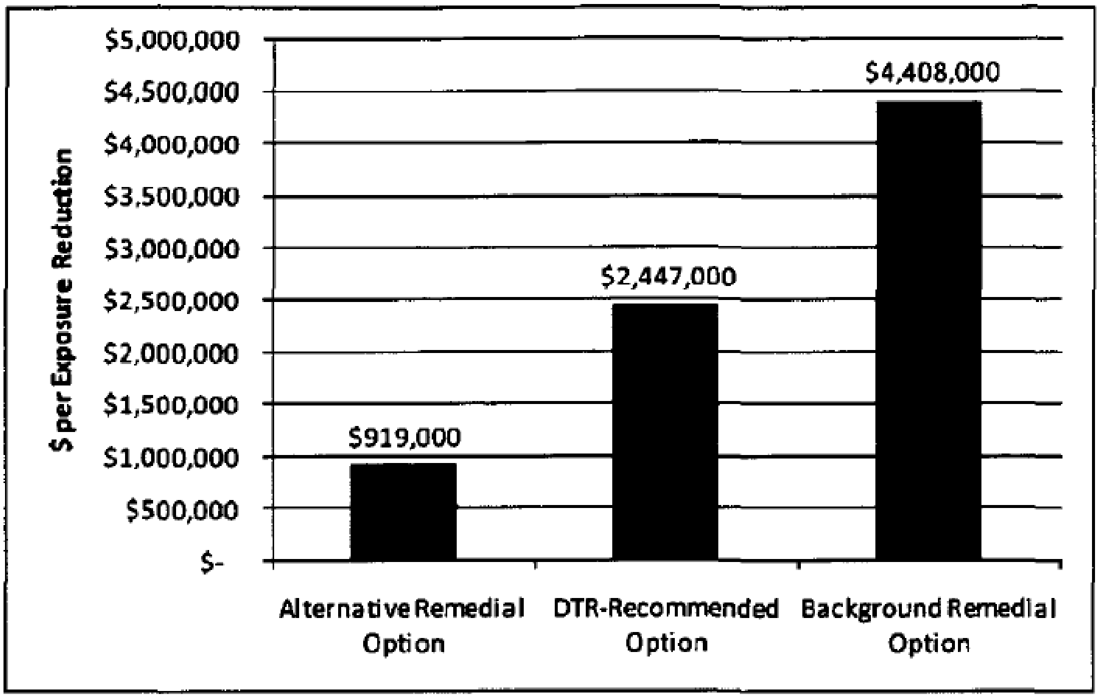
The three remedial options would have varying degrees of impact on the habitat. The Background Remedial Option may impact as much as 25% to 30% more eelgrass beds than the DTR-recommended Option. (Arcadis (2011) at 26.) Furthermore, dredging may have other habitat effects. For example, the increase in water depth may reduce the food available to diving ducks, such as the surf scoter.

Arcadis identifies many of the ways in which the Background Remedial Option, due to the length and breath of remedial activity, will affect the shipyards. Because the shipyards at the Site are the only shipyards in California that are capable of providing both dry docking and pier-side berthing, interruptions and delays in ship construction/maintenance activities could affect the shipyard’s ability to fulfill many contracts. Inabilities to fully utilize shipyard assets could have significant financial implications to the shipyards themselves, their employees, and the community’s tax base. (See Arcadis (2011) at 27-28.)

Benefits were expressed in terms of proportional reduction in the surface area-weighted average concentration (“SWAC”) relative to background—i.e., the same general approach as the DTR. Arcadis found that costs relative to benefits increased disproportionately for a cleanup to background when compared to the cleanup recommended in the DTR.

Figure 4 below, which is an accurate replication of Figure 5 in the Arcadis report, demonstrates the incremental costs and incremental reduction in exposure relative to background levels, measured in percent of the five primary COCs for the increasingly larger remedial footprints. The cost per exposure reduction (measured relative to background levels) increased from about $900,000 under the Alternative Remedial Option (smallest remedial footprint) to about $2,300,000 under the DTR-recommended Option. The incremental cost per exposure reduction under the Background Remedial Option increased to almost $4,400,000 (using a 3% discount rate). The incremental cost per exposure reduction increases in cost by almost 100%, if a cleanup to background is commenced. The differential in cost per exposure reduction increases even more when social, habitat and business impacts are factored into the analysis.

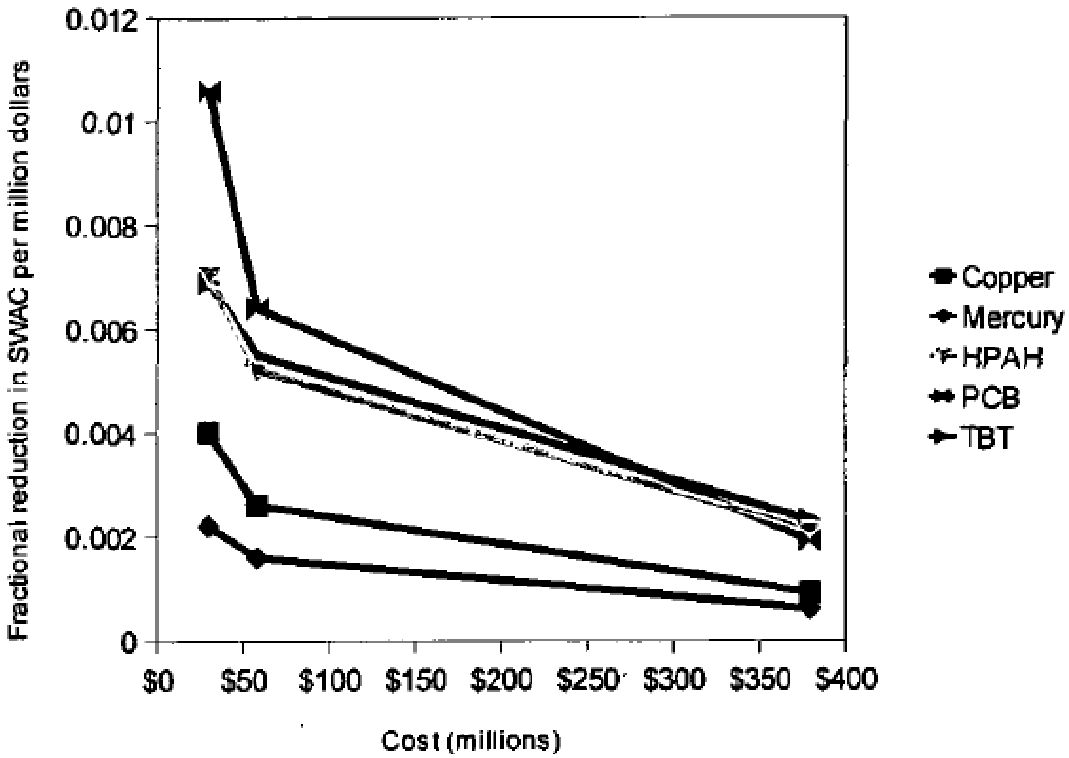
Figure 4



Integral Evaluation.

Integral, in its March 11, 2011 Evaluation of Alternative Cost Effectiveness Calculation Approaches for the Remedial Alternatives of the San Diego Shipyard Site, presented further analysis of these alternatives, including three different methods of assessing chemical-specific cost effectiveness. Integral calculated (in three different ways) the chemical-specific cost effectiveness for each of the primary COCs identified in the DTR. The fractional reduction in the SWAC per million dollars spent was used as the measure of effectiveness. Chemical specific cost-effectiveness for the three alternatives evaluated is illustrated in Figure 5 below, which is a replication of Table 3 in the Integral report. Three data points are shown in this figure for every chemical. These data points correspond to the three different remedial options evaluated: Arcadis' Alternative Remedial Option, the DTR-recommended Option, and cleanup to background, in order by increasing cost. In this figure the Y axis represents the cost effectiveness of each remedial alternative, expressed as the fractional reduction in SWAC per million dollars spent. The X axis is the cost for the three different remedial options. For each of the five COCs, the highest cost effectiveness is achieved with Arcadis' Alternative Remedial Option, moderate cost effectiveness is achieved with the DTR-recommended alternative, and the lowest cost effectiveness is associated with the cleanup to background.

Figure 5

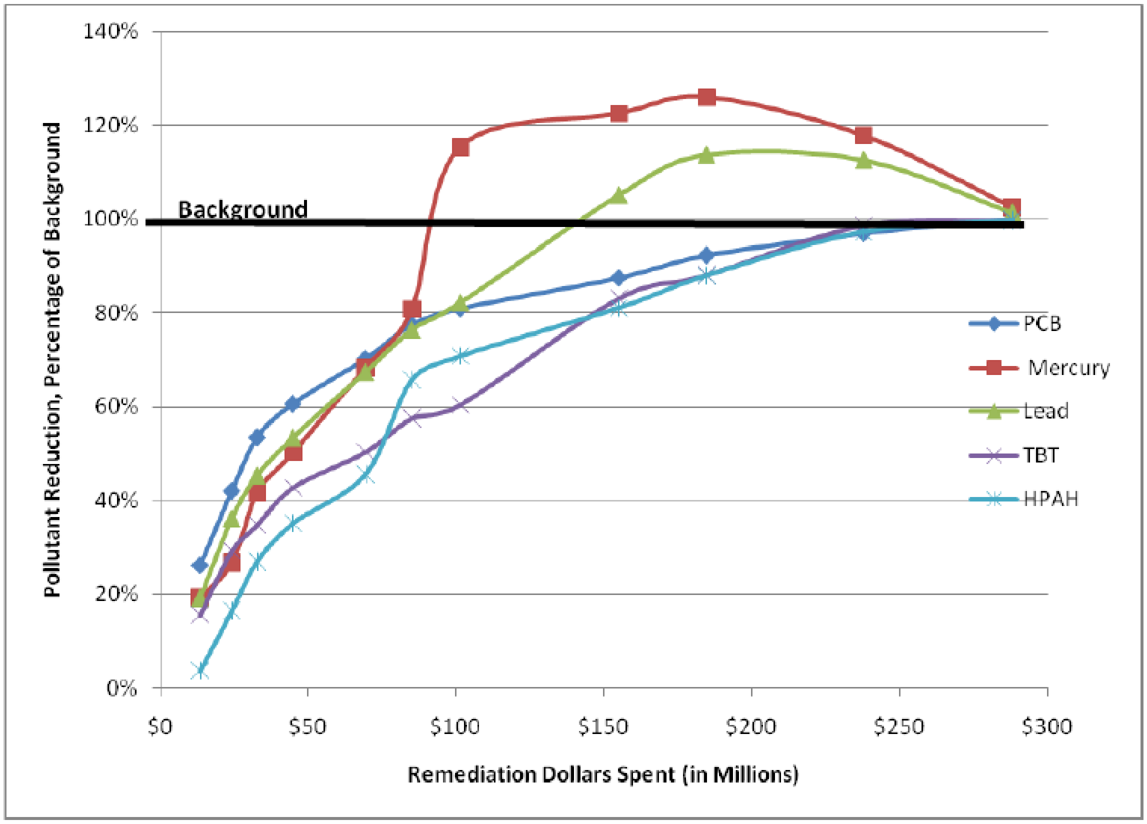


These results of chemical-specific cost effectiveness calculations show that the DTR-recommended Option is less cost-effective than Arcadis' Alternative Remedial Option, but is more cost effective than cleanup to background for all chemicals. This conclusion is consistent across all methods of interpreting cost effectiveness. Further, it is important to note that none of these methods of interpreting cost effectiveness account for the social costs, such as the impact to the community, habitat, and businesses that will be generated as a result of the cleanup level ultimately adopted by the Regional Board. Therefore, it is likely that the actual costs associated with each of the available options are understated, and the lack of cost effectiveness of cleaning to background is that much greater when all remediation costs, social and actual, are fully taken into account. Nevertheless, consistent with the determination in the DTR that cleanup to the proposed footprint is more economically feasible than cleanup to background, cleanup to the proposed footprint is more cost effective for each of the primary COCs at the Shipyard Site.

ID 55
Coastkeeper and EHC commented that the economic feasibility data was not presented in a scaled manner. DTR Figure 31-1 presents the economic feasibility analysis in a bar graph with percentage pollutant reduction per $10 million spent on the Y-axis, and remediation dollars spent on the X-axis. But by using a bar graph, readers cannot tell the true relationship of the data points to one another over a continuous basis (dollars spent). To fairly represent the data and to observe the trends of where significant pollution reduction occurs per dollar spent and where the pollution reduction per dollar spent decreases, the results must be graphed on a continuous X-

axis. Once the data is plotted as a scatter graph on a continuous x-axis, we can truly see the percent reduction compared the remediation dollars spent.

Coastkeeper/EHC Figure 3. Percent Pollution Exposure Reduction Per $10 million, by Pollutant and in Continuous Dollars, with Background Marked.



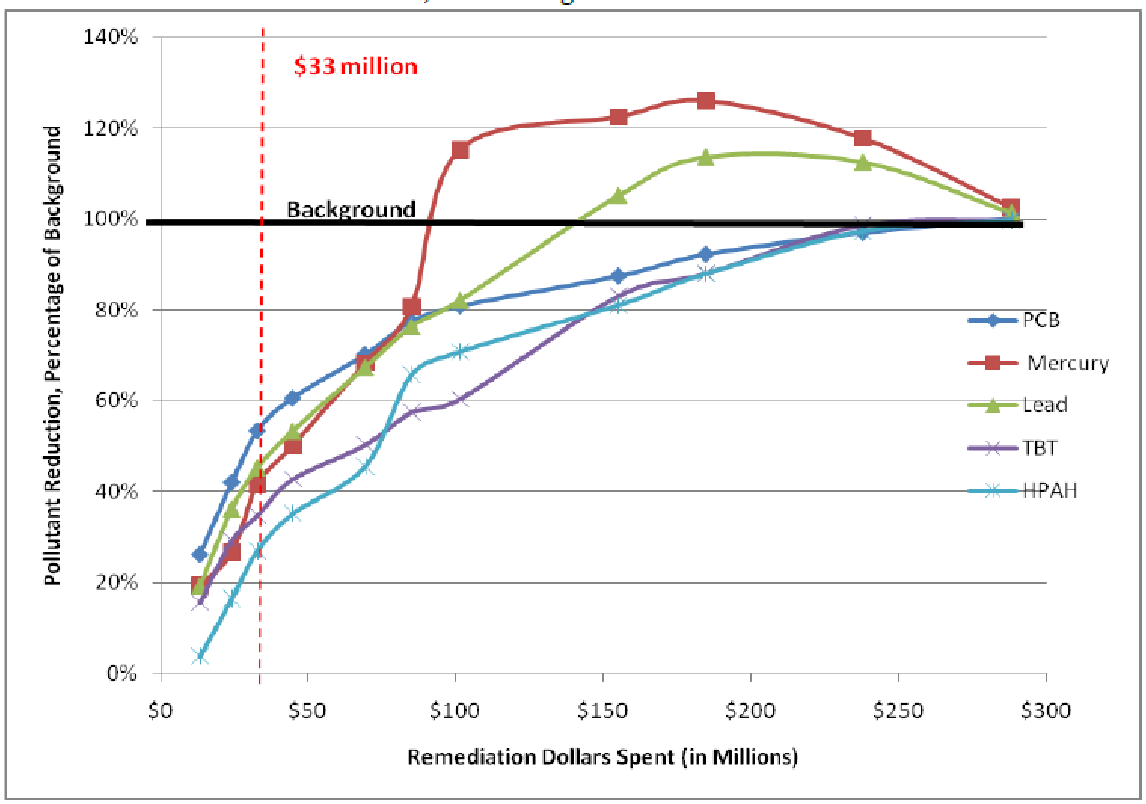
ID 302
In rebuttal, NASSCO commented that the analysis presented in EHC/Coastkeeper Comments, Figure 3 differs only in form from that presented in EHC/Coastkeeper Comments, Figure 2. It contains no additional information, other than the inclusion of background as a reference point. Consistent with the bar chart, a slope change in the plotted figure (i.e., a decrease in benefit per unit cost) can be seen at approximately $33 million total cost. The benefit/cost ratio generally continues to decrease with costs above this point.

ID 56
Coastkeeper and EHC commented that the DTR's economic feasibility conclusions based on DTR Figure 31-1 are arbitrary and capricious. The highest net benefit per remedial dollar spent occurs for the first $33 million (18 polygons), based on the fact that initial exposure reduction is above 12 percent per $10 million spent. Beyond $33 million, however, exposure reduction drops consistently as the cost of remediation increases. Exposure reduction drops below 7 percent per $10 million spent after $33 million and below 4 percent after $45 million. Based on these incremental costs versus incremental benefit comparisons, cleanup to background sediment quality levels is not economically feasible.

These conclusions are not supported by evidence in the record once the exposure reduction per $10 million is analyzed and presented on a constituent-by-constituent basis. It is crucial that the exposure reduction data for each pollutant be graphed individually because the alternative cleanup levels must be set on a pollutant-by-pollutant basis, not as an average pollution reduction amount. The alternative cleanup levels address each pollutant separately because each pollutant represents a different major class of pollutants that poses a specific type of harm or risk of harm to human health or the environment.

If the economic feasibility results are examined on a continuous dollar basis and on a constituent-by-constituent basis, it becomes clear that selection of $33 million as the point below which exposure reduction "drops consistently" as the remediation cost increases and conclusion that cleanup to background is economically infeasible is arbitrary and capricious.

Coastkeeper/EHC Figure 4. Percent Pollution Exposure Reduction Per $10 million, by Pollutant and in Constant Dollars, with background and $33 million marked.



ID 294, 303
In rebuttal, NASSCO commented that the record is clear that cleanup to background is economically infeasible. EHC/Coastkeeper erroneously states that the record does not support a finding that cleanup to background is economically infeasible. Under Resolution 92-49, determining economic feasibility requires an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions. Further, Resolution 92-49 explicitly provides that "[e]conomic feasibility . . . does not refer to the discharger's ability to finance cleanup;"

rather, an economically feasible cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits.

The DTR analysis compared incremental benefits of further cleanup, expressed in terms of exposure reduction to target receptors, with the incremental cost of achieving those benefits, and determined that the degree of exposure reduction does not justify the incremental cost of such reductions, beyond approximately $33 million. This analysis is consistent with the requirements of Resolution 92-49, and is supported by evidence in the record. Moreover, as discussed above, due to the generally favorable site conditions, any active remediation is economically infeasible under the terms set forth in Resolution 92-49. In fact, it is well-known that cleanup of sediment to background levels in San Diego Bay is economically infeasible: to date, because of economic infeasibility, none of the sediment site in San Diego Bay have been remediated to background conditions. Cleanup Team's Responses and Objections To Designated Party BAE's First Set Of Requests for Admission, Admission Nos. 44 – 46 (admitting that it is economically and technologically infeasible to remediate the Site to background, and that the Regional Board has never required remediation to background sediment quality levels for any other site within the San Diego Bay).

The record contains no evidence that cleanup to background is economically feasible; in fact, EHC/Coastkeeper has not even provided evidence that cleanup to the alternative cleanup levels is economically feasible, let alone evidence supporting its position that cleanup to background levels is feasible.

NASSCO also commented that the alternative cleanup levels were selected based on an overly conservative interpretation of chemistry and biological data, not economic feasibility. EHC/Coastkeeper erroneously states that the economic feasibility analysis was the primary basis for the selection of the alternative cleanup levels; however, this is a patently false statement. The selection of alternative cleanup levels was based on the Regional Board's analyses of many factors, including), including individual station and Sitewide chemistry data, biological data (i.e., toxicity tests, benthic community analysis, SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility. Further, based on these criteria, the selected cleanup levels are excessively conservative, as discussed extensively in NASSCO's Initial Comments.

Thus, contrary to EHC/Coastkeeper's assertions, the economic feasibility analysis was not intended to select a specific remedial scenario, and was not the primary basis for selection of any specific scenario. Rather, the analysis was intended to determine whether a point of diminishing returns on invested resources was apparent in the cost-benefit relationship, and then identify the most cost-effective level of effort—assuming that areas of higher contamination were preferentially selected for removal (as is typical). Accordingly, EHC/Coastkeeper's statement that "the economic feasibility analysis drives the entire cleanup" is incorrect. In actuality, the final selection of a remedial footprint in the DTR was based on simultaneous consideration of many factors (as is legally required under Resolution 92-49), including individual station and Sitewide chemistry data, biological data (i.e., toxicity tests, benthic community analysis, SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility. In fact, considering the results of these analyses, the proposed cleanup is extremely conservative, as discussed in NASSCO's Initial Comments.

EHC/Coastkeeper's assertion that "the economic feasibility analysis in Section 31 determined the alternative cleanup levels" is a mischaracterization of the analysis in the DTR, which contains highly conservative analyses of individual station and Sitewide chemistry data, biological data (including toxicity tests, benthic community analysis, and SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility.

ID 110
Coastkeeper and EHC commented that the Regional Board should make an independent finding of what level of cleanup is economically feasible based on all the evidence in the record regarding economic feasibility. The economic feasibility analysis presented in DTR § 31 fails to present the results of the analysis in a manner that allows that Regional Board to make a reasoned decision regarding what level of cleanup is economically feasible. Once the results are presented on pollutant-by-pollutant basis and along a continuous "dollars spent" x-axis, it becomes clear that $33 million is not a reasonable cut-off for what cleanup is economically feasible "considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." See State Water Board Order 92-49. Therefore, economic feasibility conclusions based solely or heavily on analysis in DTR § 31 are arbitrary and capricious.

The Regional Board should independently evaluate the economic feasibility analysis and determine at what point, if any, benefits of additional remediation become "negligible" and above which no further remediation should be required. We urge the Regional Board to set this level well above the $33 million level set in DTR § 31 and that forms the basis for setting the Alternative Cleanup Levels. See DTR §32.2 at 32-12 ("An assessment of risk to wildlife receptors under projected post-remedial conditions was conducted to confirm the alternative cleanup levels established by economic analysis (Section 31) are adequately protective of aquatic-dependent wildlife beneficial uses." (emphasis added)).

Comment ID 370
In rebuttal, NASSCO commented that EHC/Coastkeeper argue that the economic feasibility analysis presented in the DTR is flawed, and suggests that the Regional Board should "independently evaluate the economic feasibility analysis and determine at what point, if any, benefits of additional remediation become 'negligible' and above which no further remediation should be required." As discussed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 5 through 18, the economic feasibility analysis in the DTR is overly conservative. Thus the Regional Board has already "independently evaluate[d] the economic feasibility analysis and determine[d] at what point, if any, benefits of additional remediation become 'negligible' and above which no further remediation should be required."

Further, EHC/Coastkeeper, without any credible basis or economic feasibility analysis of its own, "urge[s] the Regional Board to set this level well above the $33 million level set in DTR § 31." The Regional Board should decline to replace the present analysis, based on the unsupported urgings of EHC/Coastkeeper. To the extent that the Regional Board does revise its economic feasibility analysis, applying Resolution 92-49, the Regional Board should reach the conclusion that only monitored natural attenuation is feasible, in light of the minimal benefits of active remediation as discussed in the Exponent Report, and the Cleanup Team's admissions that, under Resolution 92-49, the Regional Board could decide that no further cleanup is required if there is no benefit to an incremental cleanup measure. Moreover, one member of the Cleanup Team has admitted that, based on his 20-plus years of experience doing cost estimates and then going out and implementing remediation, the actual cost of remediation often exceeds pre-remediation estimates by as much as an order of magnitude, providing further evidence that the true point at which the incremental benefit is no longer justified by the incremental cost has already been exceeded under the DTR's economic feasibility analysis in the DTR. Thus, the TCAO and DTR analyses are already overly conservative, both in terms of protection of beneficial uses and the feasibility analyses; accordingly, no further cleanup is warranted.

ID 435
In rebuttal, BAE Systems commented that SDC and EHC draw numerous conclusions in this section that are invalid. The purpose of the economic feasibility analysis, as stated by the Regional Board's Cleanup Team is solely to determine whether cleanup to background is economically feasible. The Cleanup Team has determined that cleanup to background is not economically feasible, and that the proposed footprint is economically feasible, based on the cost-effectiveness of different cleanup scenarios. The stated purpose of the economic feasibility analysis does not include or imply any requirement to evaluate the economic feasibility of all, or any, other cleanup scenarios that may be favored by SDC/EHC.

5. Alternative Cleanup Levels

ID 44
In the "Data Analysis and Presentation" comments, Coastkeeper and EHC also commented that by lumping the polygons together in groups of six, the analysis fails to provide the data to allow the Regional Board to determine that the alternative cleanup level should be set at a level that falls in between the groups of six polygons.

ID 57
Coastkeeper and EHC commented that the conclusion that the alternative cleanup levels are the lowest levels economically achievable is arbitrary and capricious and not supported by the evidence. The Order concludes that "the alternative cleanup levels established for the Shipyard Sediment Site are the lowest levels that are technologically and economically achievable." But this conclusion is based on the DTR's faulty analysis in § 32.7.1 regarding the four percent additional exposure reduction per additional $10 million spent above $58 million, which the Cleanup team's own discovery response has proven untrue.

Further, the DTR's conclusion that 4 percent additional average pollutant exposure reduction per $10 million spent is not "economically achievable," is arbitrary. Neither the Order nor the DTR explains why a 12% average exposure reduction per $10 million is economically achievable, but 4% average exposure reduction per $10 million is not. Nor has the Order or DTR explained why it is appropriate to look at average exposure reduction for all pollutants instead of analyzing economic feasibility on a pollutant-by-pollutant basis. If economic feasibility is analyzed for each pollutant, a cleanup of $85 million provides an exposure reduction for HPAHs of approximately 12% per $10 million, and a cleanup of $101 million provides an exposure reduction for mercury over 20% per $10 million spent. Determining that a $58 million cleanup will bring pollutant levels to the "lowest levels economically achievable" based on a faulty claim that further cleanup will only reduce pollution by 4% per $10 million spent is arbitrary and capricious when the evidence shows that additional cleanup will reduce HPAHs by 12% per $10 million spent and reduce mercury by 20% per $10 million spent.

ID 294, 295, 304
In rebuttal, NASSCO cited its previous rebuttal comments in this group. NASSCO also commented that within the meaning of Resolution 92-49, "economically achievable" and "economically feasible" are specific terms of art referring to the requirement that the Regional Board engage in "an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions." Resolution 92-49 explicitly states that these terms "do not refer to the dischargers' ability to finance the cleanup."

As discussed above, applying Resolution 92-49, there is ample evidence in the record demonstrating that cleanup to background is economically infeasible, and the alternative cleanup levels are overly-conservative and economically infeasible. EHC/Coastkeeper has cited no evidence in the record to support the contention that lower cleanup levels are economically feasible.

ID 58
Coastkeeper and EHC commented that the economic feasibility analysis fails to demonstrate that the chosen alternative cleanup levels represent the "best water quality" based on all demands. The DTR states: "An assessment of risk to wildlife receptors under projected post-remedial conditions was conducted to confirm the alternative cleanup levels established by economic analysis (Section 31) are adequately protective of aquatic-dependent wildlife beneficial uses." . In this statement, the DTR admits that the economic feasibility analysis in Section 31 determined the alternative cleanup levels. But there is no evidence in the record justifying the decision to limit the Proposed Remedial Footprint to 23 polygons.

State Water Board Order 92-49 requires the economic feasibility analysis to consider all the values involved, but the economic feasibility analysis only includes cleanup cost for the dischargers and measures that against average pollutant concentration removal per $10 million spent. The analysis fails to quantify and consider additional benefits to human health, wildlife, aquatic dependent wildlife, and other beneficial uses from removing pollutants and providing a cleaner San Diego Bay for the wildlife and communities that use this resource. The analysis vaguely asserts that it "considered" a broad range of values, but none of these are listed or quantified, and there is no explanation of the role these other, external costs played in the determination of the economic feasibility of cleaning to background.

For example, the DTR claims that the "San Diego Water Board evaluated a number of criteria to determine risks, costs and benefits." It suggests that these criteria included factors such as "total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses..., effects on shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial or industrial uses of aquatic resources." But other than alleging that these factors were “evaluated," the DTR makes no attempt to quantify or rank these criteria or explain how they were balanced against one another.

ID 294, 305
In rebuttal, NASSCO commented that the DTR conservatively estimated the costs of cleanup to alternative cleanup levels. The DTR states that criteria including “total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife, and human health), effects on the shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources.” EHC/Coastkeeper suggests that “benefits to human health, wildlife, aquatic-dependent wildlife, and other beneficial uses from removing pollutants” were not “quantified”; however, the economic feasibility analysis does quantify benefits in terms of exposure reduction. Further, using reasonable assumptions, such a quantification would not justify any active remediation. Extensive scientific investigation conducted at the shipyards, including the sediment quality investigation upon which the findings and conclusions of the TCAO are purportedly based, indicates that beneficial uses at the site are not unreasonably impaired and that active remediation would “result in improvements that are minimal—on the order of only a percent or so.”

Yet, active remediation, including the remediation described in the TCAO, would destroy existing mature and thriving benthic communities at the Site, and result in significant negative impacts to NASSCO and the surrounding community, including but not limited to (1) the potential to jeopardize the integrity of slopes and structures at the leasehold, (2) disruption of vital ship repair and construction activities that could result in delays or contractual breaches with the U.S. Navy and other customers, (3) increased truck traffic, (4) diesel emissions from trucks and heavy equipment, (5) noise, (6) accident risks, (7) transportation of large volumes of contaminated sediment through neighborhoods, and (8) the need to establish large staging areas for dewatering activities. Taking all of these factors into account suggests that the alternate cleanup levels are not economically feasible, and certainly do not weigh in favor of further cleanup.

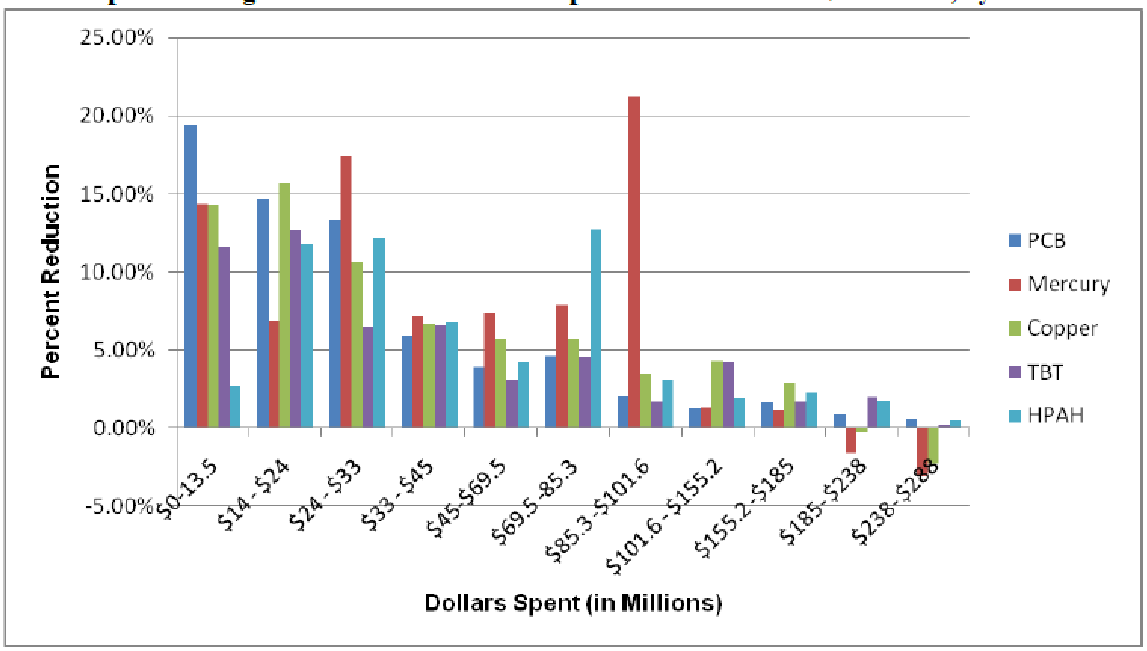
6. Constituent by Constituent Analysis

ID 54
Coastkeeper and EHC commented that the economic feasibility was not determined on a constituent-by-constituent basis. The economic feasibility analysis fails to calculate or present the data on a pollutant-by-pollutant basis. But the law requires that economic feasibility be determined on a pollutant-by-pollutant basis. (The Regional Board must determine technological and economic feasibility "to achieve the background value for that constituent and find that " the constituent will not pose a threat to human health or the environment as long as the concentration limit greater than background is not exceeded."

By averaging the pollutant reduction concentration for all five primary constituents of concern, the Cleanup Team and DTR have masked variability in pollutant exposure reduction for each of the pollutants. For example, when percent pollution exposure reduction is calculated for each pollutant individually, it becomes clear that cost scenario 7 ($85.3 - $101.6 million) results in more than 20% exposure reduction in mercury, a persistent bioaccumulating pollutant with significant health impacts.

Calculating and graphing the percent pollution exposure reduction per $10 million spent for each pollutant, using the same methodology the Cleanup Team used in the DTR. The result looks like this:

Coastkeeper/EHC Figure 2. Percent Pollution Exposure Reduction Per $10 million, by Pollutant



ID 301
In rebuttal, NASSCO commented that EHC/Coastkeeper's proposed constituent-by-constituent economic feasibility analysis and is not required by Resolution 92-49, and is technically invalid. As discussed in NASSCO's Response (Comment ID 291) to EHC/Coastkeeper Comment ID 39, there is no requirement in Resolution 92-49 that requires a constituent-by-constituent economic feasibility analysis. Moreover, EHC/Coastkeeper's proposed constituent-by-constituent economic feasibility analysis is not scientifically valid.

EHC/Coastkeeper asserts that averaging the pollutant reduction concentration for the five primary COCs, as was done in the DTR masks variability in pollutant exposure reduction for individual pollutants, and suggests that, when pollutants are analyzed individually, progression from cost scenario 6 ($69.5 million-$85.3 million) to cost scenario 7 ($85-$101.6 million) results in "more than 20% exposure reduction in mercury." However, EHC/Coastkeeper's proposed constituent-by-constituent reanalysis of the economic feasibility data merely illustrates that the five COCs are not identically distributed across the site, without addressing the issue of net remedial cost-benefit. It also confirms that incremental benefits generally decrease with increasing cost.

Of particular concern, EHC/Coastkeeper's proposed reanalysis also obfuscates the net benefits, leading to absurd results and illustrating why this analysis is a poor standalone basis for selecting a remedy (something it was never intended to do). Specifically, EHC/Coastkeeper's proposed analysis fails to recognize that the mercury SWAC achieved in scenario 7 is actually well below the site-specific reference concentration (i.e., background UPL) for mercury. Under current conditions, the mercury SWAC at the shipyard is not highly elevated relative to background (only 1.2x background UPL prior to any remediation), and very quickly approaches background as the highest composite SWAC polygons are remediated. Accordingly, at scenario 6, mercury is essentially at background. Under scenarios 7 to 11, the mercury SWAC is predicted to be below background, because the remaining unremediated stations all have mercury concentrations below the background UPL (see Figure 1, below). Scenarios 9 and 10 actually predict a rise in mercury SWAC with continued remediation, because areas with mercury levels below background are being dredged and the dredged area is assumed to equilibrate to the higher background level after remediation. As a result, the apparent "reduction" in mercury exposure from scenario 6 to scenario 7 actually produces no benefit to the public relative to the reference condition (defined as 100% exposure reduction), at a cost of more than $16 million.

7. Benthic Risk Exposure

ID 95, 96, 97, 98
SDG&E commented that section 31 economic feasibility analysis fails to consider costs to 'reduction in benthic risk exposure' and should be revised. SDG&E also commented that economic feasibility refers to the objective balancing of the incremental benefit of attaining more stringent cleanup levels compared with the incremental cost of achieving those levels. The CRWQCB (2010) is required by Resolution No. 92-49 (SWRCB, 1996) to evaluate economic feasibility such that the benefits of remediation in addressing the Site's BUIs are fully understood. The CRWQCB (2010) evaluated the benefits of remediation as the reduction in chemical exposure to human and aquatic-dependent wildlife receptors using surface-area weighted average concentrations (SWAC) of Site COCs. While this approach satisfies Resolution No. 92-49 with respect to Human Health and Aquatic-dependent Wildlife BUIs, it does not address Aquatic Life BUI.

Figure 31-1 of CRWQCB (2010) represents the final product of an economic feasibility analysis conducted to compare the incremental reduction in chemical exposure (y-axis of figure) to incremental remedial costs (x-axis of figure). In this figure, as explained on Page 31-2, exposure reduction is calculated on the basis of SWACs for the various remedial increments. The proposed remedial footprint set forth in Section 33 of the DTR was explicitly derived to address all three potential Site BUIs. SWACs were used to evaluate only two of the three BUIs found at the Site: Human Health and Aquatic-dependent Wildlife (Section 32.2 in CRWQCB (2010)). Aquatic Life BUI was evaluated on the basis of Triad and Non-Triad Data Approaches, not SWACs (Section 32.5 in CRWQCB (2010)). Although Page 31-2 states that "[t]his process used Triad data and site-specific median effects quotient (SS-MEQ)" (in reference to the economic feasibility analysis), the metric used to evaluate remedial success (exposure reduction) does not include a quantification of the exposure reduction gained from remediating polygons exhibiting Aquatic Life BUI. The areas of the polygons affected by aquatic life BUI are not included in the calculation of exposure reduction, as shown on Page 31-2 and in the Appendix 31 supporting material. The economic feasibility analysis by Spadaro et al. (2011, Table 15 therein) is also flawed because it only considers SWACs, which do not account for Aquatic Life BUI.

SDG&E also commented that because the CRWQCB is charged with addressing all three BUIs, and any supporting economic feasibility analysis, it is imperative to evaluate economic feasibility on the basis of all three BUIs. A revised economic feasibly analysis is shown in Figure 2, based on calculations shown in Tables 20 and 21. In this revised economic feasibility analysis, the percent exposure reduction for all three BUIs is considered via calculation of a composite percent exposure reduction based on SWACs for aquatic-dependent wildlife and human health (as in CRWQCB (2011)) and the area exhibiting aquatic life BUI, as based on a Toxic Unit approach for the sediment chemistry line of evidence (Figure 3; Conder, 2011a). The Toxic Unit approach is a causal chemical exposure modeling to account for bioavailability of chemicals to benthic invertebrates and predict potential chemical risk. It was used as a replacement approach for the flawed SQGQ1 approach used in the CRWQCB (2010) Triad sediment chemistry line of evidence in order to re-classify Triad stations. It was also used as a replacement approach for the flawed SS-MEQ and 60% of the LAET calculations used in the Non-Triad Data Approach. Both the revised Triad and Non-Triad Data approaches were used to identify polygons for Aquatic Life BUI (Figure 3).

Economic feasibility was also calculated using a footprint designated to address Aquatic Life BUI only (Figure 4). The approach ranked polygons exhibiting Aquatic Life BUI by the highest Toxic Unit result multiplied by the area of the polygon (Table 22). Remedial cost was estimated for five increments according to approximate cost rates suggested by Table A31-1 (Table 23). This approach is more technically defensible because Aquatic Life BUI is the most likely BUI exhibited at the Site and modeling of human health and ecological risk to aquatic-dependent wildlife is flawed.

SDG&E also commented that a revised economic feasibility approach should be adopted by CRWQCB to enable a complete and accurate evaluation of economic feasibility for any propose remedial footprint for the protection of BUIs at the Site.

ID 388
In rebuttal, NASSCO commented that SDG&E's comment correctly notes that the DTR economic feasibility analysis measured benefit based on exposure reduction for receptors that average exposure over the entire site. However, it must be noted that benefits to the benthic community must be assessed on a point by point basis, and cannot be represented by an area weighted average concentration metric. The remedy proposed in the DTR directly addressed all areas identified as likely to impact aquatic life due to sediment contamination. No areas of likely benthic impacts were omitted from the DTR remediation footprint due to economic feasibility concerns.

Response 31-1

All of the comments and rebuttal attempt to describe the requirements of Resolution No. 92-49 with respect to economic feasibility of cleaning up to background and establishing the lowest alternative cleanup levels that are economically achievable. However, the commentors fail to note that the latter consideration – establishing the lowest alternative cleanup levels that are economically achievable - is not a mandatory directive, but rather, one of the factors to be considered in setting alternative cleanup levels under Resolution No. 92-49. The factor is set forth in section 2550.4(c) of Title 23 of the California Code of Regulations, and only need be applied to this Cleanup to the extent applicable. *See* Response 1.1. Under Resolution No. 92-49, setting cleanup levels may require two distinct analyses to be undertaken in a two-step process. First, a determination must be made regarding *whether* it is economically and/or technologically feasible to cleanup to background. If cleanup to background is technologically and economically feasible, that is the end of the inquiry and background is the appropriate cleanup level under Resolution No. 92-49. A number of comments propose different ways to look at whether cleanup to background is economically feasible, but as discussed below, each method employed results in the conclusion that it is not.

Because cleanup to background is not ecnomically feasible, a second and distinct analysis must be undertaken under Resolution No. 92-49. Specifically, the text of the Resolution mandates alternative cleanup levels must result in:

> "[t]he best water quality which is reasonable if background levels of water quality cannot be restored, consideraing all demands being made and to be made on these waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alterantive cleanup levels less stringent than background, apply Section 2550.4 of Chapter 15 … any such alternative cleanup shall:
>
> 1. Be consistent with maximum benefit to the people of the state;
> 2. Not unreasonably affect present and anticipated beneficial use of such water; and
> 3. Not result in water quality less than that prescribged in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards[.]" Resolution No. 92-49, § III (G).

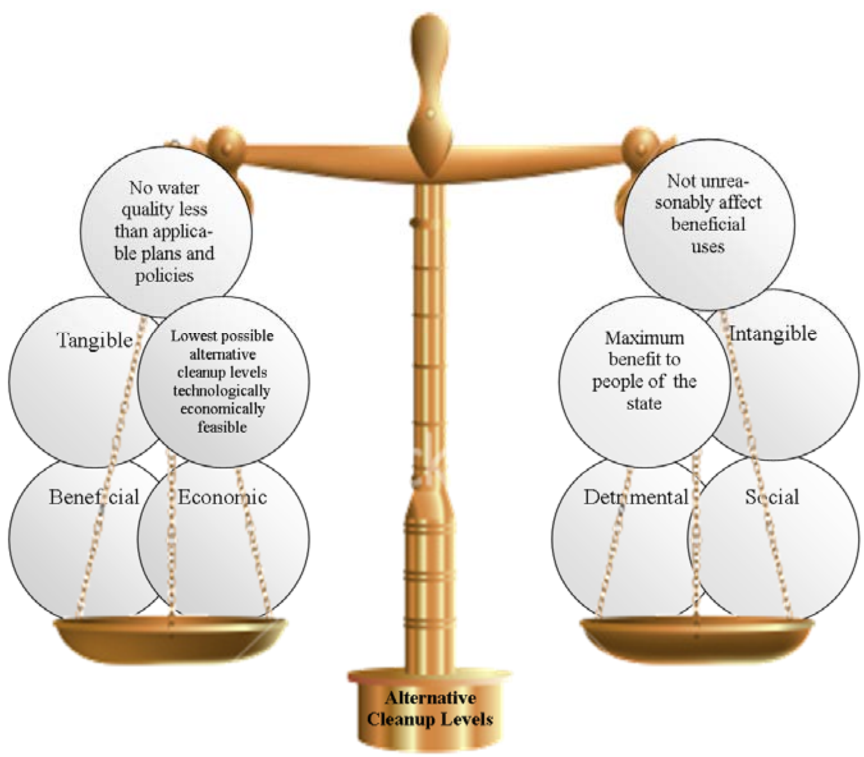
EHC and Coastkeeper assert that consituent concentration limits for alternative cleanup levels less stringent than background *must* be the lowest that are technologically and/or economically achievable. Their argument is based on language found in section 2550.4(c) of Chapter 15 of Title 23 of the California Code of Regulations. However, as detailed in the Cleanup Team's Response 1.1, Chapter 15 and section 2550.4 apply to cleanups at Class I Waste Management Units, and only "applicable provisions" of Chapter 15 need be applied to the Shipayrd Sediment Site cleanup. Even then, those "applicable provisions" need only be applied "to the extent feasible." 23 Cal. Code Regs., § 2511(d).[1] While the alternative cleanup levels proposed in the TCAO take into consideration the achievement of the lowest concentrations that are

[1] The Cleanup Team incorporates by this reference its Response 1.1 to Comments on Finding 1 relating to the applicability of section 2550.4(c) to this Response 31.1 as if set forth in full.

economically achievable, this consideration is not, and *cannot* be, the sole consideration for setting alternative cleanup levels.

This is because the specific language of Reslolution No. 92-49 commands that the San Diego Water Board *must* consider the "total values involved,beneficial and detrimental, economic and social, tangible and intangible" when setting alternative cleanup levels. Considering only whether alternative cleanup levels are set at the most stringent level that is economically feasible, as EHC and Coastkeeper urge, would read this language out of the Resolution, make it "surplusage" and be an impermissible abuse of discretion. *See California Mfrs. Assn. v. Public Utilities Com.* (1979) 24 Cal.3d 836, 844; *Moyer v. Workmen's Comp. Appeals Bd.* (1973) 10 Cal.3d 836, 844 [A statutory construction making some words surplusage is to be avoided. The words of the statute must be construed in context, keeping in mind the statutory purpose, and statutes or statutory sections relating to the same subject must be harmonized, both internally and with each other, to the extent possible.]. The DTR meets the test for statutory construction because it gives the important words "total values involved, beneficial and detrimental, economic and social, tangible and intangible" in Resolution No. 92-49 meaning and harmonizes them to the extent feasible with the words of section 2550.4(c). The DTR does consider setting alternative cleanup levels at the lowest levels that are economically achievable, but it does so in the context of the other factors Resolution No. 92-49 requires the San Diego Water Board to consider. Achieving the lowest cleanup levels that are economically feasible is but one of the factors the San Diego Water Board must consider when setting alternative cleanup levels under Resolution No. 92-49.

92-49 Total Values Approach to Alternative Cleanup Levels



DTR Section 32 addresses and assesses *all* of the factors required by Resolution No. 92-49. Critically, it ananlyzes the three enumerated subsections of Resultion No. 92-49 section (G)., concluding that the alternative cleanup levels: (1) are consisstent with maximum benefit to the people of the state; (2) do not unreasonably impact present and anticipated beneficial uses; and (3) do not result in water qulaity less than that prescried in applicable water quality control plans and policies. DTR section 32.7 specifically weighs the various aspects of the “total values involved.” The decision about an appropriate alternative cleanup levels is not driven by a single factor, but requires Water Boards to weigh a number of factors and strike the appropriate balance between them. In essence, the question “what is an appropriate alternative cleanup level”under Resolution No. 92-49 is one of policy. The Cleanup Team’s experience and neutrality make it uniquely situated among the Designated Parties to make the recommendation for alternative cleanup levles it makes in the DTR and TCAO. A recommendation that strikes the appropriate balance among all of the policy objectives of Resolution No. 92-49.

To better understand and balance the total values factors to be considered when establishing alternative cleanup levels under Resolution No. 92-49, BAE Systems provided a cost effectiveness analysis of the Shipyard Cleanup in its “Expert Report on Economic Feasibility Shipyard Sediment Site” (Arcadis, 2011; “the Arcadis Report”). The evidence in the Arcadis Report supports the “total values” approach to alternative cleanup levels set forth in the TCAO. *See* TCAO, Finding 32, DTR, § 32.7..2 “Compared to cleaning up to background cleanup levels, cleaning up to the alternative cleanup levels will cause less diesel emission, less greenhouse gas emission, less noise, less truck traffic, have a lower potential for accidents, and less disruption to the local community. Achieving the alternative cleanup levels also requires less barge and crane movement on San Diego Bay, has a lower risk of re-suspension of contaminated sediments, and reduces the amount of landfill capacity required to dispose of the sediment wastes.”

According to the Arcadis Report, cost effectiveness analysis is a well-accepted approach, with both the Office of Management and Budget and the U.S. EPA providing regulatory guidance for its use. Cost-effectiveness analysis is an economic methodology that is widely used to identify and select options that achieve the most effective use of limited resources (see for example OMB 2003, U.S. EPA 2000c).

In particular, the approach accounts for the added incremental costs to society compared to the incremental benefits from reductions in COC concentration levels for successively more stringent alternative cleanup level options. By measuring and evaluating the incremental increase in economic and social costs, both tangible and intangible, and the incremental reduction in COC concentration levels, the approach provides a means for comparing different alternative cleanup level options and selecting one that best meets Resolution No. 92-49’s “total values” mandate.

The Arcadis Report provided a robust discussion of the potential social costs associated with remedial dredging. The components of social costs include community impacts, habitat impacts, and business impacts. Community impacts associated with the remedial implementation include noise, increased traffic, air quality, and the potential for release of contaminants into San Diego Bay. The magnitude and duration of the impacts on community, habitat, and business are directly related to, and increase with the size and duration of the selected remedial option.

During construction, noise will be generated by construction equipment used in-water and at the upland sediment staging and dewatering site, as well as trucks transporting sediment through local neighborhoods and the City of San Diego to the landfill. Marine and road traffic will be increased in the vicinity of the upland sediment staging site. Marine traffic will be increased by equipment such as dredges, barges, tugboats, and support boats and may also be impacted by the presence of sediment re-suspension control devices (silt curtains, booms). Road traffic impacts may include noise, increased congestion on local streets, increased diesel and greenhouse gas emissions, and increased risk of accidents and death. It is anticipated that trucks will be used to transport sediment offsite from the sediment dewatering/processing site to an off-site landfill, and that this would be the greatest traffic impact of construction to the community. This traffic is expected to impact city streets used by local residents and workers (both vehicles and pedestrians). The number of trucks and duration of truck transport is directly related to the quantity of sediment dredged (Arcadis, 2011).

The Draft Environmental Impact Report (DEIR) estimates 50 sediment haul truck trips, eight delivery truck trips and twenty-nine employee vehicle trips per day will be required to implement the TCAO's alternative cleanup levels. *See* DEIR, § 4.1. The DEIR estimates that TCAO project will add 348 "passenger car equivalent" trips to the streets in the neighborhoods near the sediment dewatering and staging area and outward from there to the Otay Landfill. *Id.* Adding just eight polygons to the remedial footprint, as proposed by EHC and Coastkeeper, would result in an approximately twenty-five percent increase in sediment volume to be dredged and processed, and could add another year to the project duration and its temporary traffic impacts, or increase the daily traffic impacts by twenty five percent if implemented in the same remediation period. Because the TCAO's alternative cleanup levels are reasonably protective of beneficial uses, the additional social and economic costs of traffic impacts on the quality of life in and around the project area outweigh the incremental benefit of further COC concentration reductions. Temporary noise impacts from dredging, staging and dewatering activities caused by the use of bulldozers, cranes, loaders, rock slingers, excavators, tugs and barges would increase proportionally with a larger remedial footprint, and add to the social and economic costs.. *See* DEIR, § 4.4.

Air quality is another important quality of life parameter that may be impacted by the remediation. Vehicle, off-road, and diesel- and gasoline-powered marine equipment may increase pollutant emissions and greenhouse gasses. Dredging and handling of contaminated sediment may result in air emissions through volatilization, airborne particulate matter, or fugitive dust. Decaying vegetation/biota in the sediment could cause offensive odors (Arcadis, 2011).

In fact, the DEIR for the TCAO identified significant and unavoidable impacts after mitigation associated with construction equipment/vehicle emissions. Specifically, emissions during the dredging and drying of sediment would result in nitrogen oxides emissions that exceed the City-established daily emissions threshold for that pollutant. Cumulative air emissions of nitrous oxide were also found to be significant and unavoidable. Section 4.6 of the DEIR details the significant unavoidable air quality impacts that would be caused by the TCAO project. Increasing the dredge footprint directly and proportionally increases these impacts, adding social and economic costs to the total values consideration under Resolution No. 92-49. Because the

TCAO's alternative cleanup levels do not unreasonably impact beneficial uses, added social and economic costs from adverse air quality impacts are not justified.

Although mitigation will be required, dredging will destroy benthic macroinvertebrate communities and eelgrass habitat, as well as cause re-suspension of sediments. Increased water depths from dredging may result in permanent habitat changes. Eelgrass for example, would be affected by deeper water. (Arcadis, 2011). Because benthic and aquatic wildlife beneficial uses are reasonably protected by the TCAO's alternative cleanup levels, increasing the size of the dredge footprint could needlessly eliminate currently-healthy benthic communities and eel grass beds. *See* DEIR, § 4.5.

The Arcadis Report also provided more detailed information on potential economic impacts to the shipyards. Remedial implementation will directly impact the shipyards and may indirectly impact shipyard customers, shipyard employees, subcontractors and suppliers, and the local economy. The shipyards' work is scheduled several years in advance, and shipyard berths and dry docks are generally fully utilized. Interruptions and delay in ship construction activities caused by the sediment cleanup have the potential to expose the shipyards to millions of dollars in potential damages to both their customers and subcontractors. Interruptions in repair activities would have significant adverse consequences to shipyard employees, subcontractors, and Navy contractors. If larger contracts cannot be completed because of disruptions due to the cleanup, this work would have to be done at facilities outside of San Diego Bay, perhaps even outside of California, affecting the tax base as well as local businesses.

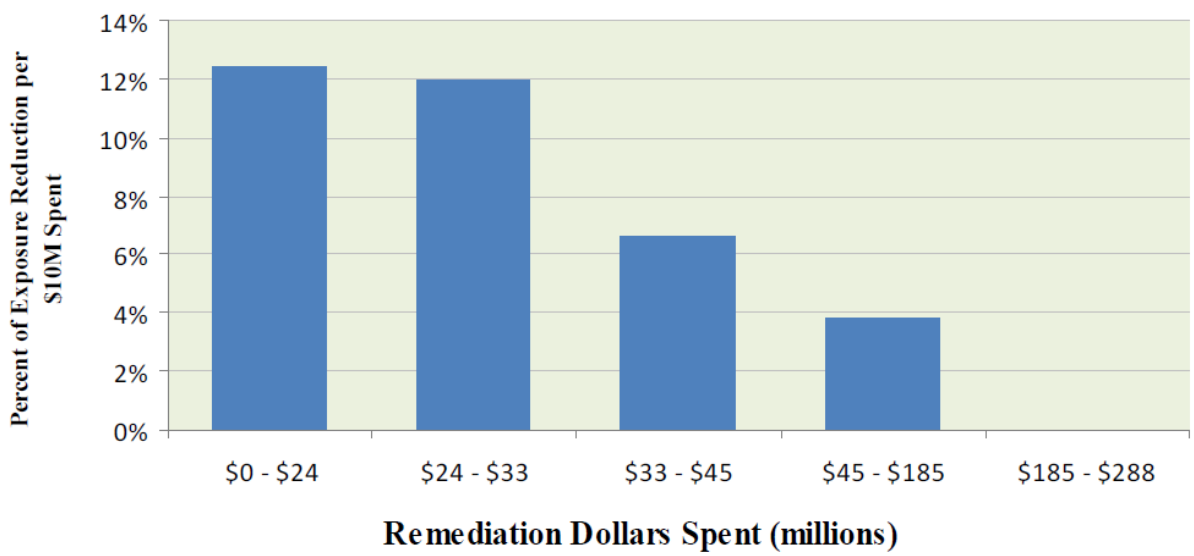
The cost effectiveness analysis showed that as the size of the remedial footprint increases, the incremental cost per exposure reduction also increases. In other words, the larger the cleanup footprint, the lower the cost effectiveness of the cleanup, and the greater the impact on the social and economic considerations of quality of life, community, habitat, and businesses. Once the threshold of reasonable protection of beneficial uses is achieved, the economic and social costs of further reductions in COC concentrations become comparatively detrimental at this Site.

The alternative cleanup levels are reasonably protective of the beneficial uses of San Diego Bay. Furthermore, the cost effectiveness of the cleanup will decrease with a larger remedial footprint while causing greater quality of life, community, habitat, and business impacts. Therefore, the alternative cleanup levels properly balance the social and economic factors required by Resolution No. 92-49.

Economic feasibility and achievability are terms of art under Resolution No. 92-49. There are no prescribed methodologies in statute, regulation, or case law for determining the economic feasibility of cleaning up to background, or for determining the point at which cleanup levels become the lowest levels that are economically achievable. Perhaps NASSCO put it best when it commented that an economic feasibility analysis conforming to Resolution No. 92-49 must determine the point at which additional remediation no longer produces an additional benefit that is sufficient to justify the associated additional expense of such remediation. NASSCO is also correct that the selection of the point at which incremental benefits no longer justifies incremental costs is primarily a policy decision, requiring best professional judgment, not a simple mathematical determination.

Figure 31-1 clearly shows that when the least contaminated polygons are added to the footprint (scenario 11), exposure reduction is negligible compared to the cost of cleanup. Figure 31-1 also shows that cleaning up the first 18 polygons at a cost of about $33 million yields the highest exposure reduction per unit cost compared to the other scenarios. The $58 million estimated cost of the remedial footprint cannot be directly overlaid on Figure 31-1. This is because different methods and assumptions were used to derive the remedial footprint and alternatve cleanup levels compared to the evaluation of the feasibility of cleaning up to background. For example, the analyses of economic feasiblity to cleanup to background used all 66 polygons, including NA22 (which was later removed from consideration), and the three polygons determined to be technologically infeasible to dredge. The statement in Section 32.7.1 that "[C]leaning up additional areas beyond the proposed remedial footprint would yield about 4 percent additional exposure reduction per $10 million spent" may not be justified and will be revised. A more reasonable interpretation of the economic feasiblity analysis as it relates to the remedial footprint is that the $58 million cost estimate for the cleanup of the proposed remedial footprint, which consists of 23 polygons, is at a point beyond the initial high exposure reduction per cost scenario represented by the first 18 polygons. The cost effectiveness analysis in the Arcadis Report also supports this conclusion. Thus, the Cleanup Team is satisfied that the alternative cleanup levels are the lowest that are economically achievable in light of the "total values" analysis required by Resolution No. 92-49.

Figure 31.1 Percent Exposure Reduction versus Remediation Dollars Spent



Following are detailed responses to the comments in this group.

1. San Diego Water Board's Findings are Arbitrary

The San Diego Water Board's findings are based on substantial evidence and are not arbitrary and capricious. Coastkeeper and EHC commented that the economic feasibility findings are arbitrary and capricious and are based on their follow up comments on the data, assumptions, analysis, and presentation. Those comments are addressed in more detail below.

2. Assumptions and Data Used

Coastkeeper and EHC correctly pointed out that the economic feasibility analysis in Section 31 did not consider certain factors as stated in Finding 31. The San Diego Water Board did not cosider cost criteria for effects on shipyards and associated economic activites, effects on local businesses and neighorhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources in the economic feasibility analysis to cleanup to background. As stated on p. 31-1, the benefits of remediation are best expressed as the reduction in exposure of human, aquatic wildlife, and benthic receptors to site related COCs. The only costs considered in the analysis were the costs of achieving exposure reduction. CAO Finding 31 and DTR Section 31 will be revised to clarify this point. The revisions will be provided on September 15, 2011, as required in the Third Amended Order of Proceedings.

Coastkeeper and EHC commented that the San Diego Water Board's conclusions must be supported by substantial evidence in the record. They also commented that the economic feasibility analysis is not supported by substantial evidence in the record because key information, including cost assumptions, pollution reduction assumptions, and dredging volume assumptions are either not provided or have been provided without a citation as to the source of the information.

Itemized cost data was not provided in the Appendix to DTR Section 31. Also, in reviewing this comment, the Cleanup Team discovered that some important data was inadvertently excluded from the Appendix to Section 31. Revisions to the Appendix to Section 31 will be provided on September 15, 2011, as required by the Third Amended Order of Proceeding. These revisions include the missing data from Table A31, and include a new table which contains itemized cost data for the 11 cleanup scenarios analyzed. The new table shows the data and information in the Excel spreadsheet named “Economic Feasibility Source Data.XLSX.” The cost data and assumptions in the spreadsheet were provided by Anchor QEA, L.P. (Anchor) with input from some of the Responsible Parties (NASSCO, BAE Systems, SDG&E, City of San Diego, and the Port District). The Cleanup Team provided this spreadsheet to Coastkeeper and EHC in response to discovery questions posed to the Cleanup Team.

Coastkeeper and EHC questioned the cost assumptions provided by Anchor stating that there is no showing that the assumptions are appropriate, nor is there any information about the source of the cost assumptions for "Eelgrass Habitat Mitigation" and "Eelgrass Land Lease Costs (in perpetuity)”. They also comment that without this information, the public cannot evaluate the reliability of that data and assumptions. Anchor provided the assumptions in the itemized cost spreadsheet referred to in the comment. Anchor is an expert in the field of marine dredging and has the knowledge and ability to estimate the costs for the cleanup scenarios. The Cleanup Team sees no need to request additional justification for the cost assumptions.

Coastkeeper and ECH also requested information on the pollution reduction assumptions and dredge volume assumptions. This information, found in DTR Sections 31 and 32, and their respective appendices is shown below.

Assumptions made for calculating exposure (pollution) reduction:

a. The sediment concentration at each station is assumed to be the same concentration through out the polygon.
b. For each of the 11 cleanup scenarios, each polygon that is remediated is assumed to be have background concentrations for the five primary COCs.
c. The percent exposure reduction was calculated using the following equation:

$$\% \text{ Exposure Reduction} = (\text{Final Exposure Reduction} / \text{Current Exposure}) \times 100$$

Or to use the equation on page 31-2 of the DTR

$$\% \text{ Exposure Reduction} = (\text{SWACcurrent} - \text{SWACfinal}) / (\text{SWACcurrent} - \text{Background}) \times 100$$

Where,

SWACcurrent was calculated from Exponent (2003) sediment chemistry data ("SWACcurrent" is the same as "pre-remedial SWAC" or "SWACpre-remedy." Values for SWACcurrent are shown on the bottom line in Table A32-1).

SWACfinal is the surface weighted average concentration of the site assuming that the polygons cleanup in a scenario have background sediment concentrations. (The terms "SWACfinal" and "SWACpost-remedy" mean the same thing. Section 31 has been revised to change the term "SWACfinal" to "SWACpost-remedy for clarity. Values are shown in Table A31-1 under the column heading "SWAC").

Background = Background concentration (values are shown in Table 29-1).

SWAC post-remedy can be calculated using the SWAC equation on page 32-11 and by replacing the sediment chemistry concentration for the stations "cleaned up" in each scenario with background concentrations. For example, replace the primary COC sediment chemistry values with background concentrations for for the six worst stations and calculate the SWAC; this will result in the SWAC post-remedy value for scenario one. Replace the twelve worst stations with background concentrations and calculate the SWAC; this will result in the SWAC post-remedy value for scenario two. Continue this process for all the remaining scenarios.

Assumptions made for calculating dredge volume:

a. Dredge volume was calculated by multiplying "depth to dredge" by "polygon area." "Polygon area" values are in Table A32-1.
b. "Depth to dredge" values were calculated from sediment chemistry data (Exponent, 2003). Values are shown in Table A31-2 under the column heading "w/1' Overdepth (ft)".

Coastkeeper and EHC requested a definition of the term "sur" which appears in Table 31-2 in the column labeled "Depth to Clean (ft)". NASSCO's rebuttal explanation above of the term "sur" is correct.

Coastkeeper and EHC questioned the adequacy of the number of core samples used to estimate the depths to dredge, and thus the dredge volumes in each polygon. Additional core samples are not needed to estimate dredge volumes for this analysis. Sediment core samples were collected at thirty eight sampling stations, more than half of the 66 stations. The core sample data generally shows the same relationships as the surface sample data. That is, the core samples have higher COC concentrations near shore and near sources, and lower concentrations off shore. Therefore, for the purpose of estimating dredge volumes, interpolating depths to background concentrations by using nearest neighbor core data is adequate and appropriate.

Coastkeeper and EHC pointed out that the DTR states on p. 31-2 that the economic feasibility analysis used Triad data and SS-MEQ. Only surface sediment chemistry data from the Triad data set was used to rank the polygons (see Section 32.2.3 for polygon ranking methodology). This revision to Section 31 will be included in the revisions provided on September 15, 2011, as required by the Third Amended Order of Proceedings.

3. Data Analysis and Presentation

Coastkeeper and ECH commented that the presentation of the economic feasibility data in "six polygon groups" was arbitrary, and that the DTR provided no explanation or rationale why stations were evaluated in groups of six. As NASSCO stated, since the Shipyard Sediment Site was divided into 66 polygons, cost scenarios of six stations each were used because 66 is evenly divisible by six. Dividing the polygons into groups of six resulted in 11 data points, which was sufficient to show the relationship between increasing cost and increasing mass removal.

NASSCO pointed out in its rebuttal that, whether the chart of the cost/benefit scenarios in Figure 31-1 uses 5 bars or 11 bars, the data shows the same trend, and supports the conclusion that cleaning up to background sediment concentrations at the site is economically infeasible. Reducing the number of bars used to display the cost/benefit scenarios from 11 to 5 was intended to simplify the chart but still show the trend of total cost increasing faster than the rate of exposure reduction per unit cost.

NASSCO commented that monitored natural attenuation is the proper remedy, however, the economic feasibility of natural attenuation is not relevant since this remedy does not meet the requirements of the TCAO. Response 33.1 addresses NASSCO's comments on natural attenuation as the proper remedy at the Shipyard Sediment Site.

4. Cost Versus Benefit

Coastkeeper and ECH commented that the DTR incorrectly summarizes cumulative exposure reduction based on the Cleanup Team's discovery responses. Coastkeeper and EHC appear to misunderstand the Cleanup Team's discovery responses. The responses state that Coastkeeper’s assumption that each cleanup scenario only contains six polygons is incorrect. The first scenario contains six polygons; the second scenario contains 12 polygons; the third contains 18 polygons; etc. In other words, each scenario contains six more polygons than the previous scenario. Furthermore, the discovery responses reiterate and clarify the DTR that the Cumulative Exposure does continue to decrease consistently and continuously while the Incremental Exposure does consistently (trend) decrease but not continuously.

The highest rate of exposure reduction is still before the $33 million mark, and therefore, the highest benefit is in the first 18 polygons remediated and $33 million spent. As NASSCO pointed out, regardless of whether the 11 hypothetical cost scenarios are grouped into five ranges or presented as 11 independent calculations, the underlying cost-benefit relationship is the same.

5. Alternative Cleanup Levels

Coastkeeper and EHC claimed that by lumping polygons together in groups of six, the analysis fails to provide the data to allow the San Diego Water Board to determine that the alternative cleanup levels should be set at a level that falls in between the groups of six polygons. They also argue that the DTR's conclusion that "4 percent additional average pollutant exposure reduction per $10 million spent is not economically achievable" is arbitrary.

As previously discussed in this response, the $58 million estimated cost of the remedial footprint cannot be directly overlaid on Figure 31-1 because of the differences in methods and assumptions between the economic feasibility analysis and the alternative cleanup levels/remedial footprint analysis. The statement in Section 32.7.1 that “[C]leaning up additional areas beyond the proposed remedial footprint would yield about 4 percent additional exposure reduction per $10 million spent” may not be justified and will be revised. A more reasonable interpretation of the economic feasiblity analysis as it relates to the remedial footprint is that the $58 million cost estimate for the cleanup of the proposed remedial footprint, which consists of 23 polygons, is at a point beyond the initial high exposure reduction per cost scenario represented by cleaning up the first 18 polygons. Thus, the Cleanup Team is satisfied that the alternative cleanup levels are the lowest that are economically achievable.

Coastkeeper and EHC pointed out that the DTR states in Section 32.3 that the cleanup levels were “established by economic analysis.” This statement in the DTR is incorrect. The alternative cleanup levels were established by the SWAC approach as described in Section 32.2. A revision to Section 32.3 will be provided on September 15, 2011, as required by the Third Amended Order of Proceeding.

6. Constituent by Constituent Ananlysis

Coastkeeper and ECH commented that Resolution No. 92-49 requires that economic feasibility be evaluated on a constituent by constituent basis. As discussed fully in Response 1.1, conducting a constituent by constituent economic feasibility analysis is an unrealistic interpretation of Resolution No. 92-49 and is not required.

Coastkeeper and EHC comment that averaging the pollutant reduction concentration in the analysis for the five primary COCs masks the variability of exposure reduction for individual pollutants. The San Diego Water Board agrees with NASSCO's rebuttal the Coastkeeper's and EHC's proposed constituent by constituent analysis merely illustrates that the five primary COCs are not identically distributed across the site, does not address net remedial cost-benefit, and confirms that incremental benefits generally decrease with increasing cost.

7. Benthic Risk Exposure

As NASSCO has correctly pointed out, benthic community evaluation cannot be represented by an average sediment concentration because benthic organisms are for the most part stationary. No areas of likely benthic impacts were omitted from the remediation footprint due to economic feasibility analysis. Furthermore, in Response 18.4, the San Diego Water Board rejected the toxic unit approach for assessing impact to the benthic community. Thus, there is no need to revise the economic feasibility analysis based on this approach.

RESPONSE 31.2

DTR Section: 30, 31, 32, 37
Comments Submitted By: NASSCO
Comment IDs: 161
Comment

NASSCO commented that implementing the TCAO would have significant negative economic and social impacts on NASSCO and the community and that monitored natural attenuation is the proper remedy.

Under Resolution No. 92-49, the Regional Board must take into account the total values involved, including economic and social values. The DTR concludes that dredging to alternative cleanup levels is technologically and economically feasible. TCAO, at ¶¶ 30, 31, DTR, at 30-7, 31-3. However, extensive dredging at NASSCO would result in significant negative impacts to NASSCO and the surrounding community; thus, taking these values into account, dredging is costly and unjustified, especially since there are little or no corresponding benefits to human health or the environment.

In particular, dredging in certain areas at NASSCO may jeopardize the integrity of slopes and structures at the leasehold, and is technologically infeasible in certain areas. Barker Depo, at 154:25 – 155:22, 156:23 – 157:16. For example, there are significant structural stability problems associated with dredging around piers, pilings, and steep slopes, such as those surrounding the floating drydock sump, which render dredging in such areas technologically infeasible. Id. Further, vital ship repair and construction activities will be significantly disrupted by dredging, and could result in delays or contractual breaches with the U.S. Navy and other customers. See, e.g., Exponent Report, at §§ 18.2, 18.4.

Large-scale dredging will also impact the surrounding community, and potentially present environmental justice issues, due to impacts including, but not limited to increased truck traffic, diesel emissions from trucks and heavy equipment, noise, accident risks, transportation of large volumes of waste through the neighborhood, increased traffic on local streets, and the need to establish large staging areas for dewatering activities. Id.

Response 31.2

The “total values involved” in setting the alternative cleanup levels, including economic and social values, are discussed in DTR Section 32.7. This discussion is augmented with the additional information provided in the DEIR and Arcadis Report (2011), as discussed in Response 31.1 above. The Cleanup Team agrees that dredging to achieve the alternative cleanup levels could have significant negative economic and social impacts on NASSCO and the community. When balanced with the other “total values involved,” however, monitored natural attenuation is not the proper remedy for the reasons put forth below.

The TCAO describes a proposed project to implement and comply witth the requirements of the TCAO in Findings 33 and 34 (see also DTR sections 33 and 34) . The TCAO determined that dredging and disposal of sediments is the proposed remedy for approximately 15.2 acres of the site and is expected to generate approximately 143,400 cubic yards (cy) of contaminated marine sediment. In addition to the 15.2 acres targeted for dredging, approximately 2.3 acres of the project site are inaccessible or under-pier areas that will be remediated by one or more methods other than dredging, most likely by application of clean sand cover.

Resolution No. 92-49 requires that an alternative cleanup level be consistent with maximum benefit to the people of the State of California. The Cleanup Team appropriately and broadly considered the alternative cleanup levels including the scope of the dredging needed to attain those levels (DTR Section 37.3.2) and determined that proposed alternative cleanup levels were consistent with maximum benefit to the people of the State based on the San Diego Bay resource protection, mass removal and source control, and economic considerations. These considerations included the following:

1. Remediated areas will approach reference area sediment concentrations for most COCs,
2. All areas identified with “Likely” impacts to benthic beneficial use will be remediated,
3. Adverse impacts to benthic communities from dredging will be temporary, with stasis expected within approximately three years,
4. The alternative cleanup levels support human health, aquatic dependent wildlife, and aquatic life beneficial uses,
5. Impacts on local communities associated with remedial activities are temporary and will be mitigated where feasible,
6. Remedial activities will cause no adverse effects to sport or commercial angling, or to contact or non-contact water recreation beneficial uses because they will take place inside the shipyard security boom,
7. Adverse effects to eelgrass beds from dredging will be mitigated to levels of insignificance following remediation,
8. Source control will be effectuated at the dischargers’ storm water facilities,
9. Significant contaminant mass removal from San Diego Bay will be attained (see DTR Table 32-25),
10. Environmental conditions of San Diego Bay are improved in balance with ensuring that vital City of San Diego services can also be maintained so that crime should not increase, fire protection should be sufficient, and a host of other City services should not decline and impair the City’s economy and vibrancy, and

11. Attainment of the alternative cleanup levels will result in no long-term loss of use of the Shipyard Sediment Site during the phased cleanup, thereby furthering continued operation of the shipyards, including vessel construction, maintenance and repair, and the concomitant employment of persons in the San Diego Region.

The Cleanup Team concurs that structures such as pile bulkheads, rock reveted slopes, piers, and pilings will need to be protected during dredging operations and anticipates that such protection and/or support will be installed iteratively during remedial activities. (See DTR 35-3.) The DTR provides at page 33-11 that for under-pier areas and other locations, where significant impacts to infrastructure (e.g., piers, wharves and bulkheads) are likely, alternatives to dredging should be considered. For example, sand covering is proposed in areas immediately adjacent to sheet pile bulkheads and beneath piers, and is expected to result in achievement of target SWAC concentrations and aquatic life beneficial use concerns. Where necessary, rock or gravel may also be used to fortify or stabilize the sand capping in these set-back areas. Inaccessible areas under piers will be remediated using technically feasible techniques such as placement of a sand layer, nominally 1 to 2 feet in thickness, on top of existing sediment. Design details of the remedial action will be specified in the Remedial Action Plan required by the TCAO in Directive B.1.

Dredging impacts to the integrity of slopes and structures at the NASSCO leasehold were also considered by the Cleanup Team in determining that dredging was infeasible at certain locations in the leasehold (See DTR page 33-8). The Cleanup Team concluded that the NA07, NA08, NA23, and NA27 polygons all had technical infeasibility problems associated with dredging. The NA07 polygon is technically infeasible to dredge due to stability concerns about the sheetpile bulkhead on the shoreline and slope near the floating dry dock sump. Any dredging in this area would drastically undermine the slope as well as impacting the sheetpile bulkhead on the east side. The NA08 polygon is technically infeasible to dredge due to stability concerns about the sheetpile bulkhead on the shoreline and slope near the floating dry dock sump. Any dredging in this area would drastically undermine the slope as well as impacting the sheetpile bulkhead on the east side. The east side of NA08 also supports the structure of the gate at Ways 4. Any dredging in this area would drastically undermine the slope as well as impact the sheetpile bulkhead on the east side. The NA23 polygon is technically infeasible to dredge because dredging would affect Pier 12, the tug boat pier, the rip-rap shoreline, as well as undermining the sediment slope for the floating dry dock sump.

The Cleanup Team determined that the cleanup proposal to attain the alternative cleanup levels described in the TCAO is a "project" as defined by CEQA Guidelines section 15180, and that the undertaking may have a significant impact on the environment. The Cleanup Team consequently prepared a DEIR in acoordance with CEQA (Public Resources Code section 21000 et seq.) and the CEQA Guidelines (CCR Title 14, section 15000 et seq.) to analyze the proposed project's potential impacts on the environment, to discuss alternatives, and to propose mitigation measures for identified potentially significant impacts that will minimize, offset, or otherwise reduce or avoid those environmental impacts. With respect to environmental justice issues the DEIR at appendix H concludes that the proposed project with suggested mitigation incorporated would not result in a disproportionate impact to low income and minority populations. This analysis satisfies the San Diego Water Board's obligations to consider environmental justice principals pursuant to Government Code section 65040.12.

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32. TCAO Finding 32 and DTR Section 32: Alternative Cleanup Levels

Finding 32 of CAO No. R9-2011-0001 states:

Under State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304*, the San Diego Water Board may prescribe alternative cleanup levels less stringent than background sediment chemistry concentrations if attainment of background concentrations is technologically or economically infeasible. Resolution No. 92-49 requires that alternative levels must be set at the lowest levels the discharger demonstrates and the San Diego Water Board finds is technologically and economically achievable. Resolution No. 92-49 further requires that any alternative cleanup level shall: (1) be consistent with maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial uses of such water; and (3) not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

The San Diego Water Board is prescribing the alternative cleanup levels for sediment summarized in the table below to protect aquatic life, aquatic-dependent wildlife, and human health based beneficial uses consistent with the requirements of Resolution No. 92-49. Compliance with alternative cleanup levels will be determined using the monitoring protocols summarized in Finding 34 and described in detail of Section 34 of the Technical Report.

Alternative Cleanup Levels: Shipyard Sediment Site

Aquatic Life	Aquatic Dependent Wildlife and Human Health	
Remediate all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community.	Surface Weighted Average Concentrations (site-wide)	
	Copper	159 mg/kg
	Mercury	0.68 mg/kg
	HPAHs[1]	2,451 µg/kg
	PCBs[2]	194 µg/kg
	Tributyltin	110 µg/kg

1. HPAHs = sum of 10 PAHs: Fluoranthene, Pyrene, Benzo[a]anthracene, Chrysene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo(a)pyrene, indeno[1,2,3-c,d]pyrene, Dibenz[a,h]anthracene, and Benzo[g,h,i]perylene.
2. PCBs = sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206.

In approving alternative cleanup levels less stringent than background the San Diego Water Board has considered the factors contained in Resolution No. 92-49 and the California Code of Regulations, Title 23, section 2550.4, subdivision (d):

Alternative Cleanup Levels are Appropriate. Cleaning up to background sediment quality levels at the Shipyard Sediment Site is economically infeasible. The alternative cleanup levels established for the Shipyard Sediment Site are the lowest levels that are technologically and economically achievable, as required under the California Code of Regulations Title 23 section 2550.4(e).
Alternative Cleanup Levels are Consistent with Water Quality Control Plans and Policies. The alternative cleanup levels provide for the reasonable protection of San Diego Bay beneficial uses and will not result in water quality less than prescribed in water quality control plans and policies

adopted by the State Water Board and the San Diego Water Board. While it is impossible to determine the precise level of water quality that will be attained given the residual sediment pollutant constituents that will remain at the Site, compliance with the alternative cleanup levels will markedly improve water quality conditions at the Shipyard Sediment Site and result in attainment of water quality standards at the site.

Alternative Cleanup Levels Will Not Unreasonably Affect Present and Anticipated Beneficial Uses of the Site. The level of water quality that will be attained upon remediation of the required cleanup at the Shipyard Sediment Site will not unreasonably affect San Diego Bay beneficial uses assigned to the Shipyard Sediment Site represented by aquatic life, aquatic-dependent wildlife, and human health. Cleanup of the remedial footprint will restore any injury, destruction, or loss of natural resources.

Alternative Cleanup Levels are Consistent with the Maximum Benefit to the People of the State. The proposed alternative cleanup levels are consistent with maximum benefit to the people of the State based on the San Diego Bay resource protection, mass removal and source control, and economic considerations. The Shipyard Sediment Site pollution is located in San Diego Bay, one of the finest natural harbors in the world. San Diego Bay is an important and valuable resource to San Diego and the Southern California Region. The alternative cleanup levels will result in significant contaminant mass removal and therefore risk reduction from San Diego Bay. Remediated areas will approach reference area sediment concentrations for most contaminants. Compared to cleaning up to background cleanup levels, cleaning up to the alternative cleanup levels will cause less diesel emission, less greenhouse gas emission, less noise, less truck traffic, have a lower potential for accidents, and less disruption to the local community. Achieving the alternative cleanup levels also requires less barge and crane movement on San Diego Bay, has a lower risk of re-suspension of contaminated sediments, and reduces the amount of landfill capacity required to dispose of the sediment wastes. The alternative cleanup levels properly balance reasonable protection of San Diego Bay beneficial uses with the significant economic and service activities provided by the City of San Diego, the NASSCO and BAE Systems Shipyards and the U.S. Navy.

RESPONSE 32.1

DTR Section: 32
Comments Submitted By: NASSCO, BAE Systems, Coastkeeper and EHC
Comment IDs: 31, 34, 129, 130, 131, 132, 135, 156, 165, 173, 194, 195, 196, 197
Comment

NASSCO and BAE Systems submitted several comments that natual attenuation is occurring at the Shipyard Sediment Site and that monitored natural attenuation is the proper remedy for the Site. At a minimum, natural attenuation should be considered as a component of the remediation required. The remedial footprint as set forth in the TCAO and DTR does not adequately take into account the natural attenuation that has occurred.

Comparison of the sediment concentration data collected 2001 and 2003 (Exponent 2003) with recently collected data collected in July 2009 ("NOW" testing) and 2010 / 2011 (AMEC 2011) indicate that natural attenuation is occurring. Analyzing samples obtained by AMEC at the BAE leasehold, Environ concludes that concentrations of the five primarly COCs in the surface sediment have decreased 24 to 76 percent.

While the only data available to evaluate whether natural attenuation is occurring is for samples outside the remedial footprint, it can be reasonably extrapolated that the same or greater natural attenuation is occurring within the shipyard areas designated for remediation.

In addition to the fact that monitored natural attenuation is already occurring, the following site-specific circumstances support monitored natural attenuation as the preferred remedy for the Site:

1. The fact that NASSCO will remain a secured shipyard until at least 2040 supports implementation of monitored natural attenuation because security measures will prevent human exposure to site contaminants and wildlife during the recovery period.

2. The shipyard has incorporated extensive pollution prevention controls to eliminate the possibility of direct releases of contamination.

Taken together, the site-specific factors present at NASSCO strongly support monitored natural attenuation, and meet the criteria identified in the DTR that indicate that a site is “particularly conducive” to monitored natural attenuation.

The difference in risk reduction between the proposed footprint and monitored natural attenuation is insignificant and does not meet the State Board's test for economic feasibility. Given these already favorable site conditions, any incremental benefits associated with dredging will be minimal, and not justified by the incremental costs, particularly where there is evidence that such dredging will cause greater environmental harm than leaving the sediment in place.

Since the potential for recontamination from off-site sources would affect all potential remedies, it is not a factor that should favor one potential remedy over another.

In rebuttal, Coastkeeper and EHC commented that natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons. No reliable data have been presented in the public record that demonstrate that natural attenuation is occurring at the Site. NASSCO and BAE Systems argue that sediment chemistry data collected at five locations in 2009 provide the necessary and sufficient evidence to demonstrate that contaminant concentrations are decreasing at the site. However, five samples do not provide a data set that is sufficiently robust to characterize current contaminant concentrations at the Site. In addition, neither NASSCO nor BAE presented evidence demonstrating that variability in contaminant concentrations is not due to sampling issues such as sampling location, sampling depth, analytical methods, or other factors.

References to data collected by AMEC in 2010 are not relevant because that data is not yet a part of the administrative record. The Regional Board may not consider this data because San Diego Coastkeeper and Environmental Health Coalition were not provided with this data and given a full and fair opportunity to review and vet that data prior to the close of the comment and rebuttal period.

No evidence demonstrates that monitored natural attenuation would reduce pollutant concentrations to levels that would protect human health and the environment within a reasonable time frame. Sediment chemistry data alone do not provide a basis for demonstrating that risks to benthic invertebrates or fish would be adequately reduced by natural attenuation. This means that even if valid sediment chemistry data existed that showed reduced pollutant concentrations since 2001, such data would not be sufficient to demonstrate that monitored natural attenuation would be appropriately protective of human health and the environment. Pore-water chemistry, whole-sediment toxicity, invertebrate-tissue chemistry, and fish-tissue chemistry would also be required to demonstrate that natural attenuation is reducing exposure of ecological receptors to contaminants at the Site. Neither NASSCO nor BAE Systems has submitted data to support their claim that monitored natural attenuation would be protective of human health and the environment.

The pollutants at the Site have the potential to migrate off site due to the nature of the activities at the Site. Monitored natural attenuation is not appropriate for use at sites where contaminants have the potential to migrate to other areas. Neither NASSCO nor BAE have provided evidence to demonstrate that contaminants of concern at the Site are stable under the range of conditions that occur at the site. On the contrary, activities at the site, such as ship maintenance and repair (and associated prop wash), have the potential to remobilize sediment-associated pollutants and result in off-site transport. Likewise, storms and tidal current could exacerbate off-site contaminant transport at the Site.

Response 32.1

Monitored natural attenuation (MNA) alone is not sufficient to meet TCAO remediation goals in a reasonable time frame or to assure protection of benficial uses over the long term. However, the proposed dredge area is approximately 11 percent of the total area of the Shipyard Sediment Site and most of the areas outside the proposed dredge area, approximately 89 percent of the Site, have several primary and secondary chemicals of concern (COCs) above background levels. Therefore, if natural attenuation is occurring, it will serve to reduce the pollutant levels in those areas not slated for active remediation by dredging.

MNA is sometimes appropriate for sites that have high deposition rates where newly deposited clean material tends to sequester or dilute the sediments with higher concentrations. The Shipyard Sediment Site does not have high deposition rates as evidenced by the relative lack of maintenance dredging conducted at the Site over the last few decades. In addition, an active shipyard has frequent disturbances to the sediment, for example via ship movements and propeller wash, that tends to re-suspend the sediments which would uncover and expose any previously buried sediments. The core data from the Shipyard Sediment Site indicate that, in many locations, the pollutant concentrations at depth are significantly higher than those in the shallower sediments. Therefore, any disturbances are likely to uncover and expose higher concentrations.

In addition, MNA is typically not very effective at sites with metals, PCBs, and other contaminants that do not readily biodegrade or otherwise transform into less toxic or bioavailable forms.

Comparison of the limited sediment chemistry data collected in July 2009 ("NOW" testing), and from 2010 to 2011 (AMEC 2011), to that collected in 2001 and 2003 (Exponent 2003) is not sufficient to demonstrate that natural attenuation is occurring. It is even more tenuous to imply that those data can be used to draw reliable conclusions about the rate at which natural attenuation might be occurring, especially considering that no studies have been done to determine what processes, if any, are responsible for lower COC concentrations at the sampling stations in the 2009, and 2010 to 2011 data sets compared to the 2001 and 2003 data sets. The more recent sampling activities in 2009 and 2010 / 2011 primarily collected samples to determine sediment chemistry concentrations for a few analytes and were not designed to obtain all of the other information necessary to evaluate natural attenuation. In addition, the 2009 and 2010 / 2011 samples were collected in very limited areas compared to the entire Shipyard Sediment Site and most were collected outside the areas with the highest concentrations proposed for dredging.

Other factors that must be accounted for when attempting to compare two data sets (i.e. the 2009 and 2010 / 2011 data compared to the 2001 / 2003 data) is variability in contaminant concentrations due to sampling location, sampling depth, and analytical methods (e.g. different laboratories). Each sediment sample is unique and any subsequent sampling, whether or not it is collected contemporaneously or years later, is from a different portion of the sediment. Since the Shipyard Sediment Site has considerable heterogeneities, duplicate samples, even those collected during the same sampling event, frequently exhibit these large variability. For example, the AMEC 2010/2011 sampling, as reported in AMEC's March 2011 Final Technical Report, collected duplicate samples G11 and G11 Dup from the same location. G11 had 3,740 ug/kg total HPAHs and G11 Dup had 5,360 ug/kg HPAHs, a 43 percent difference. Similarly, G17 and G17 Dup had 994 ug/kg and 284 ug/kg HPAHs, respectively, a 71 percent difference. Since these samples were collected at the same time, same location, and analyzed by the same laboratory, this large difference can be attributed primarily to heterogeneities in the sediment. This variability of chemical concentrations due to heterogeneities is one reason it is inappropriate to draw any conclusions regarding natural attenuation based on a data set limited in sample density, areal extent, and types of analyses.

Regarding the site characterization data and analysis needed to evaluate a site for monitored natural attenuation, the U.S. EPA document "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites" states in part that:

> "Decisions to employ MNA as a remedy or remedy component should be thoroughly and adequately supported with site-specific characterization data and analysis. In general, the level of site characterization necessary to support a comprehensive evaluation of MNA is more detailed than that needed to support active remediation. Site characterizations for natural attenuation generally warrant a quantitative understanding of source mass; ... rates of biological and non-biological transformation; and an understanding of how all of these factors are likely to vary with time. This information is generally necessary since

> contaminant behavior is governed by dynamic processes which must be well understood before MNA can be appropriately applied at a site. Demonstrating the efficacy of MNA may require analytical or numerical simulation of complex attenuation processes. Such analyses, which are critical to demonstrate natural attenuation's ability to meet remediation objectives, generally require a detailed conceptual site model as a foundation." (U.S. EPA, 1992b).

None of these more detailed site characterization activities and analyses needed to evaluate the Shipyard Sediment Site Site for a natural attenuation remedy were performed during the 2009 and 2010 / 2011 sampling or during the initial Exponent site characterization in 2001 and 2003.

The dredging proposed in the TCAO is estimated to remove approximately 143,000 cubic yards of contaminated sediments containing 141,000 kg (310,200 lbs.) of chemicals; including 2,200 kg arsenic; 170 kg cadmium; 8,700 kg chromium; 52,000 kg copper; 1,300 kg HPAHs; 15,000 kg lead; 230 kg mercury; 190 kg PCBs; 95 kg tributyltin; and 61,000 zinc (DTR Table 32-35). Natural attenuation proponents would need to demonstrate that physical, chemical, or biological processes would act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of these contaminants to levels that achieve the same benefits in reducing current impacts and future threats to beneficial uses the long term and within a time frame that is reasonable compared to the dredging identified in the TCAO.

The San Diego Water Board generally concurs with the comment that the potential for recontamination from off-site sources would affect all potential remedies and is therefore not a factor that should favor one potential remedy over another.

Additional discussion refuting MNA as a appropriate remedy is found in Response 1.1 at page 1-27, and Response 30.1.

RESPONSE 32.2

DTR Section: 32
Comments Submitted By: NASSCO, BAE Systems, Coastkeeper and EHC
Comment IDs: 75, 198, 199, 200, 325, 326, 327, 328, 429
Comment

SD Coastkeeper and EHC commented that the narrative alternative cleanup levels for aquatic life cannot ensure that these beneficial uses will not be unreasonably affected at the Shipyard Sediment Site.

ID 75
The Order and DTR fail to include numeric clean-up levels for benthic invertebrates and fish. See MacDonald 2011 at 18-20. Instead the Order relies on a narrative directive to protect aquatic life. An example of a narrative directive is "Remediate all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community." This failure is particularly egregious with respect to fish, as no information was presented in the Order or the DTR on how the potential for adverse effects on fish were explicitly considered. See MacDonald 2011 at 18 and 20. Furthermore, the lines of evidence developed to assess benthic invertebrate

communities are likely to be minimally protective as they rely on comparisons to a reference pool that included samples that would not meet criteria for negative control samples. See MacDonald 2011 at 19. Without appropriate numeric limits for fish and benthic invertebrates, there will be no way to quantitatively measure compliance with measures to protect fish and benthic invertebrates.

ID 325
In rebuttal, NASSCO commented that benthic invertebrate communities are protected by inclusion of “likely impacted” Triad stations in the proposed remedial footprint, and application of protective site-specific chemistry benchmarks (SS-MEQ and LAET), as well as additional safety buffers, to assess non-Triad stations. Moreover, a detailed statistical comparison of histopathology (i.e., incidence of lesions) in fish captured at the Site with reference area fish has already indicated that there are no significant adverse effects in Site fish as a result of observed chemistry concentrations.

ID 326
NASSCO also commented that, in fact, the TCAO and DTR are highly protective of both benthic invertebrates and fish. EHC/Coastkeeper relies primarily on the conclusions in the March 2011 MacDonald Report, which is currently subject to a motion for exclusion due to Mr. MacDonald’s unethical conduct during the discovery process (including destruction of evidence). Mr. MacDonald’s report acknowledges that “reliance on multiple lines of evidence is generally recommended for assessing contaminated sediments,” but claims that the cleanup levels are not protective of aquatic life based on several invalid criticisms, including:

(1) SS-MEQ, which is the metric Mr. MacDonald refers to as being used to evaluate sediment chemistry data in the non-triad samples, is not effects-based;
(2) the reference pool used to evaluate the results of the amphipod test is invalid because it included several survival values below 80%; and
(3) reference pools for the bivalve and echinoderm toxicity tests were invalid because the bivalve reference pool included only four stations and the echinoderm reference pool included two samples with fertilization rates below 70%.

All three of these critiques are invalid. First, Mr. MacDonald’s assertion that SS-MEQ does not provide an effects-based tool for predicting adverse effects on benthic communities is incorrect, as the SS-MEQ was specifically developed to be a site-specific, effects-based assessment tool. It was developed using all six of the “likely” impaired stations that were found at the Site under the DTR’s effects-based triad analysis, and is therefore directly analogous to the manner in which Long, et al. (1995) developed ERM values. Further, the predictive reliability of SS-MEQ was evaluated, and a threshold of 0.9 selected, using the site-specific effects determinations for the 30 triad stations, as well as the five supplemental triad stations sampled at the Site. Accordingly, there is no scientific basis for asserting that SS-MEQ is not effects-based. Additionally, using SS-MEQ rather than SQGQ1 to assess impacts on benthic communities is justifiable because the SQGQ1 is based on generic sediment quality values that do not explicitly consider site-specific conditions, whereas SS-MEQ is based on chemical and biological data collected at the Site.

Second, Mr. MacDonald's criticisms of the reference pool as it relates to the amphipod toxicity test are unfounded. The reference pool for the Site was selected by the Regional Board to comply with EPA guidance, as well as methods commonly used by environmental practitioners in assessing sediment. Applicable guidance states that reference areas should reflect the habitat conditions and background levels of chemical contamination that would exist at a study site in the absence of site-related sediment contamination. Reference conditions should incorporate levels of chemical contamination or biological responses that are considered representative of the general conditions of a water body removed. Thus, the DTR appropriately sought to select reference areas "consistent with the San Diego Water Board's goal of establishing a reference condition that represents contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination." Id. If, as Mr. MacDonald suggests, reference stations with amphipod survival of less than 80% were excluded, the analysis would ignore the full range of responses that occur in valid reference areas in San Diego Bay, and bias the analysis to in favor of a pre-conceived notion concerning what the minimum level of survival in reference areas should be. Notably, sediment management standards from other jurisdictions recognize that amphipod survival in reference areas may be as low as 75%. See BAE Initial Comments (citing Washington State Sediment Management Standards (Ecology 1995); Phillips et al. (2001)).

Third, Mr. MacDonald's criticisms of the reference pools for the remaining toxicity tests are also unjustified. In addition to the above discussion concerning the selection of reference pools, the results of the DTR bivalve and echinoderm tests were the same as those found by Exponent, using a different reference pool and different statistical procedures (analysis of variance vs. reference envelope). Accordingly, these results demonstrate that the statistical results for both tests are robust, since they were the same under two different methods of analysis.

Lastly, Mr. MacDonald's criticisms focus on the toxicity results for reference stations to the exclusion of other factors involved in selection of the reference pool; however, additional information, such as chemistry and benthic community information, was also used to select the reference pool.

ID 327
NASSCO further commented that EHC/Coastkeeper erroneously stated that the TCAO and DTR provide no information concerning the potential for adverse effects on fish at the Site. However, the DTR contains detailed analyses assessing impacts to spotted sand bass, including fish histopathology analysis and PAH metabolite analysis in fish bile, as well as evaluations of chemistry data and indirect impacts to fish via the benthic community. As discussed in NASSCO's Initial Comments, empirical data were collected at the Site and evaluated for effects on spotted sand bass, and unacceptable risks were not found. The Regional Board also conducted an independent analysis, based on the data collected by Exponent, extensively evaluating the potential effects of sediment contamination on fish at the Site, and concluded that no effects could be conclusively attributed to contaminant exposure at the Site. Because no adverse effects on fish were detected, numeric cleanup levels for fish are not necessary. Moreover, even though there are no demonstrated adverse effects on fish, the TCAO conservatively requires remediation of "all areas determined to have sediment pollutant levels

likely to adversely affect the health of the benthic community," which would also protect benthic fish.

NASSCO also agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 60.

ID 328
NASSCO continued its rebuttal stating that consistent with Water Code section 13304 and State Water Board Resolution, a reference pool should represent San Diego Bay conditions absent Shipyard Sediment Site discharges. That is, an appropriate reference pool for benthic community assessment should include all stressors and conditions that could affect the benthic community, with the exception of site-related chemical contamination. The DTR correctly states that the reference pool is intended to distinguish between pollution effects at the Site, and those found generally in the surrounding water body. Meeting criteria for negative laboratory controls is not a criterion for reference selection. The presence of all non-Site related stressors, including background chemical contamination, are part of the reference condition.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 59-60.

ID 429
BAE Systems provided the following rebuttal to SDC's and EHC's comment that "without appropriate numeric limits for fish and benthic invertebrates, there will be no way to quantitatively measure compliance with measures to protect fish and benthic invertebrates."

The statement implies that sufficient information will not be collected in the post-remediation monitoring program to protect benthic macroinvertebrates and fish. As discussed previously, the monitoring program is comprised of multiple lines of evidence that address sediment chemical concentrations and potential biological effects. The evaluations of biological effects will include direct measurements of sediment toxicity (i.e., using the 10-day amphipod survival test with Eohaustorius estuarius, and the 48-hour bivalve larvae development test using the mussel Mytilus galloprovincialis) and bioaccumulation (i.e., using the 28-d test with the clam Macoma nasuta). In addition, sediment chemical concentrations will be compared with site-specific sediment quality values designed to be protective of benthic macroinvertebrate communities (i.e., the SS-MEQ and the 60% LAET values). The concerns for fish are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on extensive site-specific evaluations using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003).

ID 198
BAE Systems rebutted the following statement in MacDonald 2011. MacDonald states that "Without evidence in the record demonstrating that potential for adverse effects on fish were considered, I conclude that the Alternative Clean-Up Levels were developed without considering the potential for adverse impacts on fish." This assertion is invalid since extensive evaluations of risks to fish were evaluated at the Site, using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003). MacDonald's assertion is therefore invalid.

ID 199

BAE Systems rebutted the following statement in MacDonald 2011. MacDonald states that "The metric for evaluating sediment chemistry data in the non-Triad samples is not effects based." He then identifies the SS-MEQ as the metric he is referring too. However, as discussed in detail in the previous response to MacDonald's Conclusion C.3.6, the SS-MEQ was developed in the DTR to be a site-specific, effects-based, protective tool for evaluating benthic impairment. MacDonald's assertion is therefore invalid.

MacDonald also states the reference pool used to evaluate the results of the 10-d amphipod test was invalid because it included several survival values less than 80 percent. However, as discussed in detail in the previous response to MacDonald's Comment C.2.6, the group of stations included in the reference pool was appropriate, because they were relatively uncontaminated and represented the range of sediment chemical concentrations and biological responses found in areas located away from contaminant sources in San Diego Bay. MacDonald's assertion is therefore invalid.

MacDonald also states that the reference pools for the bivalve and echinoderm sediment toxicity tests were invalid because the bivalve reference pool included only four stations, and the echinoderm reference pool included two samples with fertilization rates of less than 70 percent. Aside from the justifications identified for the amphipod test above, the results for the bivalve and echinoderm tests identified in the DTR were identical to those found by Exponent (2003), using a different reference pool for the echinoderm test and a different statistical procedure for both tests (i.e., analysis of variance in the Exponent report and a reference-envelope approach in the DTR). That is, both studies found no significant effects for the echinoderm test, and significant effects at the same 12 stations for the bivalve tests. These results show that the statistical results for both of these tests were robust, since they were the same using two methods of analysis. MacDonald's assertion that the results for those two tests were invalid is therefore incorrect.

ID 200

BAE Systems provided rebuttal to the following statement in MacDonald 2011. MacDonald states the "My analysis of data from the Shipyard Sediment Site indicates that benthic fish are at risk throughout portions of the site and at least seven polygons were not included in the Proposed Remedial Footprint that had unacceptable risks to fish (MacDonald 2009)." However, as describe in detail in the previous response to MacDonald's Comment C.2.9, his analysis of risk to fish suffered from numerous flaws and uncertainties. Briefly, MacDonald predicted PCB concentrations in gobies, a species that does not occur at the Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, a lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above "assumptions" has uncertainties attached to it, which MacDonald (2009) did not acknowledge or attempt to quantify. By contrast with MacDonald's hypothetical analysis of risk to fish, empirical data collected at the Site were evaluated for the spotted sand bass by Exponent (2003) and unacceptable risks were not found. MacDonald's assertion regarding risks to fish at the Site is therefore invalid."

Response 32.2

Coastkeeper, EHC and their retained expert, Donald McDonald, argue that the TCAO and DTR fail to include protective numeric clean-up levels for benthic invertebrates and fish and that there will be no way to quantitatively measure compliance with measures to protect fish and benthic invertebrates. Coastkeeper and EHC further argue that the DTR lines of evidence developed to assess benthic invertebrate communities are likely to be minimally protective as they rely on comparisons to a deficient DTR reference pool. In rebuttal, NASSCO argues that benthic invertebrate communities are protected under the terms of the TCAO by inclusion of all "likely impacted" Triad stations and Non-Triad stations exceeding protective site-specific chemistry benchmarks in the proposed remedial footprint. NASSCO also argues in rebuttal that the DTR reference pool was selected in conformance with U.S. EPA guidance and the requirements of Resolution 92-49, and is appropriate for use in establishing baseline conditions in terms of sediment chemistry, toxicity, and benthic community structure. NASSCO further contends that the concerns for fish are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on the extensive site-specific evaluation using the abundant and benthic-feeding spotted sand bass as the key indicator species. BAE Systems rebuttal supports NASSCO's arguments and further points out that the TCAO and DTR monitoring program is sufficiently adequate to quantitatively measure compliance with measures to protect fish and benthic invertebrates.

Benthic Community Protection

The Cleanup Team concurs with NASSCO's and BAE Systems rebuttal comments regarding the adequacy of the TCAO and DTR approach taken to ensure protection of benthic communities. Contrary to the assertions of San Diego Coastkeeper, EHC and their retained expert, McDonald, the TCAO and DTR approach to assessing benthic beneficial use impairment and targeting benthic impacted areas for remediation is reasonable, complete, scientifically supportable and fully adequate to ensure protection of benthic communities. The overall TCAO and DTR remediation approach to ensure protection of benthic communities consists of two key steps:

1. Evaluation of adverse effects to the benthic community at each of the 66 Shipyard Sediment Site stations using two different approaches depending on the types of data collected at the sample stations. The approaches are referred to as the Triad approach and the Non-Triad Approach; and

2. Targeting all polygonal areas having stations classified as "likely impaired" for inclusion in a remedial footprint that will be remediated to attain background concentrations derived in DTR Section 29. The term "likely impaired" is equated with impairment of the benthic community at a level assumed to represent aquatic life beneficial use impairment. The term "likely impaired "also refers to Non-Triad Stations exceeding site-specific chemistry benchmarks.

The Triad Approach summarized in TCAO Findings 16 and 18 and described in detail in DTR sections 16, 17 and 18 is based on a WOE framework for integrating sediment chemistry, toxicity, and benthic community data collected from surface sediment to make a station level determination of the likelihood of biological effects due to sediment contamination. This approach was used to evaluate the likelihood of sediment chemical-derived effects on the benthic community at the 30 stations where data was collected for each of the three Triad lines of evidence. Six of the 30 Triad stations are classified as “Likely” for chemically-associated impairment (NA19, NA22, SW04, SW13, SW22, and SW23). All of the polygons represented by these stations are included in the proposed remedial footprint (See DTR Figure 33-1).

The Non-Triad Data Approach summarized in DTR 32.5.2 is based on an empirical evaluation of sediment contaminant concentrations at the 36 sample stations where toxicity and benthic community data was not collected. The approach consists of the evaluation of the five primary COCs (copper, mercury, HPAH, PCBs and TBT in surface sediments at the site using two chemical threshold referred to as 1) Site-Specific Lowest Apparent Effects Thresholds (LAETs) for individual COCs, and 2) Site-Specific Median Effects Quotient (SS-MEQ) to address combined effects of multiple COCs. Seven of the 36 Non-Triad stations are classified as “Likely” for chemically-associated impairment (SW01, SW05, SW10, SW16, SW20, SW24, and SW28). SW01, SW05, SW16, and SW20 were identified based on an exceedance of the SS-MEQ threshold. SW10, SW24, and SW28 were identified based on an exceedance of 60% of the LAET value for HPAHs (and exceedance of SS-MEQ threshold). (See DTR Table 32-23.) All of the polygons represented by these stations are included in the proposed remedial footprint (See DTR Figure 33-1).

The various empirical, consensus based and site derived SQGs used to support the Triad and Non-Triad data assessments are technically and scientifically sound, appropriately applied and well suited for overall assessment of potential biological effects. See San Diego Water Board response to Group Comment IDs 36, 68 and 77 for more details on the Triad and non-Triad WOE approaches, including specifics on the metrics SQGQ1, SS-MEQ, and 60% LAET.

Under the TCAO, all polygonal areas included in the remedial footprint are targeted for remediation to background sediment chemistry concentrations derived in DTR Section 29. (See DTR 33.1 and TCAO Directive 2.a.) The proposed remedial action to attain background concentrations is dredging. Certain inaccessible or under-pier areas in the remedial footprint will be remediated by one or more methods other than dredging such as sand capping. Once remediation is completed, the SWAC within the remedial footprint is expected to be at or below background levels. Under Resolution No. 92-49, the cleanup of benthic impacted polygonal areas in the proposed remediation foot print to attain background conditions represents the complete removal of all waste that was 1) caused or permitted by the responsible parties identified in the TCAO to be discharged to the polygonal areas and 2) identified by inference as the likely cause of the sediment chemical-derived effects on the benthic community.

Cleanup Levels for Fish

The Cleanup Team also concurs with NASSCO’s and BAE Systems rebuttal comments regarding the adequacy of the extensive investigation documented in the DTR Appendix for Section 15, (See A15.2 Fish Histopathology Analysis and A15.3 Fish Bile Analysis) to examine adverse effects to fish attributable to contaminant exposure at the Shipyard Sediment Site. As documented in the DTR, adverse effects to fish from Shipyard Sediment Site chemicals were not identified. The detailed statistical comparison of histopathology (i.e., incidence of lesions) in fish captured at the Site with reference area fish contained in the DTR Appendix for Section 15 demonstrates that there are no significant adverse effects in Site fish that can be conclusively attributed to contaminant exposure at the Shipyard Sediment Site. The Cleanup Team concurs with NASSCO's rebuttal that because no adverse effects on fish were detected, numeric cleanup levels for fish are not necessary. NASSCO also correctly points out that even though there are no demonstrated adverse effects on fish, the TCAO conservatively requires remediation of "all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community," which would also protect benthic fish.

Reference Pool
McDonald (2001) also argues that the reference pool used to evaluate the results of the 10-day amphipod test was invalid because it included several survival values less than 80 percent. The Cleanup Team agrees with NASSCO and BAE Systems rebuttals to these comments. The TCAO Final Reference Pool described in DTR Section 17 is consistent with the San Diego Water Board's goal of establishing a reference condition that represents 1) contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and 2) some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination. (DTR Section 17 at Page 17-7). The reference pool was selected in conformance with applicable U.S. EPA guidance and the requirements of Resolution No. 92-49 pertaining to the establishment of background levels to define water quality conditions that existed before the discharge.

If amphipod survival of less than 80 percent were excluded from the reference pool, the analysis would ignore valid reference areas data in San Diego Bay indicating biological effects which are reflective of the natural variability in toxicity and benthic conditions that can occur from factors other than sediment contamination. Benthic community composition for example can be affected by stress factors that are not contaminant induced such as natural variations in habitat (e.g. sediment grain size and organic content) environmental factors (e.g. water depth, salinity, and temperature) and physical disturbance (e.g. anchor or prop wash). Measurements of sediment toxicity can also be influenced by variety of factors besides sediment contamination such as test imprecision, and the presence of natural factors such as hydrogen sulfide or ammonia. Sediment toxicity test results may also not have a consistent correlation with biological effects because the toxicity test species and species that compose the benthic communities may have different sensitivities to different contaminants. As NASSCO points out in their rebuttal the exclusion of stations exhibiting amphipod survival of less than 80 percent would inappropriately bias the analysis in favor of a pre-conceived notion concerning what the minimum level of survival in reference areas should be. All of these considerations are described in further detail in DTR section 17.2.

McDonald (2011) also argues that the reference pools for the bivalve and echinoderm sediment toxicity tests were invalid because the bivalve reference pool included only four stations, and the echinoderm reference pool included two samples with fertilization rates of less than 70 percent. This criticism of the reference pools is unfounded and the Cleanup Team concurs with NASSCO's and BAEs rebuttals on this issue. Aside from the justifications identified for the amphipod test above, the results for the bivalve and echinoderm tests identified in the DTR were identical to those found by Exponent (2003; as provided in the report, *NASSCO and Southwest Marine Detailed Sediment Investigation, September 2003* ;SAR105413, SAR1054127, SAR105997, and SAR106283), using a different reference pool for the echinoderm test and a different statistical procedure for both tests (i.e., analysis of variance in the Exponent report and a reference-envelope approach in the DTR). As BAE Systems points out in their rebuttal, both studies found no significant effects for the echinoderm test, and significant effects at the same 12 stations for the bivalve tests. These results show that the statistical results for both of these tests were robust, since they were the same using two methods of analysis.

Post Remediation Monitoring
Coastkeeper and EHC make the statement in their comments that without appropriate numeric limits for fish and benthic invertebrates, there will be no way to quantitatively measure compliance with measures to protect fish and benthic invertebrates. BAE points out in their rebuttal that this statement incorrectly implies that sufficient information will not be collected in the post-remediation monitoring program to protect benthic macroinvertebrates and fish. As discussed in the Cleanup Team's responses to comments on Finding 34, the post remediation monitoring program is comprised of multiple lines of evidence that address sediment chemical concentrations and potential biological effects. The monitoring program is adequately designed to evaluate whether TCAO remediation goals described in TCAO Directive 3 are met and maintained over the long term. Post remediation monitoring will be initiated two years after remedy implementation has been completed and continue for a period of up to 10 years after remediation. The post remedial monitoring includes direct measurements of sediment chemistry, sediment toxicity, and bioaccumulation (i.e., using the 28-d test with the clam *Macoma nasuta*). Benthic community condition assessments will also be conducted to evaluate the overall impact of remediation on the benthic community re-colonization activities.

RESPONSE 32.3

DTR Section: 32
Comments Submitted By: BAE Systems, Coastkeeper and EHC
Comment IDs: 202, 483, 484
Comment

ID 483
Coastkeeper and EHC commented that the TCAO contains incorrect statements including the following. Finding 32 of the TCAO incorrectly concludes that "clean-up of the remedial footprint will restore any injury, destruction, or loss of natural resources." The San Diego Regional Board does not have authority to conduct natural resource damage assessments because only the Natural Resources Trustees have authority to conduct natural resource damage assessments and to draw conclusions regarding injury to natural resources and the effectiveness of remedial actions in terms of restoring natural resource values. (See MacDonald 2011 at p. 20).

ID 202, 484
In rebuttal, BAE Systems commented that this statement is an unwarranted extrapolation of a single mention of "natural resources" in the TCAO, in which it is simply stated that "Cleanup of the remedial footprint will restore any injury, destruction, or loss of natural resources." The statement in no way addresses service losses, monetary damages, or any of the other parameters unique to natural resource damage assessments. The statement simply articulates that the cleanup of the remedial footprint at the Shipyard Site will improve environmental conditions

such that natural resources like those evaluated in detail at the Shipyard Site (i.e., benthic macroinvertebrates, fish, and aquatic dependent wildlife) will benefit. The SDC/EHC statement is therefore irrelevant.

Response 32.3

BAE Systems is correct in its characterization of the TCAO. The text in the TCAO Finding 32 supports the conclusion that the alternative cleanup levels will not unreasonably affect present and anticipated beneficial uses of the site. It was not meant to imply that the San Diego Water Board had conducted a natural resource damage assessment within the meaning of the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or the Oil Pollution Act (OPA). The San Diego Water Board does have statutory authority to consider a variety of factors, including damages to aquatic life and aquatic dependent wildlife benficial uses, in assessing whether alternative cleanup levels are sufficiently protective. (See Water Code section 13304, Resolution No. 92-49, and CRC Title 23, section 2550.4(e). No change to Finding 32 of the TCAO is warranted. (See also Response 1.4)

RESPONSE 32.4

DTR Section: 32
Comments Submitted By: Coastkeeper and EHC
Comment IDs: 60
Comment

III.A. The Site-W ide Alternative Cleanup Levels Were Calculated Based on Remediating to Background Pollutant Levels.

The DTR admits that "Post-remedial SWAC calculations were completed with the assumption that the SWAC inside the [Proposed Remedial] footprint would be remediated to background concentrations...." DTR §32.2.3 at 32-12; see also Table A32-3. By the DTR's own admission, in order to achieve the post-remedial pollutant concentrations site-wide, the remediated areas need to be cleaned to background if the other areas remain untouched. For this approach to be valid, the cleanup must ensure that remediated areas are cleaned to background conditions or cleaner.

Response 32.4

It is correct that post-remedial SWAC calculations were completed with the assumption that the SWAC inside the footprint would be remediated to the background UPL concentrations derived in DTR Section 29. However, it should be noted that in reality, the SWAC within the remediation footprint following remediation may well be less than the background UPL concentrations , or result in chemical concentrations below background in certain areas. (See DTR Section 32.2.3 at Page 32-12 and DTR Section 33.1 at Page 33-2.)

In order to complete the Post- Remedial SWAC calculations, it is necessary to assume an average COC concentration for the remediated area. The assumption of background UPL concentratons in the calculations incorporates conservatism in the analysis and results in a Post-Remedial SWAC result that is more beneficial use protective. It should be pointed out that the Shipyard Sediment Site site data clearly indicates that individual COC concentrations below the

background UPL currently exist at the Shipyard Sediment Site, which suggests that the Post Remedial SWAC concentrations are likely to be even lower following remediation than projected in the calculations.n (See DTR Appendix for Section 32, Table A32-1 and Table A 32-2.)
Accrdingly the pologonal areas included in the remedial footprint need to be rmediated to attain background concetratons derived in DTR Section 29 in order to achieve the predicted post-remedial SWACs shown in DTR Table 32-3.and TCAO Directive 2.c.. To ensure this, the TCAO Directive A.2.a. requires that the sediments in the remedial footprint be dredged to attain background conditions and confirmed by remediation monitoring rsults.. If the concentrations in the dredge remedial areas do not meet these TCAO directives, additional dredging will be required under TCAO Directive 2.a.. The TCAO Directive D. Post Remedial Monitoring requires sampling that confirms that the post-remedial SWAC is achieved.

RESPONSE 32.5

DTR Section: 32
Comments Submitted By: BAE Systems
Comment IDs: 177
Comment

BAE's responses to conclusions in MacDonald (2011) regarding the proposed remedial footprint.

The methods used in the DTR to evaluate sediment at the Site were selected in large part to be consistent with those recommended by EPA, as well as those commonly used to evaluate contaminated sediment sites in the U.S. by sediment quality practitioners. Conclusion C.3.3 of MacDonald 3/11/11 Expert Report states that "Evaluating risks to benthic invertebrates using a sediment quality triad (SQT) approach is a scientifically valid approach." "The procedures described in the DTR for interpreting such data are not always consistent with the best current guidance."

This conclusion is invalid, as described in detail in the responses to MacDonald's Comments C.2.4, C.2.5, and C.2.6. The methods used for the Site are consistent with EPA guidance and with the methods commonly used at contaminated sediment sites. In addition, they are both conservative and protective of benthic macroinvertebrate communities at the site.

Response 32.5

Comment Noted.

The Cleanup Team examined the Section C.3.3 of the MacDonald report (2011) in an attempt to determine the "best current guidance" MacDonald is referring to for comparison to the approach taken in the DTR. According to Section C.3.3 and C.3.5 of the MacDonald report, the data was not evaluated with the best guidance according to the "Science Advisory Group on Sediment Quality Assessment," citing MacDonald et al. 2009 for additional information. The reference 2009 document, entitled "Development and evaluation of sediment and pore-water toxicity thresholds to support sediment quality assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, Kansas" is cited as a draft report submitted to U.S. EPA Regions 6 and 7. The Cleanup Team was unable to locate the document and, as a draft report, its level of peer review is unknown. It is also unclear how the document, which appears to focus on landlocked systems, pertains to the San Diego Bay Shipyard Site. The Cleanup Team was also unable to locate any information on the "Science Advisory Group on Sediment Quality Assessment."

RESPONSE 32.6

DTR Section: 32
Comments Submitted By: BAE Systems
Comment IDs: 193
Comment

Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

MacDonald argues the "appropriateness and protectiveness of the Alternative Clean-Up Levels described in Section 32 of the TCAO and Finding 32 of the DTR are uncertain for several reasons" and proceeds to set forth comments. (Id.) BAE Systems responds to each comment.

1. Comment D.2.1 that "The Alternative Clean-Up Levels are substantially higher than background levels of the primary COCs in San Diego Bay" is Unsupported and Invalid (TCAO Finding 32; DTR § 32)

MacDonald states that "Clean-Up Levels that correspond with background conditions in San Diego Bay would provide the highest, practically achievable, level of protection to ecological receptors utilizing habitats in the vicinity of the Shipyard Sediment Site." However, because he fails to evaluate or even define his term "practically achievable", he provides no support for his assertion. By contrast the DTR provided extensive evaluations of both the protectiveness of the Alternative Cleanup Levels, as well as the technical and economic feasibility of cleaning up the entire site to background levels.

As stated in Section 32.2.3 of the DTR, "Protectiveness of the beneficial uses represented by aquatic-dependent wildlife and human health was assessed via estimation of post-remedial SWAC values of the remedial footprint. Post-remedial SWAC calculations were completed with the assumption that the SWAC inside the footprint would be remediated to background concentrations." The protectiveness of this approach for aquatic dependent wildlife was then evaluated, and it was concluded that "HQs for all receptors evaluated at the Site had a value less than 1.0 (Table 32-8), indicating that the COCs are unlikely to cause adverse ecological effects and that the post-remedial sediment chemistry conditions are protective of aquatic dependent wildlife and their associated beneficial uses." In addition, in Section 31 of the DTR, it was determined that "Based on these incremental costs versus incremental benefit comparisons, cleanup to background sediment quality levels is not economically feasible." Based on the considerations discussed above, the SWAC values identified in Section 32 of the DTR were selected as the Alternative Cleanup Levels for the Site (see Table 2 of the TCAO). It therefore is appropriate that the Alternative Cleanup Levels exceed background values, and MacDonald's assertion is invalid.

Response 32.6

The San Diego Water Board concurs with comment that the post-remedial SWAC identified in the DTR is appropriate and protective of aquatic-dependent wildlife. The San Diego Water Board also concurs with the comment that, based on the economic evaluation in the DTR, it is economically infeasible to cleanup to background.

33. TCAO Finding 33 and DTR Section 33: Proposed Remedial Footprint and Preliminary Remedial Design

Finding 33 of TCAO No. R9-2011-0001 states:

Polygonal areas were developed around the sampling stations at the Shipyard Sediment Site using the Thiessen Polygon method to facilitate the development of the remedial footprint. The polygons targeted for remediation are shown in red and green in Attachment 2. The red areas are where the proposed remedial action is dredging. The areas shown in green represent inaccessible or under-pier areas that will be remediated by one or more methods other than dredging. Portions of polygons NA20, NA21, and NA22 as shown in Attachment 2 were omitted from this analysis because it falls within an area that is being evaluated as part of the TMDLs for Toxic Pollutants in Sediment at the Mouth of Chollas Creek TMDL and is not considered part of the Shipyard Sediment Site for purposes of the CAO.

The polygons were ranked based on a number of factors including likely impaired stations, composite surface-area weighted average concentration for the five primary COCs, Site-Specific Median Effects Quotient (SS-MEQ)21 for non-Triad stations, and highest concentration of individual primary COCs. Based on these rankings, polygons were selected for remediation on a “worst first” basis.

In recognition of the methodologies and limitations of traditional mechanical dredging, the irregular polygons were converted into uniform dredge units. Each dredge unit (sediment management unit or “SMU”) was then used to develop the dredge footprint. The conversion from irregular polygons to SMUs is shown in Attachments 3 and 4. These attachments show the remedial footprint, inclusive of areas to be dredged (“dredge remedial area,” in red) and under-pier areas (“under-pier remedial area,” in green) to be remediated by other means, most likely by sand cover. Together, the dredge remedial area and the under-pier remedial area constitute the remedial footprint.

Upland source control measures in the watershed of municipal separate storm sewer system outfall SW-4 are also needed to eliminate ongoing contamination from this source, if any, and ensure that recontamination of cleaned up areas of the Shipyard Sediment Site from this source does not occur.

RESPONSE 33.1

DTR Section: 33
Comments Submitted By: Coastkeeper and EHC, NASSCO, BAE Systems, Port District
Comment IDs: 74, 76, 77, 141, 146, 149, 170, 174, 175, 176, 180, 181, 183, 329, 330, 331, 332, 333, 334, 408, 409, 430, 471, 480
Comment

ID 74, 76
Coastkeeper and EHC commented that the law requires every cleanup to result in the "best water quality reasonable." See Resolution No. 92-49. The following aspects of the proposed cleanup prevent it from achieving the "best water quality reasonable." The Proposed Remedial Footprint indicating "polygons targeted for remediation" is too small to ensure that present and anticipated

beneficial uses of San Diego Bay are protected. See Order at 38, Attachment 2. Problems with the development of the proposed remedial footprint results in a cleanup less than the best water quality reasonable based. This comment is based on five reasons presented below.

ID 77
Coastkeeper and EHC stated that, first, an insufficient number of samples were collected to accurately determine the nature and extent of contamination at the 148-acre Shipyard Site, given the variability of contaminants at the site. See MacDonald (2011) at p. 10.

ID 141, 175, 430
In rebuttal BAE Systems commented that Coastkeeper's and EHC's assertion on the number of sampling stations and their distribution is incorrect. The station distribution scheme was consistent with the manner in which most schemes are designed at contaminated sediment sites. That is, stations are distributed with the highest density near sources where the highest COC concentrations are expected (especially in depositional environments), and with lower densities in areas removed from the sources, where contaminants are expected to be more widely dispersed by waves and currents. At the Shipyard Site, it was expected that most contaminant sources would be located near the shoreline, and that the piers would create depositional environments that would facilitate deposition of contaminants near the sources, resulting in patchy distributions with elevated concentrations. In contrast, contaminant sources were not expected to be found outside the pier lines, and in those locations, contaminants would be dispersed by waves and currents in San Diego Bay, and their concentrations in sediments would be lower and more evenly distributed. Therefore, most of the 65 stations (i.e., 43) at the Shipyard Site were located within the pier line of the site, and the station distribution scheme was consistent with the scheme commonly used at contaminated sediment sites.

Moreover, the sediment chemistry results of the 2001/2002 sampling at the Shipyard Site confirmed the assumptions used to design the station distribution scheme. That is, the chemical concentrations presented in Table A33-3 of the DTR and the concentration contours presented in Figures 4-3 to 4-21 of Exponent (2003) show that the highest concentrations were generally found within the pier line and lower, more evenly distributed concentrations were found outside the pier line. Therefore, the station distribution scheme used at the Shipyard site is considered adequate to characterize the nature and extent of sediment contamination.

Because there are no firm rules or agency guidance on the number of stations that should be sampled at a contaminated sediment site (i.e., because each site is different), the number used to characterize a particular site is usually determined using the best professional judgment of the scientists, regulatory staff, and responsible parties involved with site. These decisions take into account the site-specific nature of sources and transport mechanisms, and the effort and costs involved in both the site investigation and potential cleanup actions. Because this was the process used to develop the station distribution scheme for the Shipyard Site, the station densities are considered adequate to characterize the nature and extent of sediment contamination, and to develop a remedial footprint.

ID 331
In rebuttal, NASSCO agreed with BAE's comments on the topic of "insufficient number of samples," and incorporated BAE's comments in its comments. (See BAE Initial Comments, at 30.) NASSCO commented that the sediment investigation by Exponent, upon which the DTR analyses are based, was conducted with substantial oversight from the Regional Board and has been described by Regional Board Staff ("Staff") as "the most extensive sediment investigation ever conducted for a site in San Diego Bay," if not California.(Barker Depo, at 80:2 – 80:22; 82:3 – 82:4, 83:14 – 83:23). See also DTR, at 13-2 – 13-3 (summarizing Staff and stakeholder involvement in the sediment investigation); Exponent Report, at 1-2 – 1-4 (summarizing the directives and guidance provided by Staff throughout the planning and execution of the sediment investigation and Exponent Report). Staff confirmed that approximately 65 stations were sampled, including 30 triad stations, 35 non-triad stations, with sediment chemistry and benthic community profiling data collected. Barker Depo, at 80:2 – 80:22. Staff did not recall collecting 30 or more triad stations for any other sediment matter in San Diego Bay. Id. Further, Staff described the study as "detailed" and "very thorough." Id., at 82:3 – 82:4, 82:14 – 83:23.

The Site assessment approach, including the sample types, number, and density were all thoroughly vetted by Board Staff prior to implementation in 2001. The DTR analyzes data collected from 60 stations throughout the Site, distributed consistent with the manner in which most investigations are designed at sediment sites. Stations were distributed with the highest density near sources where the highest COC concentrations would be expected, and with lower densities in areas further removed from potential sources, where contaminants would be expected to be more widely dispersed by winds, waves, and tides. In fact, Mr. MacDonald described exactly this type of distribution scheme when he suggested that "to address concerns regarding spatial variability in sediment chemistry, investigators frequently design sediment sampling programs to provide a high density of samples in the vicinity of point sources discharges." March 2011 MacDonald Report, at 10. Given the extensive and unparalleled scope of the sediment investigation, including the number of stations sampled, the contention that an insufficient number of stations were analyzed is unsupportable.

ID 471
Coastkeeper and EHC provided rebuttal to BAE Systems' comments on MacDonald 2011 as follows.

BAE's lawyers found fault with every point Don MacDonald made in his expert report, dated March 11, 2011 and deemed each expert opinion "incorrect," "invalid," "unsupported" or "premature." However, BAE's criticisms are solely argument, as they rely on unsupported assertions made by lawyers, not on measured points provided by an equally-qualified expert. After examining the particular criticisms, it is clear that they are without merit and provided merely in an attempt to confuse the Regional Board. For these reasons, BAE's criticisms of Donald MacDonald's expert opinions carry little weight and should be ignored.

Regarding the issue of sampling density, Coastkeeper and EHC stated that BAE's lawyers claim that Mr. MacDonald's expert opinion that "the sampling density is insufficient to accurately characterize the nature and extent of contamination at the site" is "incorrect." They base this claim on an unsupported and un-cited assertion that sampling was "consistent with the manner in which most schemes are designed at contaminated sites." But BAE's lawyers provide no citations or examples to demonstrate that "most schemes" are designed with such a paltry sampling density, nor can they explain how an opinion about a subjective matter like "sufficiency" can be "incorrect."

ID 77
Coastkeeper's and EHC's second assertion is that ranking the polygons from most- to least-contaminated using the Composite SWAC value fails to consider the potential adverse effects on human health or the environment. See MacDonald 2011 at 10. The method also ignores concentrations of other contaminants—such as lead, zinc, and low molecular weight PAHs—that could be elevated in sediments from the site. See MacDonald 2011 at 10.

ID 430
BAE Systems and NASSCO provided the following rebuttal to Coastkeeper and EHC's second assertion. BAE Systems commented that the first assertion is invalid because, as described in Section 33.1.2 of the DTR, the composite SWACs were based on all five primary COCs at each station. The composite values therefore provided quantitative estimates of the degree of chemical contamination at all Shipyard stations, which allowed the stations to be ranked with respect to the magnitude of risks that they posed to human health and the environment on the basis of chemical contamination. The second assertion made by SDC and EHC is invalid because, as described in Section 29.3 of the DTR, the secondary COCs at the Shipyard site generally exhibited strong positive correlations with one or more of the primary COCs, indicating that they would be addressed in a common remedial footprint. Therefore, the co-occurrence evaluation conducted in the DTR ensured that the secondary COCs were accounted for in the remedial footprint.

ID 332
NASSCO agreed with BAE's comments on the topic of ranking polygons from most- to least-contaminated using the composite SWAC value and incorporated those comments in its comments. (See BAE Initial Comments, at 31-32). Further, NASSCO stated that Coastkeeper's and EHC's contention that the polygon ranking approach fails to consider the potential adverse effects on human health or the environment is an unsupported conclusion. Coastkeeper and EHC cite to MacDonald who reiterates the same unsupported conclusion. EHC/Coastkeeper has provided no credible evidence that the proposed TCAO is not protective of human health or the environment.

ID 480
In rebuttal to Coastkeeper's and EHC's second assertion, the Port District commented that it is supportive of the proposed cleanup approach reflected in the TCAO and DTR, while reserving the right to consider any comments that may come in during the public comment period. According to Regional Board Executive Officer and CUT team head, David Gibson, this is exactly the type of support which the CUT is seeking and would expect from the Port. (Exhibit " 1 " [Gibson Deposition], 43:4-22.)

To illustrate this support, the Port's designated expert, Dr. Michael Johns, provides support for the proposed remedial footprint. (Exhibit "2" [Port Expert Designation]; Exhibit "3" [Dr. Johns

Declaration], paragraphs 8-9.) In particular. Dr. Johns agrees with the process used to identify the polygons for the remedial footprint and has concluded that the factors used to select "worst first" polygons are consistent with the findings.

Dr. Johns cited two caveats to his opinion that the remedial footprint contemplated by the DTR will adequately address risks posed by contaminated sediments within the Site in accordance with the Water Board's responsibility to protect the beneficial uses of waters of the state pursuant to California Water Code section 13304. Those caveats are:

a. Polygon SW29 - Only a portion of this polygon was included in the proposed remedial action footprint; the remaining area will be the subject subsequent action by the Water Board. Having reviewed additional data collected from within the boundaries of the SW29 polygon (i.e., split sample data from the samples collected by SDG&E under Order No. R9-2004-0026), I found that total PCB concentrations measured in samples represent some of the highest found within the Site. In addition polygon SW29 is at the edge of the study area and represents an unbounded area of higher concentrations of total PCBs. Because ofthese factors (i.e., high PCB concentrations not bounded by sediment data showing lower concentrations), the portion of polygon SW29 not currently included in the remedial footprint warrants subsequent action.

b. Polygon NA23 -The DTR acknowledges the high ranking of this polygon using the “worst first” analysis but concludes that it is technically infeasible to dredge because doing so would adversely affect Pier 12, the tug boat pier, and the riprap shoreline, as well as undermine the sediment slope for the floating dry dock sump. However, other areas in which dredging is not feasible are currently included in the remedial action footprint. Alternative remedial technologies proposed in these latter areas include capping and backfill. The constraints that precluded dredging in polygon NA23 (e.g., inaccessibility of sediment under piers) appear to have been overcome for these other areas. Therefore, the decision not to include polygon NA23 in the remedial action footprint on the basis of technical feasibility should be re-evaluated.

ID 409
NASSCO provided the following rebuttal to the Port District's Exhibit "3" [Dr. Johns' Declaration].

Dr. Johns' comment with respect to polygon SW29 suggests that remedial action should occur at all areas of polygon SW29 not included in the DTR remedial footprint due to PCB concentrations that are “…some of the highest found within the Site” and because the polygon is near the edge of the study area. However, he presents no analysis that suggests the proposed remedial footprint is insufficient to protect beneficial uses, nor does he explicitly assert that PCBs (or any other COC) concentrations at polygon SW29 pose an unacceptable risk or beneficial use impairment that requires remediation to mitigate. He apparently is suggesting that the remedial footprint be expanded solely on the basis of relative chemistry – only one leg of the triad analysis – and not on the basis of biological effects or receptor exposure. The spatially-weighted average exposure approach for assessing food web risks, and the weight of evidence approach for assessing risk to aquatic life, both of which Dr. Johns apparently agrees with, support the protectiveness of the DTR proposed remedial footprint, even given the extreme assumptions of the DTR exposure analyses for humans and wildlife.

Furthermore, Dr. Johns' comment with respect to polygon NA23 appears to be premised on the notion that "inaccessibility of sediment under piers" is the primary reason why dredging is infeasible at polygon NA23.

In fact, remediation of polygon NA23 is significantly more problematic than the remediation of other polygons, including those where sediment is inaccessible due to the presence of an overwater pier, due to the unique combination of conditions at NA23.

Specifically, NA23 is comprised largely of steep and lengthy slopes, which are located immediately adjacent to the pile-supported structure of Pier 12 and the armored shoreline, and which leave little to no room in which to establish a stabilizing offset distance. NASSCO's Initial Comments, Attachment D, Anchor QEA Technical Memorandum at 2 (May 26, 2011). These sloping areas are inclined at up to approximately 3H:1V (close to the sediment's natural angle of repose) and encompass 30 to 40 feet of vertical relief, making them among the steepest and highest in relief of any slopes at the shipyard site. Id. In such situations, dredging on any part of the slope must be accompanied by dredging to a similar extent all the way up the slope in order to maintain overall slope stability; otherwise, undredged areas higher up would quickly collapse into dredged areas below. Id. at 2-3.

However, since the upper portions of the slopes at NA23 are adjacent to Pier 12 and the armored shoreline slope, removal of material would lessen the stability of these features, and necessitate significant structural improvements to prevent catastrophic collapse of these features. Id. at 2-3. Elsewhere on the project site, such a scenario can be mitigated by installing a rock buttress alongside the structure of slope, so that it will be less likely to be undermined or weakened. Id. at 3. At polygon NA23, however, there is limited to no room in which to add such a feature, and in any event, situating one at the top of a dredged slope would be inherently unstable due to the fact that there is insufficient room to maintain a stabilizing offset distance. Id.

Thus, the unique set of conditions found at NA23, including the (1) steep slopes, (2) presence of adjoining features, and (3) limited ability to counteract the destabilizing influence of dredging along those features, renders remediation of NA23 technically infeasible.

Finally, Dr. Johns provides no biological or risk basis for concluding that NA23 should be added to the remediation footprint. The available data for Station NA23 suggest the opposite in fact (see summary below). Based on relatively low chemistry, and the lack of toxicity, benthic impacts from sediment contamination at NA23 are not considered likely. This area is known to be periodically disturbed by raising and lowering of the large floating dry dock, and it is likely that the single benthic community indicator that was outside reference conditions (total abundance) is due to physical disturbance. Accordingly, NA23 was properly excluded from the proposed remedial footprint in the DTR.

ID 77
Coastkeeper's and EHC's third assertion is that the Proposed Remedial Footprint arbitrarily excludes 15 polygons that are more contaminated—from a sediment chemistry standpoint—than the least-contaminated polygon in the Proposed Remedial Footprint. See MacDonald 2011 at 11.

ID 146,170, 181, 430
BAE Systems provided the following rebuttal regarding Coastkeeper's and EHC's third assertion. BAE Systems commented that although SDC and EHC (2011) did not identify the 15 polygons referred to in the statement, they refer to MacDonald (2011), in which the 15 polygons were those with Composite SWAC Ranking Values greater than 5.5. SDC and EHC’s assertion is invalid, however, because the DTR clearly states on Page 33-1 that, “The polygons were ranked based on a number of factors including likely impaired stations, composite surface-area weighted average concentrations for the five primary COCs, site-specific median effects quotient (SS-MEQ) for non-Triad stations, and highest concentration of individual primary COCs”. Therefore, the selection of the polygons to include in the remedial footprint was based on multiple lines of evidence, as opposed to a single line of evidence such as the Composite SWAC Ranking Values. As shown in Table 33-1 of the DTR, the 23 polygons with the highest Composite SWAC Ranking Values were included in the remedial footprint (see third column of the table), and all of those polygons had values of 7.6 or greater. Polygon NA09 was added to this group primarily because it had the 10th highest concentration of mercury (i.e., a primary COC) of all the polygons (see Table 33-4 of the DTR). Therefore, the SWAC Value of 5.5 was not the primary line of evidence used to include Polygon NA09 in the remedial footprint, and a SWAC Value of 5.5 was not used as a standalone justification for including any polygon in the remedial footprint, as MacDonald (2011) implied. SDC and EHC’s assertion is therefore invalid.

BAE also had the following related comments on MacDonadl 2011. MacDonald also states that the HPAH concentration of Polygon NA07 was listed as 15.85 mg/kg in Table A33-3 of the DTR, that this value exceeds the 60% LAET value of 15.3 mg/kg, and that, as a consequence, the rationale for excluding that polygon from the remedial footprint is based on all COCs being less that 60% LAET values (Table 33-6 of the DTR) is incorrect. McDonald’s statement that the HPAH value for Polygon NA07 is 15.85 mg/kg is correct, and Table 33-6 is, therefore, in error. Nevertheless, the Triad results indicate that NA07 is not likely impaired, with low sediment toxicity and low benthic community effects being found (see Table 33-6 of the DTR). Therefore, it is likely that the bioavailability of the HPAHs are reduced at this location, and the empirical biological results should be given more weight than the bulk sediment chemistry results when deciding whether to include this polygon in the remedial footprint. The decision to not include this polygon in the footprint is therefore justified.

Although MacDonald states that benthic macroinvertebrate data for Polygon NA07 was not included in the database he was provided, benthic data are available for this polygon (see Table 18-1 of the DTR).

ID 183
In rebuttal, BAE Systems also commented that MacDonald 2011 provided no technical basis for the assertion that" the proposed remedial footprint excludes polygons, like NA07, with concentrations of contaminants in sediment that likely pose higher risks to human health and

aquatic-dependent wildlife than some of the polygons included in the Proposed Remedial Footprint."

ID 329, 333
NASSCO agreed with BAE System's comment above and incorporated it into NASSCO's comments. NASSCO also commented that the size of the remedial footprint is irrelevant to the assessment of beneficial uses or remediation to mitigate beneficial use impairment. The only relevant consideration is whether residual sediment chemicals are protective of beneficial uses, as determined by exposure assessment on an appropriate spatial scale. At many sites, remedial goals can be achieved through the selective removal of hot spot contamination. Further, there is ample evidence set forth in NASSCO’s Initial Comments demonstrating that the cleanup is excessively conservative, and that site conditions do not warrant any remediation beyond monitored natural attenuation, which is already occurring.

ID 471
Coastkeeper and EHC provided the following comment on BAE System's criticism of MacDonald 2011. BAE’s lawyers characterize Mr. MacDonald’s conclusion that the proposed remedial footprint “excludes polygons with composite SWAC ranking values greater than 5.5” as “invalid.” But the record clearly shows that the lowest SWAC ranking value included in the footprint was 5.5 and that 15 polygons with SWAC ranking values greater than 5.5 were not included in the footprint. That BAE’s lawyers characterize an accurate factual summary as an “invalid” conclusion reveals their argument as nonsensical and unconvincing.

Further, BAE’s lawyers claim that Mr. MacDonald provided “no technical basis” for his assertion that the proposed remedial footprint “excludes polygons, like NA07, with concentrations of contaminants in sediment that likely pose higher risks to human health and aquatic-dependent wildlife than some of the polygons included in the proposed remedial footprint.” BAE either ignores or fails to understand that Table 1 of Mr. MacDonald’s expert report sets forth the technical basis for his conclusion that the proposed remedial footprint exclude polygons that pose higher risks to human health and aquatic-dependent wildlife than some of the polygons included in the proposed remedial footprint. See Expert Report of Donald MacDonald dated March 11, 2011 at Table 1.

ID 77
Coastkeeper's and EHC's fourth assertion is that the thresholds the DTR uses to determine whether polygons that are "Likely" impacted are problematic. The DTR fails to explain why the SS-MEQ is used to evaluate sediment chemistry in the non-Triad sediment samples, when the metric used for the Triad sediment samples (SQGQl) is reliable. See MacDonald 2011 at 19. The DTR and record provide no evidence demonstrating how or why 0.9 was chosen as the "optimal threshold." DTR § 32.5.2 at 32-32; See MacDonald 2011 at 11. Likewise, the 60% Lowest Apparent Effects Threshold for classifying sediment samples as "Likely" impacted is too high. See MacDonald 2011 at 11-13; See DTR § 32 at Table 32-19.

ID 180, 146, 149, 430
In rebuttal to Coastkeeper's and EHC's fourth assertion, BAE Systems commented that the SS-MEQ was specifically developed to be an environmentally protective site-specific predictor of

both non-likely and likely impairment at the Shipyard Site. The switch from the SQG1 to the SS-MEQ was therefore justified because the SQG1 values are generic guidelines that do not explicitly consider the site-specific conditions at the Shipyard Site. By contrast, the SS-MEQ was based exclusively on chemical and biological data collected at the site and therefore is a more appropriate site-specific sediment assessment tool than the SQG1.

The methods used to develop and evaluate the SS-MEQ are clearly described in the text of Section 32.5.2 of the DTR, and all of the related underlying data are presented in Table A32-11 of the DTR. As noted in the DTR, a threshold value of 0.9 had an overall reliability of 70 percent. In addition, the other measures of predictive reliability of the SS-MEQ threshold of 0.9 presented in Tables 32-21 and A32-11 of the DTR show that the threshold is biased toward being environmentally protective. That is, its ability to accurately predict locations that are not likely impaired (referred to as non-likely efficiency in Table A32-11 of the DTR) was 94 percent (i.e., 16 of 17 predictions). The only polygon erroneously predicted to not be likely impaired was NA22, which had a SS-MEQ of only 0.35. As stated in Section 32.5.2 of the DTR, however, there is substantial evidence of non-COC related impairment from physical disturbance in that polygon. The ability of the threshold SS-MEQ of 0.9 to accurately predict likely impairment (referred to as likely efficiency in Table A32-11 of the DTR) was only 38 percent (i.e., 5 of 13 predictions). That is, the SS-MEQ threshold of 0.9 predicted impairment at a substantial number of locations without impairment, as well as stations with impairment. These results indicate that there is a very high degree of confidence that polygons with SS-MEQ values less than 0.9 are not likely to be impaired. Therefore, the decision to include all polygons with SS-MEQ less than 0.9 in the remedial footprint is environmentally protective. In contrast, there is much less confidence that polygons with SS-MEQ values greater than 0.9 are likely to be impaired. Therefore, the conservative decision to include all polygons with SS-MEQ values greater than 0.9 in the remedial footprint is also environmentally protective, because over half of those polygons may not be impaired. Contrary to the SDC and EHC (2011) assertion, the information presented above indicates that the threshold SS-MEQ of 0.9 is an environmentally protective predictor of both the presence and absence of impairment at the Shipyard Site.

BAE Systems stated that MacDonald's assertion that the SS-MEQ does not provide an effects-based tool for predicting adverse effects on benthic macroinvertebrate communities is incorrect, as the SS-MEQ was specifically developed to be a site-specific effects-based assessment tool. As described in Section 32.5.2 of the DTR, the SS-MEQ was developed using the median sediment concentrations of the primary COCs at Stations NA19, NA22, SW04, SW13, SW22, and SW23. Inspection of Table 18-1 of the DTR shows that this set of stations included all six of the likely impaired stations found at the Site. Therefore, calculation of the median COC concentrations from the six likely impaired stations at the Site was directly analogous to the manner in which Long et al. (1995) developed the ERM values. In addition, the predictive reliability of the SSMEQ was evaluated, and the threshold value of 0.9 was selected, using the site-specific effects determinations for the 30 Triad stations, as well as the 5 supplemental Triad stations sampled at the Site. MacDonald's assertion that the SS-MEQ is not effects-based is, therefore, invalid.

Regarding the assertion that 60% LAET threshold is too high, BAE Systerms commented that the apparent basis for this assertion is the evaluation conducted by MacDonald (2011), in which he showed that the 60% LAET values were greater than the ERM values of Long et al. (1995). That comparison is flawed, however, because the LAET values were derived as site-specific values that reflect the mixtures of chemicals at the Shipyard Site, in addition to other important factors such as the site-specific bioavailability and bioaccessibility of those chemicals. By contrast, the ERM values were derived from sediment chemistry and toxicity data collected throughout the U.S., without any consideration of bioavailability or bioaccessibility. They are therefore only suitable as initial screening values for a site, rather than values that can reliably predict the presence or absence of sediment toxicity on a site-specific basis. In fact, Long et al. (1995) recognized the limited usefulness of the ERM values when they concluded that the values “should be used as informal screening tools in environmental assessments,” and “they are not intended to preclude the use of toxicity tests or other measures of biological effects.” Because the ERM values are generic screening values that do not consider bioavailability, it is not surprising that the 60%LAET values are greater than the ERM values, as the former values reflect the site-specific conditions that occur at the Shipyard Site. Therefore, SDC and EHC’s assertion has no bearing on the usefulness of the site-specific 60% LAETs for identifying stations that are likely impaired at the site.

ID 77
Coastkeeper's and EHC's final assertion is that the DTR failed to explicitly consider the potential effects exposure to contaminated sediments would have on fish with small home ranges. This failure is problematic because fish with small home ranges are known to utilize benthic habitats at the Site and the concentrations of PCBs in sediments are sufficient to adversely affect the reproduction offish at various locations. See MacDonald 2011 at 15.

ID 408
In rebuttal, the NASSCO cited the Declaration of the Port District's expert witness, Dr. Michael Johns as follows: "In my opinion, the process used by the Water Board to identify areas requiring remedial actions (e.g., use of polygons to define the remedial footprint) was appropriate. In using the polygons, the Water Board recognized that species such as fish and spiny lobster are mobile and that exposure to Site contaminants can occur site-wide rather than only at a single location. In developing the proposed remedial footprint, the Water Board correctly addressed impairment to more sedentary species, such as the organisms that form the benthic community. The factors used by the Water Board to select “worst first” polygons are consistent with my findings."

ID 334
NASSCO also agreed with BAE Systems' comment on this topic and incorporated it into NASSCO's comments.

ID 174, 430
BAE Systems commented that a fundamental flaw in the fish analyses conducted by MacDonald (2009) was the assumption that gobies represent an appropriate indicator species for evaluating risks to benthic fish at the Site. As discussed above, gobies were not found at the Site after an extensive sampling effort conducted as part of the 2001/2002 sampling events. Therefore, the use of gobies as an appropriate indicator species for the site by MacDonald was inappropriate. Also discussed above was the fact that MacDonald provided no documentation that gobies occur at the

Site, and that he admitted that he had not reviewed Exponent (2003) in sufficient detail to know the results of the fish survey conducted at the Site.

Further, BAE Systems commented that Coastkeepers' and EHC's fourth assertion is inaccurate. The species selected for detailed evaluation at the Shipyard Site was the spotted sand bass (Paralabrax maculatofasciatus) because, as stated in Exponent (2003), this species preys primarily on benthic macroinvertebrates, exhibits limited spatial movements, and is abundant in numerous kinds of habitats within San Diego Bay, including the Shipyard Site, as documented during the fish sampling effort prior to the 2001/2001 sampling events. These characteristics of the spotted sand bass make it an appropriate species for assessing contaminant exposure at the Shipyard Site. This determination is reinforced by the results of tissue chemistry analyses. Spotted sand bass were collected at four locations, inside and outside the leaseholds of both shipyards, and the results showed that chemical concentrations in fish tissue from inside the leaseholds were greater than concentrations in fish collected immediately outside the leaseholds (Exponent 2003). The data therefore clearly indicate that spotted sand bass are sensitive to spatial differences in sediment chemistry concentrations at the Shipyard Site. Although gobies were identified as a possible alternative species for use at the Shipyard Site, they were not found at the site during an extensive sampling effort prior to the 2001/2002 sampling event. As stated on Page 2-7 of the Exponent (2003) report, “attempts were also made to collect gobies, without success at either site.” Representatives from the California Department of Fish and Game observed the fish collection effort and agreed that gobies were absent or rare at the Shipyard Site.

Further, Coastkeeper's and EHC's concerns are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on the results of extensive site-specific evaluations using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003). MacDonald (2009) conducted a hypothetical risk analysis based on gobies, which were not found at the Shipyard Site during the extensive fish collection efforts that were conducted prior to the 2001/2002 sampling events at the site (Exponent 2003). That analysis was flawed for numerous reasons, however, and has no relevance for determining which polygons warrant inclusion in the remedial footprint. Some of the major methodological flaws in the hypothetical analysis conducted by MacDonald (2009) are as follows:

- Indicators Species: As discussed above, the selection of gobies as the indicator species was inappropriate because they are not found at the Shipyard Site.
- Toxicity Reference Value (TRV): MacDonald (2009) used a study by Orn et al. (1998) to develop the TRV for PCBs in fish. However, that study was based on zebrafish (Danio rerio) which, as a tropical freshwater species, are not found in San Diego Bay, and thus has questionable relevance to the marine fish species that reside in the Bay.
- Toxicity Endpoint: MacDonald (2009) selected reproduction as the endpoint for developing the TRV for PCBs, and developed the TRV based on ovary weight and the gonad somatic index (GSI). However, he ignored the fact that other reproductive endpoints (i.e., percentage of spawning females, mean number of eggs per female, and median hatching time), as well as early mortality showed no significant reductions in response to exposure to PCBs.
- Biota Sediment Accumulation Factor (BSAF): MacDonald (2009) used a BSAF determined for spotted sand bass in an unpublished memo by Zeeman (2004).

- Lipid Content: MacDonald (2009) assumed the lipid content of the gobies was 4 percent, based on the naked goby (Gobiosona bosc) and presented in an unpublished presentation by Lederhouse et al. (2007).
- Moisture Content: MacDonald (2009) assumed a whole-body moisture content of 80 percent for fish to convert the wet weight PCB concentrations presented in Orn et al. (1998) to dry weight.

In summary, MacDonald (2009) conducted a hypothetical analysis that predicted PCB concentrations in gobies, a species that does not occur at the Shipyard Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, an unpublished lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above items has uncertainties attached to it, which MacDonald (2009) did not attempt to quantify or even acknowledge. Given each of the uncertainties in MacDonald's hypothetical analysis, as well as the cumulative nature of them all, it is clear that the results of the hypothetical analysis conducted by MacDonald (2009) cannot be used to assess risk to fish at the Shipyard Site in a meaningful manner. In addition, such a hypothetical analysis is irrelevant because the extensive amount of site-specific information on the barred sand bass showed that risks to fish were not an issue at the Shipyard Site under baseline conditions.

ID 176
BAE Systems also provided the following comment on the MacDonald (2011) conclusion that SWACs do not provide a basis for accurately assessing the impacts on benthic invertebrates or benthic fish. According to BAE Systems, the DTR used SWACs to evaluate risks to fish and wildlife that may utilize the Shipyards Site. MacDonald's conclusion is invalid because SWACs are commonly used to evaluate risks to benthic fish at contaminated sediment sites, as they were at the Site. Contrary to MacDonald's assertion, other tools were used to evaluate risks to benthic invertebrates at the Site, including evaluations of sediment chemistry, sediment toxicity, in situ benthic macroinvertebrate communities, measures of chemical bioavailability, contaminant breakdown products in fish bile, and fish histopathology.

ID 330, 329
In rebuttal to Coastkeeper's and EHC's general assertion that the remedial footprint should be expanded, NASSCO commented that Site conditions are generally favorable, and any active remediation will result in only minimal benefits. Second, under Resolution No. 92-49, the Regional Board is required to consider economic feasibility in setting alternative cleanup levels; an expanded footprint would not be consistent with the requirements of Resolution No. 92-49 given the fact that only minimal benefits, if any, would be achieved, at substantial cost to the parties named to the TCAO. Third, for the reasons discussed above, these comments are without scientific merit, and do not support an expanded footprint.

Size of the remedial footprint is irrelevant to the assessment of beneficial uses or remediation to mitigate beneficial use impairment. Attachment A, Exponent Critique, at 8. The only relevant consideration is whether residual sediment chemicals are protective of beneficial uses, as determined by exposure assessment on an appropriate spatial scale. Id. At many sites, remedial goals can be achieved through the selective removal of hot spot contamination. Further, there is ample evidence set forth in NASSCO's Initial Comments demonstrating that the cleanup is excessively conservative, and that site conditions do not warrant any remediation beyond monitored natural attenuation, which is already occurring.

Response 33.1

The Number of Samples is Sufficient

The rebuttal comments of BAE Systems and NASSCO addressing the number of sampling stations and their distribution for the Shipyard Sediment Site investigaton are correct. The number of sampling stations and their distribution throughout the Shipyard Sediment Site were selected to have greater density in areas near the sources and discharge points (i.e. near shore) and less density farther from sources and discharge points (i.e. farther from shore). (See SAR 065405, SAR065413, SAR065659, SAR094672, SAR 066102, SAR095254, SAR095502, and SAR095511.) The station distribution scheme was consistent with the manner in which most schemes are designed at contaminated sediment sites. Furthermore, the sampling design is consistent with the MacDonald 2011 report which calls for a higher sampling density near sources to account for spatial variability. Sampling results confirmed the assumptions used in the design.

The San Diego Water Board conducted a stakeholder process during the sediment quality investigation as described in DTR Section 13.3. As explained in the DTR, "[a]t meetings and workshops, experts, and interested parties representing the shipyards and a diverse group of stakeholders had the opportunity to provide critical input and share knowledge on various aspects of the Shipyard Sediment Site investigation, including review of the work plan." (See for example SAR097527 and SAR095345) There were no State Water Board state-wide guidelines for conducting sediment quality assessments or criteria for numbers of sampling sites; accordingly the San Diego Water Board developed its own gudielines and sampling requirements in consultation with SCCWRP. (SAR 065405 and SAR065413). The San Diego Water Board considered lessons learned from previous sediment sampling designs, and the input from stakeholders in making its final deision on the number of sampling sites. Ultimately, the sampling design came down to best professional judgement and the sediment quality investigation results proved adequate to characterize the distribution of contaminants at the site for the purpose of issuing the TCAO. A detailed discussion summarizing the San Diego Water Board's supporting rationale for the sampling design was provided to EHC and Coastkeeper following the Board's August 3, 2001 workshop and follow-up October 21, 2001 meeting (see SAR095502 and SAR095511).

Polygon Ranking Considers Adverse Effects on Health and Environment

The polygon ranking score for building the remedial footprint relied solely on chemistry data as pointed out in Coastkeeper's and EHC's comment. For that reason, the post-remedial SWACs were evaluated using a risk assessment approach to ensure they are reasonably proptection of human health and aquatic dependent wildlife. (See DTR Section 32.3 and 32.4). The risk assessments inlcuded evaluations of primary and secondary COC risk drivers identified in the baseline Tier II risk assessments (See DTR Sections 24 and 28). DTR Section 32.3 inadvertantly omitted information on the wildlife risk assessment for zinc in Tables 32-7 and 32-8. The DTR has been revised to include this information. Benthic community protection was ensured by evaluating the remedial footprint and residual sediment chemistry by the methods described in DTR Section 32.5.

Regarding the Port District's expert's declaration, the Cleanup Team agrees that the portion of Polygon 29 not in the remedial footprint warrants further action. The Cleanup Team recommends that the San Diego Water Board issue a Cleanup and Abatement Order or Investigative Order to responsible parties to conduct a full sediment quality investigation to determine the extent of sediment contamination in the SW29 area and the area north of the Shipyard Sediment Site, and to determine if sediment quality meets the sediment quality objectives in the Bays and Estuaries Plan, and/or water quality objectives in the Basin Plan.

The Cleanup Team accepts NASSCO's explanation of the technical infeasibility of dredging polygon NA23.

Remedial Footprint Does Not Arbitrarily Exclude 15 Polygons
Polygon NA09 was added to the remedial footprint as a replacement for polygon NA07 which was determined to be technically infeasible to dredge. Two of the NASSCO leasehold polygons with higher ranking scores (NA23 and NA27) were excluded because they were also judged to be technically infeasible to dredge. The other polygons with higher ranking scores also had "unlikely" impacted triad results in either the DTR WOE approach or the Bays and Estuaries Plan MLOE approach (NA01, NA16, NA03, and NA04). Polygon NA09's triad result was "possibly" impacted under both the DTR WOE approach and the Bays and Estuaries Plan MLOE approach. Additionally, polygon NA09 has high COC concentrations at depth that aren't reflected in the surface sediment chemistry upon which the ranking score is based. The estimated dredge depth to reach background concentrations for this polygon is 9 feet, the deepest of all the polygons in the footprint by 2 feet. Polygon NA09 also had the 10th highest mercury concentration of the 65 polygons (See DTR Table 33-4). So although this polygon's overall ranking score is lower than 12 other polygons feasible to dredge but excluded from the footprint, cleaning up this polygon is expected to remove a relatively high mass of contaminants from the environment.

The comments pointed out at error in Table 33-6. The Table will be revised to delete the bullet point ""All COCs below 60% LAET values" for Polygon NA07. This revision will be provided on September 15, 2011, as required by the Third Amended Order of Proceedings.

Non-Triad Approach Thresholds Are Appropriate
The rebuttal comments of BAE Systems and NASSCO are generally correct. The SS-MEQ was developed (See DTR Section 35.5.2) using site-specific data to be an environmentally protective site-specific predictor of both non-likely and likely benthic impairment at the Shipyard Sediment Site non-triad stations. (Non-Triad stations refers to the 36 of the 66 Site sampling stations where toxicty and benthic community data was not collected.) By contrast, SQGQ1 values for a sediment are based on sediment quality guidelines (SQGs) that do not explicitly consider the site-specific bioavailability, toxicity, and benthic community conditions at the Shipyard Sediment Site. The SQGQ1 value for a sediment is estimated by dividing concentrations of cadmium, copper, lead, silver, zinc, total chlordane, dieldrin, total polycyclic aromatic hydrocarbons (PAHs; normalized by sediment organic carbon content), and total PCBs (sum of

18 congeners) in sediment by each chemical's empirical SQG (SAR280606). The SQGs used in the SQGQ1 approach are referred to as "empirical" SQGs because they are derived from large sets of sediment chemistry and toxicity data collected at sites throughout the United States, without any consideration of Shipyard Sediment Site specifc conditions. The SQGQ1 is an appropriate tool to use as one of three metrics to evaluate the sediment chemistry leg in the DTR WOE approach for determining whether marine sediment contaminant concentrations at the Shipyard Sediment Site warrant further assessment or were at a level that requires no further evaluation. By contrast, the SS-MEQ threshold is solidly based on both chemical and biological triad data collected at the site and is a more appropriate tool than the SQGQ1 as a reliable site specific predictor to assess both non-likely and likely benthic impairment at the Shipyard Sediment Site non-triad stations.

Like the SQGQ1, the SS-MEQ metric accounts for the potential biological effects of sediment chemical mixtures. The SS-MEQ metric was derived from sediment chemistry data from 6 "likely impaired" triad stations. The SS-MEQ was then successfully tested at 5 additional triad stations where the SS-MEQ accurately predicted that none of the stations were likely impacted. The SS-MEQ threshold was conservatively optimized at 0.9 to minimize false negatives (ie, predicitng that a station is not likely impaired when triad data indicate it is likely impaired). The optimization data showing how and why 0.9 was chosen as the optimal threshold are contained in the Appendix to Section 32.

Coastkeeper asserts that the site specific 60% LAET threshold for classifying sediment stations as likely impacted is too high. Nonetheless, the combined SS-MEQ and 60% LAET thresholds accurately predicted the WOE outcomes at the 5 additional triad stations sampled and tested in 2009. As BAE Systems pointed out, the 60% LAET values are specific to the Shipyards Sediment Site and reflect chemical mixtures, bioavailability, and bioaccessibility factors based on site specifc data.

MacDonald (2011) commented that none of the 5 stations tested had sediment chemistry that exceeded the 60% LAET threshold, so the predictability of the threshold was not adequately tested. The stations chosen for testing the non-triad approach were the 5 non-triad stations with the highest sediment chemistry. Although the sediment chemistry at these stations was well below the 60% LAET thresholds, none of the untested non-triad stations exhibited higher sediment chemistry levels. Thus, for this purpose, the 60% LAET threshold is accurately predictive.

MacDonald (2011) also criticized the testing of the non-triad approach because only 5 stations were used. Although more data is always desirable, triad samples are expensive to collect and analyze. The DTR non-triad approach using the site specific 0.9 SS-MEQ and 60%LAET thresholds acurately predicted the triad outcome of the 5 stations and additional testing was unwarranted. The data presented in Table 32-21 of the DTR show that a threshold value of 0.9 has an overall reliability of 70 percent. The reliability was erroneously stated in the text as 73 percent in DTR Section 32.5.2 as pointed out in McDonalds comments. The DTR will be revised to correct this error. This revision will be provided on September 15, 2011, as required by the Third Amended Order of Proceedings. The Cleanup Team concurs with BAE System's comment that the reduction in reliability of 3 percent to correct the text error is not statistically meaningful nor does the reduction diminish the SS-MEQ as a reliable basis for identifying polygons that are "likely" impacted.

Furthermore, the 5 station test is adequate because the SS-MEQ was conservatively optimized to minimize false positives, the site specific LAET values were conservatively lowered to 60% of the calculated LAET, and the remaining non-triad stations to be evaluated with the approach had relatively low sediment chemistry compared to the other stations in the Shipyard Sediment site.

The DTR Did Not Fail to Consider Effects on Fish with Small Home Ranges
Coastkeeper's comment on the potential effects on fish with small home ranges was also used to criticize the exclusion of certain polygons from the remedial footprint. The response to this comment can be found in Response 33.2 below.

RESPONSE 33.2

DTR Section: 33
Comments Submitted By: NASSCO, BAE Systems, City of San Diego, Coastkeeper and EHC
Comment IDs: 78, 79, 80, 90, 111, 139, 167, 171, 172, 184, 185, 186, 188, 189, 250, 287, 335, 336, 337, 365, 368, 371, 433, 436
Comment

Coastkeeper and EHC commented that the law requires every cleanup to result in the "best water quality reasonable." See Resolution No. 92-49. The following aspects of the proposed cleanup prevent it from achieving the "best water quality reasonable." The Proposed Remedial Footprint indicating "polygons targeted for remediation" is too small to ensure that present and anticipated beneficial uses of San Diego Bay are protected. See Order at 38, Attachment 2. The Proposed Remedial Footprint excludes eight polygons that, under the DTRs own methodology, should have been included. They commented that Polygons NA22, NA01, NA04, NA07, NA16, SW06, SW18, and SW29 should be added to the final remedial footprint. They cited the expert report of McDonald as evidence supporting the inclusion of these polygons in the footprint as discussed below.

POLYGON NA22

ID 79
Coastkeeper and the EHC commented that the DTR acknowledges that polygon NA22 is "Likely" impaired and should be remediated because Contaminants of Concerns in sediments are likely adversely affecting benthic invertebrates within this polygon. However, NA22, and portions of polygons NA 20 and 21, have improperly been excluded from the Proposed Remedial Footprint, principally because these polygons or portions of polygons are in the vicinity of a Total Maximum Daily Load being prepared for the Mouth of Chollas, Switzer, Paleta Creeks ("Creek Mouth TMDL"). Further, by excluding NA22 from the Post Remedial Monitoring program, the Order and DTR try to pretend that NA22 is not part of the Shipyard Sediment Site. By failing to include NA22 in the Post Remedial Monitoring, the Order and DTR underestimate the site-wide average pollutant levels in an attempt to mask the true consequences of refusing to remediate a portion of the Site that poses unacceptable risk to beneficial uses.

ID 90
Further, The DTR incorrectly claims that the Proposed Remedial Footprint "captures 100 percent of triad 'Likely'... impacted stations." This claim is incorrect because the Proposed Remedial Footprint excludes NA22, which the DTR analysis determined was "likely impacted."

The DTR repeatedly refers to "65" polygons, even though there are a total of 66 polygons in the Shipyard Sediment Site. The economic feasibility documentation in Appendix 31, Table A31-2 and the spreadsheet "2010-07-27 Economic feasibility 07-27-lO.ng.xls" (SAR384569) reveal that all 66 polygons were ranked in the economic feasibility analysis. Similarly, Appendix 32, Tables A32-1 and A32-3 and supporting data and calculations in "01-Final pre-remedial SWAC 8-17-10.XLS" (SAR384570) and "02-Final post-remedial SWAC_l.xls" (SAR384571) show all 66 polygons were included in calculating the pre-remedial SWACs and post-remedial SWACs. The DTR cannot pretend that NA22 no longer exists or is no longer part of the Shipyard Sediment Site just because the Cleanup Team chose not to include it in the Proposed Remedial Footprint in the hope that someday another process might address contamination in that polygon.

ID 365
In rebuttal, NASSCO stated that the San Diego Water Board made a rational decision to address NA22 as part of the TMDL process, so that additional information concerning the cause of impairment at NA22 could be gathered. This decision was explained thoroughly in the DTR, which clearly states that NA22 “is not considered part of the Shipyard Sediment Site for purposes of the CAO.” DTR, at 18-2, 18-11, 18-16, 18-19, 18-23, 18-24, 32-32, § 33.1.1. The decision to exclude NA22 is well within the Regional Board’s discretion, and does not render untrue the statement that the proposed remedial footprint “captures 100 percent of Triad “Likely” . . . impacted stations” since for purposes of the TCAO, NA22 was expressly not included in the definition of the Site.

ID 368
NASSCO also commented that station NA22 was specifically excluded from consideration for cleanup because it is being addressed as part of the Mouth of Chollas Creek TMDL determination, currently being undertaken by the Regional Board. Thus the total number of stations was reduced from 66 to 65 for purposes of determining the need for remediation.

ID 167, 433
BAE Systems commented that, as stated in Section 33 of the TCAO, “portions of polygons NA20, NA21, and NA22 as shown in Attachment 2 were omitted from this analysis because it falls within an area that is being evaluated as part of the TMDLs for Toxic Pollutants in Sediment at the Mouth of Chollas Creek TMDL and is not considered part of the Shipyard Sediment Site for purposes of the CAO.” The decision to remove these polygons from the Site was therefore an administrative one, rather than a technical one, and therefore does not require technical justification as MacDonald implies. In addition, because MacDonald is not participating in the design of the TMDL process for these polygons he has no direct knowledge of what the process will include. Therefore, MacDonald’s assertion regarding the manner in which NA22 will be addressed is unsupported.

ID 79
Coastkeeper and the EHC commented that the Creek Mouth TMDL will not address the existing contamination in polygon NA22. Quoting case law, Coastkeeper stated that TMDLs function primarily as planning devices and are not self-executing. TMDLs are primarily informational tools that allow the states to proceed from the identification of waters requiring additional planning to the required plans. A TMDL does not, by itself, prohibit any conduct or require any actions. A TMDL merely "forms the basis for further administrative actions that may require or prohibit conduct with respect to particularized pollutant discharges and waterbodies. A TMDL itself does not reduce pollution. TMDLs inform the design and implementation of pollution control measures.

The TMDL process cannot provide a vehicle for remediating contaminated sediment within the NA22 polygon. A new and separate remediation process—another Cleanup and Abatement Order—would need to be initiated after completion of the Creek Mouth TMDL toaddress existing contaminated sediment in NA22, if it is not remediated under the current Order. When asked in depositions, no Cleanup Team member could point to a TMDL that had been implemented through dredging. This means that removing NA22 from the Proposed Remedial Footprint virtually guarantees that it will never be dredged—even though the DTR agrees that it is "Likely" impaired. Furthermore, TMDLs are given a long time period— typically twenty years—before they need to be implemented. Adding this delay together with the time it would take to develop another cleanup and abatement order to address NA22 means that any possible cleanup of NA22 would not be for decades down the road. It is a waste of time and resources to put off remediating NA22 when a framework for its remediation has already been established in this process.

ID 287
In Rebuttal, the City of San Diego commented that polygon NA22 is located next to the piers where full thrust engine testing takes place, resulting in significant physical disturbance to the underlying sediments. Additionally, tugboat movements throughout the day and night most days of the year and large ship movements to and from piers in the Mouth of Chollas Creek further disturb sediments. Navy collected bathymetry data shows sediment elevation contours in this area suggesting of significant “blow-out” of sediments, likely from propeller activity during engine testing. The physical disturbance may be the most significant factor affecting the benthic community. In fact, levels of chemicals of concern throughout the shipyard sediment site do not correlate with observed benthic community effects. However, at the only locations where significant physical disturbances take place routinely, benthic community effects are observed.

The City of San Diego further commented that the upper and lower Newport Bay organochlorine compound TMDL includes stipulations in its implementation plan for dredging of sediments in addition to special studies, natural attenuation, and discharge controls. The dischargers, among numerous other requirements, are to submit a report that “Evaluate[s] feasibility and mechanisms to fund future dredging operations within San Diego Creek, Upper and Lower Newport Bay.” See Santa Ana Regional Water Quality Control Board Resolution No. R8-2007-0024 (City Ex. 4). It is not unheard of to use a TMDL to compel a discharger to remediate contaminated sediments. It is the expectation of the City that the Regional Board will use the

Chollas Mouth TMDL to compel dischargers to take necessary actions to mitigate the impairment and another cleanup and abatement order will not be necessary.

ID 336
In rebuttal, NASSCO commented that although the triad weight-of-the-evidence analysis categorized NA22 as “Likely” impaired, this designation was based upon “Moderate” chemistry, toxicity, and benthic community results for each of the three legs of the triad. DTR, at 33-4 (citing Table 18-1). However, NA22 is an area where propeller testing occurs routinely, suggesting that the observed benthic condition may be the result of physical impacts, rather than site contaminants. DTR, at 33-4. Additional sampling in connection with the TMDL proceeding may clarify the cause of the potential impairment, and permit the Regional Board to make a more fully informed decision concerning what, if any, remediation is required. Because there is expected to be substantially more data available to evaluate the cause of observed impacts to NA22 following the completion of the TMDL proceedings than is presently available, the Regional Board’s decision to exclude NA22 from the current cleanup is reasonable.

ID 185
BAE Systems made the following comment on the conclusion in MacDonald 2011 that the "TMDL process will not provide a vehicle for remediating contaminated sediment." BAE Systems stated that MacDonald's conclusion is invalid. The decision to remove these polygons from the Site was an administrative decision, rather than a technical decision, and therefore does not require technical justification as MacDonald implies. In addition, because MacDonald is not participating in the design of the TMDL process for these polygons he has no direct knowledge of what the process will include. Therefore, MacDonald’s assertion that the manner in which these polygons will be addressed is both invalid and uniformed.

POLYGONS NA01, NA04, NA07, NA16, SW06, SW18, AND SW29

ID 80
Coastkeeper and EHC commented that sediment quality in these polygons pose unacceptable risks to fish and the benthic community. The DTR arbitrarily excluded at least a dozen polygons from the Proposed Remedial Footprint without explanation. See MacDonald 2011 at 14-15. An independent evaluation of the available data and information by sediment remediation expert Donald MacDonald indicates that seven of these excluded polygons pose risks to organisms utilizing habitats within the study area. (MacDonald 2009). MacDonald (2011; p. 39, Table 5) presents the results of an evaluation for seven polygons that should be added to the Remedial Footprint to address inconsistencies in the procedures applied in the DTR and the risks posed to fish and benthic organisms.

ID 436 and 184
In rebuttal, BAE Systems commented that with respect to fish, the concerns are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on the results of extensive site-specific evaluations using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003). As discussed previously, MacDonald (2009) conducted a hypothetical risk analysis based on gobies, which was flawed for numerous reasons and therefore has no bearing on determining which polygons warrant inclusion

in the remedial footprint at the Shipyard Site. Briefly, MacDonald (2009) conducted a hypothetical analysis that predicted PCB concentrations in gobies, a species that does not occur at the Shipyard Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, an unpublished lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above items has uncertainties attached to it, which MacDonald (2009) did not attempt to quantify or even acknowledge. Given each of the uncertainties in MacDonald's hypothetical analysis, as well as the cumulative nature of them all, it is clear that the results of the hypothetical analysis conducted by MacDonald (2009) cannot be used to assess risk to fish at the Shipyard Site in a meaningful manner. In addition, such a hypothetical analysis is irrelevant because the extensive amount of site-specific information on the barred sand bass showed that risks to fish were not an issue at the Shipyard Site under baseline conditions.

BAE Systems commented that these polygons were appropriately excluded from the proposed remedial footprint. BAE Systems claims that, contrary to the assertion by MacDonald, the remedial footprint identified in the TCAO does meet the requirements of cleanup according to the methods described in the DTR. Therefore, there is no technical justification for expanding the footprint to include additional polygons.

ID 172, 186
In rebuttal to MacDonald's conclusions that in order to be scientifically valid, the DTR's conclusions of technical infeasibility must be supported by detailed engineering studies, BAE Systems made the following comment. MacDonald's assertion regarding the determinations of technical infeasibility are invalid, because those determinations were made by a group comprised of multiple parties with a range of backgrounds and expertise, including resource agencies and shipyard operations personnel. In addition, there is no formal requirement that engineering studies be conducted to make a determination of technical infeasibility. In addition, none of the affected polygons warranted inclusion in the remedial footprint, regardless of concerns related to technical feasibility. MacDonald's statement regarding technical infeasibility is therefore invalid, and ultimately irrelevant based on the chemical and biological indicators measured in the affected polygons.

ID 172
In addition, NA07 and NA23 were found not to be likely impaired based on the original or supplemental Triad analyses (see Tables 18-1 and 32-22 of the DTR, respectively). In addition, all primary COCs were below their 60% LAET values and SS-MEQs were less than the threshold value of 0.9 at NA08 and NA27. Therefore none of these four polygons warrant inclusion in the remedial footprint, regardless of concerns related to technical feasibility. MacDonald's statement regarding technical infeasibility is therefore inappropriate, and ultimately irrelevant based on the chemical and biological indicators measured in the four polygons.

ID 171
Regarding technical infeasibility, NASSCO provided the following rebuttal comment. Contrary to the March MacDonald Report's assertion, the DTR does provide information about the technical infeasibility posed by dredging in Stations NA07, NA08, NA23, and NA27 (see DTR,

Section 33.1.4). Furthermore, as discussed in the memorandum from Anchor QEA, no engineering studies are necessary to conclude that dredging in these stations is technologically infeasible. In fact, it is possible to determine that dredging is technically infeasible due to site characteristics alone. Attachment D, Memorandum by Michael Whelan, Anchor QEA (May 25, 2011) (Anchor QEA Memo), at 2-4.

ID 188
BAE Systems also commented that the DTR provides detailed justification as to why each polygon at the Site was or was not included in the remedial footprint. General Conclusion #1 of MacDonald 3/11/11 Expert Report states that “The results of an independent evaluation of the available data and information that I performed in 2009 indicate that additional polygons should be included in the sediment remedial footprint for the Shipyard Sediment Site (MacDonald 2009). This conclusion is invalid, because the methods, results, and conclusions of MacDonald (2009) have come under severe technical criticism both at his October 2010 deposition, and in follow-up expert reports. The use of that report to justify that additional polygons should be included in the remedial footprint is therefore inappropriate from a technical standpoint.

ID 172
BAE Systems provided rebuttal to MacDonald's statement that “no rationale was provided for excluding NA01, NA04, NA06, NA16, NA16 [sic], NA21, SW25, or SW29 from the Remedial Footprint." According to BAE Systems, this statement was apparently derived largely from MacDonald’s erroneous assumption that polygons should be included in the remedial footprint based solely on Composite SWAC Ranking Values higher than 5.5. As discussed in the response to Comment C.2.3 above, the selection of the polygons to include in the remedial footprint was based on multiple lines of evidence, as opposed to a single line of evidence such as the Composite SWAC Ranking Values. In addition, the SWAC Value of 5.5 was not intended to be a threshold value. MacDonald’s assertion is therefore an artifact of his misunderstanding of how the Composite SWAC Ranking Values were used along with other lines of evidence, and is therefore invalid. BAE Systems also pointed out that there are two discrepancies in MacDonald’s list. He erroneously identified Polygon NA06 as being excluded from the remedial footprint when, in fact, it is included in the footprint (see Attachment 4 of the TCAO). In addition, MacDonald erroneously listed Polygon NA16 twice.

ID 171, 189, 250
General Conclusion #2 of MacDonald 3/11/11 Expert Report states that “The following polygons pose unacceptable risks to fish and would likely or possibly adversely affect the benthic community: NA01, NA04, NA07, NA16, SW06, SW18, and SW29." “In addition, polygon NA22 should be included in the Remedial Footprint because it…is not valid to exclude it based on its consideration in the TMDL process for the Mouth of Chollas Creek." This conclusion is invalid with respect to fish, as described in detail in the response to Comment C.2.9, and also in abbreviated form in the response to Conclusion C.3.9. With respect to benthic macroinvertebrate communities, the comment is invalid because multiple site-specific indicators of sediment quality showed that the polygons do not pose risks to benthic macroinvertebrate communities, as follows:

- NA01: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.

- NA04: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ values (0.69) was less than the threshold value of 0.9.

- NA07: Not likely impaired based on Triad analysis.

- SW06: Not likely impaired based on the supplemental Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ values (0.63) was less than the threshold value of 0.9.

- SW18: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.62) was less than the threshold value of 0.9.

- SW29: No primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.71) was less than the threshold value of 0.9

Based on the information presented above, MacDonald's assertions that the six polygons pose risks to fish, and potentially risks to benthic macroinvertebrate communities, are both invalid.

ID 172
BAE Systems provided rebuttal as follows to Coastkeeper's Expert Report statement that the rationale provided in Table 33-6 of the DTR for excluding certain polygons from the Remedial Footprint is not sufficient. MacDonald states that "the polygon SW03 was excluded from the Proposed Remedial Footprint, even though sediments within this polygon had elevated levels of cadmium." This statement is misleading because it implies that decisions about whether a polygon should be included in the remedial footprint are based solely on a single line of evidence. However, in considering the multiple lines of evidence collected at SW03, including direct measures of biological effects, this polygon was found to have a low potential for both sediment toxicity and benthic community effects and was therefore determined not to be likely impaired (see Table 18-1 of the DTR). Therefore, although cadmium concentrations may have been elevated in Polygon SW03, they did not result in moderate or high levels of biological effects, potentially due to reduced bioavailability. Because the weight-of-evidence scheme used at the Site identified SW03 as not likely impaired, that polygon was appropriately excluded from the remedial footprint. MacDonald's assertion is therefore invalid.

ID 111
Coastkeeper and the EHC commented that adding NA22, NA01, NA04, NA07, NA16, SW06, SW18 and SW29 would ensure that the alternative cleanup levels are met even if the 120% background trigger level for a second dredging pass is retained.

ID 111
Coastkeeper and the EHC commented that remediating eight additional polygons is economically feasible. To remediate the additional eight polygons would require dredging an additional 120,000 cubic yards of sediment—30,550 cubic yards from NA22 and the remaining

89,400 cubic yards from the other 7 polygons. See "2010-07-27 Economic feasibility 07-27-lO^g.-xls" (SAR384569). At an estimated cost of $7 per cubic yard outside the leasehold and $13 per cubic yard inside the leasehold, [Footnote 10 - These numbers represent the "Probable Likely Unit Cost" as represented in "Economic Feasibility Source Data,'" provided to counsel for San Diego Coastkeeper and Environmental Health Coalition at the deposition of David Barker on March 3, 2011. It is unclear whether these numbers are a fair representation of actual dredging costs because the source of this cost assumption was not provided.] the total additional dredging cost would be approximately $1.5 million, [Footnote 11 - This number includes only the cost to dredge the additional eight polygons and does not add in additional costs that may be associated with dredging, such as sediment disposal or mitigation costs.] or only 2% of the current estimated cleanup cost. [Footnote 12 - According to DTR § 32.7.1 at 32-40, the estimated cleanup cost is $58 million.]

ID 436
In rebuttal, BAE Systems commented Coastkeeper and EHC's estimate included only the cost for the dredge to remove the sediment from the bay bottom. It is unclear what SDC and EHC intended regarding all of the other costs associated with the remedial action, but there are additional substantial costs associated with any dredging, especially in a remedial action.

The June 22, 2011 declaration of Shaun Halvax, attaching a spreadsheet of cost assumptions, estimates that the cost for remediating the additional polygons is many times SDC and EHC’s estimate. Mr. Halvax’s declaration states he is in charge of BAE Systems’ dredge activities in San Diego and other west coast locations and just completed dredging in BAE Systems’ shipyard in January 2011. Mr. Halvax states that total dredging, disposal, and underpier remediation (inclusive of environmental protection measures and monitoring) will cost an estimated $23,900,000. Costs associated with remedial dredging not considered by SDC and EHC include debris management, additional dredging/cleanup pass, protection of structures, return water management, disposal, clean sand cover, and sediment sampling/water quality monitoring. Details of these additional, but necessary, costs, including unit costs and assumptions may be found in the Halvax spreadsheet.

Instead of an incremental cost of approximately $1,500,000, the more accurate cost associated with the additional 120,000 cubic yards of sediment is $23,900,000. Even then, this estimate does not include any provision for uncertainty, permitting, long-term monitoring, design, construction management, and other potential costs that may incrementally increase the total cost of the remedial effort. Rather than an incremental increase of 2.58% to the cost of the proposed remedial action, the addition of SDC and EHC’s suggested polygons will increase the estimated cost by 41% over the current estimate of $58,100,000. (DTR § 32.1.1 at 32-40.) If additional polygons are dredged, as SDC and EHC urge, the likely cost of remediating the site will increase to at least $82,000,000.

ID 335, 337, 371
In it's rebuttal to Coastkeeper's and EHC's comments in this Group Comment, NASSCO stated that it agrees with BAE’s comments on this topic, and incorporates those comments into NASSCO's comments.

Response 33.2

The rebuttal comments of BAE Systems and NASSCO are generally correct and accurately point out the problems with the technical support cited by Coastkeeper and EHC in support of their comments. The polygons excluded from the proposed remedial footprint are consistent with the methodology described in the DTR, and the cleanup of the proposed remedial footprint should ensure that present and anticipated beneficial uses of San Diego Bay are protected.

Specific Polygons mentioned in Coastkeeper's and EHC's comments are discussed below.

POLYGON NA22

As discussed in the DTR, Section 33, over one dozen sediment samples were collected in the mouth of Chollas Creek area. These samples were analyzed for physical parameters, chemistry, toxicity, and benthic communities. There is substantially more data collected in the mouth of Chollas Creek area as part of the TMDL than was collected in this area during the Shipyard sediment quality investigation, in which only station NA22 was sampled. The decision to remove polygon NA22 from the proposed remedial footprint was due to the fact that substantially more data is available for decision making in the mouth of Chollas Creek at the completion of the TMDL.

The draft implementation plan for the TMDL for the Mouth of Chollas Creek calls for the San Diego Water Board to issue a CAO for the cleanup of contaminated sediment at the mouth of Chollas Creek, including the area encompassed by the polygon associated with station NA22, and portions of the polygons associated with stations NA20 and NA 21. The San Diego Water Board intends to issue this CAO and has put together a staff Cleanup Team to begin drafting the CAO following the San Diego Water Board's consideration of the TMDL for the Mouth of Chollas Creek for adoption. Additional documentation of the San Diego Water Board's intent to require implemention of cleanup actions at the Mouth of Chollas Creek as an integral part of TMDL implenmentation is contained in the San Diego Water Board funded Sediment Assessment Study for the Mouths of Chollas and Paleta Creek San Diego, Phase 1 Report (SCCWRP and U.S. Navy, 2005; Figure 2-2; SAR 286743).

Polygon NA22 was included in the DTR (Section 31) economic feasibility analysis of cleaning up to background sediment concentrations because at the time of the analysis, the decision to exclude NA22 from the remedial footprint had not been made. Only the portion of polygon NA22 north of the pier is included in the calculation of pre- and post-remedial SWACs. Coastkeeper correctly pointed out that a data line for NA22 appears in the SWAC calculation spreadsheets mentioned in its comment. Only a fraction of the area of polygon NA22 was included, however, in the SWAC calculations. The value of 54,670 square feet in the "area" field for polygon NA22 is only a fraction of its total area of 235,799 square feet. For purposes of post-remediation sampling, this partial area of polygon NA22 should be incorporated into the area of polygon NA20.

POLYGONS NA01, NA04, NA07, NA16, SW06, SW18, AND SW29

The sediment quality triad results (Section 18, p. 18-1 of the DTR) showed that benthic communities are unlikely impacted at stations NA01, NA04, NA07, and SW18. Station NA16 was possibly impacted. This station was re-evaluated using the Multiple Lines of Evidence approach in the Bays and Estuaries Plan with a result that the benthic community at the station was likely unimpacted (DTR p. 32-29). Triad data for station SW06 was collected as part of the study to test the SS-MEQ and 60% LAET thresholds. The WOE station outcome for station SW06 was "unlikely" impacted. Triad data was not available for station SW29, so the SS-MEQ and 60% LAET thresholds for this station was evaluated. Sediment chemistry concentrations at the station was below both thresholds.

Methods for evaluating impacts to fish are discussed in the DTR in Section 15, and in the Appendix to Section 15. The San Diego Water Board applied the weight of evidence approach principles to evaluate potential risks to aquatic life beneficial uses, including impacts to fish, from the existing levels of pollutants at the Shipyard Sediment Site. With respect to fish, the lines of evidence included fish histopathology, and fish bile analyses. Based on those lines of evidence, no adverse effects to fish could be directly attributable to specific chemical concentrations in the sediment. Therefore, the San Diego Water Board did not derive specific chemical-based cleanup levels from the fish histopathology and bile data. Although cleanup levels were not derived from the fish studies, by improving sediment conditions for benthic macroinvertebrates at the Shipyard Sediment Site, the San Diego Water Board expects conditions to improve for the fish that feed on them, as well as for fish that reside on and/or in the sediment..

The DTR fish study results are based on actual data from the site and from reference sites in San Diego Bay, an approach acutally recommended in MacDonald (2009). Further, the MacDonald 2009 analysis is theoretical based on multiple fish species not found at the Shipyard Sediment Site.

RESPONSE 33.3

DTR Section: 33.1.2, Table 33-1, Tables A33-1, A33-2, A33-3
Comment Submitted By: BAE Systems
Comment ID: 145
Comment

The DTR used Composite SWAC Ranking Values as one line of evidence for identifying polygons to include in the remedial footprint at the Site. Comment C.2.2 of MacDonald 3/11/11 Expert Report states that “The Composite SWAC Ranking Value provides a consistent, but incomplete, basis for ranking polygons for inclusion in the Proposed Remedial Footprint.”

MacDonald states that “the index does not consider the concentrations of other contaminants that could be elevated in sediments from the site. Specifically, lead, zinc, low molecular weight (L)PAHs all exceed toxicity thresholds in surficial sediments at one or more sampling stations." MacDonald then refers the reader to Table A33-3 of the DTR. Because LPAH is not addressed in Table A33-3, the basis of his assertion with respect to that group of chemicals is unclear. Also, MacDonald does not identify which toxicity thresholds he is referring to when he states that they were exceeded, so the basis of that assertion is also unclear. However, if 60% LAETs are calculated from the LAETs for lead and zinc presented in Table 9-10 of Exponent (2003), the resulting values of 150 and 720 mg/kg, respectively, are not exceeded for any of the polygons that are not included within the remedial footprint, as documented in Table 33-3 of the DTR. Therefore, MacDonald's assertion that lead and zinc exceed toxicity thresholds outside of the remediation footprint is untrue based upon site-specific thresholds calculated in a manner consistent with how the thresholds for the primary COCs were calculated.

In addition to the fact that lead and zinc did not exceed their estimated 60% LAET values outside the remedial footprint, Section 29.3 of the DTR describes how it was verified that secondary COCs, such as lead and zinc, were highly correlated with the primary COCs, to ensure that they would be addressed in a common remedial footprint. Table 29-4 of the DTR shows that both lead and zinc exhibited strong positive correlations with several of the primary COCs. The highest correlations for lead and zinc were found with copper, for which both correlations coefficients were >0.90 (i.e., 0.90 and 0.94, respectively). Therefore, the co-occurrence evaluation conducted in the DTR ensured that the secondary COCs were accounted for in the remedial footprint.

Response 33.3

The Cleanup Team agrees with this comment. It is important to recognize that contaminants, both primary COCs and secondary COCs, tend to be highly correlated (i.e. co-located with each other) so that remediation of the primary COCs also addresses secondary COCs.

RESPONSE 33.4

DTR Section: 33
Comment Submitted By: NASSCO
Comment ID: 170
Comment

The March MacDonald Report Improperly Interprets Composite SWAC Ranking Values As A Remediation Trigger

In the March MacDonald Report, Mr. MacDonald alleges that the DTR does not adequately explain why ten Shipyard Site stations with Composite SWAC Ranking Values greater than 5.5 were excluded from the proposed remedial footprint.[1] March MacDonald Report, at 11. Although he does not identify the ten stations, it appears that Mr. MacDonald is referring to Stations SW29, SW25, SW15, NA01, SW18, NA16, NA03, SW30, NA04, and SW11. See DTR Appendix for Section 33, at Table 33-1 (excluding the five stations identified in DTR, Table 33-6). Accordingly, Mr. MacDonald asserts that the DTR's rationale "for excluding stations with Composite SWAC Ranking Values greater than 5.5 is arbitrary and does not justify the exclusions." Id.

[1] Mr. MacDonald appears to have picked 5.5 as his cut-off value for Composite SWAC Ranking, because Station NA09's 5.5 Composite SWAC Value is the lowest Composite SWAC Value of all the stations included in the remedial footprint.

Mr. MacDonald's allegation is premised on his assumption that a Composite SWAC Ranking Value of 5.5 or greater alone is a remediation trigger sufficient to include a station in the remedial footprint. This is a foundational misunderstanding of the analysis performed in the DTR. In fact, the station-by-station Composite SWAC Ranking analysis (Section 33.1.2), station-by-station SS-MEQ analysis (Section 33.1.3), and the highest concentrations of individual COCs analysis (Section 33.1.4) were all considered simultaneously, along with Triad data and feasibility issues, to determine the remedial footprint. A brief review of the station-by-station SWAC Composite Ranking analysis found at DTR Section 33.1.2 (and supported by Table 33-1 in Appendix 33), demonstrates that it cannot alone be considered a remediation trigger. For example, if a SWAC Composite Ranking of 5.5 or greater alone had been considered a remediation trigger, then Station NA09 (currently part of the remedial footprint) would have been excluded because its SWAC Composite Ranking is only 5.4. DTR, Appendix for Section 33, at Table 33-1. By the same token, there would be no discussion of Station NA22 with its low SWAC Composite Ranking of only 3.6. Id.

Furthermore, based on the weight of the evidence approach employed by the DTR, the ten stations with Composite SWAC Rankings of greater than 5.5 (including Stations SW29, SW25, SW15, NA01, SW18, NA16, NA03, SW30, NA04, and SW11) identified were properly excluded from the remedial footprint. In fact:

- None of the ten stations have a SS-MEQ value greater than the 0.90 benchmark. See DTR, Appendix for Section 32, at Table A32-12. In fact, none of the stations have SS-MEQ values of greater than 0.71. Id.
- None of the ten stations have high individual concentrations of COCs. See DTR, Tables 33-3, 33-4, and 33-5 (demonstrating that none of the ten stations rank among those stations with the highest concentrations of COCs).
- None of the ten stations exceed the 60% LAET benchmark. See DTR, Table 32-23 (no LAET exceedence for SW29 or SW30); Appendix to Section 32, Table A32-9.
- None of the ten stations have a "Likely" impaired Triad ranking.

Accordingly, it is of no moment that the DTR does not offer an explanation why the ten stations with SWAC Composite Rankings greater than 5.5 (including Stations SW29, SW25, SW15, NA01, SW18, NA16, NA03, SW30, NA04, and SW11) are not included in the remedial footprint simply because the SWAC Composite Ranking is not a remedial trigger, and numerous other analyses in the DTR demonstrate why those stations were not included in the remedial footprint.

Response 33.4

The Cleanup Team agrees with the comment that the SWAC ranking is not a remediation trigger and that the rationale for including or excluding polygons is not based on the SWAC ranking alone but on simulataneously considering a station's Composite SWAC Ranking (Section 33.1.2), station-by-station SS-MEQ analysis (Section 33.1.3), and the highest concentrations of individual COCs analysis (Section 33.1.4).

34. TCA Finding 34 and DTR Section 34: Remedial Monitoring Program

Finding 34 of CAO No. R9-2011-0001 states:

Monitoring during remediation activities is needed to document that remedial actions have not caused water quality standards to be violated outside of the remedial footprint, that the target cleanup levels have been reached within the remedial footprint, and to assess sediment for appropriate disposal. This monitoring should include water quality monitoring, sediment monitoring, and disposal monitoring.

Post-remediation monitoring is needed to verify that remaining pollutant concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. Post-remediation monitoring should be initiated two years after remedy implementation has been completed and continue for a period of up to 10 years after remediation. For human health and aquatic dependent wildlife beneficial uses, post-remediation monitoring should include sediment chemistry monitoring to ensure that post-remediation SWACs are maintained at the site following cleanup. A subset of samples should undergo bioaccumulation testing using *Macoma*. For aquatic life beneficial uses, post-remediation monitoring should include sediment chemistry, and toxicity bioassays to verify that post-remedial conditions have the potential to support a healthy benthic community. In addition, post-remediation monitoring should include benthic community condition assessments to evaluate the overall impact of remediation on the benthic community re-colonization activities.

Environmental data has natural variability which does not represent a true difference from expected values. Therefore, if remedial monitoring results are within an acceptable range of the expected outcome, the remedial actions will be considered successful.

RESPONSE 34.1

DTR Section: 34
Comments Submitted By: NASSCO, BAE Systems, Coastkeeper and EHC
Comment IDs: 59, 61, 62, 63, 64, 68, 73, 109, 220, 221, 230, 234, 235, 239, 243, 244, 245, 247, 248, 249, 255, 306, 307, 308, 309, 310, 311, 312, 313, 314, 323, 362, 363, 364, 369, 425, 426, 427, 428, 434

Comment

The San Diego Water Board received multiple comments regarding the legality and follow-up requirements for "trigger concentrations" associated with remedial and post-remedial monitoring. Some comments found the trigger concentrations to be inappropriate, while others supported them. Comments against the TCAO specifically focused upon:

1. Remedial and Post-remedial monitoring does not require cleanup levels to be met;
2. Remedial monitoring fails to require achievement of background;
3. 120% trigger could lead to site-wide concentrations above cleanup;
4. The San Diego Water Board cannot legally approve the Order;
5. 120% violates the Order; and
6. Trigger concentrations are compliance levels.

The San Diego Water Board received multiple rebuttal comments on the above comments that were in support of the TCAO and DTR.

In addition, the San Diego Water Board received multiple comments from BAE Systems which, in effect, were critiques of the 2011 MacDonald expert report findings on the development and use of Goals and Triggers during remedial and post-remedial monitoring. These comments generally disagree with the findings of the 2011 MacDonald report. Multiple rebuttal comments from NASSCO were also received in support of BAE Systems intial comments on the MacDonald assessment.

Response 34.1

In response to the comments and rebuttals regarding the establishment and evaluation process for "Trigger Concentrations" during Remedial and Post-Remedial monitoring, the San Diego Water Board has the following clarifications:

1) Resolution No. 92-49 specifies at section II.A.1.e that the discharger must conduct monitoring to confirm short and long term effectiveness of cleanup and abatement. The remediation and post remediation monitoring program as described in the TCAO and DTR are designed to meet this requirement. Some comments are submitted in a context that frames the "Trigger Concentrations" as the only monitoring element, which is incorrect. They are one component of the remedial and post-remedial monitoring program.

2) The "Trigger Concentrations" and Post-Remedial "Goals" are not compliance endpoints. In contrast, they are assessment tools that are to be utilized to determine if and what additional measures are needed during and/or after remediation to ensure that the alternative cleanup levels are achieved, and that the cleanup and abatement is effective in the short and long-term.

   For remedial dredging, as stated in section B.1 of the directives, the sediment monitoring after the initial dredging must be sufficient to confirm that selected remedial activities have achieved target cleanup levels within the remedial footprint specified in Directive A.2.a. As described in 34.1 of the DTR, concerns with dredging include re-suspension and settling (dredge residuals), as well as sloughing into dredged areas. The purpose of the immediate post-dredge monitoring is to determine the liklihood that the dredged area needs additional measures to meet the concentration levels in the TCAO due to these potential issues. The sole purpose of remedial sediment monitoring is not to determine compliance with concentration levels, as some comments imply, but to determine the necessity of additional measures (e.g. 2nd dredge pass; sand cover) as prescribed in the DTR (Section 34.1.2) to achieve target cleanup levels given the site-specific monitoring results.

   Post-remedial dredging incorporates a weight of evidence approach similar to the evaluation conducted to determine the scope of remediation at the shipyard site. The lines of evidence include sediment chemistry, toxicity, and bioaccumulation. The "Trigger Concentrations" are one of two sediment chemistry evaluation tools and one of the four total evaluation tools utilized in the weight of evidence approach for the goals.

An important aspect of the dredging that some comments fail to mention involves the work done to date to determine depth levels of dredging required to meet background concentrations (see DTR Section 33.1). The combination of these calculations, active dredge footprint monitoring during dredging operations, and post dredge remedial monitoring is expected to work together to confirm the short and long term success of the cleanup and abatement in accordance with Resolution No. 92-49.

3) The "Trigger Concentrations" were developed to incorporate the expected natural sampling variability. The incorporation of this variability is appropriate to prevent a Type I error in assessment of the cleanup. Again, it is important to clarify that the TCAO requires alternative cleanup levels be met and that "Trigger Concentrations" are not a compliance endpoint in this determination. This is clear in TCAO Finding 34, which states:

> "Environmental data has natural variability which does not represent a true difference from the expected values. Therefore, if remedial monitoring results are within an acceptable range of the expected outcome, the remedial actions will be considered successful."

In regards to comments on the trigger level for mercury, there are two main points of consideration. First, the polygons being remediated have elevated mercury levels, so it is unclear how the removal of mercury will allow the dischargers to increase or not remove concentrations of Mercury. Second, the post-remedial trigger incorporates the variability expected following remediation activities, which is based upon pre-remedy SWAC variability in non-remedial sites. This variability is not reflected in the pre-remedy SWAC cited in Comment ID 68 (see Appendix B, Comment ID 68). Table 33-8 reflects this information.

4) Lastly, the San Diego Water Board retains discretion to review and approve progress reports, require changes in remedial and post-remedial monitoring, and approve the cleanup and abatement completion. This is clearly laid out in Directive F of the CAO.

The Cleanup Team generally agrees with the comments and rebuttal comments that focused upon the 2011 MacDonald report assessment of Trigger Concentrations and Goals. The Trigger Concentrations, Goals, and response criteria are reasonable and appropriate, and are consistent with Resolution No. 92-49. The Cleanup Team also offers the following clarifications in response:

1) The sampling methods for triggers/goals utilized are the same as those used to determine impairment and remediation within the polygons.

2) The assessment utilizes a multi-step process to ensure the remediation is a success, including pre-dredge calculations, remedial dredge monitoring, and post-remedial monitoring. The post-remedial monitoring also occurs over a 10 year time period.

3) The assessment includes a SWAC approach AND weight of evidence approach to determine the short and long-term success of the remediation on a site-wide basis as well as within and

among polygons. This is expected to verify that remaining pollutants do not unreasonably impact human health and aquatic dependent wildlife.

4) The Triggers and Goals incorporate flexibility for the dischargers to propose, for San Diego Water Board review and approval, what additional follow-up actions may be necessary if a trigger is exceeded and/or a goal is not met during the course of remedial or post-remedial monitoring. This flexibility is important as the project is likely to proceed in a phased manner due to other regulatory permitting and shipyard activities. Furthermore, the project will be carried out at different water depths, will occur adjacent to essential fish habitat, and may encounter differing engineering challenges and requirements.

5) The San Diego Water Board will review the remedial monitoring plan and may direct the dischargers to modify or suspend cleanup activities at any time during the remediation process. The San Diego Water Board will also review the required final cleanup and abatement completion report (see Directives A-D).

6) The San Diego Water Board will review the post-remedial monitoring plan and may implement any conditions in regards to sampling. The San Diego Water Board will also review the post-remedial monitoring reports, and will review any trigger exceedance investigation and characterization reports (see Directive F).

7) The San Diego Water Board retains discretion in approving the Final Cleanup and Abatement Completion Report and Post Remedial Monitoring Reports.

RESPONSE 34.2

DTR Section: 34
Comments Submitted By: NASSCO, BAE Systems, SDG&E, Coastkeeper and EHC
Comment IDs: 65, 81, 82, 84, 112, 203, 215, 204, 208, 209, 210, 211, 212, 213, 214, 216, 217, 222, 223, 251, 252, 253, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 352, 353, 431

Comment

The Remedial Monitoring comments focused on the level of specificity for monitoring in the DTR, and on what BMPs are needed during the actual remedial dredging process. For example, Comment ID 82 (See Appendix B, Comment ID 82) and statements in MacDonald (2011) call for more specificity (naming specific water quality standards, BMPs, etc..) in the DTR, while opposing comments and rebuttal comments focus on the requirement of the TCAO to submit a proposal to the San Diego Water Board for these activities.

The San Diego Water Board received multiple initial comments from BAE Systems that, in essence, provided rebuttal commentary on specific statements found in MacDonald (2011), which is cited in Coastkeeper/EHC comments regarding the level of specificity in the DTR for Remedial Monitoring. However, the findings in MacDonald (2011) were not submitted by Coastkeeper/EHC as specific comments. EHC/Coastkeeper comments do cite MacDonald (2011), but not specific text or sections. NASSCO and BAE Systems also submitted rebuttal comments generally in support of the approach in the DTR and of TCAO requirements.

Response 34.2

The Cleanup Team generally agrees with the comments and rebuttals that support the requirement that remedial monitoring specifics need to be included within the remedial monitoring plan when submitted to the San Diego Water Board for review. This approach is reasonable and the Cleanup Team provides the following additional clarifications:

The TCAO and DTR prescribe a baseline expectation of required water quality and sediment monitoring during the remedial dredge and fill activities (citing 2 general approaches for water quality monitoring). Thus, the approach taken in the TCAO and DTR is reasonable given the regulatory process. It is important to note that the scope, scale, timing, and regulatory process of the cleanup and abatement makes specific site prescriptions (i.e. specific BMPs, calling out specific water quality standards, construction area size, number of samples etc.) within the DTR infeasible and unnecessary. The cleanup and abatement may take place in different phases, will occur at varying depths, and involves both independent and co-dependent dredge and fill activities. Thus, the water quality and sediment monitoring requirements include sufficient flexibility to allow the dischargers to propose a monitoring program that is consistent with the TCAO, protects water quality standards, addresses site specific conditions, factors in multiple phases and sites required for remediation, and allows for regulatory input and requirements by resource agencies.

In terms of regulatory requirements, the cleanup and abatement is required to undergo additional environmental review and permitting processes which will influence the remedial monitoring plan design. The cleanup and abatement "project" is required to undergo CEQA, which will require specification of mitigation measures needed to reduce impacts to less than significant levels. Additionally, the project will require permits under the Clean Water Act (Section 401 and 404 and associated consultations) for the discharge of dredge and fill materials. These permits will condition site-specific mitigation measures for the project, such as BMPs, monitoring, and habitat mitigation. Thus, the level of description in the DTR and the requirement for submittal of a remedial monitoring plan is appropriate given the project itself and to prevent conflict with existing regulatory requirements.

Some comments favor the TCAO requiring real-time monitoring of the primary and secondary pollutants of concern to prevent the "masking" of pollutants. While such a monitoring scenario would be ideal, it is unrealistic and unreasonable due to analysis times. Further, it is unnecessary as turbidity serves as a proxy for sediment contaminant of concern detection. Contaminated sediments in depositional environments are primarily fine-grained (such as at the Shipyard Sediment Site), and contaminants associated with the sediments tend to remain tightly bound to particles, making the control of sediment resuspension important in controlling contaminant release (U.S. Army Corps of Engineers, 2008). Furthermore, sediment remediation case studies that utilized periodic contaminant of concern monitoring (mainly PCBs and PAHs) have shown that if turbidity during dredging is controlled, then the sediment-related contamination is also controlled (U.S. EPA, 2004). Thus, real-time dissolved oxygen and turbidity monitoring are appropriate for remediation monitoring.

For clarification, the TCAO does not allow dischargers to "abandon" daily real-time water quality monitoring if no samples exceed for 3 days in a row. The frequency of real-time monitoring may be reduced to weekly, and visual turbidity monitoring would likely still be required.

In regards to comments regarding the sampling protocols within individual polygons, the approach required in the DTR is reasonable to meet the monitoring requirements under Resolution No. 92-49. While replication sampling within each polygon would provide additional information following the dredging, the TCAO and DTR sampling approach is reasonable and incorporates an estimate of variability within the process while also addressing temporal sediment movement. It is unclear how targeting historic sampling sites that will be remediated will detriment this process, as the remedial monitoring should assess the success of the remediation and there is value in pre and post data collection. Again, the San Diego Water Board will also review the Remediation Plan prior to implementation (TCAO Directive B.2). For sand placement, the DTR specifies that sand placement will be evaluated by the dischargers following monitoring results with confirmation with the San Diego Water Board (via TCAO Directive B.3).

EHC/Coastkeepers Comment ID 84 (See Appendix B, Comment ID 84) regarding the impossibility of the sediment sampling is confusing and difficult to interpret. The referenced section (MacDonald, 2011 at p. 25) directly quotes sampling requirements that are presumably from section 34 of the DTR but cannot be found in the DTR. It is presumed that the comment is concerned with the accuracy of remedial sediment sampling following the dredging. DTR Section 34.1.2 specifically describes the sampling expectations and requirements, which include coordination between the dredge operator and sampling team. The DTR states that the undisturbed depth will "be determined based upon the accuracy to which the dredge operator can guarantee the depth to which they dredge." The DTR also lays out decision rules in the evaluation of sampling and defines subsurface depths. These specific methods proposed by the dischargers will also be reviewed by the San Diego Water Board. Thus, the sampling is not considered to be "impossible" to conduct.

The monitoring approach in the TCAO and DTR does not prevent the San Diego Water Board or dischargers from assessing impacts from the remedial dredging, nor does it limit the ability to determine if additional actions and/or remedial measures need to be taken during the dredging to protect water quality standard while simultaneously conducting the cleanup and abatement.

RESPONSE 34.3

DTR Section: 34
Comments Submitted By: NASSCO, BAE Systems, SDG&E, Coastkeeper and EHC
Comment IDs: 65, 218, 219, 349
Comment

ID 65
Coastkeeper and EHC commented that the "120% of background" decision rule for a second dredging pass is ambiguous. In addition to violating the requirement that the alternative cleanup levels must be concentration limits, the language in the Order setting the 120% background level allowance leaves open the possibility that every Contaminant of Concern had to exceed 120% of background in order to warrant a second dredging pass. (See Order Directive A.2.a) This would

allow for a situation when one or more of the pollutants were significantly above background concentrations, but if one pollutant was at or below 120% of background, that no additional dredging would be required. This would lead to even more egregious violations of the alternative cleanup levels. See MacDonald 2011 at p. 25.

ID 218, 219
BAE Systems responded to MacDonald 2011 comments regarding deficiencies of the remediation monitoring requirements – Sediment. BAE Systems commented that MacDonald's statement that "The TCAO and the DTR provide inconsistent requirements on sampling depth" is premature and unsupported. Any inconsistencies regarding sampling depth will be resolved when the Remediation Monitoring Plan is prepared.

BAE Systems responded to the MacDonald 2011 comment that "the DTR should specifically require that samples be collected within the top 10 cm" stating that it is premature and unsupported. The sediment sampling depth for remediation monitoring will be finalized when the Remediation Monitoring Plan is prepared and reviewed by the Regional Board.

ID 349
NASSCO noted Coastkeeper's and EHC's comment that the Order and DTR provide inconsistent sampling requirements; the Order requires that samples be collected deeper than the upper 5cm, while the DTR requires that samples be collected deeper than the upper 10cm. NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 66.

Response 34.3

In response to comments regarding the sampling depth and trigger process during remedial monitoring, the TCAO Directive A.2.a and DTR at 34.1.2, p. 34-3 will be revised as follows:

"If the concentration of any primary COC in subsurface sediments (deeper than the upper 5 cm) is above 120 percent of the post-remedial dredge area concentration after completion of initial dredging, then additional sediments shall be dredged by performing an additional "pass" with the equipment."

The phrase " deeper than the upper 10 cm" stated in DTR at 34.1.2, Page 34-3 was a typographical error in the DTR. The 10 cm sampling depth interval was evaluated for the remedial monitoring, but rejected in favor of 5 cm (as reflected in the TCAO). The 5 cm depth is consistent with the Field Procedures for sediment sampling in the Bays and Estuaries Plan (SWRCB, 2009; p. 4, Sections V.D.3 and 4). This revision will be provided on September 15, 2011, as required by the Third Amended Order of Proceedings.

Please see Response 34.1 above in regards to comments abnd responses regarding the conditions that would trigger an additional "pass" with dredging equipment described in TCAO Directive A.2.a and DTR at 34.1.2, p. 34-3 .

RESPONSE 34.4

DTR Section: 34
Comments Submitted By: NASSCO, BAE Systems, SDG&E, Coastkeeper and EHC
Comment IDs: 66, 70, 71, 72, 86, 113, 191, 205, 206, 224, 225, 226, 227, 228, 229, 231, 232, 233, 236, 237, 238, 240, 241, 242, 246, 254, 315, 316, 317, 318, 319, 320, 321, 322, 354, 355, 356, 357, 358, 359, 360, 361, 372, 373, 432, 437

Comment

The San Diego Water Board received multiple comments in favor and against the design and requirements of the post-remedial monitoring program. These primarily focused upon:

1. Sediment sampling depth;
2. Appropriate number and location of triad stations;
3. Number and selection of bioaccumulation stations;
4. Lack of consideration of secondary COCs in the post-remedial sampling;
5. Benthic community sampling methods and lack of a specific benthic community trigger;
6. Exclusion of site NA22 from monitoring; and
7. SWAC monitoring.

BAE Systems also submitted comments against findings in MacDonald (2001) that the amount of post-remedial data collected was insufficient. Subsequent rebuttal comments were received in support of the post-remedial monitoring design as depicted in the TCAO and DTR:

In addition, the San Diego Water Board received multiple comments from BAE Systems which, in effect, were critiques of the MacDonald (2011) expert report findings on the SWAC approach for post-remedial monitoring. Multiple rebuttal comments from BAE Systems and NASSCO were also received regarding the MacDonald critique of the SWAC approach.

Response 34.4

The Cleanup Team received numerous comments regarding the specifics and sufficiency of the post-remedial sampling. The objective of the post-remedial monitoring is to verify that remaining pollutant concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. This is consistent with the requirement for long term monitoring required under Resolution No. 92-49 to confirm the effectiveness of the cleanup . Although some commenters suggest a different approach, the monitoring approach described in the TCAO and DTR is reasonable and sufficient to adaequately evaluate the short and long-term effectiveness of the cleanup. The Cleanup Team agrees in principle that the collection of additional data could provide additional information regarding the remediation success as suggested by some commentors. However, the TCAO monitoring requirements have been structured in a considered and reasonable manner that compares pre-remediation and post-remediation assessments to assist in the evalaution of the short and long-term success of the remediation. Additional analysis and sampling investigation may be conducted based upon exceedances of specifed post remedation trigger concentrations and attainment of remedial goals incorporated in the TCAO Directives D-F.

With the proper implementation of mitigation measures, the potential for resuspension, transport, and deposition of fine sediment during remedation dredging activites will be mitigated to less than significant levels and subsequently assessed over the long-term under the post remedial monitoring program. The selection of the nine sampling stations along the length of the remedial footprint for bioaccumulation testing was not arbitrary (see DTR Section 34.2.1) and will be used in a weight of evidence approach with other data and factors to evaluate the short and long-term success of the cleanup and abatement and attainment of TCAO remedial goals (see also Response 34.4 above). It is the responsibility of the dischargers to meet the remedial goals required in the TCAO directives. If, at any time during the 10-year post remediation monitoring period, monitoring data and follow-up studies indicate that the cleanup levels are not maintained, the San Diego Water Board will require further corrective action (see TCAO Directives D.5 and F).

Sediment Sampling Depth
Most of the sediment chemistry samples from the sediment quality investigation (Exponent, 2003) were from the 0-2 cm depth interval. The TCAO requires post-remediation monitoring samples be from the 0-2 cm depth sample for confirmation that post-remedial SWACs have been achieved, and for the purpose of assessing post-remediation benthic community conditions.

Post-remediation sediment sampling at the 0-2 cm depth interval will enable post-remediation comparisons to pre-remediation sediment chemistry conditions. This depth interval also is an indicator of residual sediment re-contamination for both remediated and non-remediated polygons. In regards to comments on sampling the biologically active zone, the post-remedial monitoring requires sampling of the benthic community in years 3 and 4 to provide a qualitative assessment of the re-establishment of benthic organisms at selected sites within the remedial footprint area. (See DTR Sections 32.2.3 and 32.2.4)

Use of 5 Triad Stations
The Cleanup Team generally agrees with the rebuttal comments from BAE Systems regarding the adequacy and supporting rationale for the 5 sample stations. For clarification, there were 6 stations identified in the DTR (Section 18), though one (NA22) was excluded due to overlap with a TMDL evaluation area (see Table 18-1). DTR Section 34.2.3 states:

"The purpose of assessing benthic community conditions as part of post-remedy monitoring is to demonstrate the remediation will successfully create conditions that would be expected to promote recolonization of a healthy benthic community. This objective will be evaluated by collecting surficial sediment samples (0-2 cm interval) from selected stations within the remedial footprint where pre-remedial Triad analysis showed likely effects on benthic receptors. Chemistry and toxicity tests will be performed on these samples to determine if they are likely to have effects on benthic receptors."

Thus, the use of these 5 stations is appropriate to measure attainment of TCAO remedial goals. It should be noted that SWAC, bioaccumulation, and benthic community sampling occurs inside AND outside of remedial areas and will be to assess if pollutant concentrations in non-remedial areas has been maintained.

Bioaccumulation
The selection of the 9 stations for post remedial bioaccumulation testing is described in DTR Section 34.2.1 as being the sites where bioaccumulation was initially conducted to determine if conditions have been maintained and improved. The nine sediment samples will undergo bioaccumulation testing using the same 28-day *Macoma nasuta* test used in the pre-remedial site assessment. Thus comparisons with pre-remedial bioaccumulation levels can be made and trends can be determined over time. Of the nine stations, the majority (7) lie inside remedial footprint areas with the remaining stations (2) being directly adjacent or close to remediated polygons. Additioanlly, the 9 stations are distributed along the entire length of the remedial footprint. Thus, the bioaacumulation stations may be evaluated to see if bioaccumulation trends in 1) remediated footprint areas are decreasing and 2) non-remedial areas have not gotten worse. The purpose of the post-remdial bioaccumulation monitoring is not, as some comments imply, to conduct a post-remedial aquatic life and human health risk assessment. The specific bioaccumulation remedial goals specified in TCAO Directive D.3.c at pp. 28 and 29 are designed to document that bioaccumulation levels are responding to the sediment remediation and are showing a decreasing trend at two years post-remediation and that this decreasing trend continues at year five post-remediation and, if determined necessary, at year ten post-remediation. The post remedial bioaccumulation evaluations described in DTR Section 34.2.1. is designed appropriately for the intended use.

Secondary COCs
Additional post remedial SWAC trigger concentrations are not needed for secondary contaminants due to the relationship of secondary contaminants to primary descbried in DTR Section 29. Furthermore, the selection process for remediation of contaminants did evaluate secondary contaminants of concern, and the post-remedial monitoring SWAC and goals will identify if a secondary contaminant of concern is preventing short and/or long term goals of the cleanup and abatement from being achieved.

Benthic Community Triggers
The San Diego Water Board included benthic invertebrate community sampling soley as a qualitative measure to assess the benthic recolonization of bay sediments following remediation. The benthic community measurements willnot be ised to evaluatre the success of the remedial action. Due to the natural variability in benthic colonization, as well as the variability of Shipyard Sediment Site conditions (depth, habitat types, disturbances, etc...) it is not reasonable to include a specific benthic community trigger.

Polygon NA22 Inclusion
The polygon associated with Station NA22 has been excluded from the Shipyard Sediment Site remedial footprint and will instead be further assesed as part of the TMDL effort for the Chollas Creek mouth (DTR Section 33.1.1.) This is a reasonable and appropriate approach because substantially more data was collected in the Chollas Creek Mouth area as part of the TMDL than was collected during the Shipyards sediment study, in which one sample was collected at Station NA22. Further, station NA22 is located in an area where propeller testing occurs routinely. Thus physical impacts could be causing the impaired benthic conditions found at NA22, rather

than chemically indiuced impacts. The additional samples from the TMDL will allow a better assessment of the causes of potential impairment in the mouth of Chollas Creek area which will allow a more effective cleanup decision to be made. Polygon NA22 should not be included in the remedial footprint simply because it is considered to be "within" the Shipyard Site. For more discussion please see Response 33.2.

SWAC Approach
The Cleanup Team does not agree with EHC/Coastkeeper in Comment ID 70 (See Appendix B, Comment ID 70), that the collection of 65 samples represents a paltry sum and that the purpose of the compositing is to mask pollutants and guarantee that no additional action is taken. This conflicts with Coastkeeper's and EHC's next comment (ID 71), which states that the CAO does not require each polygon to be sampled. Coastkeeper and EHC do not appear to understand the actual post-remedial sampling requirements. As stated in DTR Section 34, post-remediation monitoring is needed to verify that remaining pollution concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. The analysis of levels of pollutants attributed to each specific polygon is not required unless an exceedance of the SWAC is documented under TCAO Directive D.4. The purpose of the SWAC approach is to evaluate whether the clean-up goals have been attained for the whole site. The Cleanup Team expects the toxicity and bioaccumulation post-remedial monitoring to address the concerns raised by the commenter regarding organisms that are sessile or have small home ranges.

It should be noted that the "success" of the clean-up will rely heavily upon multiple factors beside data from the polygons not dredged (see also Response 34.1 above). However, the data from those polygons not dredged is indeed important to ensure that sediment quality is maintained at non-dredge sites during and following the remedial dredging. Thus, the six sampling areas are spaced based upon proximity to remedial dredging utilizing the Thiessen Polygons (see DTR Section 32.2.2). DTR Section 34.2.1.states: "Post-remediation monitoring is intended to verify that remediation was effective in reducing and maintaining pollutants in sediments at levels that do not unreasonably impact human health and aquatic-dependent wildlife." Again, this is consistent with the monitoring requirements under Resolution No. 92-49. The polygons were divided into groups that are:

- Dredged;
- Adjacent to Dredged Areas; and
- At the furthest distance from dredged areas.

The 6 composite samples can thus be evaluated to demonstrate that :

- Remediation in dredged areas was effective in reducing pollutants in sediments at levels that do not unreasonably impact human health and aquatic-dependent wildlife beneficial uses.
- Remediation in dredged areas was effective in preventing migration of contaminants, thus maintaining pollutants in adjacent and furthest distance sediments at levels that do not unreasonably impact human health and aquatic-dependent wildlife beneficial uses.

In regards to Comment ID 72 (See Appendix B, Comment ID 72), the TCAO is clear in Directives D.1.c.3 and 4 which provide that:

> "The average concentration of the each of the six composites shall be calculated from the analytical results of the replicates for each COC."
>
> "The three replicate subsamples of composite samples provide an estimate of variances in the compositing process."

Comment ID 72 also misquotes DTR Section 34.2.1, which states: "Post-remediation monitoring is intended to verify that remediation was effective in reducing and maintaining pollutants in sediments at levels that do not unreasonably impact human health and aquatic-dependent wildlife."

In regards to consistency with the original SWAC determinations, EHC/Coastkeeper comments do not recognize some of the purposes of assessing the post-remedial condition utilizing a SWAC approach. While the Cleanup Team is concerned with the post-remediation contaminant concentration levels achieved in dredged areas, the SWAC approach was selected, in part, to ensure that dredging residuals and suspended sediments did not re-settle into non-remedial areas, and that natural sediment migration following remediation activities did not result in significant increases in pollutant concentrations in non-remedial areas. Furthermore, it is important to note that the sediment chemistry concentrations at depth for each polygon have already been evaluated to determine depth of dredging to remediate to background. Active dredge footprint monitoring and remedial monitoring is expected to confirm concentration remediation within the dredged areas.

Comments and Rebuttal Comments on the MacDonald (2011) Report (MacDonald's critique of SWAC and amount of data collected)
The Cleanup Team generally agrees with the comments supporting the SWAC approach, including the six groups, compositing, and archiving of 65 samples, which as discussed above is a reasonable and appropriate evaluation approach that is consistent with Resolution No. 92-49.

It is also important to note, as some of the comments and rebuttals state, that the SWAC is not the only post-remedial assessment of the short and long-term success of the remediation. Comments received that were not in favor of the SWAC approach did not acknowledge the overall post-remedial monitoring weight-of-evidence approach discussed above. In this respect those SWAC comments are, to a certain extent, taken out of context..

The Cleanup Team generally agrees with the comments regarding the necessity, reliability and breadth of data collected during the post-remediation related to the alternative cleanup levels. The TCAO and DTR describe a combined remedial and post-remedial monitoring approach that is adequate to successfully verify that the remediation was effective in reducing and maintaining pollutants in sediments at concentrations that will not unreasonably affect San Diego Bay beneficial uses. The monitoring approach incorporates expected variability, requires response measures associated with monitoring phases and types, provides multiple lines of evidence, and is altogether a reasonable approach that is consistent with Resolution No. 92-49.

RESPONSE 34.5

DTR Section: 34
Comments Submitted By: NASSCO
Comment IDs: 157

Comment

The Remedial Monitoring and Post-Remedial Monitoring Programs are unprecedented compared to other sediment remediation projects throughout SD Bay, and California (Findings 34, 36).

Staff has also proposed extensive remedial and post-remedial monitoring programs that are far more stringent than those required for other similar sediment remediation projects in San Diego Bay. Gibson Depo, at 103:23 – 104:12, 133:17 – 135:7 (testifying that the remedial and post-remedial monitoring programs described in the TCAO and DTR are more extensive than any other projects in San Diego Bay). For example, the Regional Board has never before required the implementation of a five- to ten-year post-remedial monitoring plan for a site not involving an engineered cap.

In sum, by requiring significantly more stringent cleanup levels and monitoring programs for NASSCO and failing to regulate NASSCO in the same manner as other similarly situated shipyards and boatyards, the TCAO violates the consistency requirement expressly stated in Resolution 92-49, as well as principles of due process and equal protection

Response 34.5

NASSCO's equal protection argument lacks merit. The San Diego Bay sediment cleanup sites referenced by NASSCO were ordered by the San Diego Water Board between the years 1985 through 1998. As evidenced by the DTR, the advances in data collection, analytical techniques and analytical tools since that time are substantial. Resolution No. 92-49 does not mandate the regional water boards remain stuck in time, nor that they cannot use scientific advances with respect to understanding beneficial use impairment, with respect to emerging remediation technologies, and with respect to analyzing the effectiveness of alternative cleanup levels greater than background through the remedial and post-remedial monitoring programs described in the TCAO and DTR. Resolution No. 92-49 merely provides that the regional boards are to prescribe cleanup levels which are consistent with analogous discharges that involve similar wastes, site characteristics and water quality considerations, not that alternative cleanup levels or remedial and post-remedial monitoring programs must be identical for all cleanups (See Section II (A)(9)).

Achieving the intended water quality benefits of the proposed TCAO remedial action in terms of anticipated improvements in the marine sediment environment at the Shipyard Sediment Site is of primary importance. That is true for the San Diego Water Board who is requiring cleanup of the Site, the parties responsible for funding the cleanup, the anglers, boaters and others, who may be directly affected by the contamination and the San Diego community at large which has a primary interest in ensuring that the quality of San Diego Bay waters is protected for the use and enjoyment of the people of the state. Remedial and post-remedial monitoring is the only way to evaluate the Shipyard Sediment Site cleanup’s success in reducing risk and ensuring that the remediation objectives have been met and is therefore an essential part of the cleanup remedy proposed in the TCAO.

Accordingly, monitoring during remediation activities (refered to as "remediation monitoring") is required under the TCAO to document that remedial actions have not caused water quality standards to be violated outside of the remedial footprint, that the target cleanup levels have been reached within the remedial footprint, and to assess sediment for appropriate disposal. Post-remediation monitoring is required under the TCAO to verify that remaining pollutant concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses

NASSCO correctly points out that the San Diego Water Board did not require extensive remedial and post-remediation monitoring at previous San Diego Bay sediment cleanup sites not involving an engineered cap. As a result of that approach, the basic monitoring information needed to evaluate long term trends at the remediation sites was not collected. This in turn prevented the San Diego Water Board and others from determining the long term success of the cleanup projects in protecting beneficial uses. This situation was not unique to the San Diego Water Board's contaminated sediment cleanup sites. A recent study by the National Research Council concluded that post remediation monitoring at most federal Superfund sites involving contaminated sediment cleanup has to date been largely inadequate to determine whether dredging has been effective in achieving remedial objectives. (NRC, 2007)

It has been over 15 years since the San Diego Water Board ordered the last San Diego Bay sediment cleanup. During that period the San Diego Water Board has determined that short and long term remediation monitoring is an essential component of TCAO actions on contaminated sediment. This is consistent with U.S. EPA guidance which states "most sites where contaminated sediment has been removed also should be monitored for some period to ensure that cleanup levels and RAOs [remedial action objectives] are met and will continue to be met" (U.S. EPA 2005a, p. 2-17). This is also consistent with the requirements of Resolution No. 92-49 which directs the regional water boards to direct dischargers to implement monitoring to confirm short- and long-term effectiveness of cleanup and abatement. (See II.A.e.)

Additional perspective on the level of remediation monitoring proposed in the TCAO Directive D and DTR Section 34.2 can be obtained by comparing the scale of the proposed Shipyard Sediment Site remediation with past projects conducted to date. A total of 9 remedial sediment projects have taken place in San Diego Bay, with 339,600 cubic yards of sediment remediated either via dredging removal or capping. By comparison, the TCAO and DTR require the remediation of roughly 143,400 cubic yards of sediment (over 17.5 acres), which is over 42 percent of the contaminated sediment cubic yardage remediated to date in San Diego Bay in the last 20 years. The Shipyard Sediment Site remediation will use a variety of techniques to achieve remedial action objectives including direct removal, natural attenuation, and sand cover placement (See DTR Section 35.3). Each remedial technique requires monitoring to determine its success in achieving objectives. The site remediation is also scheduled to take up to five years to complete (See DTR Figure 35-1), which extends the time for remedial monitoring simply due to the length of time over which dredging will occur. Taking into consideration the size, length, and methodologies utilized for the remediation, the level of post-remediation monitoring required under TCAO Directive D is appropriate to protect water quality and determine the short and long-term success of the remediation.

The objective of the post–remediation monitoring referenced in NASSCO's comment is to further verify that remaining pollutant concentrations in the sediments after remediation will not unreasonably affect San Diego Bay beneficial uses. (See DTR Section 34.2) Post-remediation monitoring will be initiated 2 years after remedy implementation has been completed and will continue for a period of up to 10 years after remediation. The TCAO has provisions to discontinue post-remediation monitoring at the five years post-remediation mark if the expected trend of exposure and risk reduction described in the Year 5 remedial goals are met (See TCAO Directive 3). Depending upon the post-remedial monitoring results, certain measures may need to be taken if the 5 year goals are not met, and the 10-year monitoring event is expected to assess their success.

This type of post-remediation review at 5-year intervals is fully consistent with U.S. EPA's post remedial monitoring of remedies at Superfund sediment sites which are typically subject to review at 5-year intervals when, following remediation, contamination exists that could limit potential uses of the site. This could occur for several reasons: residual contamination after the completion of the remedial action, the recontamination potential associated with the dynamic nature of the aquatic environment, the fact that some sources may be undetected and that controls of known sources are not always implemented concurrently with the remedy (particularly at the watershed level), and the additional time required by remedies to achieve objectives that must counter past bioaccumulation of contaminants in the food chain.

It is also important to note that other Regional Water Board water quality programs require long-term 5-10 year monitoring to document project success. For example, the Total Maximum Daily Load for PCBs, pesticides, and sediment toxicity in McGrath Lake (Los Angles Water Board Resolution No. R09-006) requires 10 years of monitoring to determine if remedial actions are successful and if water quality standards have been attained.

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35. TCA Finding 35 and DTR Section 35: Remedial Action Implementation Schedule

Finding 35 of CAO No. R9-2011-0001 states:

The dischargers have proposed a remedial action implementation schedule and a description of specific remedial actions they intend to undertake to comply with this CAO. The remedial action implementation schedule will begin with the adoption of this CAO and end with the submission of final reports documenting that the alternative sediment cleanup levels have been met. From start to finish, remedial action implementation is expected to take approximately 5 years to complete.

The proposed remedial actions have a substantial likelihood to achieve compliance with the requirements of this CAO within a reasonable time frame. The proposed schedule is as short as possible, given 1) the scope, size, complexity, and cost of the remediation, 2) industry experience with the time typically required to implement similar remedial actions, 3) the time needed to secure other regulatory agency approvals and permits before remediation can start, and 4) the need to conduct dredging in a phased manner to prevent or reduce adverse effects to the endangered California Least Tern. Therefore, the remedial action implementation schedule proposed by the dischargers is consistent with the provisions in Resolution No. 92-49 for schedules for cleanup and abatement.

The San Diego Water Board did not receive any comments on Finding 35 and DTR Section 35.

36. TCAO Finding 36 and DTR Section 36: Legal and Regulatory Authority

Finding 36 of CAO No. R9-2011-0001 states:

This Order is based on (1) section 13267 and Chapter 5, Enforcement, of the Porter-Cologne Water Quality Control Act (Division 7 of the Water Code, commencing with section 13000), commencing with section 13300; (2) applicable state and federal regulations; (3) all applicable provisions of statewide Water Quality Control Plans adopted by the State Water Resources Control Board and the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) adopted by the San Diego Water Board including beneficial uses, water quality objectives, and implementation plans; (4) State Water Board policies for water quality control, including State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California* and Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code section 13304*; and (5) relevant standards, criteria, and advisories adopted by other state and federal agencies.

The San Diego Water Board did not receive any comments on Finding 36 and DTR Section 36.

37. TCAO Finding 37 and DTR Section 37: CEQA Review

Finding 37 of CAO No. R9-2011-0001 states:

In many cases, an enforcement action such as this could be exempt from the provisions of the California Environmental Quality Act ("CEQA"; Public Resources Code, section 21000 et seq.), because it would fall within Classes 7, 8, and 21 of the categorical exemptions for projects that have been determined not to have a significant effect on the environment under section 21084 of CEQA.[49] In Resolution No. R9-2010-0115 adopted on September 8, 2010, the San Diego Water Board found that because the tentative CAO presents unusual circumstances and there is a reasonable possibility of a significant effect on the environment due to the unusual circumstances, the tentative CAO is not exempt from CEQA and that an EIR analyzing the potential environmental effects of the tentative CAO should be prepared.

As the lead agency for the tentative CAO, the San Diego Water Board prepared an EIR that complies with CEQA. The San Diego Water Board has reviewed and considered the information in the EIR.

The San Diego Water Board did not receive any comments on Finding 37 and DTR Section 37.

[49] Title 14 CCR sections 15307, 15308, and 15321.

38. TCAO Finding 38 and DTR Section 38: Public Notice

Finding 38 of CAO No. R9-2011-0001 states:

The San Diego Water Board has notified all known interested persons and the public of its intent to adopt this CAO, and has provided them with an opportunity to submit written comments and recommendations.

The San Diego Water Board did not receive any comments on Finding 38 and DTR Section 38.

39. TCAO Finding 39 and DTR Section 39: Public Hearing

Finding 39 of CAO No. R9-2011-0001 states:

The San Diego Water Board has considered all comments pertaining to this CAO submitted to the San Diego Water Board in writing, or by oral presentations at the public hearing held on [date(s) to be inserted]. Responses to relevant comments have been incorporated into the Technical Report for this CAO. In the event that the San Diego Water Board proposes any changes to the Tentative CAO deemed material by the Dischargers, the Dischargers reserve their right to complete the administrative process delineated in the Final Discovery Plan and Second Amended Order of Proceedings, including the rights to conduct discovery, to cross–examine witnesses, and to submit rebuttal evidence, comments and initial and final briefs, subject to revised deadlines to be set by the San Diego Water Board or its designated Presiding Officer.

The San Diego Water Board did not receive any comments on Finding 39 and DTR Section 39.

40. TCAO Finding 40: Technical Report

Finding 40 of CAO No. R9-2011-0001 states:

The "*Technical Report for Cleanup and Abatement Order No. R9-2011-0001 for the Shipyard Sediment Site, San Diego Bay, San Diego, CA*" is hereby incorporated as a finding in support of this CAO as if fully set forth here verbatim.

The San Diego Water Board did not receive any comments on Finding 40.

41. DTR Section 40: References

The San Diego Water Board did not receive any comments on DTR Section 40.

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APPENDIX

1. All Comments Received

Please see enclosed CD or the below link:

http://www.waterboards.ca.gov/sandiego/water_issues/programs/shipyards_sediment/2005_0126adt.shtml

APPENDIX A

CLEANUP TEAM QUALIFICATIONS RELEVANT TO ASSUMPTIONS AND ANALYSES IN THE TCAO/DTR

- **David W. Gibson – Executive Officer**

  Mr. Gibson is the Executive Officer of the San Diego Water Board. . Prior to be selected by the Water Board as its Executive Officer in October 2009, Mr. Gibson was the Environmental Program Manager overseeing the Water Quality Restoration and Standards Branch from 2008 to 2009. Mr. Gibson has been a member of the Shipyards Sediment Clean Up Team since 2008. From 2003 to 2008, Mr. Gibson supervised the Grants and Project Assistance Unit, the Southern Watershed Protection Unit, and the TMDL unit as a Senior Environmental Scientist. Mr. Gibson started at the Water Board in 2000 as an Environmental Scientist and worked in the municipal, construction and industrial storm water, Clean Water Act section 401 Water Quality Certification, Non Point Source, and Grants Programs from 2000 to 2003. As an Environmental Scientist, Mr. Gibson worked on 401 certifications for dredging projects in San Diego Bay and Batiquitos Lagoon and helped draft the Municipal Storm Water NPDES Permits for San Diego and Orange Counties.

  Prior to joining the San Diego Water Board staff, Mr. Gibson worked at the City of San Diego as a Watershed Biologist and Entomologist and has been an active member of the California Aquatic Bioassessment Workgroup since 1994. Mr. Gibson is a member of the North American Benthological Society. In 1998, Mr. Gibson founded the San Diego Stream Team and served as its Coordinator until 2000. Between 1998 and 2008, Mr. Gibson trained over 400 students, state and local agency staff, Tribal members, and interested members of the public in benthic bioassessment and monitoring. Mr. Gibson graduated from San Diego State University in 1989 with a degree in Biology.

- **David T. Barker, P.E. – Branch Chief, Surface Water Basins Branch**
  Supervising Water Resource Control Engineer

  Mr. Barker has approximately 35 years of professional work experience at the San Diego Water Board, and has been a Supervising Water Resource Control Engineer since 2000. Prior to 2000, Mr. Barker served as a Senior Water Resource Control Engineer from 1981 through 2000, an Associate Water Resource Control Engineer from 1979 through 1981 and a Water Resource Control Engineer from 1976 through 1978. Between 1985 and 2005, Mr. Barker served as the technical staff lead for all nine of the San Diego Water Board's cleanup and abatement orders addressing marine sediment. He has also been involved in at least four other sediment remediation projects which may lead to the issuance of cleanup and abatement orders in the future. While Chief of the Water Quality Standards Unit, Mr. Barker authored a number of amendments to the Water Quality Control Plan for the San Diego Bay Region (Basin Plan), part of which included the development of a cleanup policy that was later used by the State Water Board as one of the bases for its Resolution No. 92-49; "Policies and Procedures for Investigating and Cleanup and Abatement of Discharges under Water Code section 13304."

Since 2008, Mr. Barker has had responsibility for managerial oversight of the 401 Water Quality Certification Program, and worked on approximately 12 sediment dredging projects. Prior to 2008, Mr. Barker worked preparing regulatory documents, including WDRs, and on other compliance issues for approximately two dozen dredging projects. He has had supervisory or managerial job responsibilities under various San Diego Water Board regulatory programs involving groundwater and/or surface water cleanups at several hundred sites in the San Diego Bay Region.

Mr. Barker obtained a Bachelor of Science Degree in Civil Engineering from Virginia Tech University in 1975, and has been a California Registered Civil Engineer since 1978. He also completed graduate level Civil Engineering classes in wastewater and water treatment plant design, water and wastewater chemistry, and airport design at San Diego State University between 1977 and 1978. He has completed training classes offered by the State Water Board on environmental remediation and its Sediment Quality Objectives Policy, and lectured at local universities about San Diego Water Board-ordered cleanups and related policies such as Resolution No. 92-49 between 1981 and 2000.

- **Julie Chan, P.G. – Branch Chief, Cleanup and Land Discharge Branch Supervising Engineering Geologist**

Ms. Chan has approximately 11 years of professional work experience at the San Diego Water Board, and has been the Branch Chief of the Cleanup and Land Discharge Branch of the San Diego Water Board for approximately three and one half years. She began as a Senior Engineering Geologist for the San Diego Water Board in 2000, and also worked as a Senior Engineering Geologist for the State Water Board from 1995 to 2000.

During her tenure at the San Diego Water Board, Ms. Chan has worked on five sediment remediation projects in San Diego Bay, including Tow Basin, NTC Boat Channel, Convair Lagoon, TDY and Mouth of Chollas Creek. She has worked on over fifty groundwater cleanups. At the State Board, Ms. Chan worked on writing the implementation plan and its EIR for the Bay-Delta Water Quality Control Plan, designed to restore the ecological health of the Bay Delta by implementing flow and salinity standards. Prior to that, Ms. Chan worked for five years at the U.S. Geological Survey helping create a model salinity fate and transport model for tile-drained areas of the west side of the San Joaquin Valley in response to the Kesterson Reservoir bird deaths, deformities and reproductive failures, and published a peer-reviewed paper relating to her work.

Ms. Chan obtained a Bachelor of Sciences Degree in Geology from the University of Wisconsin, Milwaukee, and a Master of Sciences Degree in Geology from Washington State University. She has completed a variety of trainings offered by the State Water Board, including Sediment Quality Analysis for SQOs, Invalidating Data – What It Means and What to Do, Assessment and Management of Sites with MTBE, Evaluation of Groundwater Models and Soil and Gas Survey Seminar. She has attended a number of continuing education seminars on environmental cleanups.

- **Christian Carrigan, Senior Staff Counsel**

  Mr. Carrigan is Senior Staff Counsel at the State Water Resources Control Board's Office of Enforcement. He is specially assigned to the San Diego Water Board's Cleanup Team for the Shipyard Sediment Site TCAO matter. Prior to becoming Senior Staff Counsel, Mr. Carrigan was a partner at the law firm of Miller, Starr & Regalia, and a principal at the law firm of Morgan, Miller, Blair. He has administrative advocacy and trial experience under the Porter-Cologne Water Quality Control Act, the Clean Water Act, CERCLA, the California Environmental Quality Act and a variety of other state and federal environmental statutes. Mr. Carrigan is admitted to practice law in all of the Courts of California, the United States Supreme Court, the Federal Court of Claims, the Ninth Circuit Court of Appeals, and all of the federal District Courts of California.

- **Craig Carlisle, P.G./C.E.G – Unit Chief, Central Cleanup Unit**
  Senior Engineering Geologist

  Mr. Carlisle has over 11 years of professional work experience at the San Diego Water Board, and has been a Senior Engineering Geologist for the San Diego Water Board for approximately nine years. He began as an Associate Engineering Geologist for the San Diego Water Board in 2000, and also worked as a Project Manager for environmental consulting firms from 1986 to 2000.

  During his tenure at the San Diego Water Board, Mr. Carlisle has worked on several sediment investigation and remediation projects in San Diego Bay including Convair Lagoon, Campbell Shipyard, Mouth of Chollas Creek TMDL, and several other TMDLs, including Naval Station San Diego, Downtown Anchorage, and the Navy Submarine Base. He has also worked on over 100 groundwater remediation projects, both as a regulator and as a consultant, including large DOD Installation and Restoration projects.

  Mr. Carlisle obtained a Bachelor Degree in Economics and Master Degree in Geological Sciences from the University of California at Santa Barbara, and a Master of Business of Administration from California State University, San Marcos. He served as an instructor on underground storage tank regulations and a presenter at San Diego County Environmental Health forums on site mitigation and assessment. He also was a member of the team that authored the earliest version of San Diego County’s Site Assessment and Mitigation Manual (SAM Manual) that has been recognized as the standard of practice for environmental work in California. Mr. Carlisle has completed a variety of trainings and attended seminars on topics including PCB analysis and data interpretation, CEQA, 401 Certification, land disposal regulations, TMDLs, and CERCLA RI/FS.

- **Eric Becker, P.E. – Unit Chief, Southern Watershed Unit**
  Senior Water Resource Control Engineer

  Mr. Becker has 20 years of professional work experience at the San Diego and Central Valley Water Boards. He transferred to the San Diego Water Board in 2001 and has been the Unit Chief of the Southern Watershed Unit since 2008.

  During his tenure at the Central Valley Water Board, Mr. Becker work on PCB remediation projects at large DOD Installation and Restoration and Southern California Edison sites. He also worked on over 50 soil and groundwater remediation as part of the Spills Leaks Investigation and Cleanup Program. At the San Diego Water Board, Mr. Becker has supervised the issuance of over 40 Clean Water Act Section 401 Water Quality Certifications. This includes the recent BAE Systems Dry Dock Maintenance Dredge Project that involved the dredging of sediment within the Shipyard Sediment Site.

  Mr. Becker obtained a Bachelor of Sciences in Civil Engineering from San Diego State University in 1992. He has completed a variety of trainings and seminars on groundwater pollution and hydrology, CEQA, PCB cleanups, and Clean Water Act Section 401 Water Quality Certifications. He has been a Professional Engineer in Civil Engineering since 2003.

- **Tom Alo**
  Water Resource Control Engineer

  Mr. Alo has been a Water Resource Control Engineer at the San Diego Water Board since 2000. During that time, in addition to the Shipyard Sediment Site TCAO, Mr. Alo has worked on the Campbell Shipyard, NTC Boat Channel, Tow Basin and Convair Lagoon marine sediment cleanups and the mouth of Paleta Creek TMDL and Convair Laggon matters, each of which addressed contaminated marine sediments. He has also worked on the TDY, Goodrich, Solar Turbines and BAE Systems San Marcos cleanups.

  For approximately seven years prior to joining the San Diego Water Board, Mr. Alo worked at A.L. Burke Engineers, Woodward-Clyde Consultants, IT Corporation, and Dames & Moore as a staff engineer, where he conducted soil and groundwater investigations and helped with the design and implementation of site remediation plans at approximately half dozen sites.

  Mr. Alo obtained a Bachelor of Sciences Degree in Civil Engineering from Cal Poly Pomona in 1993. He has received training from the State Water Board, Army Corps of Engineers, and others on Collection, Analysis, and Interpretation of Sediment Quality Data; Analysis and Development of Sediment Quality Guidelines; Understanding Contaminated Harbor and River Sediment; Analysis and Interpretation; Dredged Material Assessment and Management; Environmental Stability of Chemicals in Sediments; and Sediment Quality Analysis.

- **Chad Loflen –
  Environmental Scientist**

  Mr. Loflen has over 3 years of professional work experience at the San Diego Water Board. Mr. Loflen has worked on over 100 Clean Water Act section 401 Certification applications, at least 10 of which involved dredging sediments. Prior to that he was a Student Intern at the San Diego Water Board.

  Mr. Loflen was awarded a Bachelor of Sciences Degree in Biology (Marine Emphasis), Magna Cum Laude, and a Master of Science Degree in Biology, both from San Diego State University. He worked as a Research Assistant and Scientific SCUBA Diver on a variety of marine research projects in San Diego Bay and offshore Southern California with TENERA Environmental and San Diego State University, including fish surveys, fish impingement and entrainment studies, lobster habitat use and eel grass surveys, invasive bivalve studies, and benthic suction sampling and species identification.

- **Vicente Rodriguez –
  Water Resource Control Engineer**

  Mr. Rodriguez has 18 years of professional work experience at the San Diego Water Board. He previously worked on one marine sediment remediation project in San Diego Bay and a few dozen groundwater cleanup projects. He received his Bachelor of Science in Civil Engineering from Prairie View A&M University.

APPENDIX B

All comments listed in “ID” numerical order

Appendix B contains the individual comments in order of the Comment ID numbers assigned by the Cleanup Team. The original comment letters and rebuttal comment letters can be found on the San Diego Water Board website here: http://www.waterboards.ca.gov/sandiego/water_issues/programs/shipyards_sediment/2005_0126adt.shtml .

Comment ID: 1 **Organization: Campbell Industries**
DTR Section: 6.3.1
Comment:

San Diego Marine Construction Company (subsequently Star & Crescent) did not sell its leasehold to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972.

In Finding 6 of the Draft Technical Report, in the first sentence of the second paragraph of Section 6.3.1, it states, "San Diego Marine Construction Company (subsequently Star & Crescent) sold its leasehold to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972." This statement is incorrect. San Diego Marine Construction Company (subsequently Star & Crescent) sold the business and assets of its Marine Division to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972. The minutes of the first meeting of Directors of MCCSD approving that transaction are attached for inclusion in the administrative record. The purchase did not include the leasehold. San Diego Marine Construction Company surrendered its leasehold to the San Diego Unified Port District (SAR 163149), and the Port District entered into a new lease with MCCSD (SAR 174131).

Comment ID: 2 **Organization:** U.S. Navy
DTR Section: 10
Comment:

Ten IRP sites were identified in the CAO; nine of these sites were also identified in the Complaint. The potential for historical releases from four of the sites (IRP Sites 8, 9, 10, and 12) to San Diego Bay is low, and it is unlikely that these sites ever had a detectable impact on bay sediments. Historical transport pathways from six of the sites (IRP Sites 1, 2, 3, 4, 7, and 13) did exist or may have existed, although there is little direct evidence in bay sediments that is indicative of releases from these sites. Discharges to the bay from these sites would have declined over time due to cessation of site activities, improved environmental practices, and completion of remedial actions. Five of the sites (IRP Sites 7, 8, 9, 12, and 13) have been closed with no further action, with regulatory agency concurrence.

Comment ID: 3 **Organization:** Campbell Industries
DTR Section: 6.3.1
Comment:

Refusal or failure to respond to State Water Board inquiries is not a basis for naming Campbell Industries as a Discharger.

In Finding 6 of the Draft Technical Report, in the third paragraph of Section 6.3.1, it states, “The stock of Campbell Industries was acquired by Marco Holdings, Inc. (“MARCO”), a Washington corporation, in 1979. Marco Holdings, Inc. is a wholly-owned subsidiary of Marine Construction and Design Company, a Washington Corporation.” In the subsequent paragraph in Section 6.3.1 of Finding 6 in the DTR, it states:

On February 19, 2004 the San Diego Water Board issued Investigative Order R9-2004-0026 directing MARCO to submit a historical site assessment report that completely documented all leasehold information and activities in the vicinity of the BAE Systems leasehold that may have affected water quality, including chemical and waste handling and storage activities, discharges, and monitoring data.

That statement is incorrect. MARCO is defined in the preceding paragraph as Marco Holding, Inc. That company is not mentioned in Investigative Order R9-2004-0026 (SAR 193136). The subsequent paragraph in Section 6.3.1 of Finding 6 in the DTR recites the contents of a letter from H. Allen Fernstrom on behalf of MARCO, now defined as Marine Construction and Design Co. The letter first states that Marine Construction and Design Co. had conducted an internal search and had no records of any operations of its or Campbell Industries operations within the Southwest Marine leasehold. There is no evidence that statement was inaccurate at the time it was written in 2004. Marine Construction and Design Co. has never operated at the Southwest Marine leasehold. Even today Campbell Industries has not located any records of the operations of its subsidiary at the Southwest Marine leasehold. The letter then states that Marine Construction and Design Co. has no California operations or offices. That statement was true then and remains accurate today. It then states that Campbell Industries terminated all California operations in 1999 at Eight Avenue and Harbor Drive (the former Campbell Shipyard), and all available records from California-based operations pertain to that Campbell Shipyard. That statement is also correct. After reciting the contents of this letter, the paragraph ends with the statement, “MARCO was not responsive to the directives of the San Diego Water Board’s Investigative Order and their lack of responsiveness forms part of the basis for the San Diego Water Board’s determination that MARCO should be named as a discharger in the Cleanup and Abatement Order.” This statement is erroneous in four respects. First, MARCO defined as Marco Holdings, Inc. was not under any directive from the San Diego Water Board, as discussed above. Second, MARCO if defined as Marine Construction and Design Co. truthfully responded to the Investigative Order based on the information available to it at the time. Third, Campbell Industries has been an active participant in the mediation proceedings with Timothy Gallagher which led to the drafting of the pending TACO and DTR, and voluntarily provided most of the evidence of its history at the Site recited in Section 6.3.1. It has not refused or failed to respond to any inquiry by the San Diego Water Board. Finally, the TCAO and DTR do not name MARCO (however defined) as a Discharger in the Cleanup and Abatement Order. Paragraphs 4 and 5 in Section 6.3.1 should be deleted. Not only are portions of these paragraphs inaccurate, but there is no basis or need for the San Diego Water Board to use refusal or failure to respond as a factor in naming Campbell Industries as a Discharger in the Cleanup and Abatement Order.

Comment ID: 4 **Organization:** U.S. Navy
DTR Section: 10

Comment:
Multiple dredging events from the 1940s through 2003 have removed sediments that accumulated in three areas of San Diego Bay adjacent to the IRP sites and in the main navigational channel between NBSD and the Shipyard Sediment Site, reducing the likelihood of potential impacts of any historical releases from IRP sites as well as the availability of COCs for potential resuspension and transport.

Comment ID: 5 **Organization:** U.S. Navy
DTR Section: 10
Comment:
At NBSD, COC concentrations in surface sediment in the three areas adjacent to the IRP sites tend to be higher closer to shore and lower outside the pier heads and in the main channel. At the Shipyard Sediment Site, COC concentrations in surface sediment also decrease with increasing distance from the shoreline. These concentration gradient patterns are consistent with the presence of separate, localized source areas at NBSD and the Shipyard Sediment Site and are not consistent with the transport of COCs from NBSD to the Shipyard Sediment Site. There are no reasonable physical or chemical mechanisms that can scientifically explain these chemical gradient patterns other than the existence of localized source areas at each site.

Comment ID: 6 **Organization:** U.S. Navy
DTR Section: 10
Comment:
Average COC concentrations in the three areas of San Diego Bay adjacent to the IRP sites are lower than average concentrations within the proposed remediation footprint at the Shipyard Sediment Site. In addition, COC concentrations in subsurface sediments adjacent to the IRP sites do not appear to be substantially higher than those in surface sediments. Based on the existing data reviewed for the site, there are no reasonable physical or chemical mechanisms that can scientifically explain higher chemical concentrations at a distant site that exceed the original source concentration.

Comment ID: 7 **Organization:** U.S. Navy
DTR Section: 10
Comment:
Because of its prevalent use as an antifouling coating on commercial ships and its lack of use on Navy ships, TBT is a strong, site-specific indicator of Shipyard Sediment Site releases. TBT concentrations in sediments adjacent to NBSD are about an order of magnitude lower than concentrations found at the Shipyard Sediment Site. Other Shipyard Sediment Site COCs, including arsenic, cadmium, copper, lead, zinc, and PCBs, are significantly correlated with TBT in sediments at the Shipyard Sediment Site. This correlation is consistent with co-occurring sources within the Shipyard Sediment Site and inconsistent with a significant source from NBSD.

Comment ID: 8 **Organization:** U.S. Navy
DTR Section: 10
Comment:

PCB fingerprinting of sediments at the Shipyard Sediment Site is consistent with the presence of two distinct, localized sources of PCBs. If these PCBs were derived from activities at NBSD, the signatures would be similar. The spatial distribution of PCBs at the Shipyard Sediment Site is consistent with the presence of two different sources, with concentrations found at the north end of the site higher than those at the south end.

Comment ID: 9 **Organization:** U.S. Navy
DTR Section: 10
Comment:

A modeling simulation was performed specifically to evaluate the claim that sediments adjacent to IRP sites may have been resuspended by propeller wash, transported to the Shipyard Sediment Site by tidal currents, and redeposited within the Shipyard Sediment Site. The modeling results indicate that net deposition to the Shipyard Sediment Site proposed remediation footprint due to resuspension and transport from areas adjacent to IRP sites at NBSD was between 0.17 percent and 0.37 percent of the total annual deposition, an amount that is negligible in the overall deposition of sediments at the Shipyard Sediment Site.

Comment ID: 10 **Organization:** U.S. Navy
DTR Section: 10
Comment:

Collectively, these lines of evidence indicate that the overall contribution of Installation Restoration Program (IRP) sites to contamination at the Shipyard Sediment Site is negligible.

Comment ID: 11 **Organization:** City of San Diego
DTR Section: 4.3.1.
Comment:

COMMENT 1.0: STUDIES CITED IN DTR SECTION 4.3.1 DO NOT SUPPORT THE DTR'S STATEMENTS REGARDING CHOLLAS CREEK'S INFLUENCE ON THE CHEMICALS OF CONCERN IN SHIPYARD SEDIMENTS.

The Draft Technical Report for Tentative Cleanup and Abatement, Order No. R9-2011-0001 is herein referred to as the "DTR." The DTR quotes the following allegation by the San Diego Regional Board in Cleanup and Abatement Order, Finding 4:

"the City of San Diego has discharged urban water containing waste through its MS4 to Chollas Creek resulting in the exceedances of chronic and acute California Toxics Rule copper, lead, and zinc criteria for the protection of aquatic life. Studies indicate that during storm events, storm water plumes toxic to marine life emanate from Chollas Creek up to 1.2 kilometers into San Diego Bay, and
contribute to pollutant levels at the Shipyard Sediment Site." (Section 4, page 4-1.)

The DTR further states this allegation is based on:

"Available studies (Schiff, 2003, Katz et aI., 2003; Chadwick et aI., 1999) indicate that storm water plumes emanating from Chollas Creek outflow to San Diego Bay are toxic to marine life and introduce suspended solids, copper, zinc, and lead to the Shipyard Sediment Site through settling of particles." (Section 4.3.1, page 4-3.)

The available studies referred to above are:

Schiff, K., S. Bay and D. Diehl, 2003. Stormwater Toxicity in Chollas Creek and San Diego Bay, California. Environmental Monitoring and Assessment 81: 119-132, 2003. 2003 Kluwer Academic Publishers. Printed in the Netherlands. (Herein referred to as Schiff 2003).

Katz, C.N., A. Carlson-Blake, and D.S. Chadwick 2003. Not found 1.

Chadwick B., J. Leather, K. Richter, S. Apitz, D. Lapota, D. Duckworth, C. Katz, V. Kirtay, B. Davidson, A. Patterson, P. Wang, S. Curtis, G. Key, S. Steinert, G. Rosen, M. Caballero, J. Groves, G. Koon, A Valkirs, K. Meyers-Schulte, M. Stallard, S. Clawson, R. Streib Montee, D. Sutton, L. Skinner, J. Germano, and R. Cheng. 1999. Sediment Quality Characterization - Naval Station San Diego Final Summary Report. U.S. Navy Technical Report 1777. (Herein Referred to as Chadwick 1999).

The studies cited by the DTR at Section 4.3.1, page 4-3, provide insufficient support for the allegations in the DTR, because they lack information that would allow a detailed peer review, thus preventing reproduction of the results, verification of all data and methods, and testing of hypotheses. Scientists are generally known to have natural human biases that can influence their perceptions. While these biases are not always conscious and certainly not intentional, they are widely recognized to exist. To overcome these biases, certain principles generally known as the scientific method have evolved in an attempt to be as objective as possible. The scientific method's approaches for overcoming natural biases include:

1. Adopting a practice of full disclosure by documenting, archiving, and sharing all data and methodology so they are available for careful scrutiny by other scientists giving them the opportunity to verify the results, and most importantly, reproduce them.

2. Proposing hypotheses and testing these hypotheses through experimental studies using methods that are repeatable. Through this testing of hypotheses, scientific theories can be developed when independently derived hypotheses come together in a coherent and supportive structure.

The documents referenced above by the DTR do not appear to achieve these goals. The data are not included in the reports, which prevents an independent scientific review of the information. The lack of data availability and independent review of such information, and its use in the DTR to assign responsibility to parties is particularly problematic since two of the three documents are authored by employees or contractors of the U.S. Navy, and one of the documents cited is published by the U.S. Navy, a party named as responsible for discharges to the site.

Specifically, an independent review of this information should include access to the following information:
a. Schiff (2003): although this document indicates that methodological details are provided in another document (Schiff et al. 2001. Stormwater Toxicity in Chollas Creek and San Diego Bay. Technical Report 340. Southern Coastal Water Research Project), our review of this document and that referenced did not identify the following:

i. While the papers note a digital global positioning system (GPS) was used to record the sampling locations, no table reports location data, and the one figure that is provided is so small and has such limited features, the locations are not legible or precise enough to be replicated.

ii. While Schiff (2001) provides a summary of the toxicity tests, these data only provide statistical measures of means and standard deviations. The raw data is not provided. Significant data are collected concurrent with the bioassay tests. These include test chamber salinity and temperature. Notes to the toxicity test results indicate there were issues with some test chambers, but are not specific and without the data, do not allow for third party review.

b. There is no raw data for the analytical chemistry, specifically the output of the laboratory instrumentation. EPA Contract Laboratory Program (CLP) procedures require analytical results be run and reported with performance duplicates and lab blanks allowing scientists to assess the influence of potential contamination from labs, and the performance of lab equipment, which has repeatedly been demonstrated to be highly variable. CLP procedures were developed to allow verification of procedures, duplication of results and are the industry standard for documenting environmental sample analysis. Without the raw data or laboratory quality control results, it is not possible to evaluate the degree to which chemical analytical data has been appropriately validated, and the accuracy and precision of the results.

c. Chadwick (1999)

i. Chadwick et al. (1999) estimate total annual mass loads and percent contributions historically from different sources, including Chollas Creek, on page 95, sections 6.2 and Tables 29 and 30. The means of estimating historical storm water inputs are not presented. How the volumetric discharges are estimated is not presented. Since these methods are not provided, we cannot independently verify their accuracy, thus preventing the report from independent peer review.

ii. On page 95, section 6.2, and Tables 29 and 30, the report does not provide measures of statistical error. Thus, the uncertainty associated with the provided estimates cannot be evaluated.

d. Katz (2003).

i. The document has a blank cover page with the handwritten notation of "Conference 2003, April 8, 2003, and Katz et a/. 2003). But the following page, which is a copy of the actual poster, has no date or indication of where it was presented or published. We are unable to verify that Katz (2003) even exists. Searches of Agricola, Google Scholar, and other databases which list such documents do not result in any findings that such a presentation was made. A poster of the same title is referenced among publications by the U.S. Navy in a now deleted web page (available through Google's cached document archive). Given the citation is incorrect and unavailable, it further demonstrates our concern that this information has not received independent scientific review.

ii. The ability to evaluate this reference is limited because of the abbreviated discussion of the overall study in this format

Comment ID: 12 **Organization:** Port District
DTR Section: 1.4.2.1. and 1.5.2.
Comment:

Port Support of the Proposed Remedial Footprint

TCAO Finding 33 and Attachment 2
DTR §§1.2; 1.4.2.1, and 1.5.2

Additionally, the Port's experts agree that the remedial footprint can go forward without delay. While some parties may claim that the remediation cannot go forward unless the Chollas Creek outfall area is included within the remedial footprint or otherwise addressed because of recontamination concerns, the Port's designated fate and transport expert has concluded that any interim resedimentation from Chollas Creek discharges will not adversely impact the remediation efforts at the Shipyards. (Exhibit "2" [Port Expert Designation]; Exhibit "4" [Dr.Poon Declaration], paragraphs [13-15.) As such, the Port supports the exclusion of the mouth of Chollas Creek from the remedial footprint as well as the decision to move forward expeditiously with the remediation.

Comment ID: 13 **Organization:** Port District
DTR Section: 1.4.2.1. and 1.5.2.
Comment:

Port Support During the TCAO/DTR Process

The Port also reiterates its willingness to provide appropriate support to the Regional Board in its efforts to implement the TCAO and DTR. The Port was instrumental in coordinating initial efforts to get the dischargers and interested parties into discussions and mediation to try to reach a consensus on remedial approach and scope. The Port has worked to locate and leverage dischargers' potentially applicable insurance policies that could assist in funding the remediation. The Port also made its experts available to the CUT to assist in the site assessment.

The Port remains committed to supporting the Regional Board in any appropriate manner afforded by law. The Port will continue to be engaged in any appropriate mediation process, to reach a resolution of any remediation and monitoring issues. Likewise, the Port is working with the CUT and supporting its efforts through the California Environmental Quality Act (CEQA) process. The Port is further working with the CUT to explore options for potential disposal or dewatering sites for the dredged sediment.

Comment ID: 14 **Organization:** City of San Diego
DTR Section: 4.7.1.3.
Comment:
COMMENT 1.1: PURPLE SEA URCHIN FERTILIZATION TESTS (SCHIFF 2003) CITED AT DTR SECTION 4.7.1.3 DO NOT SUPPORT THE CONCLUSION THAT CHOLLAS CREEK HAS CONTRIBUTED TOXIC EFFECTS OR CONSTITUENTS OF CONCERN TO THE SITE SEDIMENTS.

DTR Section 4.7.1.3 (page 4-14) reaches the conclusion that Chollas Creek releases a toxic plume impacting sediments at the Site based on purple sea urchin fertilization tests provided in Schiff (2003). Schiff (2003) (which references Schiff (2001) for detailed methods) notes as follows:

"This study observed that stormwater plumes emanating from Chollas Creek extended between 0.02 and 2.25 square kilometers over San Diego Bay during small to moderately-sized storm events. Plumes were easily distinguished using salinity as a conservative tracer of wet weather inputs. Turbidity was also a good tracer of the plume. Storm water plumes formed relatively thin lenses of 1 to 3 m, floating on top of the more dense bay water." (Emphasis added.)

Thus, the toxicity reported by Schiff (2003) is based on the surface water plume of less than 3 meters that floats above the lower water column and bottom sediments. No evidence or data is provided to demonstrate the chemicals or solids responsible for the observed toxicity in the surface are transported to the deeper portions of the water column and the bottom sediments. In fact, the data collected to evaluate sediment toxicity during the Shipyard Site remedial investigation indicate the toxicity observed at the surface water interface during storm events does not occur in waters and sediments near the bottom of the Site. Of note:

1. Purple Sea Urchin fertilization in waters associated with the bottom sediments of the Site was over 87% in all samples (See Table 18-8, page 18-16 in DTR Volume 2). This is a level significantly above that seen in Schiff (2003), and comparable to the reference samples. This contradicts the DTR's assertions that Chollas Creek is contributing toxic levels of any substance to the Site.

2. Toxicity tests including the urchin fertilization test have been conducted on the Site's sediments and there was no correlation between the chemical concentrations of copper, zinc, or lead, which are the primary constituents found in Chollas Creek waters, and the toxic effects measured.

Comment ID: 15 **Organization:** Port District
DTR Section: 1.4.2.1. and 1.5.2.
Comment:
Past and Present Port Support and Cooperation with the Regional Board

The Port is dedicated to protecting and improving the environmental conditions of San Diego Bay and the Port tidelands. The Board of Port Commissioners is committed to conducting Port operations and managing resources in an environmentally sensitive and responsible manner and ensuring that tenant operations do the same.

The Port was created by the State Legislature in 1962 to manage San Diego Bay and surrounding tidelands by balancing economic benefits, community services, environmental stewardship, and public safety. (California Harbors and Navigation Code, App. 1 [the Port Act].) The Port takes seriously its authority and responsibility to protect, preserve, and enhance San Diego Bay's physical access; natural resources, including plant and animal life; and water quality. (Port Act, §4(b).)

The Port has adopted as its mission statement the commitment to protecting the tideland resources through balancing economic benefits, community services, environmental stewardship, and public safety on behalf of the citizens of California. To this end, the Port has developed strategic goals to protect and improve the environmental conditions of San Diego Bay and surrounding tidelands. The Port currently has several programs in place to protect stormwater, reduce pollutant sources, improve air quality, and reduce air emissions. For example, the Port has established an environmental committee with the goal of promoting environmental improvement projects throughout the San Diego Bay beyond ordinary compliance obligations. (Exhibit " 1 " [Gibson Deposition], 56:12-57:14.) Such Port programs have positively impacted water quality in bays and harbors throughout the state.

To the extent the CUT would designate the Port as a primary discharger because of perceived non-cooperation grounded in the Port's withdrawal from a voluntary mediation process that it suggested, such a position would be an inappropriate basis for Port primary liability as a matter of law. On the contrary, the Port's commitment to the above principles is reflected its long history of cooperating with the Regional Board in efforts to remediate sites at which the Port is a landlord, some of which are listed below.

1. Campbell Shipyard

The Port provided significant assistance and leadership at another large San Diego Bay dredging project, the Campbell Shipyard site. At that site, the Port worked cooperatively with and supported the Regional Board's cleanup approach. (See, Exhibit " 1 " [Gibson Deposition], 28:12-24; 48:18-49:9; Exhibit "5" [Barker Deposition], Vol. Ill, 539:11-25.) The Port assisted in pushing the site toward mediation and assisted in securing insurance proceeds from a number of dischargers as well as its own insurance. These funds were used to finance the dredging and capping of the impacted sediments. Ultimately, the Port performed the sediment dredging and capping work. (Exhibit "6" [Carlisle Deposition], Vol. I, 119:2-6.)

2. Shelter Island Yacht Basin TMDLs

The Regional Board has been implementing copper TMDLs at the Shelter Island Yacht Basin. As David Barker acknowledged in his deposition, the Port "is working very cooperatively with the [Regional B]oard" on this matter. (Exhibit "5" [Barker Deposition], Vol. Ill, 543:2-8.) In particular, the Port has been working at phasing out copper-based hull paint and "taking a lead role in investigating the use of alternative vessel hull paints to curtail copper discharges into the [San Diego B]ay." (Exhibit "5" [Barker Deposition], Vol. Ill, 544:25-545:6.) The Port has sought grant funds to assist in the switching of hull paints and has been facilitating a discussion on this point between the Regional Board, the yacht owners and the marinas. (Exhibit "5" [Gibson Deposition], 31:20-32:15; Exhibit "5" [Barker Deposition], Vol. Ill, 545:7-10.) The Port has also made financial contributions to this effort. ((Exhibit " 1 " [Gibson Deposition], 32: 16-23.)

3. Teledyne Ryan/Convair Lagoon

The Port has worked cooperatively with the Regional Board at the Teledyne Ryan (TDY) and Convair Lagoon sites. These sites involve a former aeronautical facility that had landside contamination impacts (the TDY site) and San Diego Bay sediment contamination impacts (the Convair Lagoon site). Again, the Port is working cooperatively with the Regional Board at this site. (Exhibit "5" [Barker Deposition], Vol. Ill, 540:11-20.) In fact, the Port assisted in bringing historic specialized insurance assets to help pay for demolition and remediation costs on the TDY site. Further, the Port worked aggressively with Regional Board oversight to remediate the sediment in the Convair Lagoon.

4. South Bay Power Plant

The South Bay Power Plant is a complex decommissioning and demolition project related to a power plant facility. There are related environmental issues associated with this work, including issues relating to San Diego Bay sediment. The Port has been cooperative while working with the Regional Board at the South Bay Power Plant site. (Exhibit " 1 " [Gibson Deposition], 30:18-31:8.) The Port is also working with other responsible agencies and parties through a very complex process to implement the demolition and related processes.

5. Former BFGoodrich South Campus

BFGoodrich is a site involving investigation and remediation in an area adjacent to the San Diego Bay. The Port is working with the Regional Board in investigating potential areas of historic contamination, including sediment contamination.

6. Tow Basin

The Tow Basin is an area adjacent to the San Diego Bay involving PCB contamination associated with a former aeronautics facility. The Port has been working cooperatively with the Regional Board to conduct the necessary investigation and remedial work pursuant to the Sediment Quality Objectives.

Comment ID: 16 **Organization:** City of San Diego
DTR Section: 4.7.1.3.
Comment:

COMMENT 1.2: THE DTR'S RELIANCE ON SCHIFF (2003) IS MISPLACED, AS THE SCHIFF (2003) PLUME STUDIES ARE NOT SUPPORTED BY ADEQUATE DATA. DO NOT TAKE INTO ACCOUNT THE HYDRODYNAMIC PROCESSES THAT AFFECT THE FATE AND TRANSPORT OF SEDIMENTS FROM CHOLLAS CREEK INTO SAN DEGO BAY, AND THEREFORE OVERSTATE TOXICITY IN THE CHOLLAS FRESHWATER PLUME.

Section 4.7.1.3 of the DTR (page 4-14) relies on Schiff (2003) in support of its conclusions regarding toxicity in the Chollas Creek freshwater plume. Much of the site and observed toxicity is along the shoreline which has significant structural obstructions making this area quiescent with a low likelihood of exposure to the freshwater plumes from Chollas Creek. The Schiff (2003) plume maps (figures 2 through 8) which show temperature, salinity, turbidity (beam attenuation), and toxicity results right up to the shore are likely not based directly on any data collected from these areas (again it is impossible to review since locations are not provided). Nowhere in the text is there mention of the authors having received access to these restricted areas to perform the sampling. We believe the results showing the area of impacts on these figures are extrapolations based on Kriging the extent of the plume. This geostatistical method referred to as Kriging does not take into account advection, dispersion, or transformation. Where hard boundaries exist such as shorelines, Kriging will extrapolate right up to the boundary. However, in theory, advection to a hard boundary is very limited and movement toward a hard boundary tends to be via diffusion, which is a very slow process compared to advection. Schiff (2003) does not provide data indicating the Chollas freshwater plume extends up to the shoreline. The use of Kriging or other geostatistical methods to predict concentrations beyond the boundaries of sampling is an inappropriate use of the geostatistical method. Geostatistical tools are developed for characterizing data within the sampled area. Such tools have no predictive abilities, and thus should not have been used to determine the area influenced by the surface waters of Chollas Creek.

Comment ID: 17 **Organization:** City of San Diego
DTR Section: 4.7.1.3.
Comment:

COMMENT 1.3: THE HYDRODYNAMIC MODEL REPORTED IN CHADWICK (1999) LACKS IMPORTANT INFORMATION INFLUENCING FATE AND TRANSPORT AND THEREFORE MAY BE OVERSTATING IMPACTS FROM CHOLLAS CREEK.

Section 4.7.1.3 of the DTR relies on Chadwick (1999) as indicating that "the Chollas Creek outflow (plume) to San Diego Bay can introduce pollutants to the Shipyard Sediment Site." Yet the hydrodynamic model presented by Chadwick (1999) is deficient such that it provides insufficient support for the DTR's conclusion about the reach of the Chollas Creek plume. Specifically, this model does not appear to take into account physical obstructions to flow such as ships docked at NASSCO piers 3-6 at the mouth of Chollas Creek, which is a typical situation. Such ships almost (or sometimes do) touch bottom at that location, which creates a physical impediment to flow from Chollas Creek to the Shipyard. The Doppler meters used to calibrate the hydrodynamic model were most likely placed outside of piers and probably could not show the effects of the piers on waters between them. Again, the locations of the Doppler meters are not provided in the report and so it is impossible to review this data. Also this model uses a 100 meter grid which cannot be used to conclude movements of sediments at the scale of Chollas Mouth which is less than 100 m wide. Collectively these issues with the hydrodynamic modeling efforts in the shoreline area indicate model predicted results for this area should not be relied upon for predicting fate and transport from the Chollas Creek mouth area or from the Shipping Channel up toward the shoreline and are likely over-predicting the movement of sediments to the shoreline.

In Chadwick (1999), Section 6.4.2, page 119 describes methods for modeling the creek discharges during storms using a half sine wave function. While the use of a half sine wave may fit the mathematical functions of the tidal model used, it does not match the creek discharges, creek hydrology, or storm functions in the region. Creek discharges from a storm may be significantly longer than one-half tidal cycles and will have several local maxima due to differing rainfall intensities during the storm. This suggests that loading estimates, transport direction and distance of transport could be inaccurately predicted for time steps relevant to tidal cycles from the tidal model used.

Direct data or a well calibrated model that includes all physical influences should be used to make such conclusions. Without either, and direct data being preferred over a mathematical model, it is not reasonable to conclude that Chollas Creek has introduced toxicity and pollutants to the Shipyards Site, which is largely along the shoreline where physical obstructions occur.

Comment ID: 18 **Organization:** City of San Diego
DTR Section: 4.7.1.3.
Comment:

COMMENT 1.4: MEASURED CHOLLAS CREEK DISCHARGE DATA AS REFERENCED IN KATZ (2003) ARE INSUFFICIENT FOR DRAWING CONCLUSIONS THAT CHOLLAS DISCHARGES HAVE SIGNIFICANTLY IMPACTED SHIPYARD SEDIMENTS.

According to the DTR's description of the Katz (2003) study (DTR Section 4.7.1.3, page 4-15), the data in Katz (2003) included only one precipitation event over three days and data generated using different collection methods for different areas (Because the Katz (2003) study cannot be located, the City relies on the DTR's description of its contents). The data were extrapolated to derive conclusions as to the proportion of total impacts caused by Chollas Creek stormwater discharge versus stormwater water discharge from NAVSTA. Upstream Chollas Creek stormwater samples were collected by the City of San Diego's contractor from two different tributaries on a flowweighted basis and then composited into one sample. Stormwater samples from NAVSTA outfalls adjacent to the channel were collected on a time-proportional basis and composited into one sample. Flow weighted sampling pro-vides a sample whose concentration represents the event mean concentration. Time proportional sampling does not, unless the flow rate is constant over the period of sampling. Storm flows are not constant. Therefore, the two sampling methodologies are not comparable and conclusions as to the difference (or lack thereon in concentrations or mass loadings should not be made using this data.

Comment ID: 19 **Organization:** City of San Diego
DTR Section: 4.7.1.3.
Comment:
COMMENT 1.5: PURPLE SEA URCHIN TOXICITY DATA IN SCHIFF (2001 AND 2003) DO NOT PROVIDE ADEQUATE SUPPORT FOR THE CONCLUSION THAT CHOLLAS CREEK WATER CONTAINS TOXIC LEVELS OF ZINC AND COPPER.

Section 4.7 .1.3 of the DTR (page 4-15, top bulleted paragraph) relies on Schiff (2003) and the Southern California Coastal Research Project (2001) (hereafter, "Schiff (2001),,) studies as support for the conclusion that "in-channel and plume toxicity was primarily due to trace metals including zinc and copper."

However, data quality issues related to copper and zinc toxicity as presented by Schiff (2003) weaken the conclusion drawn that the concentrations of each metal were high enough in the tested samples to account for the observed toxicity. Toxicity test results for the purple sea urchin (Strongylocentrotus purpuratus) as reported by Schiff (2001) are interpreted in part on the basis of the calculation of a toxicity unit (TU). The TU is inversely proportional to the median effective concentration (EC50, concentration producing 50% reduction in fertilization). The concentrations of metals in each sample tested were estimated based on the metal concentrations measured in undiluted samples and the estimated reduction in metals concentration based on sample dilution, where appropriate. The other measure of toxicity used in the interpretation of test results is the no observed effect concentration (NOEC). There are three observations that do not appear to support the conclusions regarding copper toxicity by Schiff (2001 and 2003):

a) The use of an EC50 concentration for copper that lies within the range of observed NOECs. Given the definition of NOEC is a concentration below which no effects are observed, it seems infeasible that an EC50 concentration would occur below a NOEC concentration for a quality data set. However, Schiff (2001) in Table 2 state their toxicity tests had a NOEC range from 20-44 ug/L and selected the EC50 of 31 ug/L. The authors do not explain why a EC50 value within the range of NOECs found was selected.

b) The failure of one of the copper reference toxicant tests based on variability in the urchin response.
A reference toxicant test is included with each batch of samples evaluated for toxicity as a quality measure to ensure that the test organisms are responding in a typical manner (Le., that they are not organisms that are too unhealthy and susceptible to toxicity or too robust and

insensitive to toxicity). The reference toxicant test can be run with any toxicant that has a record of response at the laboratory with the specific test species. The bioassay lab used by Schiff (2001) consistently used copper as the reference toxicant. In the first reference toxicant test associated with samples collected on January 25, 2000, the reference toxicant test was inconclusive because as stated in the report: "the reference toxicant had high variability precluding the calculation of a copper EC50."

c) The observed range of EC50s from copper reference toxicant tests that did not fail were all above the EC50 chosen by Schiff (2003) and used by the OTR to demonstrate copper as having a toxic influence on the Site.
The range of copper EC50 concentrations reported in Schiff (2001) Appendix A are based on successful reference toxicant tests are: 55 ug/L (February 13, 2000), > 65 ug/L (February 22, 2000), and 40.8 I-lg/L (March 7, 2000). These test results are all above the EC50 of 31 ug/L used to draw conclusion about sample toxicity in the Schiff (2001) report.

The allegation that Zinc is the primary chemical causing toxicity is suspect. The reported EC50 in Table 2, Schiff (2001) of 29 ug/L is substantially below levels set forth in the California Toxics Rule (CTR; Federal Register Vol. 65, No. 97, Thursday, May 18, 2000) as reproduced below.

Copper criteria in the CTR

Freshwater Acute: 120 ug/L
Freshwater Chronic: 120 ug/L
Saltwater Acute: 90 ug/L
Saltwater Chronic: 81 ug/L

The chronic concentration is defined as "the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (4 days) without deleterious effects". The urchin test is 40 minutes. The fact that 50% of the sea urchins failed to successfully fertilize at concentrations well below zinc concentrations in the CTR, would strongly suggest that something other than zinc is causing the toxic response.

Given the sea urchin test under the conditions used by Schiff (2001) where salinity was adjusted is abnormally sensitive relative to the studies identified in the CTR, the authors should at least discuss alternative hypotheses. For example, the practice of adding salts to freshwater samples to test toxicity with a saltwater species (purple sea urchin fertilization) which would not otherwise occur in such an environment is a source of uncertainty. Reference samples were not collected from an uncontaminated "riverine plume" and then diluted. Therefore the reference samples are actually not processed exactly the same as the Chollas Creek samples. Any differences resulting from different handling should be considered as plausible influences, particularly given the value of zinc toxicity published in the reports are more than four times below the chronic freshwater CTR.

Comment ID: 20 **Organization:** Port District

DTR Section: 11.2
Comment:
The Port Should Not be Primarily Responsible for its Tenants' Discharges

TCAO Finding 11
DTR §11.2

The DTR states that the Port may be named as a discharger due to its capacity as landlord of certain tenants identified as dischargers but also recognizes that "[i]n certain situations, the State Water Board has found it appropriate to consider a lessee primarily responsible and the lessor secondarily responsible for compliance with a cleanup and abatement order." (DTR, § 11.2, at p. 11 -4.) As the DTR further notes, while this determination requires an analysis of various factors, the general rule is "that a landowner or lessor party may be placed in a position of secondary liability where it did not cause or permit the activity that lead to the initial discharge into the environment and there is a primarily responsible party who is performing the cleanup." (Id) The Port agrees with the DTR's statements of the law in this regard.

While the DTR goes on to correctly note that "there is no evidence in the record that the Port District initiated or contributed to the actual discharge of waste to the Shipyard Sediment Site" it incorrectly concludes that "it is ... appropriate to name the Port District as a discharger in the CAO to the extent the Port's tenants, past and present, have insufficient financial resources to cleanup [sic] the Shipyard Sediment Site and/or fail to comply with the order." (DTR §11.2, at p. 11-4 [citing In the Matter of Petitions ofWenwest, Inc. et al., WQ 92-13, p. 9; In the Matter of Petitions of Arthur Spitzer, et al, WQ 89-8, p. 21.)

The DTR acknowledges that "[i]n the event the Port District's tenants, past and present, have sufficient financial resources to clean up the Shipyard Sediment Site and comply with the Order, then the San Diego Water Board may modify its status to secondarily responsible party in the future." (DTR §11.2, at pp. 11-4 to 11-5.) This anticipated modification is appropriate and should be implemented because there is substantial evidence of the Port District's tenants' abilities to fund the Order. In the same fashion, the evidence illustrates that the Port District's tenants are complying with the Order.

Comment ID: 21 **Organization:** Port District
DTR Section: 11.2.
Comment:
The Port's Tenants Have Sufficient Assets to Conduct the Cleanup

TCAO Finding 11
DTR §11.2

The Port's tenants have more than sufficient assets to conduct the cleanup. In fact, prior iterations of the TCAO did not name the Port as a primary discharger because of its determination that the Port's tenants had adequate assets to conduct the cleanup and were cooperating. (SAR 375780, at 375818-375819.) Inexplicably, the latest draft of the TCAO reaches a contrary conclusion without presenting any new facts that would justify this change in position. Having acknowledged the correct legal analysis for determining whether the Port should be primarily or secondarily liable, the CUT bears an initial burden of establishing through evidence the facts necessary to conclude that the Port's tenants do not have adequate assets to fund the cleanup efforts. Yet, no such evidence has ever been presented.

In fact, the evidence establishes beyond question that the Port's tenants have adequate assets to fund the cleanup efforts. The DTR estimates the remedial cleanup and monitoring costs will total $58.1 million. (DTR §32.7.1, at p. 32-40.) During the discovery period, the Port sought and received responses from its tenants confirming that the tenants have adequate assets, whether in the form of traditional financial assets or insurance assets, to perform the cleanup. As detailed below, the Port's current and historic tenants have more than adequate financial and insurance assets - at least $800 million. This is exclusive of the available financial and insurance assets of other dischargers such as the Navy and the City of San Diego.

Additionally, the Port's tenants have lease and permit terms obligating the tenants to defend and indemnify the Port against this type of liability. (See, e.g., SAR 159273, 159289 at paragraph 21 [NASSCO Lease]; Exhibit "7" [SDG&E Tidelands Use and Occupancy Permit Excerpt], p. 5, paragraph lO; SAR 159307, 159324 at paragraph 20 [Southwest Marine Lease]; Exhibit "8" [Southwest Marine Lease Amendment No. 4 Changing Name to BAE Systems San Diego Ship Repair, Inc.].) Consequently, the tenants' significant assets would be applicable to the Port's responsibility for any alleged "orphan shares" under these indemnity agreements. There is, therefore, no basis to conclude that the Port's tenants will be unable to cover the costs of remediation.

1. BAE

During the administrative discovery process, BAE stipulated that "it has the financial assets to cover any amounts of the cleanup and remedial monitoring under [the TCAO] which are premised upon BAE's established liability for the time period 1979 to the present with respect to the BAE leasehold only and that are ultimately allocated to BAE." (Exhibit "9" [BAE Stipulation].) Based on its review of BAE's insurance documents, the Port believes BAE has tens of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "10" [Summary of BAE Historic Liability Insurance].)

2. NASSCO

During the administrative discovery process, NASSCO stipulated that "it has the financial assets to cover the amount of the [TCAO] that are ultimately allocated to NASSCO." (Exhibit "11" [NASSCO Stipulation].) Additionally, based on its review of relevant documents, the Port believes that NASSCO has hundreds of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "12" [Summary of NASSCO Historic Liability Insurance].)

3. SDG&E

During the administrative discovery process, SDG&E produced documentation of its insurance profile. Based on its review of these and other relevant documents, the Port believes that SDG&E has hundreds of millions of dollars of liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "13" [Summary of SDG&E Historic Liability Insurance].)

4. Campbell

During the administrative discovery process, Campbell produced documents regarding its insurance profile. Based on its review of these and other relevant documents, the Port believes that Campbell has tens of millions of dollars of liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "14" [Summary of Campbell Historic Liability Insurance].)

5. Star & Crescent Boat Company

Based on its review of relevant documents, the Port believes that Star & Crescent has millions of dollars of liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "15" [Summary of Star & Crescent Boat Company Historic Liability Insurance].) Additionally, Star & Crescent has stipulated that it has assets totaling between $750,000 and $1 million. (Exhibit "16" [Star & Crescent Stipulation].) Given Star & Crescent's likely limited share of liability for the Shipyard Sediment Site in comparison to the other dischargers, the combination of insurance and financial assets eliminate any likelihood that there will be any "orphan share" assigned to the Port.

The Port is aware that the Star & Crescent entity that is currently named in the TCAO and DTR disputes its successor liability for the other predecessor entities that operated at the Shipyard Sediment Site. However, this dispute does not present the risk of significant "orphan share" liability that could potentially be assigned to the Port. Regardless of whether the current Star & Crescent entity is liable for the earlier operations at the Shipyard Sediment Site, the identified insurance assets would still apply, so long as the insured entity is named as a discharger under the TCAO and DTR. Thus, if the TCAO and DTR were amended to name all of the potentially liable entities - San Diego Marine Construction Company, Star and Crescent Boat Company and Star & Crescent Investment Co. — the insurance assets should be available to address directly any established liability, whether or not these entities are still in existence. (See, California Insurance Code §11580(b)(2).)

Comment ID: 22 **Organization:** Port District
DTR Section: 11.2.
Comment:
The Port's Tenants Are Cooperative

TCAO Finding 11
DTR §11.2

In addition to possessing more than adequate financial assets to conduct the remediation, the Port's tenants are currently cooperating with the Regional Board. Although the tenants have been proposing a remedial approach that differs in some respects from the remedial approach proposed by the CUT, the process is "proceeding cooperatively." (Exhibit "5" [Barker Deposition], Vol. Ill, 489:20-490:14.)

IV. There is no Evidence of Port Non-Cooperation

In contrast to the extensive evidence provided above regarding the Port's history of prior cooperation with the Regional Board in achieving remediation of numerous environmental challenges throughout the San Diego Bay area and cooperation with the Regional Board in the specific context of this matter, the CUT has contended in its administrative discovery responses that the Port was named as a discharger because it has not cooperated with the CUT during this process.

The Port notes that the allegation of non-cooperation is not contained in the TCAO or DTR. This absence confirms that, at least as of the date of the most recent TCAO and DTR, no issue regarding the Port's cooperation existed. In fact, the concern regarding Port cooperation is not grounded in fact. When asked to identify the basis for the allegations of non-cooperation, the witnesses testified to concerns that the Port was not supporting the remedial footprint and was not going to produce witnesses to confirm this support. (Exhibit "5" [Barker Deposition], Vol. Ill, 520:7-21, 521:23-522:24; Exhibit"1" [GibsonDeposition], 33:9-22.) As detailed above, the Port has produced expert witnesses to support the remedial footprint. Likewise, the witnesses testified that the Port had not been supportive of efforts to locate a site for dewatering or disposal of the dredged sediments. (Exhibit "5" [Barker Deposition], Vol. Ill, 523:4-21.) Again, as noted above, the Port is working with the CUT to explore solutions to this issue and is working to provide appropriate support in the CEQA process. (See, Exhibit "5" [Barker Deposition], Vol. Ill, 527:23-529:6.)

The only other basis for the allegation of non-cooperation was the Port's decision to withdraw from the mediation process. (Exhibit " 1 " [Gibson Deposition], 33:9-34:10, 44:5-13; Exhibit "6" [Carlisle Deposition], 110:20-23.) However, as noted, the Port's withdrawal from a voluntary mediation process that it initially proposed is an inappropriate basis for naming the Port as a primary discharger, as a matter of law. Further, any implication that the mediation withdrawal constitutes Port non-cooperation or opposition to the TCAO process is directly rebutted by the Port's cooperation cited above. In sum, the Port has provided and continues to provide appropriate cooperation during the TCAO process.

Comment ID: 23 **Organization:** City of San Diego
DTR Section: 4.4.
Comment:
COMMENT 2.0: THE DTR'S CONCLUSIONS THAT DISCHARGES FROM SW9 HAVE CONTRIBUTED TO ELEVATED LEVELS OF CONSTITUENTS OF CONCERN OBSERVED IN SHIPYARD SEDIMENTS ARE NOT SUPPORTED BY ADEQUATE DATA.

The DTR quotes the following allegation from Tentative Cleanup and Abatement Order (TCAO), Finding 4:

'The City of San Diego also owns and operates a municipal separate storm sewer system (MS4) through which it discharges waste commonly found in urban runoff to San Diego Bay subject to the terms and conditions of a National Pollutant Discharge Elimination System (NPDES) Storm Water Permit. The San Diego Water Board alleges, but the City of San Diego denies, that the City of San
Diego has discharged urban storm water containing waste directly to San Diego Bay at the Shipyard Sediment Site. The waste includes metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), total suspended solids, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes." (DTR page 4-1 (emphasis added).)

The DTR further alleges:

"The City of San Diego has caused or permitted the discharge of urban storm water pollutants directly to San Diego Bay at the Shipyard Sediment Site. The pollutants include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), TSS, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and 10 PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSeO leasehold) MS4 conduit pipes." (DTR page 4-6 (emphasis added).)

The DTR states at section 4.7.3:

"Surface sediment data at NASSCO sample station NA22, which is located near the SW9 storm drain outfall shows elevated concentrations of total high-molecular-weight polynuclear aromatic hydrocarbons (Total HPAHs) at 3600 ug/kg), Dichlorodiphenyltrichloroethane (DDT) at 29.7ug/kg), and Chlordane at 21.1 ug/kg. These pollutant levels are indicators of an urban runoff source (Exponent, 2003) and therefore indicate that historical urban runoff discharges occurred from the City via the SW9 outfall.

As described above, the surface sediment data at NASSCO sample station NA22 provides evidence that the City of San Diego MS4 Storm Drain SW9 conveys the HPAHs, DDT, and Chlordane pollutants into the NASSCO leasehold and San Diego Bay at the Shipyard Sediment Site. The urban runoff characteristics of the sediment pollutants at Station NA22 adjacent to the City of San Diego's MS4 Storm Drain SW9 provide evidence that the City has discharged pollutants to the Shipyard Sediment Site, both presently and in the past." (DTR page 4-19.)

Thus, Sections 4.6 and 4.7.3 of the DTR set forth certain conclusions regarding the contents of storm water released through SW9.

Neither of these conclusions is based on reliable data. First, no samples of stormwater have ever been collected from the SW9 storm drain. Second, Section 4.7.3 of the DTR is basing its

conclusions entirely on the results of a single sediment sample collected from the Bay at NA-22. Given NA-22's proximity to large ship repair, moorage, and other industrial waterfront operations, the DTR's claims that concentrations of chemicals found at NA-22 can be attributed to SW9 because urban runoff "typically" contains pollutants is inappropriate (RWQCB, 1972, 1994; USEPA, 1974; Pacific Northwest Pollution Prevention Resource Center, 1997; Schafran et ai, 1998; Anchor
Environmental, 2005; United States Department of Navy (USDN), 2006), Science Applications International Corporation (SAIC), 2007). The toxins in the sediment data are attributable to nearby industrial activity, and there is no basis set forth in the DTR for attributing the pollutant levels to discharges from SW9.

Third, SW9 discharges into the mouth of Chollas Creek. Water leaving SW9 will be subject to the same hydrodynamic forces as water leaving Chollas Creek during a storm event. As noted above (see Comment 1.1), the studies conducted to date do not show that suspended solids from this discharge cause toxicity in shipyard sediments.

Fourth, historically, prior to the year 2000 timeframe, SW9 drained the NASSCO leasehold, which, based on the types and quantities of wastes produced in ship building and repair operations, is likely to have contained significant quantities of chemicals of concern found in Shipyards sediments.

REFERENCES FOR COMMENT 2.0
Anchor Environmental, CA LP. 2005. Site Investigation and Characterization Report for 401 Certification. BAE Systems, Inc. (formerly Southwest Marine, Inc.). Bulkhead Extension and Yard Improvement. Phase II Activities. August.

California Regional Water Quality Control Board San Diego Region, 1972. Wastes Associated with Shipbuilding and Repair Facilities in San Diego Bay. A staff report to the Executive Officer of the San Diego Regional Water Quality Control Board. June.

California Regional Water Quality Control Board San Diego Region, 1994. Water Quality Control Plan for the San Diego Basin (9). September 8.

Pacific Northwest Pollution Center. 1997. Small shipyards and boatyards in Oregon: environmental issues & P2 opportunities. A Northwest Industry Roundtable Report.

Schafran, G.C., J.G. Winfield, P. Pommerenk, A.O. Akan, L. Mizelle, and IJ. Fox. 1998. Stormwater Collection, treatment, Recycling, and Reuse in a Shipyard. Final Report. NSRP Project N1-96-07. Center for Advanced Ship Repair and Maintenance (CASRM) Old Dominion University Prepared for The National Shipbuilding Research Program NSRP 0536 May 26,1999. December 31.

Science Applications International Corporation. 2007. Lower Duwamish Waterway Glacier Bay Source Control Area Summary of Existing Information and Identification of Data Gaps. Prepared for Washington State Department of Ecology, Lacey, Washington 98504. June.

USDN. 2006. Final Removal Site Evaluation Report, Installation Restoration Site 13 Naval Station San Diego (Naval Base San Diego) California. Naval Facilities Engineering Command Southwest. September.

United States Environmental Protection Agency (USEPA). 1974. Draft Report to the San Diego Regional Water Quality Control Board on Guidelines for the Control of Shipyard Pollutants. Prepared by Environmental Protection Agency National field Investigations Center - Denver. July 1.

Comment ID: 24 **Organization:** Port District
DTR Section: 11.3.
Comment:

The Port Has not Discharged Contamination from its MS4 Facilities

TCAO Finding 11
DTR §11.3

As a secondary basis for Port designation, the TCAO and DTR allege that the Port should be named as a discharger based upon its ownership and operation of MS4 facilities that have purportedly discharged contamination. Specifically, the TCAO and DTR allege that MS4 facilities owned or operated by the Port have discharged through the SW4 and SW9 outfalls and minor storm drains. However, the evidence in the record does not support this basis for Port discharger liability.

Comment ID: 25 **Organization:** City of San Diego
DTR Section: 4.4
Comment:

COMMENT 3.0: THERE ARE NO DATA INDICATING THAT SW4 HAS CONTRIBUTED SIGNIFICANTLY TO ELEVATED LEVELS OF CONSTITUENTS OF CONCERN OBSERVED IN SHIPYARD SEDIMENTS.

The DTR quotes the following allegation from TCAO, finding 4 the San Diego Water Board alleges that the City of San Diego has, as cited on page 4-1 of the DTR:

" ... The waste [in urban storm water discharges] includes metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), total suspended solids, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes." (DTR, page 4-1.)

The DTR further alleges:

" .... The pollutants [in urban storm water discharges] include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), TSS, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes." (DTR, Section 4.4, page 4-6.)

The DTR section 4.7.2 states:

" .... Although no monitoring data is available for this outfall (sic SW4), it is highly probable that historical and current discharges from this outfall have discharged heavy metals and organics to San Diego Bay at the Shipyard Sediment Site.

Recent evidence of illicit discharges from the City of San Diego's Storm Drain SW4 into the Shipyard Sediment Site is provided by the results of a recent sampling investigation conducted by the City of San Diego. On October 3, 2005, the City of San Diego ... obtained evidence of an illegal discharge into the SW4 MS4 catch basin on the north side of Sampson Street between Belt Street and Harbor Drive, approximately 10 feet east of the railroad line .... The results of these 0 samples indicate the presence of both PCBs and PAHs entering and exiting the municipal storm drain system catch basin and resulted in the City of San Diego issuing a Notice of Violation (NOV) to
SDG&E." (DTR, section 4.7.2, pages 4-15, 4-16.)

DTR section 4.7.2 further states:

'The City of San Diego MS4 Storm Drain SW4 discharges into BAE Systems leasehold between Piers 3 and 4. Sample stations from the Detailed Sediment Investigation (Exponent, 2003) in the area of this outfall include SW20 and SW25." (DTR, Section 4.7.2, page 4-17.)

DTR section 4.7.2 further states:

"Sediment PCB levels, specifically Aroclor-1254 and 1260, and sediment PAH levels reported in the storm water conveyance system (sic: catch basin) are also reported in the bay sediment near the storm water outfalls ... " (DTR, Section 4.7.2, page 4-18.)

Thus, Sections 4.6 and 4.7.2 of the DTR set forth certain conclusions regarding the contents of storm water released through SW4. These conclusions are not based on reliable data.

No storm water samples have ever been collected from SW4. The watershed drained by SW4 differs in size and land use from the watershed drained by Chollas Creek. There are no data that would show that Chollas Creek storm water is chemically similar to SW4 storm water. Therefore, it is inappropriate to conclude that SW4 carried the same pollutants to the Shipyard that the Chollas Creek carries to its mouth.

With respect to the catch basin sampling event, following the sampling event in 2005, the catch basin was cleaned out by SDG&E per the requirements in the Notice of Violation issued by the City of San Diego to SDG&E (Zirkle, 2005; TN& Associates, 2006). There are no data showing that SW4 currently has any PCBs in it or that it is currently contributing to pollution of sediments at the Shipyards site.

The presence of chemicals of concern at sediment sampling stations SW20 through SW25 where ship building, ship repair, ship mooring, and ship moving operations took place does not indicate that the chemicals of concern came from SW4 in sufficient quantity to cause the observed concentrations or effects in those sediments. In fact, ship building, ship repair, ship mooring, and ship moving operations have been documented to have historically produced and discharged significant quantities of wastes containing the chemicals of concern found at the Shipyard site (RWQCB, 1972, 1994; USEPA, 1974; Pacific Northwest Pollution Prevention Resource Center, 1997; Schafran et ai, 1998; Anchor Environmental, 2005; United States Department of Navy (USDN), 2006), Science Applications International Corporation (SAIC), 2007)

Historically, prior to the year 2000 timeframe, SW4 drained the BAE leasehold. Based on the types and quantities of wastes produced in ship building and repair operations, runoff from the BAE leasehold is likely to have contained significant quantities of chemicals of concern found in Shipyards sediments.

REFERENCES FOR COMMENT 3.0
Anchor Environmental, CA LP. 2005. Site Investigation and Characterization Report for 401 Certification. BAE Systems, Inc. (formerly Southwest Marine, Inc.). Bulkhead Extension and Yard Improvement. Phase II Activities. August.

California Regional Water Quality Control Board San Diego Region, 1972. Wastes Associated with Shipbuilding and Repair Facilities in San Diego Bay. A staff report to the Executive Officer of the San Diego Regional Water Quality Control Board. June.

California Regional Water Quality Control Board San Diego Region, 1994. Water Quality Control Plan for the San Diego Basin (9). September 8.

Pacific Northwest Pollution Center. 1997. Small shipyards and boatyards in Oregon: environmental issues & P2 opportunities. A Northwest Industry Roundtable Report.

Schafran, G.C., J.G. Winfield, P. Pommerenk, A.O. Akan, L. Mizelle, and IJ. Fox. 1998. Stormwater Collection, treatment, Recycling, and Reuse in a Shipyard. Final Report. NSRP Project N1-96-07. Center for Advanced Ship Repair and Maintenance (CASRM) Old Dominion University Prepared for The National Shipbuilding Research Program NSRP 0536 May 26, 1999. December 31.

Science Applications International Corporation. 2007. Lower Duwamish Waterway Glacier Bay Source Control Area Summary of Existing Information and Identification of Data Gaps. Prepared for Washington State Department of Ecology, Lacey, Washington 98504. June.

TN & Associates, Inc. (2005); Letter to Ken Rowland, San Diego Gas and Electric Company, Response to the Silver Gate Power Plant storm Water Discharge Notice of Violation 5408; March 13, 2006;

USDN. 2006. Final Removal Site Evaluation Report, Installation Restoration Site 13 Naval Station San Diego (Naval Base San Diego) Califomia. Naval Facilities Engineering Command Southwest. September.

United States Environmental Protection Agency (USEPA). 1974. Draft Report to the San Diego Regional Water Quality Control Board on Guidelines for the Control of Shipyard Pollutants. Prepared by Environmental Protection Agency National field Investigations Center - Denver. July 1.

Zirkle, Chris (2005); Letter to Lloyd A Schwartz, BAE Systems San Diego Ship Repair, Inc.; Unauthorized Discharge
of toxic Pollutants into the Municipal Storm Drain System; October 14, 2005.

Comment ID: 26 **Organization:** Port District
DTR Section: 11.3.1. and 11.4.
Comment:

The Port Does not Own or Operate SW4 or SW9

TCAO Finding 11
DTR §§11.3.1,11.4

The DTR states that the Port "operates the following MS4 storm drains which convey urban runoff from source areas up-gradient of the Shipyard Sediment Site's property and discharge directly or indirectly into San Diego Bay within the NASSCO and BAE Systems leasehold: ... Storm Drain SW4; Storm Drain SW9." (DTR §11.3.1, at pp. 11-5 to 11-7.) Elsewhere, the DTR alleges that the Port has discharged pollutants 'through its SW4 ... and SW9 MS4 conduit pipes, as well as other minor drains on its tidelands property and watershed."
(DTR §11.4, at p. 11-8.)

These statements are incorrect. The Port does not own or operate the SW4 or SW9 outfall or the MS4 facilities leading to these outfalls. Rather, as the CUT has acknowledged in its administrative discovery responses, both outfalls (SW4 and SW9) and related MS4 facilities are operated by the City under an easement, (Exhibit "17" [CUT Discovery Responses Excerpts], Responses to Special Interrogatories 28, 30.) The City has similarly acknowledged that its "storm drain system enters the NASSCO leasehold at the foot to 28* Street and terminates at the southeasterly comer" where it "discharges into Chollas Creek" at the SW9 outfall. (See, SAR 158787, 158971, 158806 [2004 City Storm Water Pollution Prevention Program Report].) The City has an easement for the MS4 facilities that terminate at the SW4 outfall. (Exhibit "18" [City Easement].) Moreover, the City retained easements for "all water, sewer and drainage facilities, known or unknown" located within the tidelands when the City first conveyed the tidelands in trust to the Port. (Exhibit "19" [Conveyance].) Because there is no evidence the Port has ever owned or operated SW4 and SW9 or the MS4 facilities that lead directly to these outfalls, the Port cannot be held liable for discharges from this portion of the MS4. (Exhibit "20" paragraph 7 [Collacott Declaration].)

The CUT's administrative discovery responses clarify that the TCAO and DTR "do not allege that the Port District manages or operates the portion of the City of San Diego's MS4 that drains to" SW4 and SW9. (Exhibit "17" [CUT Discovery Responses Excexpts], Responses to Special Interrogatories Nos. 28, 30.) Rather, the contention is that the Port "is responsible for controlling pollutants into and from its own MS4 system" and that "the Port District cannot passively allow pollutants to be discharged through its MS4 and into another Copermittees' MS4s, like the City of San Diego." (Id [emphasis added].) Yet, neither the DTR nor the administrative discovery responses identify what part of the MS4 owned or operated by the Port would ultimately lead to SW4 or SW9, much less how such MS4 facilities have discharged pollutants to SW4 or SW9.

Comment ID: 27 **Organization:** Port District
DTR Section: 11.5.
Comment:
There is no Evidence that the Port's MS4 Facilities are Discharging Pollutants to the San Diego Bay

TCAO Finding 11
DTR §11.5

The DTR contains no evidence that Port discharges from its MS4 are contributing to the Shipyard Sediment Site contamination.

Comment ID: 28 **Organization:** Port District
DTR Section: 11.6.4. and 11.6.5.
Comment:
There is no Evidence that SW4 and SW9 are Discharging Contaminants to the Shipyard Sediment Site

TCAO Finding 11
DTR §§11.6.4,11.6.5

The TCAO and DTR fail to provide evidentiary support for the conclusion that SW4 and SW9 have discharged contaminants to San Diego Bay and the Shipyard Sediment Site. In fact, the DTR acknowledges that "no monitoring data is available" for either SW4 or SW9. (DTR §§11.6.4, at p. 11-13 [SW4]; 11.6.5, at p. 11-15 [SW9].) In lieu of actual monitoring results, the DTR simply concludes that "it is highly probable that historical and current discharges from th[ese] outfalls have discharged" various contaminants. (Id.) Reliance upon assumption rather than evidence as a basis for liability is legally unsound.

In Natural Resources Defense Council, Inc. v. County of Los Angeles (2010) 2011U.S.App.LEXIS 4647, 41 Env.L.Rptr. 20109, the claimant alleged the co-permittees on an NPDES permit had discharged various pollutants in violation of the permit. (Exhibit "21" [NRDC Case].) The claimant argued initially that the "measured exceedances in the Watershed

Rivers ipso facto establish Permit violations by Defendants." (NRDC, supra, at *44.) However, the Ninth Circuit noted that because "the Clean Water Act does not prohibit 'undisputed' exceedances; it prohibits 'discharges' that are not in compliance with the Act (which means in compliance with the NPDES) ... responsibility for those exceedances requires proof that some entity discharged a pollutant." (Id, at *44-45.)

Against this backdrop, the Ninth Circuit found that "the primary factual dispute between the parties is whether the evidence shows any addition of pollutants by Defendants" to the waterways. (NRDC, supra, at *45.) The claimant asserted that because "the monitoring stations are downstream from hundreds of miles of storm drains which have generated the pollutants being detected" it was "irrelevant which of the thousands of storm drains were the source of polluted stormwater - as holders of the Permit, Defendants bear responsibility for the detected exceedances." (Id, at *46.) The Ninth Circuit found this view unsatisfactorily simplistic as it "did not enlighten the district court with sufficient evidence for certain claims and assumed it was obvious to anyone how stormwater makes its way from a parking lot in Pasadena into the MS4, through a mass-emissions station, and then to a Watershed River." (Id, at *47.)

Ultimately, the Ninth Circuit found adequate evidence of discharges for two of the rivers, where mass emissions stations detecting the exceedances were located in a portion of the MS4 "owned and operated" by the defendant in question. (NRDC, supra, at *51-52.) In contrast with that conclusion, the Ninth Circuit found that "it is not possible to mete out responsibility for exceedances detected" in these waterways. (Id, at 52.) The Ninth Circuit was "unable to identify the relationship between the MS4 and these mass-emissions stations" and noted that "it appears that both monitoring stations are located within the rivers themselves." (Id.) The Ninth Circuit concluded that "[i]t is highly likely, but on this record nothing more than assumption, that polluted stormwater exits the MS4 controlled by the [defendants], and flows downstream in these rivers past the mass-emissions stations." (Id.) However, this assumption was inadequate because the claimant was "obligated to spell out this process for the district court's consideration and to spotlight how the flow of water from an ms4 'contributed' to a water-quality exceedance detected at the Monitoring Stations." (Id, at 52-53.)

Based on the foregoing, liability requires evidence the co-permittee "discharged" pollutants from an MS4 facility that the co-permittee owns or operates. Testing or monitoring taken from the affected waterway, rather than from the MS4 system, is not adequate. This is so regardless of how "probable" or "likely" the assumption that the defendant may have discharged pollutants. In the present case, there is no evidence that SW4 or SW9 discharged any pollutants. Rather, the TCAO and DTR merely assume such discharges as "highly probable" based upon monitoring results from Chollas Creek. This is indistinguishable from the inadequate approach in National Resources Defense Council and cannot form the basis for liability arising out of the ownership or operation of an MS4 system.

Comment ID: 29 **Organization:** Port District
DTR Section: 11.6.4. and 11.6.5.
Comment:

There is no Evidence that the Port's MS4 Facilities are Discharging Contaminants to the Shipyard Sediment Site

TCAO Finding 11
DTR §§11.6.4,11.6.5

Even if there was adequate evidence that SW4 and SW9 are discharging pollutants, there are no monitoring or test results establishing that there have been discharges from the Port's MS4 facilities into the City MS4 facilities that lead to the outfalls at SW4 and SW9. National Resources Defense Council makes clear that there must be evidence that the specific Port MS4 facilities, not the MS4 system generally, are discharging pollutants. This is true regardless of how "probable" it is that such discharges might be taking place. Contrary to the correct legal standard, the DTR broadly and incorrectly identifies the offending Port MS4 facilities as SW4 and SW9. The DTR contains no factual analysis of any actual Port MS4 facilities, much less the content of the discharges from the Port MS4 facilities. In fact, the Port has only very limited MS4 facilities that lead to SW4 and no MS4 facilities leading to SW9.

Furthermore, the Port's status as co-permittee under the NPDES permit since 1990 does not make it liable for any and all discharges from SW4 and SW9, regardless of whether the Port's MS4 facilities discharged pollutants. Likewise, the Port is not broadly liable under the NPDES permit for its tenants' discharges into a portion of the MS4 system that the Port does not own or operate. There is no language in the NPDES permit that purports to impose such broad joint liability upon the Port. Such an interpretation of the NPDES permit would be contrary to the terms of the Clean Water Act, which is the basis for the NPDES permit. Under the Clean Water Act, a "co-permittee" is defined as "a permittee to an NPDES permit that is only responsible for permit conditions relating to the discharge for which it is operator." (40 Code of Federal Regulations § 122.26(b)(1).) This is further reflected in the analysis in National Resources Defense Council, in which the Ninth Circuit focused on and required evidence of discharges from specific MS4 facilities owned and operated by the defendants, not from the MS4 system generally.

In sum, the Port is responsible only for discharges from MS4 facilities that it owns or operates. The Port's status as co-permittee under the NPDES permit does not support the conclusion that the Port owns or operates the entire MS4 system. Likewise, the Port's status as trustee of tidelands property does not support the conclusion that the Port owns or operates all MS4 facilities located on that property. In the absence of evidence linking discharges of pollutants from a specific portion of the MS4 system that the Port owns or operates, the Port is not responsible under the NPDES permit for those discharges.

Comment ID: 30 **Organization:** Port District
DTR Section: 11.6.5.
Comment:
There is no Evidence that SW9 Discharges are Contaminating the Shipyard Sediment Site

TCAO Finding 11

DTR §§11.6.5

The Port's designated expert, Dr. Ying Poon, has done an extensive fate and transport modeling analysis and confirmed that any discharges from Chollas Creek would not result in any significant deposit, accumulation or resedimentation of the Shipyard Sediment Site. (Exhibit "2" [Port Expert Designation]; Exhibit "4" [Dr. Poon Declaration], paragraphs[13-15) This extensive modeling contradicts the assumption in the TCAO that, based upon the erroneous Exponent Report approach, Chollas Creek flows result in the settling of contaminated sediment at the Shipyard Sediment Site. In the absence of any substantial evidence that SW9 discharges are transporting contaminants to the Shipyard Sediment Site, the Port cannot be liable based upon these alleged discharges.

Comment ID: 31 **Organization:** NASSCO
DTR Section: 13
Comment:

NOTE: COMMENT RECORDS 2 THROUGH 5 ARE FROM THE "EXECUTIVE SUMMARY OF COMMENTS" AND CONTAIN MULTIPLE COMMENTS THAT ARE ALSO ENTERED INDIVIDUALLY ELSEWHERE IN THIS DATABASE

I. Executive Summary of Comments
The following is a summary of NASSCO's primary comments concerning the TCAO:

A. The Tentative Cleanup and Abatement Order Is Excessively Conservative And Does Not Accurately Reflect The Favorable Conditions Observed At The Site (Findings 13-28)

The TCAO is highly conservative and proposes unprecedented cleanup levels, despite the favorable findings and conclusions of a multimillion dollar sediment investigation conducted by Exponent, with substantial input and oversight by Board staff NASSCO and
Southwest Marine Detailed Sediment Investigation, Exponent (October 2003) ("Exponent Report"). This investigation, recognized as the most extensive sediment investigation that the Board has ever required to be conducted in San Diego Bay, concluded that beneficial uses at the Site are not unreasonably impaired, and documented the presence of healthy and mature benthic communities. [Comment No.1, TCAO, at 13-28, DTR, at 13-28]. To the extent minor differences from reference conditions were observed with respect to aquatic life, such effects were largely attributable to ongoing discharges from Chollas Creek. [Comment No.2, TCAO, at 14-20, DTR, at 14-20]. Current site conditions were found to already be protective of aquatic-dependent wildlife and human health. [Comment No.3, TCAO, at 21-28, DTR, at 2128]. For these reasons, and because active remediation would not produce any clear long-term improvement in beneficial uses relative to current conditions, the Exponent Report concluded that monitored natural attenuation is the preferred remedy. This recommendation was subsequently validated when testing conducted by Exponent in June 2009 documented that shipyard contaminants are, in fact, naturally attenuating. However, in stark contrast to these favorable results, the TCAO concludes that beneficial uses are impaired, utilizing a series of excessively conservative, and unwarranted, assumptions which do not accurately represent the favorable conditions present at the Site. Accordingly, NASSCO is concerned that, in attempting to be conservative, Staff has

greatly overstated the risks posed by site sediments. [Comment No.4, TCAO, at 14-28, DTR, at 14-28].

Comment ID: 32 **Organization:** NASSCO
DTR Section: 12
Comment:
NOTE: COMMENT RECORDS 2 THROUGH 5 ARE FROM THE "EXECUTIVE SUMMARY OF COMMENTS" AND CONTAIN MULTIPLE COMMENTS THAT ARE ALSO ENTERED INDIVIDUALLY ELSEWHERE IN THIS DATABASE

I. Executive Summary of Comments
The following is a summary of NASSCO's primary comments concerning the TCAO:

I.B. Chollas Creek And Other Sources Of Off-Site Discharges Must Be Controlled Before The Cleanup Goals In The TCAO Can Be Achieved
(Findings 12, 30, 32, 33)

NASSCO is likewise concerned that Staff has proposed extensive dredging to unprecedented cleanup levels, at a cost of millions of dollars, despite the fact that ongoing uncontrolled discharges from Chollas Creek are impacting the Site, and are not expected to be controlled for at least 20 years. [Comment No.5, TCAO, at 12,30,32,33, DTR, at 12.1,30, 32.7.1,33.1.1]. It is axiomatic that source control must be achieved prior to active remediation and common sense dictates that is a waste of resources to spend millions to remediate a site that is at risk of recontamination. It is also not technologically feasible to require compliance with the exceptionally stringent cleanup levels proposed in the TCAO while the Site continues to be impacted by uncontrolled discharges from Chollas Creek. [Comment No.6, TCAO, at 12,30, 32,33, DTR, at 12.1, 30, 32.7.1, 33.1.1]. Accordingly, Chollas Creek and other sources must be controlled before the cleanup goals in the TcAo can be achieved through active remediation. [Comment No.7, TCAO, at 12,30,32,33, DTR. at 12.1,30,32.7.1, 33.1.1].

Comment ID: 33 **Organization:** NASSCO
DTR Section: 32
Comment:
NOTE: COMMENT RECORDS 2 THROUGH 5 ARE FROM THE "EXECUTIVE SUMMARY OF COMMENTS" AND CONTAIN MULTIPLE COMMENTS THAT ARE ALSO ENTERED INDIVIDUALLY ELSEWHERE IN THIS DATABASE

I. Executive Summary of Comments
The following is a summary of NASSCO's primary comments concerning the TCAO:

I.C. The Tentative Cleanup and Abatement Order Treats NASSCO Differently Than Other Similar Sites, In Violation of Law (Findings 32, 36)

The TCAO violates the consistency requirement that is expressly stated in Resolution No. 92-49, as well as related principles of due process and equal protection by proposing cleanup levels that are far more stringent than what has been required at other similarly situated shipyard and boatyard sites in San Diego Bay and elsewhere. Fundamental fairness dictates that similarly situated sites should be treated similarly, and there is no rational basis for treating NASSCO differently than other comparable sites in the same water body, especially in light of overall condition of the site, as documented in the sediment investigation and Exponent Report. [Comment No.8, TCAO, at 32, 36, DTR. at 32, 36.4].

Comment ID: 34 **Organization:** NASSCO
DTR Section: 30. 32.
Comment:

NOTE: COMMENT RECORDS 2 THROUGH 5 ARE FROM THE "EXECUTIVE SUMMARY OF COMMENTS" AND MAY CONTAIN MULTIPLE COMMENTS THAT ARE ALSO ENTERED INDIVIDUALLY ELSEWHERE IN THIS DATABASE

I. Executive Summary of Comments
The following is a summary of NASSCO's primary comments concerning the TCAO:

I.D. Monitored Natural Attenuation Is The Proper Remedy (Findings 30, 32)

The Regional Board is required to adopt a technically and legally sound TCAO based upon an accurate risk-based assessment, and reasonable assumptions, in accordance with Resolution No. 92-49. In light of the generally favorable site conditions and total values at stake, monitored natural attenuation-which has already been shown to be occurring-is the proper remedy for the NASSCO Site. [Comment No.9, TCAO, at 30, 32, DTR. at 30, 32].

Comment ID: 35 **Organization:** NASSCO
DTR Section: 36.
Comment:

NOTE NASSCO'S COMMENTS No. 10 AND No. 11 ARE CONTAINED HEREIN

II. REGULATORY FRAMEWORK
A.California Porter-Cologne Water Quality Control Act (Finding 36)

II.A.1. The Water Code Recognizes That Beneficial Uses Are Not Unreasonably Affected By All Changes To Chemical Concentrations In Sediments (Comment No. 10, TCAO, at 36, DTR. at 36)

The Porter-Cologne Act ("the Act") establishes the framework pursuant to which the Regional Board may reasonably protect water quality in California. Cal. Water Code §§ 13000 et seq.

The Act mandates that a balancing process be followed in regulating activities and factors that affect the state's water quality. According to the Legislature, such activities "shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." Cal. Water Code § 13000 (emphasis added). The Act also recognizes that "it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses." Cal. Water Code § 13241 . The Act therefore identifies factors that the Regional Board must consider in determining what level of protection is reasonable, including economic considerations. Id.

The State Water Resources Control Board ("State Board") and the Regional Boards are the state agencies with primary responsibility for the coordination and control of water quality, and must conform to and implement the Water Code in exercising their responsibilities. Cal. Water Code § 13001 . The Regional Board discharges its duty to coordinate and control water quality by, among other things, investigating the quality of waters of the state and requiring the cleanup or abatement of waste, including through the issuance of Cleanup and Abatement Orders ("CAOs") when a discharge "creates, or threatens to create a condition of pollution or nuisance. . . ." Cal. Water Code §§ 13225, 13304. "Pollution" means "an alteration of the quality of the water of the state by waste to a degree which UNREASONABLY affects either ... (A) The waters for beneficial uses[,] or (B) Facilities which serve these beneficial uses." Cal. Water Code § 13050(1) (emphasis added). Restated, it is not considered "pollution" where a past discharge affects beneficial uses, but does not do so unreasonably. Similarly, "nuisance" means "anything which meets all of the following requirements:

(I) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes."

Cal. Water Code § 13050(m). Contaminated sediment does not constitute a nuisance where it is not proven to be injurious to health, or, if it is not proven to be injurious to health, does not affect an entire community. Thus, it is clear that the definitions of "pollution" and "nuisance" recognize that at certain concentrations, contaminants in sediment may not unreasonably affect beneficial uses of the waters of the state or be injurious to health. [Comment No. II, TCAO, at 36, DTR, at 36]. Indeed, this a logical and reasonable result. If a discharger could never impact sediment quality to any degree, then the Regional Board could never issue NPDES permits or Waste Discharge Requirements that involved the discharge to any water body. Hence, the Water Code allows some minor impacts to sediment quality, as long as those impacts do not unreasonably impair beneficial uses.

Comment ID: 39 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

I. The Law Requires Cleanup to Background Except Where Evidence in the Record Demonstrates that Alternative Cleanup Levels Greater than Background Water Quality are Appropriate.

The State Water Resources Control Board has empowered the Regional Boards "to require complete cleanup of all waste discharged and restoration of affected water to background conditions (i.e., the wateF quality that existed before the discharge)." See State Water Board Order 92-49. When ordering a cleanup, the Regional Board must "[e]nsure that dischargers are required to clean up and abate the effects of discharges" to "either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." State Water Board Order 92-49. Therefore, cleanup must be set to background pollutant levels unless background water quality "cannot be restored."

Comment ID: 40 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

I.A. Cleanup to a Pollutant Level Greater than Background Conditions is Only Allowed if the Regional Board Makes Two Findings.

The law provides that the Regional Board can establish alternative cleanup levels for constituents greater than background pollutant levels only if the Regional Board makes two findings. First, it must find "that it is technologically or economically infeasible to achieve the background value for that constituent." The Post Remedial Monitoring plan should be expanded to provide a more robust basis for evaluating exposure of benthic invertebrates to contaminants at the site and for assessing sediment toxicity, and include testing from
appropriate reference sites 2550.4(c). If cleanup to background is technologically or economically infeasible, a pollutant level greater than background conditions can be adopted only if the Regional Board finds "that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the concentration limit greater than background is not exceeded." CAL. CODE REGS. tit. 23 §2550.4(c). The cleanup levels must be set at background water quality if the Regional Board fails to make these two findings for each pollutant.

Comment ID: 41 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

I.B. Alternative Cleanup Levels Must Be a Concentration Limit Set on a Constituent-by-Constituent Basis and Must Meet Requirements in State Water Board Order 92-49.

The law governing alternative cleanup levels makes clear that the alternative cleanup levels MUST set a concentration limit, or maximum pollutant amount that cannot be exceeded. The Regional Board must find that the constituent will not pose a threat to human health or the environment "as long as the CONCENTRATION LIMIT greater than background is not exceeded." CAL. CODE REGS. tit. 23 §2550.4(c) (emphasis added). Therefore, alternative cleanup levels that are not set at a maximum pollutant level are unlawful. •

The law also dictates that analyzing whether background levels are achievable and what alternative cleanup levels are appropriate must be done on a constituent-by-constituent basis. See CAL. CODE REGS. tit. 23 § 2550.4(c) (The Regional Board must determine technological and economic feasibility "to achieve the background value FOR THAT CONSTITUENT" and find that "THE CONSTITUENT will not pose a threat to human health or the environment as long as the concentration limit greater than background is not exceeded." (emphasis added)).

Finally, State Water Board Order 92-49 requires that any alternative cleanup level:
1) must be consistent with the maximum benefit to the people of the state;
2) must not unreasonably affect present and anticipated beneficial uses of the waterbody; and
3) must not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

Comment ID: 42 **Organization:** Coastkeeper and EHC
DTR Section: 32
Comment:

I.C. The Regional Board's Findings Must be Supported By Evidence in the Record.

Decisions of the Regional Board must be made on a reasoned basis and be supported by evidence in the record. A reviewing court will overturn a Regional Board decision "if the court determines that the findings are not supported by the weight of the evidence." CAL. Civ. PROC. CODE § 1094.5(c). For an agency finding to be upheld, the agency's findings must be "supported by substantial evidence" in the record. See JKH Enter, v. Dep't of Industrial Relations. 48 Cal. Rptr. 3d 563. 574 (Cal. Ct. App. 2006).

Therefore, in order to set a cleanup level at less than background water quality, the Regional Board's finding of technical or economic infeasibility must be supported by substantial evidence in the record. Also, there must be substantial evidence in the record demonstrating (1) that the remaining pollutant levels "will not pose a substantial present or potential hazard to human health or the environment as long as the concentration limit greater than background is not exceeded." Cal. Code Regs. tit. 23 §2550.4(c), (2) that the alternative cleanup levels are consistent with the maximum benefit to the people of the state; (3) that the alternative cleanup levels will not unreasonably affect present and anticipated beneficial uses of San Diego Bay; and (4) the alternative cleanup levels will not result in water quality less than that prescribed in the

State and Regional Boards' Water Quality Control Plans and Policies. See State Water Board Order 92-49.

Comment ID: 43 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

II. The Order's Conclusion that Cleanup to Background Water Quality Levels is Economically Infeasible is Arbitrary and Capricious and Not Supported By Substantial Evidence in the Record.

The first step in detennining appropriate cleanup levels—background or some other level—is assessing the technological and economic feasibility of cleaning to background pollutant levels. The Order determined that cleaning to background is technologically feasible. See Order Finding 30. This means that the economic feasibility analysis determines whether alternative cleanup levels will be considered, and if so, what that level should be.

Because the economic feasibility analysis drives the entire cleanup, it is imperative that the economic feasibility is a fair analysis, supported with evidence in the record cited to its sources, which is fairly presented. But the economic feasibility analysis in Section 31 of the DTR fails to provide support for its assumptions, fails to provide the source of data used in the analysis, analyzes the cleanup arbitrarily in eleven groups of six polygons, presents the analysis in four arbitrary groups, and then arbitrarily proclaims that $33 million is the cut-off for where the incremental costs exceed the incremental benefits.

This arbitrary and unsupported economic feasibility analysis leads to an arbitrary determination that cleanup to background is not economically feasible. More importantly, it has also lead to an arbitrary determination of what level of cleanup is the "best water quality reasonable" given all considerations. See State Water Board Order 92-49.

Comment ID: 44 **Organization:** Coastkeeper and EHC
DTR Section: 31.1.
Comment:

II.A. The Economic Feasibility Analysis Arbitrarily Assessed Costs in Six-Polygon Groups.

The DTR admits that the economic feasibility of remediating the Shipyard Sediment Site to background levels was assessed using a "series of cumulative cost scenarios, starting with the "six most contaminated stations, then adding the six next most contaminated stations, progressing sequentially down the list until the entire Shipyard Sediment Site was included in the scenario." DTR §31.1 at 31 -2.

The DTR provides no explanation or rationale as to why stations were evaluated in groups of six. There is no biological or economic reason for the polygons to be evaluated in groups of six, particularly when the polygons are different sizes and six polygon groups do not necessarily represent one construction season or other grouping in which a consideration of economies of scale could have reduced costs.

Furthermore, by lumping the polygons together in groups of six, the analysis fails to provide the data to allow the Regional Board to determine that the alternative cleanup level should be set at a level that falls in between the groups of six polygons.

Comment ID: 45 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

II.B. The DTR and Appendices Fail to Detail the Assumptions in the Economic Feasibility Analysis and Provide Information as to the Source of the Information Used in the Analysis.

The Regional Board's conclusions must be supported by substantial evidence in the record. Sec CAL. Civ. PROC. CODE § 1094.5(c). However, the economic feasibility analysis is not supported by substantial evidence in the record. The key information, including cost assumptions, pollution reduction assumptions, and dredging volume assumptions are either not provided or have been provided without a citation as to the source of the information. Failing to provide this infonnation prevents the public from fully vetting the analysis and renders any Regional Board decision based on incomplete information or information not in the record arbitrary and capricious.

Comment ID: 46 **Organization:** Coastkeeper and EHC
DTR Section: 31, Appendix 31, Table A31-1
Comment:

II.B.1. The economic feasibility analysis fails to identify the source of data for the surface weighted average concentration of the five priority pollutants.

Table A31 -1 columns labeled "SWAC." DTR Appendix 31; Table A31 -1. The source of this data has not been provided in the record. It must be provided to allow the public to evaluate the economic analysis and to perform additional analysis.

Comment ID: 47 **Organization:** Coastkeeper and EHC
DTR Section: 31, Appendix 31, Table A31-1
Comment:

II.B.2. The record fails to identify the source of the cost data in Table A31-1.

Table A31-1 contains cost data. The record fails to identify the source of data or itemize the costs so that the public can analyze the cost assumptions and the elements that underlie the cost conclusions.

Counsel for San Diego Coastkeeper and Environmental Health Coalition were provided an excel spreadsheet labeled "Economic Feasibility Source data" by counsel for the Cleanup Team on March 24, 2011. The document was provided without an administrative record citation and therefore it is assumed that this infonnation is not currently a part of the administrative record. The file fails to indicate the source(s) for this economic feasibility data and this information has not been provided to the public.

This spreadsheet contains cost assumptions that are suspect. For example, the spreadsheet assumes that eelgrass mitigation will be required for five percent of the total dredging area for each six-polygon scenario. There is no showing that this is an appropriate assumption, nor is there any information about the source of the costs assumptions for "Eelgrass Habitat Mitigation" and "Eelgrass Land Lease Costs (in perpetuity)/' Without this information, the public cannot evaluate the reliability of that data and assumptions.

Comment ID: 48 **Organization:** Coastkeeper and EHC
DTR Section: 31, Table A31-2
Comment:
II.B.3. The record fails to identify the source of the data in Table A31-2.

Table A31-2 contains data regarding polygon area, volume and dredging depths and volumes. The record fails to identify the source of this data so that the public can analyze the data and assumptions.

Comment ID: 49 **Organization:** Coastkeeper and EHC
DTR Section: 31, Appendix 31, Table A31-2
Comment:
II.B.4. There is no explanation in the economic feasibility analysis why polygons identified with a "depth to clean" as the undefined term "sur" have differing "dredging depth|s|."

Table A31-2 includes the undefined term "sur" for several polygons in the "depth to clean" column. Determining what the term "sur" is supposed to mean becomes challenging because the dredging depth varies for polygons with "depth to clean" listed as "sur." For example, "Depth to clean" for SW05 is "sur" while the "Dredging Depth" is 5; "Depth to clean" for SW23 is "sur" while the "Dredging Depth" is 3: and "Depth to clean" for NA15 is "sur" while the "Dredging Depth" is 7. The record provides no explanation as to why these three polygons that all have "Depth to Clean" listed as "sur," have such varied dredging depths or how "Dredging Depth" was determined for rows where "Depth to Clean (ft)'" is listed as "sur." See 2010-07-27 Economic feasibility 07-27-10.ng.xls (SAR384569).

If "sur" means that only surficial data is available, the record must explain why additional sampling to determine appropriate dredging depth was not collected. Further, if dredging depth from polygons labeled "sur" was assumed based on dredging depth at an adjacent polygon, the record must explain how such an assumption could be valid and explain the consequences of that assumption to the cost assumptions.

Comment ID: 50 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

II.C. The Economic Feasibility Results are Presented in an Arbitrary Manner.

The economic feasibility analysis must be supported by substantial evidence in record and must be presented in a fair manner so that conclusions drawn from the analysis are not arbitrary and capricious. However, the economic feasibility analysis results presented in DTR §31 are presented in an arbitrary manner that prevents the Regional Board from making a reasoned decision based on evidence fairly presented. Any Regional Board decision based solely or heavily on that unfair or biased presentation of evidence is arbitrary and capricious.

Comment ID: 51 **Organization:** Coastkeeper and EHC
DTR Section: 31, Appendix 31, Table A31-2
Comment:

II.C.1. DTR Appendix 31 Table A31-2 groups the economic feasibility results together in an arbitrary manner.

The economic feasibility analysis evaluated the 66 polygons in eleven "cost scenarios," with each scenario representing a group of 6 polygons. See DTR Appendix 31. DTR Table A31-2 provided infonnation relative to cost, such as total dredging area, total dredging volume, under pier area, and rock protection area for each polygon.

For each 6-polygon cost scenario, Table A31 -1 presented data for: (1) the resulting surface weighted average concentration of each pollutant following remediation of those polygons and (2) the cumulative percent exposure reduction for each pollutant.

The economic feasibility analysis averaged the cumulative exposure reduction for all five pollutants and calculated the percentage "exposure reduction per $10 million spent" based on the average pollutant levels. DTR Table A31 -1. The DTR presents the data in a chart labeled Figure 31-1.

The graphic representation of the economic feasibility presented in DTR Figure 31-1is arbitrary. Instead of graphing each of the eleven cost scenarios separately, the DTR groupedsome of the scenarios together, presenting the data in the following way:

[Coastkeeper/EHC Table 1. Description of DTR Figure 31-1 by Cost Scenarios and Polygons [See Exhibit B]]

By grouping multiple groups of six polygons scenarios together in an inconsistent and arbitrary way, the economic feasibility analysis fails to present a fair representation of the data, making the analysis arbitrary.

Comment ID: 52 **Organization:** Coastkeeper and EHC
DTR Section: 31, Figure 31-1
Comment:
II.C.2. DTR Figure 31-1 would have looked different if results had been presented for each of the eleven cost scenarios.

When the cost scenarios are arbitrarily grouped, they look like this:

[Figure 31-1 Percent Exposure Reduction versus Remediation Dollars Spent]

Each of the eleven cost scenarios graphed individually looks like this:

[Coastkeeper/EHC Figure 1. Average Percent of Exposure Reduction Per $10 Million, for Each Cost Scenario]

Comment ID: 53 **Organization:** Coastkeeper and EHC
DTR Section: 31, Figure 31-1
Comment:
II.C.3. The DTR incorrectly summarizes cumulative exposure reduction percentages per $10 million spent.

The DTR states "exposure reduction drops below 7 percent per $10 million after $33 million, below 4 percent after $45 million, and drops to zero at $185 million." DTR § 32.7.1 at 32-40. This response is consistent with supporting calculations in "2010-07-27 Economic feasibility 07-27-lO.ng.xls" (SAR384569).

But the Cleanup Team's own discovery response indicates that those numbers arc incorrect and shows that the average exposure reduction per $10 million is 10.8% after $33 million, 8.7% after $45 million, and at 5.5% at $185 million. See Response to San Diego Coastkeeper and Environmental Health Coalition Economic Feasibility Question, attached as Exhibit D.

[Cleanup Team Response at Page 6:]

Likewise, the DTR states that "the total cost of the cleanup is estimated to be $58 million and asserts that "cleaning up additional areas beyond the proposed remedial footprint would yield about 4 percent additional exposure reduction per $10 million spent." DTR § 32.7.1 at 32-40. The Cleanup Team's own discovery response proves these statements to be incorrect, as the chart above illustrates that the cumulative exposure reduction per $10 million for a $69.4 million cleanup is actually 8.7%.

Comment ID: 54 **Organization:** Coastkeeper and EHC
DTR Section: 31, Appendix 31, Figure 31-1
Comment:
II.C.4. The Economic Feasibility Was Not Determined on a Constituent-by-Constituent Basis.

The economic feasibility analysis fails to calculate or present the data on a pollutant-by-pollutant basis. But the law requires that economic feasibility be determined on a pollutant-by-pollutant basis. See CAL. CODE REGS. tit. 23 § 2550.4(c) (The Regional Board must determine technological and economic feasibility "to achieve the background value for that constituent and find that "the constituent will not pose a threat to human health or the environment as long as the concentration limit greater than background is not exceeded."
(emphasis added)).

By averaging the pollutant reduction concentration for all five primary constituents of concern, the Cleanup Team and DTR have masked variability in pollutant exposure reduction for each of the pollutants. For example, when percent pollution exposure reduction is calculated for each pollutant individually, it becomes clear that cost scenario 7 ($85.3 - $101.6 million) results in more than 20% exposure reduction in mercury, a persistent bioaccumulating pollutant with significant health impacts.

Calculating and graphing the percent pollution exposure reduction per $10 million spent for each pollutant, using the same methodology the Cleanup Team used in the DTR. The result looks like this:

[Coastkeeper/EHC Figure 2. Percent Pollution Exposure Reduction Per S10 million, by Pollutant]

Comment ID: 55 **Organization:** Coastkeeper and EHC
DTR Section: 31, Figure 31-1
Comment:
II.C.5. The economic feasibility data was not presented in a scaled manner.

DTR Figure 31-1 presents the economic feasibility analysis in a bar graph with percentage pollutant reduction per $10 million spent on the Y-axis, and remediation dollars spent on the X-axis. But by using a bar graph, readers cannot tell the true relationship of the data points to one another over a continuous basis (dollars spent). To fairly represent the data and to observe the trends of where significant pollution reduction occurs per dollar spent and where the pollution reduction per dollar spent decreases, the results must be graphed on a continuous X-axis. Once the data is plotted as a scatter graph on a continuous x-axis, we can truly see the percent reduction compared the remediation dollars spent.

[Coastkeeper/EHC Figure 3. Percent Pollution Exposure Reduction Per $10 million, by Pollutant and in Continuous Dollars, with Background Marked.]

Comment ID: 56 **Organization:** Coastkeeper and EHC
DTR Section: 31, Figure 31-1, 32.7.1
Comment:

II.D. The DTR's economic feasibility conclusions based on DTR Figure 31-1 are arbitrary and capricious.

DTR §32.7.1 concludes, based on DTR Figure 31-1:

The highest net benefit per remedial dollar spent occurs for the first $33 million (18 polygons), based on the fact that initial exposure reduction is above 12 percent per $10 million spent. Beyond $33 million, however, exposure reduction drops consistently as the cost of remediation increases. Exposure reduction drops below 7 percent per $10 million spent after $33 million and below 4 percent after $45 million. Based on these incremental costs versus incremental benefit comparisons, cleanup to background sediment quality levels is not economically feasible.

These conclusions are not supported by evidence in the record once the exposure reduction per $10 million is analyzed and presented on a constituent-by-constituent basis. It is crucial that the exposure reduction data for each pollutant be graphed individually because the alternative cleanup levels must be set on a pollutant-by-pollutant basis, not as an average pollution reduction amount. See State Water Board Order 92-49. The alternative cleanup levels address each pollutant separately because each pollutant represents a different major class of pollutants that poses a specific type of harm or risk of harm to human health or the environment. See DTR at 20-1. 20-2.

If the economic feasibility results are examined on a continuous dollar basis and on a constituent-by-constituent basis, it becomes clear that selection of $33 million as the point below which exposure reduction "drops consistently" as the remediation cost increases and conclusion that cleanup to background is economically infeasible is arbitrary and capricious.

[Coastkeeper/EHC Figure 4. Percent Pollution Exposure Reduction Per $10 million, by Pollutant and in Constant Dollars, with background and $33 million marked.]

Comment ID: 57 **Organization:** Coastkeeper and EHC
DTR Section: 32.7.1.
Comment:

II.E. The Conclusion that The Alternative Cleanup Levels Are the Lowest Levels Economically Achievable is Arbitrary and Capricious and Not Supported by the Evidence.

The Order concludes that "the alternative cleanup levels established for the Shipyard Sediment Site are the lowest levels that are technologically and economically achievable." Order Finding 32 at 16. But this conclusion is based on the DTR's faulty analysis in § 32.7.1

regarding the four percent additional exposure reduction per additional $10 million spent above $58 million, which the Cleanup team's own discovery response has proven untrue. See above. Section 11.C.3.

Further, the DTR's conclusion that 4 percent additional average pollutant exposure reduction per $10 million spent is not "economically achievable, is arbitrary. See DTR §32.7.1 at 32-40. Neither the Order nor the DTR explains why a 12% average exposure reduction per $10 million is economically achievable, but 4% average exposure reduction per $10 million is not. Nor has the Order or DTR explained why it is appropriate to look at average exposure reduction for all pollutants instead of analyzing economic feasibility on a pollutant-by-pollutant basis. If economic feasibility is analyzed for each pollutant, a cleanup of $85 million provides an exposure reduction for HPAHs of approximately 12% per $10 million, and a cleanup of $101 million provides an exposure reduction for mercury over 20% per $10 million spent. Determining that a $58 million cleanup will bring pollutant levels to the "lowest levels economically achievable" based on a faulty claim that further cleanup will only reduce pollution by 4% per $10 million spent is arbitrary and capricious when the evidence shows that additional cleanup will reduce HPAHs by 12% per $10 million spent and reduce mercury by 20% per $10 million spent.

Comment ID: 58 **Organization:** Coastkeeper and EHC
DTR Section: 31, 32.2
Comment:

II.F. The Economic Feasibility Analysis Fails to Demonstrate that the Chosen Alternative Cleanup Levels Represent the "Best Water Quality" Based on All Demands.

The DTR states: "An assessment of risk to wildlife receptors under projected post-remedial conditions was conducted to confirm the alternative cleanup levels established bv economic analysis (Section 31) are adequately protective of aquatic-dependent wildlife beneficial uses." DTR 532,2 at 32-12(emphasis added). In this statement, the DTR admits that the economic feasibility analysis in Section 31 determined the alternative cleanup levels. But there is no evidence in the record justifying the decision to limit the Proposed Remedial Footprint to 23 polygons.

State Water Board Order 92-49 requires the economic feasibility analysis to consider all the values involved, but the economic feasibility analysis only includes cleanup cost for the dischargers and measures that against average pollutant concentration removal per $10 million spent. The analysis fails to quantify and consider additional benefits to human health, wildlife, aquatic dependent wildlife, and other beneficial uses from removing pollutants and providing a cleaner San Diego Bay for the wildlife and communities that use this resource. The analysis vaguely asserts that it ••considered" a broad range of values, but none of these are listed or quantified, and there is no explanation of the role these other, external costs played in the determination of the economic feasibility of cleaning to background.

For example, the DTR claims that the "San Diego Water Board evaluated a number of criteria to determine risks, costs and beneflts." DTR § 31 at 31-1. It suggests that these criteria included factors such as "total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses..., effects on shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial or industrial uses of aquatic resources." DTR § 31 at 31-1. But other than alleging that these factors were ^evaluated," the DTR makes no attempt to quantify or rank these criteria or explain how they were balanced against one another.

Comment ID: 59 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:
III. The Order Fails to Meet Legal Requirements for Cleanup to Pollutant Levels Greater Than Background.

In order to adopt alternative cleanup levels, the Regional Board must make a finding that the pollutants will not threaten human health or the environment as long as the alternative cleanup levels are "not exceeded;, CAL. CODE REGS. tit. 23 §2550.4(c). But the monitoring plans—both during and post-remediation—do not actually require that the alternative cleanup levels be met. See Order Directive A.2.a. and Directive D; DTR § 34.

Comment ID: 60 **Organization:** Coastkeeper and EHC
DTR Section: 32.2.3, Table A32-3
Comment:
III.A. The Site-W ide Alternative Cleanup Levels Were Calculated Based on Remediating to Background Pollutant Levels.

The DTR admits that "Post-remedial SWAC calculations were completed with the assumption that the SWAC inside the [Proposed Remedial] footprint would be remediated to background concentrations...." DTR §32.2.3 at 32-12; see also Table A32-3. By the DTR's own admission, in order to achieve the post-remedial pollutant concentrations site-wide, the remediated areas need to be cleaned to background if the other areas remain untouched. For this approach to be valid, the cleanup must ensure that remediated areas are cleaned to background conditions or cleaner.

Comment ID: 61 **Organization:** Coastkeeper and EHC
DTR Section: 34.1
Comment:
III.B. The Remediation Monitoring Fails to Require Remedial Areas to Achieve Background Levels.

The Order and the DTR indicate that the Dischargers must conduct "Remedial Monitoring" to confirm that the dredging and other remedial activities have achieved target clean-up goals within the remedial footprint. See Order Section B.l. I: DTR Section 34.1. As explained above, the "target cleanup levels within the remedial footprint" is background pollutant levels. But the

Order and DTR set out a process by that allows the remediated areas to be 20% more polluted than background pollutant levels.

Comment ID: 62 **Organization:** Coastkeeper and EHC
DTR Section: 34.1.2, Table A32-3
Comment:

III.B.1. The "I20% of background" could lead to site-wide pollutant concentrations above the Alternative Clean-up Levels.

The Order requires a second dredging pass: ' i f concentrations of primary COCs in subsurface sediments (deeper than 5 cm) are above 120 percent of post-remedial dredge area (background) concentrations." Order Directive A.2.a. at 20; see also DTR § 34.1.2. at 34-3.
Because the DTR's approach to achieve site-wide contamination levels below existing contamination levels (but above background) is to clean-up a portion of the Site to background levels and to leave other portions of the site as-is, it is key that those portions of the Site that will be dredged actually achieve background contamination levels. See MacDonald 2011 at 25. But the Order and DTR has set the trigger for second pass of dredging at 120% of background, meaning that the remediation areas will not necessarily achieve background contamination levels and are likely to have highcr-than-background concentrations of pollutants. See MacDonald 2011 at 25.

When the "Predicted Post-Remedial SWAC Calculations" in DTR Table A32-3 are recalculated using numbers in each remediated polygon at the "120% of background" level at which additional dredging is not required, it becomes clear that the site-wide alternative cleanup levels will not be achieved. By substituting the background concentrations of each pollutant for the 120% of background, the resulting Site-wide surface weighted average concentration for each pollutant would be greater than the Alternative Cleanup Levels.

[Coastkeeper/EHC Table 2. Comparison of Post-Remedial Pollutant Concentration When Remediated to Background and Second-Pass Dredging Trigger Set at 120% of Background [See Exhibit H for Detailed Calculations using DTR Table A32-3.]]

The DTR and record present no evidence demonstrating that site-wide remediation goals will be met if the concentrations of pollutants in all of the remediated areas are at 120% of background levels. See MacDonald 2011 at 25. Therefore, the "120% of background" second-dredging pass rule is arbitrary and capricious and fails to ensure that alternative cleanup levels are achieved.

Comment ID: 63 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

III.B.2. The Regional Board cannot approve the Order and DTR with the 120% of background second-pass rule because it fails to ensure that Alternative Cleanup Levels will not be exceeded.

To allow an alternative cleanup level greater than background concentration of a pollutant, the Regional Board must find that the constituent will not pose a threat to human health or the environment "as long as the concentration limit greater than background is not exceeded." CAL. CODE REGS. tit. 23 §2550.4(c) (emphasis added). But the Order's own allowance for remediated polygons to have pollutant concentrations greater than background renders the Alternative Cleanup Levels "predicted resulting pollutant concentrations" and not actual pollutant concentration limits. To make the alternative cleanup levels concentration limits, the Order must ensure that remediated areas are remediated to background pollutant concentrations.

Comment ID: 64 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

III.B.3. The "120% of background" decision rule violates the Order's corrective action directive.

Order Section A.2.C. states "the Shipyard Sediment Site as shown in Attachment 2 shall be remediated to attain the following post remedial surface-weighted average concentrations ("SWACs").

[Table displaying Predicted Post-Remedial SWACS for Primary COCs]

Because the Order mandates—through the use of the word "shall"—attainment of the above-listed post-remedial SWACs, and because those levels can only be guaranteed if the remedial areas achieve background pollutant levels, the 120% background Redredging trigger violates the Order's remediation directive.

Comment ID: 65 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

III.B.4. The "120% of background" decision rule for a second dredging pass is ambiguous.

In addition to violating the requirement that the alternative cleanup levels must be concentration limits, the language in the Order setting the 120% background level allowance leaves open the possibility that every Contaminant of Concern had to exceed 120% of background in order to warrant a second dredging pass. See Order Directive A.2.a This would allow for a situation when one or more of the pollutants were significantly above background concentrations, but if one pollutant was at or below 120% of background, that no additional dredging would be required. This would lead to even more egregious violations of the alternative cleanup levels. See MacDonald 2011 at 25.

Comment ID: 66 **Organization:** Coastkeeper and EHC
DTR Section: 34.2.

Comment:
III.C. The Post Remedial Monitoring Fails to Evaluate Whether Alternative Cleanup Levels are Achieved.

The Order requires the Dischargers to submit a Post Remedial Monitoring plan [Footnote 4 - While the Order refers to "Post Remedial Monitoring," (pages 25-31, Attachment 6), the DTR refers to "Post-Remediation Monitoring" (see Section 34.2). These comments use the term "Post Remedial Monitoring" to refer to requirements in both the Order and DTR.] to the San Diego Water Board within 90 days of the Order's adoption. See Order Section D; DTR §34.2. The Post Remedial Monitoring plan must be designed to verify that the remaining pollutant concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. Post Remedial Monitoring is a key component of any sediment remediation because it provides the data and information needed to confirm that the remedial work has been successfully completed and to confirm that the clean-up goals have been met. See MacDonald 2011 at 28. Unfortunately, the Post Remedial Monitoring requirements set out in the Order and explained in the DTR do not provide data needed to evaluate the remedial measures' effectiveness and to identify whether additional remediation is needed to achieve the clean-up goals. The Post Remedial Monitoring also considers the remedy "successful" at pollutant concentrations greater than the alternative cleanup levels.

Comment ID: 68 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:
III.C.1. The Order sets the "Remedial Goals" as compliance with "Trigger Concentrations" above the Alternative Cleanup Levels—and in some cases ABOVE existing pollutant levels.

The Order sets the "Remedial Goals" as "composite site-wide [pollutant concentrations] below the Trigger Concentrations." Order Directive D at 29. A quick glance at the Trigger Concentrations reveals that they are well above the "alternative cleanup levels" and in many cases are not much below existing pollutant levels. For mercury, the Trigger Concentration is actually greater than existing mercury levels. This means that the Order is setting a cleanup goal for mercury that the cleanup not add any additional mercury contamination. See MacDonald 2011 at 31.

[Coastkeeper/EHC Table 3. Summary of Pollutant Concentrations]
[Table Note 5 - See Order Table 1 at 13.]
[Table Note 6 - See DTR Table 32-5 at 32-14.]
[Table Note 7 - See Order Table2 at 15.]
[Table Note 8 - See Order D.6. at 27]

Because the Order sets the remediation goals as compliance with the "Trigger Concentration" instead of the alternative cleanup levels, the Order is actually setting the "Trigger Concentration" as the concentration limit for each pollutant.

In order for these "trigger concentrations" to be acceptable as alternative cleanup levels greater than background, the Regional Board must find that "the constituent will not pose a threat to human health or the environment as long as the concentration limit greater than background is not exceeded." CAL. CODE REGS. tit. 23 §2550.4(c).

The Regional Board cannot make this finding for two reasons. First, mercury has been identified as a toxic pollutant that poses a threat to human health and the environment when in its bioaccumulating methylmercury form. DTR § 1.5.2.5 at 1-16, 1-17. People from the local community who eat fish from San Diego Bay are at risk from existing mercury levels. See DTR § 1.5.3; see generally Environmental Health Coalition ^Survey of Fishers on Piers in San Diego Bay," March 2005. The Regional Board cannot find that allowing more mercury in the sediment in San Diego Bay does not pose a threat to human health and the environment. Second, the analysis in the DTR regarding the risk to beneficial uses is based on the "alternative cleanup levels" listed in Table 2 of the Order, not the "Trigger Concentrations" as the remedial goal. There is no analysis in the record that compliance with the "Trigger Concentrations" will not pose a threat to human health or the environment.

Comment ID: 69 **Organization:** Star & Crescent
DTR Section: 5
Comment:

Star & Crescent Boat Company is Not a Successor to San Diego Marine Construction Company

(See TCAO Paragraph 5, “Accordingly, Star & Crescent is the corporate successor of and responsible for the conditions of pollution or nuisance caused or permitted by San Diego Marine Construction Company.”)

(See DTR Finding 5, “Accordingly, Star & Crescent is the corporate successor of and responsible for the conditions of pollution or nuisance caused or permitted by San Diego Marine Construction Company”.)

The Water Board does not allege and cannot prove that S&C Boat engaged in any direct activity at, or related to, the Shipyard Sediment Site. The only basis for the Water Board’s assertion of liability against S&C Boat is based upon a flawed corporate successor liability theory. S&C Boat has no successor liability for SDMCC or Investment Co., the entity from which S&C Boat acquired only harbor excursion assets and liabilities four years after SDMCC/Investment Co. gave up all leasehold interest in the Shipyard Sediment Site.

Moreover, S&C Boat did not assume all of SDMCC/Investment Co.’s liabilities when it acquired the harbor excursion business. The acquisition of the harbor excursion business did not result in a mere continuation or de facto merger between S&C Boat and SDMCC/Investment Co. because the two companies were owned and operated separately: Investment Co. continued to own and operate several other businesses and own real property until 1991, while S&C Boat separately operated the harbor excursion business. S&C Boat acquired this harbor excursion business for adequate consideration. Finally, there is no evidence that S&C Boat’s acquisition of the harbor excursion business was part of a fraudulent transfer. Thus, S&C Boat does not have successor liability for SDMCC or Investment Co.

The Water Board has identified no other fact or theories of liability aside from the successor-in-interest theory, which is herein shown to be inappropriate and without merit. As a result, there is no basis upon which the Water Board can assign liability to S&C Boat.

The TCAO must be amended to remove reference to S&C Boat as a responsible party or "discharger." S&C Boat is a distinct corporate entity that does not bear legal responsibility for the contamination allegedly caused or permitted by SDMCC at the Shipyard Sediment Site.

Comment ID: 70 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

III.C.2. The Post Remedial Monitoring program will mask ongoing pollutant problems.

The Post Remedial Monitoring program requires Discharges to collect a paltry amount of samples and then mix them together—a process called "compositing"—which will mask the true extent of the remaining pollution and to guarantee that no additional action will be required. See MacDonald 2011 at 30. In order to fairly assess the success of the remediation and determine if additional remediation is necessary, the Post Remedial Monitoring program must collect a robust amount of samples and analyze those samples in a meaningful way. Given the current design of the program, the Regional Board will not be able to assess whether the alternative cleanup levels were achieved and the remediation was successful.

Comment ID: 71 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

III.C.2.a. The Post Remedial Monitoring program fails to require samples from each polygon at the site.

The sediment sampling requirements described in the Order will provide data on the average levels of five pollutants in the top 2 cm of sediment contained within only six polygon groups. See Order, Section D.l.c. This means that the Order fails to require the Dischargers to collect data needed to evaluate whether the clean-up goals have been met for the whole site. See MacDonald 2011 at 29. Determining pollutant concentrations within each polygon at the Site is important because certain ecological receptors—including benthic invertebrates and certain benthic fish species, such as gobies—have small home ranges and are therefore exposed to contaminants that occur within small geographic areas. See MacDonald 2011 at 29.

Further, this method is not consistent with the way the site-wide post-remedial concentrations were determined. Those site-wide concentrations were determined by measuring existing

pollutant concentrations in each unremediated polygon, assuming that each remediated polygon would be cleaned to background, and then calculating the average. To determine the actual post-remedial pollutant concentrations, the pollutant concentrations in each polygon should be measured and the concentrations should then be averaged. This way, if the site-wide alternative cleanup levels are not met and additional action is needed, the data will be available to determine where the pollutant "hot-spots" are or which remediated polygons were not remediated to background. This will also indicate if the dredging
resuspended contaminated sediments and potentially contaminated areas outside the remedial footprint.

Comment ID: 72 **Organization:** Coastkeeper and EHC
DTR Section: 34.2.1.
Comment:
III.C.2.b. Compositing surface sediment into six polygon groups will mask the true extent of contamination remaining at the Shipyard Sediment Site.

The DTR divides the Shipyard Sediment Site into six sampling areas and then directs the Dischargers to use a compositing scheme to evaluate the efficacy of the remediation. This process is flawed for several reasons:

(1) The "success" of the clean-up will relv heavilv on data from polygons that were not dredged. Only two of the six groups sampled to determine the remediation's success represent areas where remedial actions will be taking place, and these areas represent a relatively small proportion of the site as a whole. Therefore, the assessment of how successful the cleanup has been will largely rest on composite data from sites that were not remediated — an inappropriate basis for evaluating the efficacy of remedial actions. See MacDonald 2011 at
30.

(2) The six sampling areas are arbitrarv. Neither the Order nor the DTR provide any explanation of how the six sampling areas were selected, nor do the documents describe how this is a scientifically-defensible method to assess remediation success. Composite sediment sampling to determine a remediation program's success is unorthodox. See MacDonald 2011 at 30. Without a detailed, scientifically-based explanation of how the sites were selected and how it would accurately gauge remediation success, this sampling method is not scientifically justified and is arbitrary. See MacDonald 2011 at 30.

(3) Testing replicate sub-samples of composited sediment samples tests how good the lab is, not the variability of pollutants remaining at the Site. The Post Remedial Monitoring plan will not provide the data to verify whether the remediation has been effective in protecting human health and aquatic-dependent wildlife. See DTR § 34.2.1; MacDonald 2011 at 30. The plan's reliance on sub-sampling sediments that have been composited from multiple polygons will only provide information on the consistency of the homogenization process that is applied to the composite sediment samples. See MacDonald 2011 at 30. The sub-sampling approach will not provide Regional Board staff with the information necessary to determine whether remediation has been effective at protecting human health or aquatic-dependent

wildlife. See MacDonald 2011 at 30.

Comment ID: 73 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

III.C.3. Failure to assure that the Alternative Cleanup Levels are met through the remediation process renders the cleanup illegal.

The Post Remedial Monitoring requirements reveal the major shortcomings of the cleanup.

(1) There is no requirement in the Order that the alternative cleanup levels must be met. Instead, the Order allows the cleanup to achieve a less-stringent "Trigger Concentration" level of pollutant that effectively sets the cleanup levels significantly higher than background pollutant levels. See Order at D.6 at 27. But there is no evidence in the record that this remaining pollutant level will not "pose significant risk to human health or the environment" or will not Unreasonably aftect present and anticipated beneficial uses of the waterbody." See State Water Board Order 92-49.

(2) By considering the remediation successful if it achieves 'Trigger Concentration" levels, the cleanup is not "consistent with the maximum benefit to the people of the state." The people of the state have paid for Regional Board staff to spend years' worth of time developing a cleanup plan. To settle for a plan that allows an even greater level of pollution than already exists and calling it "successful" is an insult to the people of California.

(3) By designing the Post Remedial Monitoring to disguise the true extent of pollution remaining at the Site and to gauge the success of the remediation overwhelmingly on pollutant levels in areas that were not actually remediated makes the cleanup look like a sham. To demonstrate that the Dischargers and the people of the California that the cleanup achieved the alternative cleanup levels, the Post Remedial Monitoring must be designed in a way to fairly assess the cleanup's success and identify areas where cleanup was not successful.

(4) Exceeding the "Trigger Concentrations" does not actually trigger any additional remediation. See MacDonald 2011 at 34. Instead, Dischargers need only attempt to identify the specific sub-areas that are causing the exceedance(s), and write a report of investigation that includes recommendation action—if any—to address the problem. This means that even w here pollutant concentrations exceed the alternative clean-up levels and the trigger concentrations, there is still no mandate to take additional remedial action to achieve
the alternative clean-up levels.

Comment ID: 74 **Organization:** Coastkeeper and EHC
DTR Section: 32
Comment:

IV. The Proposed Cleanup Fails to Require the Best W ater Quality Reasonable.

The law requires every cleanup to result in the "best water quality reasonable." See State Water Board Order 92-49. The following aspects of the proposed cleanup prevent it from achieving the "best water quality reasonable."

Comment ID: 75 **Organization:** Coastkeeper and EHC
DTR Section: 32
Comment:

IV.A. Narrative Alternative Cleanup Levels for Aquatic Life Cannot Ensure that These Beneficial Uses will not be Unreasonably Affected at the Shipyard Sediment Site.

The Order and DTR fail to include numeric clean-up levels for benthic invertebrates and fish. See MacDonald 2011 at 18-20. Instead the Order relies on a narrative directive to protect aquatic life. See Order, Table 2 at 15 ("Remediate all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community.). This failure is particularly egregious with respect to fish, as no information was presented in the Order or the DTR on how the potential for adverse effects on fish were explicitly considered. See MacDonald 2011 at 18 and 20. Furthermore, the lines of evidence developed to assess benthic invertebrate communities are likely to be minimally protective as they rely on comparisons to a reference pool that included samples that would not meet criteria for negative control samples. See MacDonald 2011 at 19. Without appropriate numeric limits for fish and benthic invertebrates, there will be no way to quantitatively measure compliance with measures to protect fish and benthic invertebrates.

Comment ID: 76 **Organization:** Coastkeeper and EHC
DTR Section: 38
Comment:

IV.B. The Proposed Remedial Footprint is Too Small to Ensure that the Remaining Pollutant Levels will not Unreasonably Affect Present and Anticipated Beneficial Uses of San Diego Bay.

The Proposed Remedial Footprint indicating "polygons targeted for remediation" is too small to ensure that present and anticipated beneficial uses of San Diego Bay are protected. See Order at 38, Attachment 2.

Comment ID: 77 **Organization:** Coastkeeper and EHC
DTR Section: 32.5.2., Table 32-19
Comment:

IV.B.1. Problems with the development of the Proposed Remedial Footprint results in a cleanup that achieves less than the best water quality reasonable.

First, an insufficient number of samples were collected to accurately determine the nature and extent of contamination at the 148-acre Shipyard Site, given the variability of contaminants at the site. See MacDonald 2011 at 10.

Second, ranking the polygons from most- to least-contaminated using the Composite Surface Weighted Average Concentration (SWAC) Value fails to consider the potential adverse effects on human health or the environment. See MacDonald 2011 at 10. The method also ignores concentrations of other contaminants—such as lead, zinc, and low molecular weight PAHs—that could be elevated in sediments from the site. See MacDonald 2011 at 10.

Third, the Proposed Remedial Footprint arbitrarily excludes 15 polygons that are more contaminated—from a sediment chemistry standpoint—than the least-contaminated polygon in the Proposed Remedial Footprint. See MacDonald 2011 at 11.

Fourth, the thresholds the DTR uses to determining whether polygons that are "Likely" impacted are problematic. The DTR fails to explain why the Site Specific Median Effects Quotient (SS-MEQ) is used to evaluate sediment chemistry in the non-Triad sediment samples, when the metric used for the Triad sediment samples (SQGQl) is reliable. See MacDonald 2011 at 19. The DTR and record provide no evidence demonstrating how or why 0.9 was chosen as the "optimal threshold." DTR § 32.5.2 at 32-32; See MacDonald 2011 at 11. Likewise, the 60% Lowest Apparent Effects Threshold for classifying sediment samples as "Likely" impacted is too high. See MacDonald 2011 at 11-13; See DTR § 32 at Table 32-19.

Additionally, the DTR failed to explicitly consider the potential effects exposure to contaminated sediments would have on fish with small home ranges. This failure is problematic because fish with small home ranges are known to utilize benthic habitats at the Site and the concentrations of PCBs in sediments are sufficient to adversely affect the reproduction offish at various locations. See MacDonald 2011 at 15.

Comment ID: 78 **Organization:** Coastkeeper and EHC
DTR Section: 33.
Comment:

IV.B.2. The Proposed Remedial Footprint excludes eight polygons that, under the DTRs own methodology, should have been included.

Polygons NA22, NA01, NA04, NA07, NA16, SW06, SW18, and SW29 should have been included in the Proposed Remedial Footprint and should be added to the final remedial footprint.

Comment ID: 79 **Organization:** Coastkeeper and EHC
DTR Section: 33.
Comment:

IV.B.2.a. The Proposed Remedial Footprint improperly excludes NA22.

The DTR acknowledges that polygon NA22 is "Likely" impaired and should be remediated because Contaminants of Concerns in sediments are likely adversely affecting benthic invertebrates within this polygon. See DTR Section 33.1.1. However, NA22 has improperly been excluded from the Proposed Remedial Footprint, principally because NA22 is in the vicinity of a

Total Maximum Daily Load being prepared for the Mouth of Chollas, Switzer, Paleta Creeks ("Creek Mouth TMDL").

The Creek Mouth TMDL will not address the existing contamination in polygon NA22. TMDLs "function primarily as planning devices and are not self-executing." See City of Arcadia v. EPA, 265 F.Supp.2d 1142, 1144 -1145 (N.D. Cal. 2003), citing Pronsolino v. Nastri. 291 F.3d 1123, 1129 (9th Cir.2002) ("TMDLs are primarily informational tools that allow the states to proceed from the identification of waters requiring additional planning to the required plans.").

A TMDL does not, by itself, prohibit any conduct or require any actions. See id. A TMDL merely "forms the basis for further administrative actions that may require or prohibit conduct with respect to particularized pollutant discharges and waterbodies." See id. (emphasis added), citing Idaho Sportsmen's Coalition v. Browner, 951 F. Supp. 962, 966 (W.D.Wash.l996)(4TMDL development in itself does not reduce pollution.... TMDLs inform the design and implementation of pollution control measures.").

The TMDL process cannot provide a vehicle for remediating contaminated sediment within the NA22 polygon. A new and separate remediation process—another Cleanup and Abatement Order—would need to be initiated after completion of the Creek Mouth TMDL to address existing contaminated sediment in NA22, if it is not remediated under the current Order. When asked in depositions, no Cleanup Team member could point to a TMDL that had been implemented through dredging. This means that removing NA22 from the Proposed Remedial Footprint virtually guarantees that it will never be dredged—even though the DTR agrees that it is "Likely" impaired. Furthennore, TMDLs are given a long time period— typically twenty years—before they need to be implemented. Adding this delay together with the time it would take to develop another cleanup and abatement order to address NA22 means that any possible cleanup of NA22 would not be for decades down the road. It is a waste of time and resources to put off remediating NA22 when a framework for its remediation has already been established in this process.

Comment ID: 80 **Organization:** Coastkeeper and EHC
DTR Section: 33, Table A33-1, Table A33-3
Comment:
IV.B.2.b. The Proposed Remedial Footprint excludes—NA01, NA04, NA07, NA16, SW06, SW18 and SW29—which pose unacceptable risks to fish and the benthic community.

The DTR arbitrarily excluded at least a dozen polygons from the Proposed Remedial Footprint without explanation. See MacDonald 2011 at 14-15. An independent evaluation of the available data and information by sediment remediation expert Donald MacDonald indicates that seven of these excluded polygons pose risks to organisms utilizing habitats within the study area. (MacDonald 2009). The following presents the results of an evaluation for seven polygons that should be added to the Remedial Footprint to address inconsistencies in the procedures applied in the DTR and the risks posed to fish and benthic organisms. See MacDonald 2011 at 39, Table 5.

[MacDonald 2011 at 39, Table 5]

Comment ID: 81 **Organization:** Coastkeeper and EHC
DTR Section: 34.1.
Comment:

IV.C. The Remediation Monitoring is Insufficient to Assess Remedial Activities' Impacts on Water Quality, to Evaluate the Effectiveness of Remedial Measures, or to Identify the Need for Further Dredging to Achieve Clean-up Goals at the Shipyard Sediment Site.

The Order and the DTR indicate that the Dischargers must conduct water quality monitoring: (1) to demonstrate that remedial dredging does not violate water quality standards outside the construction area and (2) to confirm that the dredging and other remedial activities have achieve target clean-up goals within the remedial footprint. See Order Section B.l. 1; DTR Section 34.1. Unfortunately, the water quality component of the Remediation Monitoring program set out in the Order and the DTR falls short of meeting the monitoring goals for several reasons.

Comment ID: 82 **Organization:** Coastkeeper and EHC
DTR Section: 34.1.1.
Comment:

IV.C.1. The water quality component of the Remediation Monitoring program fails to prov ide safeguards to ensure data collected reveals actual water quality conditions.

The water quality component of the Remediation Monitoring Program falls short in two ways: (1) some of the requirements are specific but are not designed to collect data to accurately reflect water quality impacts during remediation and (2) some requirements are vague, allowing Dischargers to collect data in a way that masks the true water quality impacts during dredging.

For example, the Remediation Monitoring program allows the Dischargers to measure compliance with ambiguous water quality monitoring goals through modeling, which will not provide data of actual conditions sufficient to determine w hcther dredging is violating water quality standards. See MacDonald 2011 at 22; DTR § 34.1.1. at 34-2. Water quality impacts can only be adequately assessed by comparing the results of real-time turbidity monitoring, dissolved oxygen sampling, and sampling of contaminants of concern to water quality standards in the Basin Plan and/or state water quality standards. See MacDonald 2011 at 22. Similarly, the Remediation Monitoring allows Dischargers to abandon daily water quality monitoring if no samples exceed water quality targets for three days in a row. DTR § 34.1.1. at 34-2. Abandoning daily monitoring is problematic because variability in turbidity or dissolved oxygen levels may not be associated primarily with operation of the dredge. See MacDonald 2011 at 23.

Vagueness in the Remediation Monitoring requirements include: (1) failing to specify the numeric "water quality standards" that must be complied with during remediation. See MacDonald 2011 at 22; (2) failing to require dischargers to take all the samples from downcurrent locations. See MacDonald 2011 at 22; (3) failing to define the "construction area" See MacDonald 2011 at 22-23; (4) mandating that samples be collected 10 feet deep instead of the depth with the highest level of monitored variables. See MacDonald 2011 at 23; (5) failing to require that water samples need to be collected long enough after dredging commences to give the plume time to reach the sampling location; See MacDonald 2011 at 23, (6) and failing to specify which best management practices should be employed to reduce or eliminate resuspended sediments from traveling to other areas, harming water quality or recontaminating adjacent areas. See MacDonald 2011 at 23; DTR § 34.1.1. at 34-2.

Comment ID: 83 **Organization:** SDG&E
DTR Section: 16
Comment:

1.0 DTR's Benthic Beneficial Use Impairment is Critically Flawed and Should be Replaced with a Causal Approach to Adequately Identify Risk

1.1 Introduction

CRWQCB evaluated impairment of Aquatic Life Beneficial Uses for Estuarine Habitat, Marine Habitat, and Migration of Aquatic Organisms by evaluating exposure and adverse effects to the benthic macroinvertebrate community and fish (Findings 14-15 in CRWQCB, 2010) using data from the 2001-2002 Site investigation by Exponent (2003). Adverse effects to fish from Site chemicals were not identified (Appendix for Finding 15 of CRWQCB, 2010). Adverse effects to the benthic macroinvertebrate community were evaluated by CRWQCB (2010) at each of the 66 sediment stations using one of two approaches, depending on the data collected at each of 66 sampling stations at the Site:

1. Triad Approach: The Triad Approach was based on a CRWQCB-derived Sediment Quality Triad approach (Findings 16 and 18 in CRWQCB, 2010) that integrated three lines of evidence: 1) concentrations of chemicals in Site surface sediment; 2) effects observed in laboratory toxicity tests conducted with Site surface sediment; and 3) enumeration of benthic macroinvertebrates collected from Site surface sediment. This approach was used to evaluate the likelihood of sediment chemical-derived effects on the benthic macroinvertebrate community at the 30 stations where data was collected for each of the three Triad lines of evidence. Six of the 30 Triad stations were classified as “Likely” for chemically-associated impairment (NA19, NA22, SW04, SW13, SW22, and SW23). A Triad Approach conclusion of “Likely” was equated with impairment of the benthic macroinvertebrate community at a level CRWQCB (2010) assumed to represent Aquatic Life BUI. The Triad approach did not provide evidence regarding the specific chemicals responsible for the BUI. Such an analysis would be problematic because TBT, a primary Site chemical of concern, was not included in the chemical screening step in this analysis.

2. Non-Triad Data Approach: The Non-Triad Data Approach was based on a CRWQCB-derived empirical approach (Finding 32 in CRWQCB, 2010) that used average quotients calculated from on dividing concentrations of PCBs (sum of 40 congeners), HPAHs, copper, mercury, and TBT by empiricallyderived median values (SS-MEQ), as well as comparison of single values to 60%

of the Lowest Adverse Effect Thresholds (LAETs) in Site surface sediment to predict the likelihood of sediment chemical-derived effects on the benthic macroinvertebrate community at the 36 stations for which only surface sediment chemistry was available. It should be noted that this
analysis was used as a substitute for a full Sediment Quality Triad evaluation because sediment toxicity and benthic macroinvertebrate community census data were not collected at the Non-Triad stations. Seven of the 36 Non-Triad stations were classified as "Likely" for chemically-associated impairment (SW01, SW05, SW10, SW16, SW20, SW24, and SW28). A Non-Triad Data Approach conclusion of "Likely" for a station was equated with impairment of the benthic macroinvertebrate community at a level CRWQCB (2010) assumed to represent Aquatic Life BUI. SW01, SW05, SW16, and SW20 were identified based on an exceedance of the SS-MEQ threshold, for which
chemical causality cannot be identified. SW10, SW24, and SW28 were identified based on an exceedance of 60% of the LAET value for HPAHs (and exceedance of SS-MEQ threshold), which suggests HPAHs may factor strongly in the BUI at these locations.

The sediment chemistry line of evidence approaches used in the CRWQCB (2010) do not represent a complete or accurate characterization of chemical risk potential to benthic invertebrates because they do not include all COCs and they are not based on cause-and-effect toxicity endpoints, as discussed by Conder (2011a). As a result, the current Triad and Non-Triad Data approaches set forth in the DTR are not scientifically valid or supportable, and should not be used to identify Aquatic Life Beneficial Use Impairment (BUI).

Comment ID: 84 **Organization:** Coastkeeper and EHC
DTR Section: 34.1.2.
Comment:

IV.C.2. The sediment component of the Remediation Monitoring program fails to require data collection to confirm Cleanup Levels are achieved.

In addition to the fatal flaw of only requiring a second dredging pass if pollutant concentrations exceed 120% of background pollutant levels, the sediment portion of the Remediation Monitoring program fails to require Dischargers to collect data in an amount and through methods sufficient to competently measure compliance with the alternative clean-up levels.

First, the Order and DTR provide inconsistent sampling requirements; the Order requires that samples be collected deeper than the upper 5cm. while the DTR requires that samples be collected deeper than the upper 10cm. See Order Directive A.2.a; DTR § 34.1.2 at 34-2. Second, vagueness in the monitoring requirements permits Discharges to collect only one sample from each polygon, w hich is insufficient given the sediment chemistry variability within polygons. See MacDonald 2011 at 24. Vagueness in the monitoring requirements also allows sediment sampling to target the historic sampling locations, leaving other locations within the remedial footprint unsampled and ignoring elevated contaminant levels that may occur in those unsampled areas. See MacDonald 2011 at 25.

The DTR explains a sampling protocol that requires the sampling team to visually examine each sediment sample and try to identify Undisturbed sediments." These sampling procedures are inappropriate and will be nearly impossible for sampling teams to follow consistently. See MacDonald 2011 at 25. The DTR explains that a sand cap would be necessary at times, but the Remediation Monitoring fails to explain what those criteria are and who would make such determination. See MacDonald 2011 at 26. The Order is silent on this issue.

Comment ID: 86 **Organization:** Coastkeeper and EHC
DTR Section: 34.2.
Comment:

IV.D. The Post Remedial Monitoring Program is Poorly Designed and Will not Require Data Collection to Accurately Evaluate Post-Remediation Conditions.

The Post Remedial Monitoring plan provides poorly-written and confusing directions that would be difficult for sampling teams to consistently follow. See MacDonald 2011 at 30. The Post Remedial Monitoring excludes NA22 wholesale from the Post Remedial Monitoring plan, even though NA22 is part of the Site. See DTR §34. NA22 must be included in any Post Remedial Monitoring because it is a part of the Shipyard Sediment Site. See MacDonald 2011 at 30.

The approach to evaluating post-remedial conditions is likely to underestimate sediment toxicity because the DTR relied on inappropriate thresholds. See MacDonald 2011 at 29. A better approach would be to generate sediment quality Triad data for at least six reference sites as part of the Post Remedial Monitoring plan. See MacDonald 2011 at 29.

Furthermore, requiring sediment samples to be collected at only five sampling stations to evaluate benthic community conditions is inadequate because it will provide data on only about eight percent of the polygons at the Sediment Shipyard Site instead of from the entire Site, which is more appropriate. See MacDonald 2011 at 31. As there is substantial potential for resuspension. transport, and deposition of fine sediment during the implementation of the remedy, recontamination of remediated areas or further contamination of unremediated areas could occur. See MacDonald 2011 at 31. The Post Remedial Monitoring plan should be expanded to provide a more robust basis for evaluating exposure of benthic invertebrates to contaminants at the site and for assessing sediment toxicity, and include testing from appropriate reference sites. See MacDonald 2011 at 31.

The Post Remedial Monitoring program's bioaccumulation requirements are insufficient. The nine sites selected for Post Remedial bioaccumulation sampling are arbitrary. See MacDonald 2011 at 31. Because the bioaccumulation criteria are not effects-based, they will not be useful for determining if conditions at the Shipyard Sediment Site will be unreasonably affecting San Diego Bay beneficial uses two years, five years, or ten years after the completion of remedial actions. See MacDonald 2011 at 31. Moreover, reducing bioaccumulation levels below the pre-remedial levels would not ensure that aquatic organisms utilizing habitats at the site would have tissue concentrations of contaminants of concern low enough to support beneficial uses. See MacDonald 2011 at 29.

The Order fails to include rules specifying what actions the Dischargers must take in several situations, including (I) if sediment chemistry results for the post-remediation sediment samples exceed the thresholds included in the Order and (2) if toxicity to one or more species is observed during the Post Remedial sampling and testing. See MacDonald 2011 at 32. The Order does not list the triggers that will be used for e\aluating sediment chemistry for benthic exposure. See MacDonald 2011 at 32.

Comment ID: 90 **Organization:** Coastkeeper and EHC
DTR Section: 33.3
Comment:

IV.E. The DTR Contains Incorrect Statements.

The DTR incorrectly claims that the Proposed Remedial Footprint "captures 100 percent of triad 'Likely'... impacted stations." DTR § 33.3.lat 33-12. This claim is incorrect because the Proposed Remedial Footprint excludes NA22, which the DTR analysis determined was "likely" that "the health of the benthic community is adversely impacted based on three lines of evidence: sediment chemistry, toxicity, and benthic community." See DTR Table 18-1 at 18-2.

The DTR repeatedly refers to "65" polygons, even though there are a total of 66 polygons in the Shipyard Sediment Site. See DTR § 31.1 at 31-2: § 32.2 at 32-9; 32-11; §32.5 at 32-28; §34.2.1 at 34-5. The economic feasibility documentation in Appendix 31, Table A31-2 and "2010-07-27 Economic feasibility 07-27-lO.ng.xls" (SAR384569) reveal that all 66 polygons were ranked in the economic feasibility analysis. Similarly, Appendix 32, Tables A32-1 and A32-3 and supporting data and calculations in "01-Final pre-remedial SWAC 8-17-10.XLS" (SAR384570) and "02-Final post-remedial SWAC_l.xls" (SAR384571) show all 66 polygons were included in calculating the pre-remedial SWACs and post-remedial SWACs. The DTR cannot pretend that NA22 no longer exists or is no longer part of the Shipyard Sediment Site just because the Cleanup Team chose not to include it in the Proposed Remedial Footprint in the hope that someday another process might address contamination in that polygon.

Comment ID: 95 **Organization:** SDG&E
DTR Section: 31
Comment:

2.0 DTR's Section 31 Economic Feasibility Analysis Fails to Consider Costs to Reduction in Benthic Risk Exposure and Should be Revised

Comment ID: 96 **Organization:** SDG&E
DTR Section: 31
Comment:

2.0
2.1 Introduction

Economic feasibility refers to the objective balancing of the incremental benefit of attaining more stringent cleanup levels compared with the incremental cost of achieving those levels. The CRWQCB (2010) is required by Resolution No. 92-49 (SWRCB, 1996) to evaluate economic feasibility such that the benefits of remediation in addressing the Site's BUIs are fully understood. The CRWQCB (2010) evaluated the benefits of remediation as the reduction in chemical exposure to human and aquatic-dependent wildlife receptors using surface-area weighted average concentrations (SWAC) of Site COCs. While this approach satisfies Resolution No. 92-49 with respect to Human Health and Aquatic-dependent Wildlife BUIs, it does not address Aquatic Life BUI.

Figure 31-1 of CRWQCB (2010) represents the final product of an economic feasibility analysis conducted to compare the incremental reduction in chemical exposure (y-axis of figure) to incremental remedial costs (x-axis of figure). In this figure, as explained on Page 31-2, exposure reduction is calculated on the basis of SWACs for the various remedial increments. The proposed remedial footprint set forth in Section 33 of the DTR was explicitly derived to address all three potential Site BUIs. SWACs were used to evaluate only two of the three BUIs found at the Site: Human Health and Aquatic-dependent Wildlife (Section 32.2 in CRWQCB (2010)). Aquatic Life BUI was evaluated on the basis of Triad and Non-Triad Data Approaches, not SWACs (Section 32.5 in CRWQCB (2010)). Although Page 31-2 states that "[t]his process used Triad data and site-specific median effects quotient (SS-MEQ)" (in reference to the economic feasibility analysis), the metric used to evaluate remedial success (exposure reduction) does not include a quantification of the exposure reduction gained from remediating polygons exhibiting Aquatic Life BUI. The areas of the polygons affected by aquatic life BUI are not included in the calculation of exposure reduction, as shown on Page 31-2 and in the Appendix 31 supporting material. The economic feasibility analysis by Spadaro et al. (2011, Table 15 therein) is also flawed because it only considers SWACs, which do not account for Aquatic Life BUI.

Comment ID: 97 **Organization:** SDG&E
DTR Section: 31
Comment:

2.0
2.2 Revised Economic Feasibility Analysis

Because the CRWQCB is charged with addressing all three BUIs, and any supporting economic feasibility analysis, it is imperative to evaluate economic feasibility on the basis of all three BUIs. A revised economic feasibly analysis is shown in Figure 2, based on calculations shown in Tables 20 and 21. In this revised economic feasibility analysis, the percent exposure reduction for all three BUIs is considered via calculation of a composite percent exposure reduction based on SWACs for aquatic-dependent wildlife and human health (as in CRWQCB (2011)) and the area exhibiting aquatic life BUI, as based on a Toxic Unit approach for the sediment chemistry line of evidence (Figure 3; Conder, 2011a). The Toxic Unit approach is a causal chemical exposure modeling to account for bioavailability of chemicals to benthic invertebrates and predict potential chemical risk. It was used as a replacement approach for the flawed SQGQ1 approach used in the CRWQCB (2010) Triad sediment chemistry line of evidence in order to re-classify Triad stations. It was also used as a replacement approach for the flawed SS-MEQ and

60% of the LAET calculations used in the Non-Triad Data Approach. Both the revised Triad and Non-Triad Data approaches were used to identify polygons for Aquatic Life BUI (Figure 3).

Economic feasibility was also calculated using a footprint designated to address Aquatic Life BUI only (Figure 4). The approach ranked polygons exhibiting Aquatic Life BUI by the highest Toxic Unit result multiplied by the area of the polygon (Table 22). Remedial cost was estimated for five increments according to approximate cost rates suggested by Table A31-1 (Table 23). This approach is more technicallydefensible because Aquatic Life BUI is the most likely BUI exhibited at the Site and modeling of human health and ecological risk to aquatic-dependent wildlife is flawed.

Comment ID: 98 **Organization:** SDG&E
DTR Section: 31
Comment:

2.0
2.3 Conclusion

A revised economic feasibility approach should be adopted by CRWQCB to enable a complete and accurate evaluation of economic feasibility for any propose remedial footprint for the protection of BUIs at the Site.

Comment ID: 99 **Organization:** SDG&E
DTR Section: 28
Comment:

3.0 DTR's Assessment of Human Health Beneficial Use Impairment Fails to Follow Proscribed Regulatory Guidance and Should be Rejected

3.1 Introduction

Human health BUI considerations as a remedial action driver should be withdrawn by the CRWQCB because there is a complete lack of evidence for human health risk at the Site as well as a failure by the CRWQCB to follow established state and federal guidelines for the assessment of human health risk at impacted sites. Critical deficiencies in the DTR's human health risk assessment include: (1) the assumption of a value of "1" for the Fractional Intake parameter (Page 28-5, Table 28-3 and Page 28-6, Table 28-4 in CRWQCB (2010) for angler exposure at the Site (i.e., a complete exposure pathway); and (2) the failure of the CRWQCB to properly apply site-specific exposure parameters in concluding there is a risk to human health at the Site.

Comment ID: 105 **Organization:** SDG&E
DTR Section: 24
Comment:

4.0 DTR's Assessment of Aquatic Dependent Wildlife Beneficial Use Impairment Fails to Follow Proscribed Regulatory Guidance and Should be Rejected

4.1 Introduction

CRWQCB (2010) addressed Aquatic-dependent wildlife beneficial uses Wildlife Habitat (WILD), Preservation of Biological Habitats of Special Significance (BIOL), and Rare, Threatened, or Endangered Species (RARE) using ecological risk assessment to predict the likelihood of chemical effects in wildlife from exposure to chemicals originating from Site sediment. The CRWQCB (2010) analysis is based on modeling which predicts the exposure and effects to hypothetical wildlife species (Page 24-9 to 24-12 in CRWQCB (2010)). The model uses Site specific data such as concentrations of chemicals in sediment and prey items (e.g., fish, invertebrates) and specific-specific parameters (e.g., body weight, prey consumption rate). In cases where the model predicted potential risk for a particular chemical, the CRWQCB (2010) assumed Aquatic-dependent wildlife BUI was likely and identified that chemical as a COC. Primary COCs PCBs, HPAH, copper, and mercury were associated with Aquatic-dependent wildlife BUI and included in Spatially-Weighted Average Concentration (SWAC) calculations to derive a remedial footprint designed to address the presumed BUI.

4.2 DTR Ecological Risk Assessment Flawed and Should be Revised

Aquatic dependent wildlife BUI considerations set forth in the DTR should be withdrawn by CRWQCB, because there is an absence of any site-specific evidence for aquatic dependent wildlife risk at the Site. The critical flaw in the DTR's ecological risk assessment modeling is the assumption that aquatic dependent wildlife restricts their activity to the Site, thus deriving 100% of their diet (the primary source of exposure to chemicals) from the Site. This assumption is implicit in the assumption of a value of "1" for the Area Use Factor parameter (Page 24-10, Table 24-6 in CRWQCB, 2010) and as such represents the primary basis for the CRWQCB's conclusion of aquatic dependent wildlife risk at the Site.

The CRWQCB (2010) Area Use Factor assumption of 1 is technically flawed because this assumption fails to recognize all of the representative aquatic dependent wildlife species are expected to derive only a very small fraction of their diet from the Site. There is no reason to assume that the Site is attractive to wildlife such that it would result in this level of Site use because the Site is a heavily industrialized shipyard and does not offer natural habitat (vegetated features, undeveloped beach areas, trees or nesting platforms, etc.) that would result in anything other than infrequent Site visits and/or foraging events. The lack of habitat is expected to continue until at least 2034 to 2040 (end of current NASSCO and BAE Systems leases (CRWQCB, 2010); therefore, the assumption that wildlife will only visit the Site very infrequently is expected to remain valid for at least another 23 years.

The frequency of wildlife foraging events is quantified in an ecological risk assessment by a quantitative comparison of the size of an organism's foraging range (home range) to the size of the Site, a value referred to as the Area Use Factor or Fractional Intake values by CRWQCB (2010). Standard ecological risk assessment guidances, both on a state (DTSC, 1996) and federal (USEPA, 1997) level, prescribe using this quantitative comparison in lieu of simply assuming

100% site use. This comparison is made by dividing an animal's foraging range by the size of the Site or contaminated area (DTSC, 1996; USEPA, 1997). The foraging range represents the area in which the animal forages on a daily basis. Estimates on foraging ranges are obtainable from scientific studies and agency-promulgated compilations (USEPA, 1993). The value that is obtained from dividing an animal's foraging range by the size of the Site can be considered to be equivalent to the proportion of the diet (the main route of wildlife exposure for most chemicals) that is derived from the Site. For example, the representative species with the smallest foraging range (East Pacific green turtle, 3,700 acres (Exponent, 2003)) would only be expected to derive 4% of its diet from the Site since the Site is only 140 acres (i.e., 140 ÷ 3,700 = 4%). The other representative aquatic dependent wildlife species exhibit larger foraging ranges than the East Pacific green turtle and would be expected to forage at the Site approximately 1% of the time based on their respective foraging ranges (Exponent, 2003). If these technically-supportable Area Use Factors of 0.01 to 0.04 (1 to 4%) are applied to Site chemical intake estimates (using the equation on page 24-9 of CRWQCB (2010)), all Hazard Quotients (as shown in Table 24-3 of CRWQCB (2010)), ecological risk potential would not be recognized. Contrary to the USEPA and DTSC approach, the CRWQCB (2010) assumption of an Area Use Factor of 1 grossly overestimates dietary intake of Site chemicals by a factor of 30 to 100.

The selection of an Area Use Factor of 1 by the CRWQCB (2010) appears to have been arbitrary and was made in absence of any applicable regulatory guidance or scientific evidence. Mr. Tom Alo, the CRWQCB's Person Most Knowledgeable (PMK) and lead CRWQCB ecological risk assessor assigned to the Site, stated in his February 17, 2011 deposition that the value of 1 was selected by Mr. David Barker, Chief, Surface Water Basins Branch, CRWQCB (Pages 117-121 in Alo, 2011). Alo stated that this decision was not supported by any technical guidance or scientific evidence, and agreed that it is probable that wildlife do not forage exclusively within the Site (Alo, 2011).

4.3 Conclusion

The CRWQCB (2010) assumption of a value of "1" (100%) for the Area Use Factor is not based upon any site-specific evidence, is not technically-supportable, and is contrary to state and federal ecological risk assessment guidance. Consideration of the Site-specific evidence of usage by wildlife in a manner consistent with USEPA and DTSC ecological risk assessment guidances demonstrates that ecological risk potential is absent from the Site. Because there is an absence of risk potential for aquatic-dependent wildlife, identification of COCs causing Aquatic-dependent Wildlife BUI is unnecessary, as is the derivation of a remedial footprint using the analysis of SWACs (Section 32, CRWQCB (2010)). Consideration of Aquatic dependent wildlife BUI should be withdrawn from the DTR.

Comment ID: 108 **Organization:** Coastkeeper and EHC
DTR Section: 32
Comment:
CONCLUSIONS

The Order and DTR fail to demonstrate based on substantial evidence in the record that cleanup to background concentrations is not economically feasible. The proposed cleanup fails to meet legal requirements for a cleanup to a pollutant level greater than background and does not represent a cleanup to the best water quality which is reasonable "considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." See State Water Board Order 92-49. However, minor changes in alternative cleanup level implementation, monitoring requirements, and the remedial footprint can transform the proposed cleanup into a cleanup that is both legal and the protective of existing and anticipated beneficial uses in San Diego Bay.

Comment ID: 109 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

CONCLUSIONS

The Order and DTR Must Require that the Remediation Achieve the Alternative Clean-up Levels.

The proposed cleanup violates the law because it sets alternative clean-up levels that are not actually maximum pollutant concentrations. See State Water Board Order 92-49. While the Proposed Site-Wide Alternative Cleanup Levels are reasonable, the "120% of background" second-dredging pass trigger and the "Trigger Concentrations" work together to allow the pollutant levels at the Site to exceed Alternative Cleanup Levels at the Site following remediation. The Regional Board cannot legally approve the Order and DTR with the provisions that allow pollutant levels to exceed the Alternative Cleanup Levels because there is no evidence in the record that pollutant levels above the Alternative Cleanup Levels 'Vill not pose a substantial present of potential hazard to human health and the environment." See CAL. CODE REGS. tit. 23 §2550.4(c).

To address this problem, the Regional Board should do three things:

1. Direct that a second dredging pass is required if the concentration of any primary contaminant of concern exceeds background concentration in a remediated polygon (or, as explained below. retain the 120% of background second-pass dredging rule and add eight more polygons to the remedial footprint);

2. Set the "Trigger Concentration" at the Alternative Cleanup Levels listed in Table 2 of the Order (the Site-wide Post-Remedial SWACs); and

3. Mandate additional remediation if the "Trigger Concentrations" are exceeded.

Comment ID: 110 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

CONCLUSIONS

The Regional Board Should Make an Independent Finding of What Level of Cleanup is Economically Feasible Based on all the Evidence in the Record Regarding Economic Feasibility.

The economic feasibility analysis presented in DTR § 31 fails to present the results of the analysis in a manner that allows that Regional Board to make a reasoned decision regarding what level of cleanup is economically feasible. Once the results are presented on pollutant-by-pollutant basis and along a continuous "dollars spent" x-axis, it becomes clear that $33 million is not a reasonable cut-off for what cleanup is economically feasible "considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." See State Water Board Order 92-49. Therefore, economic feasibility conclusions based solely or heavily on analysis in DTR § 31 are arbitrary and capricious.

The Regional Board should independently evaluate the economic feasibility analysis and determine at what point, if any, benefits of additional remediation become "negligible" and above which no further remediation should be required. We urge the Regional Board to set this level well above the $33 million level set in DTR § 31 and that forms the basis for setting the Alternative Cleanup Levels. See DTR §32.2 at 32-12 ("An assessment of risk to wildlife receptors under projected post-remedial conditions was conducted to confirm the alternative cleanup levels established bv economic analysis (Section 31) are adequately protective of aquatic-dependent wildlife beneficial uses." (emphasis added)).

Comment ID: 111 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

CONCLUSIONS

The Proposed Remedial Footprint Should Be Enlarged by Eight Polygons.

Station NA22 is "Likely" impaired based on moderate sediment chemistry, moderate toxicity, and moderate benthic community impairment. See DTR § 33.1.1 at 33-4. Polygon NA22 should be added to the Remedial Footprint to address the real risks pollution in this polygon poses to current beneficial uses. Excluding NA22 from the remedial footprint in the hope that another process will address contamination there decades from now ignores the present threat contamination in NA22 poses to current beneficial uses. See above at IV.B.2.a. Further, by excluding NA22 from the Post Remedial Monitoring program, the Order and DTR try to pretend that NA22 is not part of the Shipyard Sediment Site. By failing to include NA22 in the Post Remedial Monitoring, the Order and DTR underestimate the site-wide average pollutant levels in an attempt to mask the true consequences of refusing to remediate a portion of the Site that poses unacceptable risk to beneficial uses.

Likewise, NA01, NA04, NA07, NA16, SW06, SW18 and SW29 pose unacceptable risks to fish and the benthic community and should be added to the remedial footprint to address these risks.

See above at IV.B.2.b. Furthermore, adding NA22, NA01, NA04, NA07, NA16, SW06, SW18 and SW29 would ensure that the alternative cleanup levels are met even if the 120% background trigger level for a second dredging pass is retained.

[Coastkeeper/EHC Table 4. Comparison of Post-Remedial Pollutant Concentration When Second-Pass Dredging Trigger Set at 120% of Background for Proposed Remedial Footprint and for Proposed Remedial Footprint with Eight Additional Polygons.]

[Table Note 9 - Sec Exhibit K]

Remediating eight additional polygons is economically feasible. To remediate the additional eight polygons would require dredging an additional 120,000 cubic yards of sediment—30,550 cubic yards from NA22 and the remaining 89,400 cubic yards from the other 7 polygons. See "2010-07-27 Economic feasibility 07-27-lO^g.-xls" (SAR384569). At an estimated cost of $7 per cubic yard outside the leasehold and $13 per cubic yard inside the leasehold, [Footnote 10 - These numbers represent the "Probable Likely Unit Cost" as represented in "Economic Feasibility Source Data,'" provided to counsel for San Diego Coastkeeper and Environmental Health Coalition at the deposition of David Barker on March 3, 2011. It is unclear whether these numbers are a fair representation of actual dredging costs because the source of this cost assumption was not provided.] the total additional dredging cost would be approximately $1.5 million, [Footnote 11 - This number includes only the cost to dredge the additional eight polygons and does not add in additional costs that may be associated with dredging, such as sediment disposal or mitigation costs.] or only 2% of the current estimated cleanup cost. [Footnote 12 - According to DTR § 32.7.1 at 32-40, the estimated cleanup cost is $58 million.]

[Coastkeeper/EHC Table 5. Dredging Cost for Additional Polygons [Table Note 13 - Source of data: DTR Appendix 31, table A31 -2.]]

As Section II above demonstrates, $58 million does not achieve the best water quality reasonable, nor is the proposed cleanup the lowest levels economically achievable. See CAL. CODE REGS. tit. 23 §2550.4 (e).

A map of the additional eight polygons in relation to the polygons already included in the Proposed Remedial Footprint is incorporated herein and attached as Exhibit I.

Comment ID: 112 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:

CONCLUSIONS

The Monitoring Requirements Should Be Strengthened to Ensure the Best Water Quality Reasonable.

To ensure the cleanup achieves the "best water quality reasonable." the Remediation Monitoring and Post Remedial Monitoring requirements should be strengthened. See MacDonald 2011 at 20. Without stringent Remediation Monitoring to ensure that the Alternative Cleanup Levels are actually achieved throughout the entire Shipyard Sediment Site, it is highly likely that existing and/or future beneficial uses in San Diego Bay will be unreasonably affected. See MacDonald 2011 at 20. We recommend that the water quality and sediment monitoring protocols recommended by Donald MacDonald be adopted. See MacDonald 2011 at 27.

Likewise, the current Post Remedial Monitoring requirements are insufficient to evaluate the effectiveness of the remedial measures and identify the need for further remediation to achieve the clean-up goals at the Shipyard Sediment Site. To ensure the Post Remedial Monitoring requirements can determine whether or not the remedial measures were effective and whether or not additional remediation is necessary to achieve cleanup goals, we recommend that the changes to the Post Remedial Monitoring Program recommended by Donald MacDonald should be adopted. See MacDonald 2011 at 32-33.

Comment ID: 113 **Organization:** Coastkeeper and EHC
DTR Section: 34
Comment:
CONCLUSIONS

Additional Trigger Concentrations and Triggers for Benthic Invertebrates Should Be Added to Ensure the Best Water Quality Reasonable.

To ensure the "best water quality reasonable." additional "trigger concentrations" for the secondary Contaminants of Concern should be added to the Post-Remedial Monitoring requirements. Likewise, triggers addressing benthic invertebrates should be added to the Post-Remedial Monitoring requirements. According to Donald MacDonald's recommendations, we urge the Regional Board to adopt the following additional trigger concentrations:

[Table - RECOMMENDED ADDITIONAL TRIGGER CONCENTRATIONS]

[Table Note 15 - See MacDonald 2011 at 35.]

Comment ID: 116 **Organization:** BAE Systems
DTR Section: 14 to 20
Comment:
I. AQUATIC LIFE IMPAIRMENT (TCAO FINDINGS 14-20; DTR §§ 14-20)

A. The Site-Specific Bioavailability of Chemicals at the Shipyard Sediment Site is Not Adequately Addressed (TCAO Findings 14-20; DTR §§ 14–20)

In conducting the weight-of-evidence (“WOE”) approach to evaluate potential impairment of benthic macroinvertebrate communities at the Site, the DTR fails to sufficiently account for the site-specific bioavailability of chemicals in sediment at the site, and erroneously directly relates the concentrations of chemicals in bulk sediment with their potential to cause sediment toxicity.

With respect to the WOE approach used in the DTR in general, Dr. Ginn [Footnote 1 - Expert Report of Thomas C. Ginn regarding Evaluation of Draft Technical Report for Tentative Cleanup and Abatement Order No, R9-2011-0001, dated and submitted to the Regional Board on March 11, 2011 (the "Ginn 3/11/11 Expert Report").] noted that:

the WOE approach described in the DTR appears to be an unconventional assessment method developed specifically for this case, which bears little resemblance to the standards of practice for sediment quality assessments. Little or no scientific basis is provided by the Staff to justify their deviation from standard data interpretation methods, resulting ultimately in arbitrary cleanup levels with no risk basis.

(Ginn 3/11/11 Expert Report, at p. 13.)

As stated above, one of the most severe flaws with the WOE approach used in the DTR is that it erroneously equates chemical exposure with chemical toxicity, and ignores the fact that the site-specific bioavailability of the chemicals may be limited. In such cases, exposure to elevated chemical concentrations would not necessarily result in sediment toxicity or adverse effects on benthic macroinvertebrate communities. Dr. Ginn noted that:

A fundamental problem with the Staff's WOE approach is the framework that concludes that adverse effects on benthic macroinvertebrates are "possible" when there is no significant sediment toxicity and no adverse effects on benthic macroinvertebrates (see Table 18-14 of the DTR). In these cases, the conclusion of "possible" effects is driven by the characterization of "high" for sediment chemistry. In such cases where chemical and biological indicators disagree, rather than prematurely concluding that effects on benthic macroinvertebrates are "possible," the investigator should evaluate the reason for the difference between chemical and biological indicators of effect, especially because this situation may result from low bioavailability of sediment chemicals The Staff even recognizes this situation in Section 15.1 of the DTR: "For example, sediment chemistry provides unambiguous measurements of pollutant levels in marine sediment, but provides
inadequate information to predict biological impact."

(Ginn 3/11/11 Expert Report, at p. 13.)

Therefore, despite the fact that the DTR acknowledges uncertainties related to chemical bioavailability, the benthic impairment assessment places an unwarranted emphasis on bulk sediment chemistry data in the WOE approach. Dr. Ginn concluded that:

A significant error in the Staff's WOE approach is the absence of an evaluation of the chemical bioavailability information in their decision framework. This omission is unscientific and is inconsistent with the current standards of practice for sediment assessments that recognize the importance of bioavailability in determining whether a given concentration of a chemical substance will cause adverse effects.

(Ginn 3/11/11 Expert Report, at p. 15.)

In summary, the failure to explicitly consider chemical bioavailability in the WOE approach presented in the DTR results in an overly conservative analysis.

Comment ID: 117 **Organization:** BAE Systems
DTR Section: 18.4, 18.5
Comment:
I. AQUATIC LIFE IMPAIRMENT (TCAO FINDINGS 14-20; DTR §§ 14-20)

B. The Benthic Community Leg of the Triad is not Given the Appropriate Weight in the Triad Analysis (TCAO Finding 18; DTR §§ 18.4, 18.5)

As second major flaw with the WOE approach used in the DTR is the failure to give the benthic community leg of the Triad more weight than the sediment chemistry and sediment toxicity legs, since the benthic evaluations at the Site directly addressed the potential effects of chemical contamination in in-place sediments on the native benthic macroinvertebrates that reside at the site. The benthic analyses are therefore the most relevant leg of the Triad for assessing effects on the in situ benthic macroinvertebrate communities at the Site. With respect to the benthic leg of the Triad, Dr. Ginn noted that:

"it is the one LOE that addresses the actual responses of organisms living in or on the sediments at the site. Alternatively, the chemistry data represent the potential exposures existing at the site and the laboratory toxicity tests represent potential responses of test organisms under laboratory conditions."

(Ginn 3/11/11 Expert Report, at p. 28.)

Dr. Ginn noted that Section 15.2 of the DTR recognizes that a WOE approach necessarily involves the use of best professional judgment ("BPJ") to integrate the lines of evidence and assess the quality, extent, and congruence of data. He then discussed a recent study of the consistency of BPJ in the interpretation of Triad data that was published by Bay et al. (2007b). In that study, the authors relied on a panel of six individuals, whom they considered to be sediment experts, to independently evaluate Triad data from 25 California embayment sites and categorize each site according to its environmental condition (likely unimpacted, possibly impacted, likely impacted, etc.). Dr. Ginn noted that:

The results showed considerable inconsistencies in the categorical assignments of the various sites among panel members, and the differences among panel members were associated primarily with different approaches to weighting of the three lines of evidence. However, overall the panel members placed the greatest weight on the benthic community leg of the Triad.

(Ginn 3/11/11 Expert Report, at p. 14.)

Despite the fact the sediment quality experts gave the greatest weight to the benthic community leg of the Triad, the DTR WOE approach tends to place a greater weight on the sediment chemistry and sediment toxicity legs. Therefore the DTR is inconsistent with the evaluations conducted by the sediment quality experts in Bay et al. (2007b).

In discussing the variability in sediment quality categories that can arise from different experts with considerable experience in sediment assessments, Bay et al. (2007b) noted that:

…the expertise of personnel at state and local agencies responsible for conducting or interpreting sediment quality assessments is
highly variable and can lead to different interpretations of the same data set.

As noted by Dr. Ginn, the identity or qualifications of any experts who exercised the BPJ that led to the WOE assessment presented in the DTR is unclear.

Inspection of the Sediment Quality Objectives ("SQOs") for enclosed bays and estuaries in California (CSWRCB (2009)) shows that more weight is given to the benthic community leg of the Triad than the sediment toxicity leg. For example, Table 9 of CSWRCB (2009) presents the Severity of Biological Effects Matrix. Inspection of that matrix shows that the low, moderate, or high benthic condition categories determine the overall effects designation for a station, regardless of the toxicity categories. For example, if a station is in the Low Disturbance Category for benthic condition, its overall biological severity designation is Low Effects, regardless of whether the toxicity condition is in the Low, Moderate, or High Toxicity Categories. Therefore, although the Site is explicitly exempt from regulation by the SQOs, it is instructive that the SQOs are consistent with the sediment quality experts in Bay et al. (2006b), by giving greater weight to the benthic community leg of the Triad than the sediment toxicity leg.

Therefore, the failure of the DTR to give the benthic community leg of the Triad more weight than the sediment chemistry and sediment toxicity legs, ignored the greater importance of that leg, as documented in Bay et al. (2007b) and CWSWRCB (2009), and led to an overly conservative assessment that gave unwarranted weight, in particular, to the sediment chemistry leg of the Triad.

Comment ID: 118 **Organization:** BAE Systems
DTR Section: 18.3, 18.5
Comment:

I. AQUATIC LIFE IMPAIRMENT (TCAO FINDINGS 14-20; DTR §§ 14-20)

C. The Results of the Bivalve Larvae Sediment Toxicity Test are Given an Inappropriate Amount of Weight in the Triad Analysis (TCAO Finding 18; DTR §§ 18.3, 18.5)

Dr. Ginn noted that that there were substantial discrepancies between the results for the bivalve larval development test, and the other two toxicity tests that were evaluated at all 30 Triad stations at the Site (i.e., the amphipod survival test and the sea urchin fertilization test). Table 18-

8 of the DTR shows that significant toxicity was found at 12 of the 30 Triad stations for the bivalve larvae test. By contrast, significant toxicity was found at only one of the 30 Triad stations for the amphipod test, and at none of the 30 stations for the sea urchin test. Moreover, no significant toxicity was found for the other two toxicity tests at any of the 12 stations at which significant toxicity was found for the bivalve larvae test. In light of these major discrepancies, Dr. Ginn stated that:

Based on the low correspondence with other toxicity tests and with sediment chemistry, it is important to assess whether the bivalve larvae test is producing accurate and reliable results. Experience at other sites has shown that the bivalve larvae test does not have the same reliability as the amphipod test. For example, Thompson et al. (1997) found weak relationships between sediment contamination and the results of bivalve larvae tests in San Francisco Bay. In the same study, the authors reported significant relationships between mixtures of sediment contaminants and the results of the amphipod test using Eohaustorius, the same species used for the shipyard study. Bay et al. (2007a) note that the bivalve larvae sedimentwater interface test has only fair reproducibility among laboratories and has a low relative precision of the response.

(Ginn 3/11/11 Expert Report, at p. 23.)

Inspection of the Quality Assurance and Quality Control Report ("QA/QC Report") for the bivalve larvae tests conducted at the 30 Triad stations at the Site (Appendix H of Exponent 2003) shows that problems were identified for this test, and that it was recommended that those problems be considered when the bivalve results were analyzed in the overall Triad analysis. Specifically, the QA/QC Report stated that:

Test organism responses in the second test batch may have been more sensitive to the fine-grained sediment than the test organisms
in the first batch.

(Appendix H of Exponent 2003)

In addition, The QA/QC Report for the bivalve test stated that:

Examination of the abnormality results for each sample showed that results for several samples exhibited unusually high variability due
primarily to a single outlier value.

(Appendix H of Exponent 2003)

Finally, the QA/QC Report for the bivalve test concluded that:

Unusually high variability was observed in the abnormality results for several samples. This variability is not clearly attributable to any aspect of laboratory performance or to specific conditions within the unusual replicates…The variability in the test results may reflect varying sensitivity within the group of test organisms. In addition, modification of the standard bivalve test method…to isolate the larvae from the sediment…may have introduced physical variations within the test chamber that affect larval development. The lack of consistency among some bivalve test replicates may indicate problems with the bivalve test method or test conditions, and should be considered during data interpretation. Although the high variability does not appear to be a QA/QC issue, it could affect interpretation of the results, and should be considered during data analysis.

(Appendix H of Exponent 2003)

Therefore, the failure of the DTR to acknowledge or address the issues identified with the bivalve larvae test identified in the QA/QC Report, as well as the discrepancies in the toxicity designations based on the bivalve test compared with those based on the amphipod and sea urchin tests, resulted in an overly conservative analysis in which sediment toxicity was considered "Moderate" in Tables 18-1 and 18-9 of the DTR on the sole basis of the questionable results for the bivalve test.

Comment ID: 119 **Organization:** BAE Systems
DTR Section: 19.1
Comment:

I. AQUATIC LIFE IMPAIRMENT (TCAO FINDINGS 14-20; DTR §§ 14-20)

D. Bioaccumulation Data is Incorrectly Interpreted (TCAO Finding 19; DTR §19.1.)

Finding 19 of the TCAO states:

The San Diego Water Board evaluated initial laboratory bioaccumulation test data to ascertain the bioaccumulation potential of the sediment chemical pollutants at the Shipyard Sediment Site. Examination of laboratory test data on the chemical pollutant concentrations in tissue of the clam Macoma nasuta relative to the pollutant concentrations in sediment indicates that bioaccumulation of chemical pollutants is occurring at the Shipyard Sediment Site.

However, expert opinion disagrees with the expressed findings. "The Board has inappropriately interpreted the bioaccumulation data by not fully evaluating the consequences of any bioaccumulation through an appropriate risk assessment." (Allen 3/11/11 Expert Report, at p. 18.) [Footnote 2 - Expert Report of Herbert E. Allen regarding Importance of Bioavailability for Risk Assessment of Sediment
Contaminants at the NASSCO Site – San Diego Bay, dated and submitted to the Regional Board on March 11, 2011.
(the "Allen 3/11/11 Expert Report).] More specifically, Dr. Allen opines:

5.2. Bioaccumulation at the Shipyard Sediment Site.

The Tentative Cleanup and Abatement Order (California Regional Water Quality Control Board - San Diego Region. 2010a) evaluates Macoma nasuta. It is correctly noted that concentrations of arsenic, copper, lead, mercury, zinc, TBT, total PCBs, and high molecular weight PAHs in the Macoma nasuta tissue increase with respect to their concentrations in the sediment. This leads to the conclusions that these compounds are bioavailable at the Shipyard Sediment Site and that bioaccumulation is occurring at the site.

These conclusions regarding bioavailability and bioaccumulation are extended to further assessments regarding chemicals. For example, those chemicals that have been selected as Indicator Chemicals, arsenic, copper, lead, mercury, zinc, TBT, high molecular weight PAHs, and total PCB homologs were selected based solely on the results of Macoma tissue bioaccumulation. This is contrary to the narrative water quality objective for toxicity applicable to San Diego Bay and the Shipyard Sediment Site which provides that: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life." The Macoma tissue bioaccumulation testing does not assess the required toxicity or assessment of detrimental physiological responses that are specified in the water quality objective. It merely indicates that the chemicals are present in the exposed Macoma. To assess the responses specified in the water quality objective, an appropriate risk assessment must be carried out.

5.3 Conclusions.

Bioaccumulation is a normal process for both metals and organic compounds. High levels of bioaccumulation can lead to detrimental responses either in the organism that has bioaccumulated the compound or in consumer organisms. An appropriate risk assessment must be carried out to evaluate if the bioaccumulation produces risk to consumer organisms.

(Id. at pp. 19-20.)

BAE Systems concurs and joins in the opinions of Dr. Allen with respect to bioaccumulation and bioavailability. Based on Dr. Allen's opinions, it is likely that the Regional Board's risk assessment conclusions have been overstated for risks that certain chemicals pose to various Bay organisms.

Comment ID: 120 **Organization:** BAE Systems
DTR Section: 24.2.2, Table 24-6
Comment:

II. AQUATIC-DEPENDENT WILDLIFE IMPAIRMENT ANALYSIS' TIER II EXPOSURE PARAMETER ASSUMPTION REGARDING AREA USE FACTOR IS OVERLY CONSERVATIVE AND UNSUPPORTED (TCAO FINDING 24; DTR § 24.2.2, TABLE 24-6)

This "Tier II risk assessment objective was to more conclusively determine whether or not Shipyard Sediment Site conditions pose an unacceptable risk to aquatic-dependent wildlife receptors of concern." (TCAO, Finding 24.) "Based on the Tier II results, as summarized in Table 24-1 and Table 24-2 [of the DTR], the San Diego Water Board determined that ingestion of prey caught within all four assessment units at the Shipyard Sediment Site poses a risk to all aquaticdependent wildlife receptors of concern (excluding the sea lion)." (DTR, § 24.1.)

The DTR's aquatic-dependent wildlife Tier II impairment analysis includes an area-use factor ("AUF") assumption which is defined as the "fraction of the daily intake of a given dietary component or inert medium derived from the site (unitless area-use factor)." (DTR, § 24.2.2.) This Tier II analysis uses an AUF value of 1, which equate to an assumption that the receptors selected will catch and consume 100% of their prey from within the Shipyard Sediment Site. (Deposition of Tom Alo ("Alo Deposition"), Vol. II, at 329:7-12.)

With respect to Finding 24 and the associated sections of the DTR supporting that finding, expert opinions, as well as that of the Cleanup Team itself, are in accord: the DTR's use of a 100% AUF assumption in this Tier II analysis is overly conservative, unsupported by evidence or authority, and results in a significant overestimation of risk to aquatic-dependent wildlife.

Dr. Ginn addressed the 100% AUF assumption used by the DTR in this analysis:

Failure to Consider Actual Habitat Use

One of the primary risk-driving assumptions made by the Staff in their exposure assessment is selection of an area use factor (AUF) of 1.0 for all receptors. In other words, for purposes of risk evaluation, it is assumed by the Staff that all modeled receptors obtain 100 percent of their diet from within the confines of the [Shipyard Sediment Site]3, and that prey items sampled at [the Shipyard Sediment Site] stations are therefore representative of the entire diet for each receptor. This assumption is clearly unrealistic, and the resulting conclusions based on this model are an inaccurate representation of actual wildlife exposure and risk.

(Ginn 3/11/11 Expert Report, at p. 59.)

Dr. Ginn also explains that the aquatic-dependent wildlife ecological risk assessment ("ERA") set forth in the TCAO/DTR is "clearly not compliant with" federal or California regulatory guidance and standards for AUF application. (Id. at pp. 61-65.)

Tom Alo was designated by the Cleanup Team as its "Person Most Knowledgeable" regarding aquatic-dependent wildlife impairment, and was deposed in that capacity. (Alo Deposition, Vol. II at 303:3-9.) Speaking on behalf of the Cleanup Team in that capacity, Mr. Alo agreed that the 100% AUF assumption is "very conservative." (Id. at 331:16-19.) Mr. Alo further conceded that the Cleanup Team was not relying upon any guidance document or agency policy in selecting a 100% AUF assumption (id. at 333: 21-23), and agreed that it is "actually probable" that the selected receptors consume some amount of their diet from outside the Site. (Id. at 334:16-19.) Indeed, several of the receptors used in this analysis are migratory, and thus by definition cannot be permanent residents of Site. (Id. at 334:20-23.) And, importantly, Mr. Alo recognized that Tier II analyses should use site-specific and species-specific AUF data:

Q. Mr. Alo, in light of both EPA and state guidance on this subject, wouldn't you agree that it's reasonable to use site-specific and species-specific area use factors for Tier 2 aquatic dependent wildlife risk assessment?

MR. CARRIGAN: Documents speak for themselves. Calls for a legal conclusion. You can answer.
THE WITNESS: Yes.

(Id. at 340:15-23.)

Exponent (2003) calculated site-specific and species-specific AUFs for the same identified receptors. That data was reflected in Table 28-6 of the DTR for TCAO No. R9-2010-0002, released in December, 2009. With respect to the area identified as "Inside SWM", the AUF for every receptor is less than 1%. [Footnote 4 - .6% for the East Pacific Green Turtle, .2% for all other receptors.] (Id.) The AUFs for "Inside NASSCO" are approximately the same. (Id.) Mr. Alo was questioned regarding the variance between the Exponent-calculated site-specific and species-specific AUFs, and the 100% AUF assumption used by the Regional Board in the DTR:

Q. Other than being very or overly protective, is there any other reason why this site-specific data based on receptors in San Diego Bay, based on the characteristics of the NASSCO leasehold and based on the 344 scientific literature cited by Exponent in the development of this table, is there any reason why you would not use this in connection with your Tier 2 risk assessment?
A. Again, I would have to look into it further and consult with other experts such as the natural resource trustee agencies.
Q. Okay. Let's assume for a minute that the 1.1 percent is an accurate estimation of the area use factor of the East Pacific green turtle inside the NASSCO leasehold.
The DTR used a factor of a hundred percent, correct?
A. Correct.
Q. So that would be roughly a hundred times this area use factor?
MR. CARRIGAN: Vague. Excuse me.
THE WITNESS: Roughly. Correct.
BY MR. RICHARDSON:
Q. 99 percent, is that closer? 99 times more?
So if the risk assessment were adjusted to account for the one-percent area use factor calculated by Exponent, what would that do to the overall risks calculated in the Tier 2 assessment?
A. That would likely lower the risk.
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Q. By approximately a hundredfold. Correct?

A. (Witness nods head.)
Q. I'm sorry?
A. Yes.
Q. The reporter can't take down a head nod.
That difference can be significant, right? I
mean, it could be the difference between triggering a
threshold and not triggering a threshold?
A. That's correct.
Q. Did the Cleanup Team conduct any study of the
actual use of these receptors or other receptors at the
shipyard?
A. No, we did not.
Q. Did the Cleanup Team calculate any
site-specific area use factors for any species at the
shipyard?
A. No, we did not

(Alo Deposition, Vol. II at 344:22-346:17.)

With respect to BAE Systems' leasehold, if Exponent's site and species-specific data were used instead of the default 100% AUF assumption, then based on Mr. Alo's testimony the aquatic-dependent wildlife risk at the BAE Systems' leasehold is overstated by approximately 500% for five of the six receptors, and by approximately 167% for the East Pacific Green Turtle.

In conclusion, as stated by Dr. Ginn, "[t]he Tier II ERA in the DTR is unrealistically biased by the reliance on Tier I (screening level) assumptions about exposure (e.g., area use)." (Ginn 3/11/11 Expert Report, at p. 74.) "The ERA uses unrealistic and nonscientific estimates of wildlife use of the shipyard as foraging habitat. The use of these values in the ERA results in dramatic overestimates of risk to wildlife." (Id.) BAE Systems concurs and joins in Dr. Ginn's expert opinions with respect to the aquatic-dependent wildlife impairment analysis. (See id., at pp. 59-75.) Those opinions are directly supported by the testimony of the Cleanup Team's person most knowledgeable on this topic, Mr. Alo, as set forth above.

Comment ID: 121 **Organization:** BAE Systems
DTR Section: 25-28
Comment:
III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

A. Human Health Beneficial Uses REC-1 and REC-2 are Not Adversely Impacted by Concentrations of Pollutants Present in the Marine Sediment At the Site (TCAO Finding 25; DTR § 25.1)

Finding 25 of the TCAO concludes that four identified beneficial uses (REC-1, REC-2, SHELL, and COMM) are "impaired due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site." Section 25.1 of the DTR identifies the same four beneficial uses, and states “concentrations of the pollutants present in the marine sediment within and adjacent to the Shipyard Sediment Site causes or threatens to cause a condition of pollution or contamination that adversely impacts these four beneficial uses and thereby constitutes a threat to the public health.” (DTR, § 25.1) (emphasis added.

Tom Alo was designated by the Cleanup Team as its “Person Most Knowledgeable” regarding human health impairment, and was deposed in that capacity. (Alo Deposition, Vol. I at 23:7-17.) Speaking on behalf of the Cleanup Team in that capacity, Mr. Alo testified that beneficial uses REC-1 and REC-2 present minimal risk to human health:

Q. Mr. Alo, it's my understanding that in light of U.S. EPA's position in an analysis conducted under the DTR, that the cleanup team concluded that contact water recreation and non-contact water recreation presented minimal risk to human health; is that correct?
A. That's correct.
Q. So the focus of the human health impairment section, as you stated previously, was on shellfish harvesting and commercial and sportfishing, correct?
A. Correct.

(Alo Deposition, Vol. I, at 66:25-68:24.)

Thus, Finding 25 of the TCAO and § 25.1 of the DTR should be revised to clarify that the Cleanup Team did not find human health risks associated with the beneficial uses Contact Water Recreation (REC-1) and Non-Contract Water Recreation (REC-2) to be impaired by the pollutants present in the marine sediment within and adjacent to the Site.

Comment ID: 122 **Organization:** BAE Systems
DTR Section: 26.1, 28.2.2.1
Comment:

III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

B. Human Health Impairment Analysis’ Tier II Exposure Parameter Assumptions Regarding Fractional Intake Are Overly Conservative (TCAO Findings 26, 28; DTR §§ 26.1, 28.2.2.1)

The DTR’s human health impairment Tier II analysis defines Fractional Intake as: “fractional intake of seafood consumed that originates from the Site.” (DTR at 28-4.) Key assumptions underlying the DTR’s fractional intake analyses include, but are not limited to, (1) fractional intake value of 1 (100%), (2) complete exposure pathway for anglers at the site, (3) consumption rates of 21g/day for recreational anglers and 161g/day subsistence anglers, and (4) an exposure duration of 30 years. While leeway for overly conservative assumptions may be appropriate for a Tier I screening level assessment, they are entirely inappropriate for a Tier II assessment. (Ginn 3/11/11 Expert Report, at p. 79.)

The TCAO/DTR's human health Tier II analyses, and thus the resulting tentative decisions, are based on the stringing-together of overly conservative, implausible (if not impossible) assumptions that "an angler visits the leasehold on a daily basis (choosing not to fish at anywhere else in the bay), bypassing armed security, catches fish and lobster that contain the maximum arsenic and PCB concentrations, then takes his catch home and consumes the entire fish and lobster, entrails and all." (Finley 3/11/11 Expert Report, at p. 22.) [Footnote 5 - Expert Report of Brent L. Finley Regarding the Draft Technical Report for Tentative Cleanup and Abatement Order No, R9-2011-0001 (San Diego Bay), dated and submitted to the Regional Board on March 11, 2011 (the "Finley 3/11/11 Expert Report").]

Dr. Ginn succinctly summarizes the result of these compounding errors:

[T]he overly-conservative assumptions used in the Tier II baseline risk assessment result in a meaningless and implausible assessment
that is constructed under the guise of being "conservative." These overly-conservative and unsubstantiated assumptions have a dramatic effect on the resultant risk calculations. In effect, the DTR is combining a series of extreme assumptions, which result in a multiplicative effect on the final risk calculations.

(Ginn 3/11/11 Expert Report, at p. 81.)

BAE Systems concurs and joins in these concerns as expressed by experts Dr. Ginn and Dr. Finley. Several of said assumptions are addressed in more detail below.

Comment ID: 123 **Organization:** BAE Systems
DTR Section: 28.2.2.1
Comment:

III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

B. Human Health Impairment Analysis' Tier II Exposure Parameter Assumptions Regarding Fractional Intake Are Overly Conservative (TCAO Findings 26, 28; DTR §§ 26.1, 28.2.2.1)

1. Tier II Fractional Intake Assumption Value of 1 is Overly Conservative and Unsupported (TCAO Findings 28; DTR § 28.2.2.1)

The DTR's Tier II analyses assume that 100% of the fish and shellfish caught by the hypothetical receptor anglers would be sourced from the Shipyard Sediment Site. However, expert opinions, as well as that of Mr. Alo, are in accord: this assumption is overly conservative, unsupported by evidence or authority, and results in an overestimation of risk to human health.

"This assumption greatly overestimates Site chemical exposure to anglers." (Environ 3/11/11 Human Health Report, at p. 7.) [Footnote 6 - Expert Report of Environ entitled Evaluation of CRWQCB Human Health Risk Assessment for the San Diego Shipyard Sediment Site, dated and submitted to the Regional Board on March 11, 2011 (the "Environ 3/11/11 Human Health Report").] And it "is not reasonable because there is a lack of a complete exposure pathway."

(Id.) Environ concludes that the Regional Board's assumption of a fractional intake value of 1 "is not supported by applicable agency guidance or scientific evidence." (Id. at 8.)

Dr. Ginn is in accord:

The most unrealistic assumption used in the DTR Tier II assessment is the FI. FI represents the portion of the seafood diet that an angler would receive directly from the assessment area. In the DTR, FI is set to 100 percent, the same value used in the Tier I screening-level assessment. In other words, the baseline risk assessment (and determination of need for remediation) is entirely based on the assumption that both recreational and subsistence anglers catch all of the fish or lobster that they consume within the boundaries of the Site. This assumption is clearly unrealistic and does not reflect actual or potential usage of the Site by recreational or subsistence anglers.

(Ginn 3/11/11 Expert Report, at pp. 81-82.)

The Regional Board actually concedes the same in the DTR: "Since it is likely that anglers catch at least a portion of their seafood from other locations in San Diego Bay and/or the fish caught from the Shipyard Sediment Site comes from elsewhere, the actual site fractional intake is likely to be less than 100 percent." (DTR, § 28.2.6.) The 100% assumption is used by the Regional Board despite the acknowledgment in the DTR that fishing is unlikely and currently prohibited at the Site, as detailed in section III-B-2 below. Based upon these factors and others, Exponent (2003) used a fractional intake assumption for inside the BAE Systems leasehold of 2.3%. (DTR, § 28.2.6.) Exponent's assumption was calculated by taking the length of the shoreline and piers of the shipyards, and comparing it to the length of the shoreline of San Diego Bay. (Alo Deposition, Vol. I at 98:9-99:16.) That assumption itself was conservative considering Exponent assumed fishing inside the heavily-secured Site, where fishing is prohibited, would be at least as attractive as fishing elsewhere in San Diego Bay. (Id.)

In comparison to the Exponent-calculated fractional intake assumption of 2.3% to the DTR's assumption of 100%, Mr. Alo agreed that 100% is an "extremely conservative assumption." (Id., at 95:1-4.) And Mr. Alo does "not [dispute] the accuracy [of Exponent]. We just didn't agree with that fractional intake." (Id. at 97:18-21.) Mr. Alo defended the DTR's use of a 100% fractional intake assumption by reference to the considerations set forth in bullet point format in the DTR at pages 28-10 and 28-11, including (1) the possibility that despite the fishing prohibition, BAE Systems or Navy personnel may fish off of the piers, (2) although BAE Systems has a long term lease through 2034, it is possible BAE Systems may not occupy the site in the future and site usage may allow for fishing, and (3) the possibility that pollutants within the BAE leasehold may migrate to areas outside the leasehold where fishing is permitted. (Id. At 93:18-94:8.) As detailed in section III-B-2 below, those stated considerations should be disregarded in the human health impairment analysis, and consequently the DTR's AUF assumption is without justification.

Comment ID: 125 **Organization:** BAE Systems
DTR Section: 28.2.2.1
Comment:

III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

B. Human Health Impairment Analysis' Tier II Exposure Parameter Assumptions Regarding Fractional Intake Are Overly Conservative (TCAO Findings 26, 28; DTR §§ 26.1, 28.2.2.1)

2. Tier II Assumption of a Complete Exposure Pathway for Anglers at the Site is Overly Conservative and Unsupported (TCAO Findings 26, 28; DTR § 28.2.2.1)

Although it is recognized that "public fishing and shellfish harvesting are currently unlikely events at the Shipyard Sediment Site due to the current security measures," the TCAO/DTR nonetheless assumes a complete exposure pathway exists for human anglers to catch shellfish and fish from within the Site. (DTR § 28.2.2.1.) In support of that assumption the Cleanup Team relied upon four recommended considerations provided by Mr. Brodberg of the Office of Environmental Health Hazard Assessment ("OEHHA"). (DTR, p. 27-5.)

The Environ 3/11/11 Human Health Report addressed, inter alia, the assumption in the TCAO/DTR of a complete exposure pathway for human anglers (see Section 2.1). For the reasons stated therein, and to conserve judicial and party resources by not re-stating the same here, BAE Systems joins in Environ's evaluation and criticism of this assumption as stated in Section 2.1, 2.1.1, and 2.1.2 of the Environ 3/11/11 Human Health Report, as well as the resulting relevant portion of the Conclusion stated in Section 3 of the same. In sum, the assumption of a complete exposure pathway for anglers at the site is invalid, unsupported, and speculative. (Id.)

The four recommended considerations from Mr. Brodberg/OEHHA, relied upon by the Cleanup Team in the TCAO/DTR, suffer the same defects, as detailed by Environ. (Id.)

The Finley 3/11/11 Expert Report echoes and expands upon the DTR's identified (but discarded) security measures precluding fishing at the Site. (Finley 3/11/11 Expert Report, at pp. 16-17). Dr. Finley also further undermines the recommended considerations relied upon by the Cleanup Team in discarding those security measures by noting the applicable regional governmental authorities' plans for the Site. (Id. at p. 16.) For example, the Port's Master Plan, dated January 2010, makes clear that the "Port Master Plan seeks to preserve and protect this unique coastal resource by limited uses to strictly marine oriented industrial ones." (Alo Deposition, at 104:15-20; Ex. 1107 to Alo Deposition at p. 70.) The "Belt Street Industrial" area (including BAE Systems' leasehold), a "heavy industrial district, south of the Tenth Avenue Marine Terminal, consists several well-established and highly important marine-related manufacturing, processing, and serving establishments." (Id., at p. 72.) "The Precise Plan calls for the continued operation of the existing marine related industries." (Id. at 73) (emphasis added.) Similarly, the City of San Diego's General Plan, dated March 2008, mitigates against the land-use speculation contained in the DTR: "Land identified as prime industrial will undergo additional scrutiny if land use amendments are proposed that could diminish the potential role for base sector and related employment uses either before or after comprehensive community plan updates." (Alo Deposition, at 105:12-106:20; Ex. 1108 to Alo Deposition at pp. EP-7.) The Shipyard Sediment Site is land identified as prime industrial. (Id.) Thus, the Site's heavy marine industrial use, including prohibition of and lack of access to angling, is extremely unlikely to change in the foreseeable future.

Moreover, the Regional Board is not aware of any literature or guidance that would instruct it to include speculative future land uses in calculating fractional intake assumptions:

11 Q. Are you aware of any guidance or literature
12 that would instruct the cleanup team to include
13 speculative future land uses in calculating the
14 fractional intake?
15 MR. CARRIGAN: Vague.
16 THE WITNESS: No.

(Alo Deposition, Vol. II, at 392:11-16.)

BAE Systems is aware of no evidence in the Administrative Record, or otherwise, supporting the possibility of fishing or lobstering at the Site despite the security measures and prohibition. The Regional Board is aware of no such evidence or authority either:

5 Q. Mr. Alo, in light of your prior testimony that
6 the administrative record is voluminous and that you are
7 not aware of any CAO proceeding with a larger record,
8 and because there is no evidence in this voluminous
9 record that anyone has fished at the NASSCO site, and in
10 light of the security measures that we just reviewed and
11 the photographs that you saw and the discussion on
12 page 28-10, wouldn't you agree that it's an unrealistic
13 assumption to assume that someone fishes at the shipyard
14 for 30 years and eats only fish caught at the shipyard?
15 MR. CARRIGAN: I'm going to object as vague.
16 But you can answer, if you understood the 17 question.
18 THE WITNESS: I agree.

(Alo Deposition, Vol. I, at 93:5-18; see also Cleanup Team's response to BAE System's Request for Admission Nos. 25-26.)

Without any evidence or authority to support them, the considerations identified in the first three bullet points on page 28-11 of the DTR do not provide a reasonable basis to discard the realities of the current and future site use and thereby assume a complete exposure pathway for the receptor anglers. Those identified considerations should thus carry no weight in the human health impairment analysis.

Comment ID: 126 **Organization:** BAE Systems
DTR Section: 28
Comment:

III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

B. Human Health Impairment Analysis' Tier II Exposure Parameter Assumptions Regarding Fractional Intake Are Overly Conservative (TCAO Findings 26, 28; DTR §§ 26.1, 28.2.2.1)

3. Tier II Consumption Rate Assumptions are Overly Conservative and Unsupported (TCAO Findings 26, 28; DTR § 28)

a. Expert Opinion Disagrees with the Assumed Consumption Rates (TCAO Findings 26, 28; DTR § 28)

The DTR assumes consumption rate assumptions of 21g and 161g per day for recreational and subsistence anglers, respectively. (See, e.g., DTR, Table 28-7.) These exposure assumptions are overly conservative and unrealistic. As stated by Dr. Finley:

o The RWQCB assumed that subsistence anglers would always consume the entire fish or shellfish (guts and all), which is completely unfounded and only serves to overestimate risk. It also runs counter to the information collected in a detailed study of anglers in the San Diego Bay (County of San Diego 1990).

o The RWQCB employed fish consumption rates from the anglers in the Santa Monica Bay. Considering the lack of access and industrial nature of the NASSCO shipyard, the use of fish consumption rates from the Santa Monica Bay, a highly accessible recreational area, is inappropriate and inconsistent with the practice of risk assessment in general and regulatory risk assessment guidance in particular.

(Finley 3/11/11 Expert Report, at p. 6) (emphasis in original.)

Dr. Finley further states:

The "current default EPA assumption for recreational and subsistence anglers is 2 and 6.8 g/day of the edible portions of caught fish ((USEPA, 1997); Table 10-52)" However, in their assessment, the RWQCB assumed that the subsistence angler would always consume the entire fish (sand bass) or shellfish (lobster), skin, guts, filter organs, and all, and not just the filet or edible portion. This is a critical (yet baseless) assumption that serves to artificially inflate the RWQCB risk (Finley 3/11/11 Expert Report, at p. 10) (emphasis in original.)

Dr. Finley concludes: "In summary, the RWQCB's assumption that subsistence anglers would consume entire fish and/or shellfish following each and every trip (instead of just eating the edible portion) has resulted in risk estimates for subsistence anglers that are too high by at least an order of magnitude." (Id. at 13.)

BAE Systems agrees and joins in the foregoing expert opinions, and the supporting data and rationale (id., at § 2-a), with respect to the consumption rates assumed in the TCAO/DTR's Tier II human health impairment analysis.

Comment ID: 127 **Organization:** BAE Systems
DTR Section: 1.5.3.3
Comment:

III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

B. Human Health Impairment Analysis' Tier II Exposure Parameter Assumptions Regarding Fractional Intake Are Overly Conservative (TCAO Findings 26, 28; DTR §§ 26.1, 28.2.2.1)

3. Tier II Consumption Rate Assumptions are Overly Conservative and Unsupported (TCAO Findings 26, 28; DTR § 28)

b. The EHC Fisher Survey Should be Disregarded Entirely (DTR § 1.5.3.3)

The Regional Board cites to the Environmental Health Coalition ("EHC") having conducted an "Opportunity" sample survey in 2002 of people fishing from piers near the Shipyard Sediment Site (the "EHC Fisher Survey"). (DTR, § 1.5.3.3.) The Regional Board adopts the EHC description of the survey as a "…selected sample that is highly exposed to fish from near the shipyards, Naval Station San Diego, and the Southern portion of the San Diego Bay. (Id.)

EHC Fisher Survey was not designed or conducted in a manner consistent with appropriate standards of survey design. (U.S. EPA 1992, 1998.) As a consequence, the survey results are most likely biased, are not representative, and do not provide any useful estimates of fish consumption.

The EHC Fisher Survey is based on a limited number of questionnaires conducted at three fishing sites in the San Diego Bay. Interestingly, the fishing pier closest to the NASSCO and BAE shipyards, the Coronado Pier, was not surveyed. (Deposition of Laura Hunter ("Hunter Deposition"), at 92:2-7.)

The survey authors did not consult any standard protocol in designing their survey. Neither of the survey designers were trained or educated in preparing appropriating protocol and surveys. (Id. at 95:5-15; 96:15-17.) It is not clear if EHC accounted for repeated surveys of the same individual. In a properly conducted survey, one of the first questions asked is whether or not the participant has been interviewed before. (U.S. EPA 1998; Finley 3/11/11 Expert Report, at p. 19.)

Certain methodological defects exist in the EHC Fisher Survey. The survey was introduced to participants in a way that likely biased responses. The scientific literature on survey techniques and validation documents that survey participants are susceptible to responding in a way that they believe the interviewer wants to hear. (U.S. EPA 1992.) The introduction of the questionnaire used by EHC here [Footnote 7 - "Our goal as an organization is to help communities resolve health issues and the contaminating toxins in the San Diego bay." (Ex. 604 to Hunter Deposition.)] makes it clear the interviewer believes that there are health issues associated with fish consumption. U.S. EPA (1992) guidance states, "The selection and phasing of questions to meet survey objections is critical." The narrative text raises alarms in survey participants leading to non-impartial data likely being collected.

The survey does not state the total number of anglers at any of the piers or the fraction of those anglers who participated in the survey. Without this information the results of the survey apply only to the pier anglers who were actually survey and not to generalized pier anglers as a whole. The study's authors acknowledge the lack of statistical validity by saying that "[t]he survey group represents an opportunity sample of fishers from South Bay piers, it is not a randomized sample," and, "[i]t is not a representative sample of all San Diego Bay fishers or all South Bay residents." (Hunter Deposition, Ex. 603.)

EPA's Guidance for Conducting Fish and Wildlife Consumption Surveys (U.S. EPA 1998) includes nearly 70 references describing various issues related to survey design. This guidance document (U.S. EPA 1998) recommends that any one of five different statistical approaches be employed for interviews of anglers at their fishing site; these approaches are simple random sampling without replacement, stratified random sampling, systematic random sampling, two-stage sampling, and non-uniform probability sampling. EHC did not use any of these recommended approaches for selecting survey participants. EPA guidance (U.S. EPA 1998) provides further recommendations regarding the development of fish consumption rate data adequate for use in policy decisions stating:

Since consumptions rates will "have a significant impact on the risk estimates and on the selection of fish consumption limits" (U.S. EPA 1992), it is important to consider carefully how the consumption rate will be determined from the questions asked. For example, consumption rates will be calculated fro species-specific estimates of the frequency of fish consumption ("1 meal per week from May through July"). …Insufficient delineation on the timing or details of consumption patterns will result in poor estimates of the consumption rate and consequently inaccurate estimates of risk.

Because of EHC's non-random selection of survey participants and poor questionnaire design, bias is almost certainly present in the survey results. The survey's conclusions regarding the frequencies of angling habits and ethnicity are therefore not verifiable indicators of the pier fishing community as a whole.

No actual consumption rates were determined or discussed. There are no measures or estimations of how frequently the fish caught are consumed. No questioning regarding the species or size of fish or sampling to determine concentrations of contaminants was performed in the fish that were consumed.

EHC results include some estimations of fishing frequency, but preparation habits are extrapolated from common cultural practices in Filipino and Asian cultures, not individual responses. (Finley 3/11/11 Expert Report, at p. 19.)

The EHC Fisher Survey emphasizes the risks associated with consumption of whole fish or fish organs. However, the survey did not ask survey participants if they consumed whole fish or fish organs. Similarly, the report emphasizes that not all anglers eat only the filet of fish, yet they never asked the participants if they filet the fish prior to consumption. EHC equated "eating fish skins" with "eating an entire fish," which is clearly not appropriate since many filets are eaten with the skin on. (Deposition of Joy Williams ("Williams Deposition"), at 100:16-24, 103:21-24, 107:13-16; Hunter Deposition, at 137:3-6, 138:13-15.) The survey does not provide any data on subsistence fishing because it did not ask survey participants how much of the fish they caught they also consumed and because no information exists regarding concentration of contaminants contained in the fish eaten.

Thus, it is inappropriate to conclude that subsistence fishing or significance exposures occurred via the information obtained through the EHC surveys. The EHC Fisher Survey should be disregarded entirely for purposes of the human health impairment analyses.

Comment ID: 128 **Organization:** BAE Systems
DTR Section: 28.2.2, 28.2.2.1, Table 28-7
Comment:

III. HUMAN HEALTH IMPAIRMENT (TCAO FINDINGS 25-28; DTR §§ 25-28)

B. Human Health Impairment Analysis' Tier II Exposure Parameter Assumptions Regarding Fractional Intake Are Overly Conservative (TCAO Findings 26, 28; DTR §§ 26.1, 28.2.2.1)

4. Tier II Exposure Duration Assumption of 30 Years is Overly Conservative and Unsupported (TCAO Finding 28; DTR §§ 28.2.2, 28.2.2.1; DTR Table 28-7)

The DTR's human health impairment Tier II analyses utilizes an exposure duration assumption as one component of the model used to estimate human exposure to contaminants in fish and shellfish collected at the Site. (DTR, p. 28-12.) The DTR assumes an exposure duration of 30 years for both types of receptor anglers. (DTR, Table 28-7.)

Expert Dr. Finley succinctly criticizes this exposure duration assumption:

The RWQCB used the highest EPA default point estimate for exposure duration with no discussion, no explanation, and no justification. The RWQCB could have reviewed local census or creel angler data to develop a more accurate and site-specific estimate. They also could have explored alternative (and lower) default EPA estimates or used a distribution of estimates. Current EPA guidance recommends using an estimate of 9 years, which represents the 50th percentile (USEPA 1997a). The studies that this value are derived from reported average exposure duration times ranging from 4.6 years to 12 years (Israeli and Nelson 1992; Johnson and Capel 1992; U.S. Bureau of the Census 1993). It should be noted that the EPA is currently proposing that the default average duration be lowered to 8 years (USEPA 2009). It does not appear that the RWQCB reviewed or considered any of this information.

(Finley 3/11/11 Expert Report, at p. 21) (emphasis added.)

Although that EPA-recommended 9 year period was posed to Mr. Alo during his deposition, he indicated he was not aware of that guidance, and defended (without explanation) the use of a 30 year period as a "reasonable duration rate." (Alo Deposition, Vol. I, at 145:21-

147:11.) Moreover, Mr. Alo confirmed that the Cleanup Team lacks any site-specific data that would justify the use of a 30 year exposure duration period:

Q. Do you have any site-specific data that they would consume a whole fish and a whole lobster daily for 30 years?
A. No.

(Alo Deposition, Vol. I, at 121:22-25.)

Q. So with this site-specific study on San Diego Bay, is it unrealistic or overly conservative to assume that someone fishes every day at the shipyard for 30 years?
MR. CARRIGAN: Incomplete hypothetical.
THE WITNESS: Yes.

(Alo Deposition, Vol. I, at 144:9-14.)

In sum, there is no reasonable or justifiable basis for the DTR's use of a 30 year exposure duration assumption in the Tier II human health impairment analysis. The DTR's resulting risk assessment for the Site is significantly overstated.

Comment ID: 129 **Organization:** BAE Systems
DTR Section: 30.1, 30.2, 35.3
Comment:

IV. NATURAL RECOVERY IS NOT PROPERLY ACCOUNTED FOR IN REMEDY SELECTION (TCAO FINDINGS 30, 35; DTR §§ 30.1, 30.2, 35.3)

Finding 32 acknowledges that natural recovery has been a successful component of cleanup actions in San Diego Bay, yet the preliminary remedial design described in Finding 35 fails to allow for the effect of natural recovery at the Site. Currently available data from the BAE shipyard demonstrates that natural recovery is occurring, and its rate should be incorporated into remedy selection.

Comment ID: 130 **Organization:** BAE Systems
DTR Section: 4.3, 4.7, 30, 32.7, 34.4
Comment:

IV. NATURAL RECOVERY IS NOT PROPERLY ACCOUNTED FOR IN REMEDY SELECTION (TCAO FINDINGS 30, 35; DTR §§ 30.1, 30.2, 35.3)

A. Source Control Issues Affect All Potential Primary Remedies (TCAO Findings 30, 32, 34; DTR §§ 4.3, 4.7, 30, 32.7, 34.4)

David Barker was designated as and deposed in his capacity as the “person most knowledgeable” for the Cleanup Team regarding alternative remedies analyses, including monitored natural attenuation. (Barker Deposition, Vol. II, at 255:19-256:1.) The DTR states that natural recovery is one of the “readily employable and proven remediation strategies.” (DTR, § 30.1.) Mr. Barker agrees with that statement. (Barker Deposition, Vol. II, at 262:23-263:1.) Natural recovery was not selected as the primary remedy for the Site because “[c]omplete control of site sources has not been fully demonstrated to a level that would assure adequate rates of recovery.” (DTR, at p. 30-3.) However, Mr. Barker testified that recontamination from off-site sources would affects all potential remedies:

Q. If we have off-site sources that are continuing
to contaminate a site, it will continue to contaminate
the site whether we do natural recovery, dredging,
capping, or any other remedy; right?
A. Right. That's correct. Yeah.
Q. I'm having trouble understanding how that could
influence a decision on which remedy to select.
A. Oh, you're having trouble where there are
off-site sources?
Q. Why that would favor any type of dredging. For
example -- I'll give you an example. If you dredge the
site and there's recontamination, then you may simply
have to dredge it again.
A. Yes.
Q. So that would be an ineffective remedy and you'd
have remedy failure.
A. Yeah.
Q. So if you choose capping, as is the case with
Convair Lagoon, where sources weren't controlled and
there's additional pollution on top of the cap, there's
further remediation necessary.
A. Yes.

(Barker Deposition, Vol. II, at 278:6-279:2.)

Thus, the perceived source control issue is not a factor that should favor one potential remedy over another. And, as discussed below, available recent data indicates natural attenuation is actively occurring at the site.

Comment ID: 131 **Organization:** BAE Systems
DTR Section: 30.1, 30.2, 35.3
Comment:

IV. NATURAL RECOVERY IS NOT PROPERLY ACCOUNTED FOR IN REMEDY SELECTION (TCAO FINDINGS 30, 35; DTR §§ 30.1, 30.2, 35.3)

B. 2009 NOW Data Evidences Natural Attenuation is Actively Occurring (TCAO Findings 30, 35; DTR §§ 30.1, 30.2, 35.3)

In July of 2009, a supplemental triad study was conducted at the site evaluating five stations that had previously been sampled during the 2001/2002 period by Exponent. This supplemental study is often referred to as the “NOW” testing. The NOW results are shown in DTR Table 32-22.

At his deposition Mr. Barker was shown tables summarizing and comparing the data from the 2001/2002 investigation to the NOW data for the five primary constituents of concern ("COC"). (Barker Deposition, at 318-333; Exs. 1227, 1228.) Comparison of these two data sets shows that the concentrations of all such COCs have decreased over the period between 2001/2002 and the July 2009 NOW testing. Concentrations of copper have decreased from 183.3 to 167.8 mg/kg, corresponding to a rate of 1.1% per year (8.5% total decrease). Concentrations of mercury have decreased from 1.5 to 0.8 mg/kg, corresponding to a rate of 7.9% per year (49% total decrease). Concentrations of total PCB congeners have decreased from 247 to 188.7 µg/kg, corresponding to a rate of 3.4% per year (23.6% total decrease). Concentrations of HPAH have decreased from 2,823.4 to 2,293.3 µg/kg, corresponding to a rate of 2.6% per year (18.8% total decrease). Concentrations of TBT have decreased from 82.1 to 23.3 µg/kg, corresponding to a rate of 16.7% per year (71.6% total decrease). (Id.)

Comment ID: 132 **Organization:** BAE Systems
DTR Section: 30.1, 30.2, 35.3
Comment:

IV. NATURAL RECOVERY IS NOT PROPERLY ACCOUNTED FOR IN REMEDY SELECTION (TCAO FINDINGS 30, 35; DTR §§ 30.1, 30.2, 35.3)

C. 2010 AMEC Data Evidences Natural Attenuation is Actively Occurring (TCAO Findings 30, 35; DTR §§ 30.1, 30.2, 35.3)

Data from the surface sediment sampling conducted by AMEC [Footnote 8 - The Cleanup Team is in the process of adding to the administrative record the AMEC Earth and Environmental Final Technical Report, Pre- and Post-Dredge Sediment Survey for BAE Systems San Diego Ship Repair, Inc., San Diego Bay, San Diego, California, March 2011.] prior to the dredging of the Pride of San Diego dry dock sump can be compared to the data presented by Exponent (2003) in the same area. The spatial coverage of the two data sets is not identical, but the data sets can be compared using only data from the spatial extent common to the two data sets. Specifically, data from Exponent stations SW03, SW06, SW07, SW10, SW11, SW12, SW15, SW18, SW19, SW25, SW26, SW27, SW30, SW31, SW32, SW33, SW34, and SW36 are in the same area as the locations sampled by AMEC.

PCBs were measured as Aroclors, homologs, and a subset of congeners in the 2001 data set, but only a more limited subset of PCB data, namely congeners, was measured in 2010. Therefore changes in PCB concentrations can only be evaluated using the sum of congeners. The list of congeners analyzed in the two studies is almost identical, however, so use of the sum of congeners is appropriate for evaluating the rate of natural recovery.

Comparison of these two data sets shows that the median concentrations of all COCs have decreased over the period between 2001 and 2010 (the median is used for this comparison because it is a more stable measure of central tendency than the mean). Concentrations of copper have decreased from 170 to 160 mg/kg, corresponding to a rate of 0.7% per year (5.9% total decrease). Concentrations of mercury have decreased from 0.75 to 0.66 mg/kg, corresponding to a rate of 1.4% per year (12% total decrease). Concentrations of total PCB congeners have decreased from 200 to 44.5 μg/kg, corresponding to a rate of 17% per year (77.7% total decrease). Concentrations of HPAH have decreased from 4,450 to 1,843 μg/kg, corresponding to a rate of 9.8% per year (58.6% total decrease). Concentrations of TBT have decreased from 51 to 12 μg/kg, corresponding to a rate of 16 percent per year (76.5% total decrease).

The consistent decreases in concentrations of COCs in surface sediment, and the relatively high rate of decrease of PCBs, indicate that natural recovery is occurring in sediment of the Site. The CAO should therefore take natural recovery into account when establishing the cleanup footprint and during remedy selection. Given sufficient time, natural attenuation could be an appropriate remedy to reach the alternative cleanup levels set forth in the TCAO. Furthermore, given the decreased median concentrations of all COCs that have occurred over the last nine years, the risks to the beneficial uses of the Bay now are less than the risks calculated using the earlier 2001 gathered data than those expressed in the TCAO and DTR. Therefore, the remedial cleanup levels and resultant remedial footprint as expressed in the TCAO and DTR are more conservative than necessary to adequately protect the Bay's beneficial uses.

Comment ID: 133 **Organization:** NASSCO
DTR Section: 36.1.2
Comment:
NOTE NASSCO'S COMMENTS No. 12 AND No. 13 ARE CONTAINED HEREIN

II. REGULATORY FRAMEWORK
A. California Porter-Cologne Water Quality Control Act (Finding 36)

II.A.2. Water Code Section 13304 Allows Dischargers To Cleanup or Abate The Effects Of Wastes [Comment No. 12, TCAO, at 36, DTR, at 36.1.2]

Further, under such circumstances, Section 13304, which requires a discharger to "cleanup or abate the effects of the waste," provides that wastes need not be cleaned up if the effects can be abated, and implicitly acknowledges that cleanup levels can and should be based on site-specific science and risk assessments. [Comment No. 13, TCAO, at 36, DTR, at 36.1.2]. In light of these parameters and for the reasons discussed in detail below, active remediation at the NASSCO shipyard, as described in the TCAO and DTR, is not supported by the record.

Comment ID: 134 **Organization:** NASSCO

DTR Section: 30, 31.1, 32.1, 32.7, 36.4
Comment:
NOTE NASSCO'S COMMENTS No. 14 AND No. 15 ARE CONTAINED HEREIN

II. REGULATORY FRAMEWORK

II.B. State Water Resources Control Board Resolution No. 92-49: Policies and Procedures For Investigation and Cleanup and Abatement or Discharges Under Water Code Section 13304 (Findings 30-32, 36)

1. The Board Must Consider The Totality Of Factors Affecting Water Quality In Selecting Cleanup Levels Under Resolution No. 92-49, Including Economic And Technological Feasibility [Comment No. 14, TCAO, at 30-32, 36 DTR, at 30, 31.1, 32.1, 32.7, 36.4]

Resolution 92-49 provides guidance to Regional Boards concerning the application of Water Code Section 13304. The State Board has described the analysis required by Resolution 92-49 as follows:

Resolution 92-49 directs the RWQCBs to ensure that water affected by an unauthorized release attains either background water quality or the best water quality which is reasonable if background water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background . . . any such cleanup level shall (1) be consistent with maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less stringent than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

See Resolution 92-49, at III. G. See also, In the Matter of the Petition of Unocal Corporation, State Board Order No. WQ 98-12, at 2 (quoting Resolution 92-49); In the Matter of the Petition of Landis Incorporated, State board Order No. WQ 98-13, at 2 (same); In the Matter of the Petition of Unocal Corporation, Order No. 99-10, at 2; In the Matter of the Petition of Chevron Pipe Line Company, State Board Order No. WQ 2002-0002; In the Matter of the Petition of Environmental Health Coalition and Eugene Sprofera, Order No. WQ 92-09, at 4.

Further, the text of Resolution 92-49 requires an analysis of cost-effectiveness and technological and economic feasibility in determining cleanup levels. See Resolution 92-49, at 6-7 ("The Regional Water Board shall . . . ensure that dischargers shall have the opportunity to select cost-effective methods for . . . cleaning up or abating the effects [of wastes discharged and] . . . require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, cleanup and abatement.") (emphasis added). For the reasons discussed below, active remediation is not economically or technologically feasible within the meaning of Resolution 92-49; rather, monitored natural attenuation is the appropriate remedial alternative considering the demands being made and to be made on the waters at the Site, and the total values involved—beneficial and detrimental, economic and social, and tangible and intangible. [Comment No. 15, TCAO, at 30-32, 36, DTR, at 30, 31.1, 32.1, 32.7, 36.4]

Comment ID: 135 **Organization:** BAE Systems
DTR Section: 30, 32, 25
Comment:

IV. NATURAL RECOVERY IS NOT PROPERLY ACCOUNTED FOR IN REMEDY SELECTION (TCAO FINDINGS 30, 35; DTR §§ 30.1, 30.2, 35.3)

D. Natural Attenuation Is Likely to Achieve The TCAO's Proposed Cleanup Levels in a Reasonable Time Without Active Dredging (TCAO Findings 30, 32, 35; DTR §§ 30, 32, 25)

Pursuant to State Water Board Resolution 92-49, the Regional Board has prescribed alternative cleanup levels for the Site to protect aquatic life, aquatic-dependent wildlife, and human health beneficial uses. (TCAO, Finding 32.) Those levels are set forth in Table 2. (TCAO, at p. 15.) On a SWAC basis, comparison of the alternative cleanup levels for the five primary COCs to the levels reflected by the recent AMEC data reflects the results of natural attenuation at the Site:

[Table displaying five primary COCs, Alt. Cleanup Level, and AMEC Data]

The data from AMEC reflects significant decreases since the 2001/2002 timeframe. For the stations sampled by AMEC, four of the five primary COCs are below the post-remedial SWAC levels, while copper is negligibly above. This data suggests that the alternative cleanup levels prescribed by the Regional Board will be achieved within a reasonable time without active dredging.

That conclusion is in accord with recent expert opinion presented by Environ. [Footnote 9 - Expert Report of Environ entitled Comparison of 2001-2002 and 2011 Chemical Conditions in Surface Sediment at the San Diego Shipyard Sediment Site, dated and submitted to the Regional Board on March 11, 2011 (the "Environ 3/11/11 SWAC Expert Report").] Analyzing grab-samples obtained by AMEC at the BAE leasehold, Environ concludes that

concentrations of the five primary COCs in surface sediment have decreased 24 to 76%. Extrapolation of the proportionate decreases to the entire Site suggests that current (2011) Site-wide SWACs are below Site-specific risk-based sediment management criteria set by [the Regional Board] (2010) for restoration of aquatic dependent wildlife and human health Beneficial Uses. Thus, active remediation via dredging to meet chemical risk-based goals to address aquatic dependent wildlife and human health Beneficial Use Impairment is not required. Furthermore, 2011 results indicate natural recovery processes and/or source control may be sufficient to support a Monitored Natural Recovery management approach for addressing aquatic dependent wildlife and human health BUIs at the Site.

(Environ 3/11/11 SWAC Expert Report, at p. 5.)

While the only data available to evaluate whether natural attenuation is occurring is for samples outside the remedial footprint, it can be reasonably extrapolated that the same or greater natural attenuation is occurring within the shipyard areas designated for remediation. At a minimum, natural attenuation should be considered in evaluating the robustness of the remediation required. The remedial footprint as set forth in the TCAO and DTR does not adequately take into account the natural attenuation that has occurred. Furthermore, the evidence of natural attenuation demonstrates that, given the technical and economic feasibility factors of State Water Board Resolution 92-49, natural attenuation is an appropriate remedy for the Site.

Comment ID: 136 **Organization:** NASSCO
DTR Section: 18.4
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

c.The Benthic Community Assessment Shows That Shipyard Sediments Are Not Causing Impacts To Aquatic Life (Findings 14- 20)

(1)The Benthic Community Analysis Shows That The Number Of Organisms In Shipyard Sediments Is Not Significantly Different From Reference (Findings 14, 15, 16, 18, 20)

Comment No. 117-120

The benthic community analyses indicate that the assemblage of organisms in Site sediments is not significantly different from reference. DTR, Table 18-12; Ginn Report, at 34. [Comment No. 117, TCAO, at 18, DTR, at 18.4]. If substantial alterations of benthic communities were occurring, one would expect to see sparse communities, comprised of the few organisms and taxa able to tolerate chemical toxicity; however, such conditions were not observed at any of the NASSCO stations. Exponent Report, at 8-38. [Comment No. 118, TCAO, at 18, DTR, at 18.4]. Instead, communities at the Site are similar to communities in reference areas. Exponent Report, at 8-8; Ginn Report, at 34. [Comment No. 119, TCAO, at 18, DTR, at 18.4]. Of particular note, the number of crustaceans, which are known to be especially sensitive to sediment pollutants, are present in similar percentages at Site and reference stations, and the overall abundance of benthic macroinvertebrates in Site and reference stations are not statistically different. Ginn Report, at 33-34. [Comment No. 120, TCAO, at 18, DTR, at 18.4]

Comment ID: 137 **Organization:** NASSCO
DTR Section: 18.4
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

c.The Benthic Community Assessment Shows That Shipyard Sediments Are Not Causing Impacts To Aquatic Life (Findings 14- 20)

(2)The Benthic Community Analysis Shows That The Types Of Organisms In Shipyard Sediments Is Not Significantly Different From Reference (Findings 14-18)

Comment No. 121-123

The benthic community analyses indicate that the number of taxa in Site sediments is not significantly different from reference. DTR, at Table 18-12. The only station to show statistically significant differences from reference with respect to number of taxa is NA22. [Comment No. 121, TCAO, at 18, DTR, at 18.4]. As discussed above, the number of taxa at NA20 was incorrectly identified as statistically different, despite falling within the reference range. Id. [Comment No. 122, TCAO, at 18, DTR, at 18.4]. Accordingly, with the minor exception of NA22, which is not part of the cleanup footprint, none of the stations at NASSCO differed significantly from reference in terms of number of taxa. Id. [Comment No. 123, TCAO, at 18, DTR, at 18.4].

Comment ID: 138 **Organization:** NASSCO
DTR Section: 18.4
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

c.The Benthic Community Assessment Shows That Shipyard Sediments Are Not Causing Impacts To Aquatic Life (Findings 14- 20)

(3) Sediment Profile Images Confirm That The Benthos Is Mature And Thriving (Findings 14-20)

Comment No. 124

Photographs of sediments at the Site provide additional direct confirmation that the benthos is mature and thriving. Exponent Report, at 8-5. In addition to benthic community analyses, sediment profile images were collected throughout the Site and at reference stations. Exponent Report, at Appendix A. These photographs confirm the presence of mature benthic communities at the Site, and refute Staff's conclusions that benthic macroinvertebrates at the Site are impaired. [Comment No. 124, TCAO, at 14-16, 18, 20, DTR, at 14, 16, 18.1, 18.4, 18. 5, 20]

Comment ID: 139 **Organization:** BAE Systems
DTR Section: 33
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

On March 11, 2011, San Diego Coastkeeper submitted the Expert Report of Donald D. MacDonald, of MacDonald Environmental Sciences, Ltd., entitled Review and Evaluation of Tentative Clean-up and Abatement Order (No. R9-2011-001) for the Shipyard Sediment Site, San Diego Bay, San Diego, California (the "MacDonald 3/11/11 Expert Report"). BAE Systems responds to the comments and conclusions of said report contained in Section "C" entitled "Expert Opinion #1: Proposed Remedial Footprint" which states:

The Proposed Remedial Footprint does not include all of the polygons that meet the requirements for clean-up according to the methodology described in the DTR. Therefore, the Proposed Remedial Footprint should be expanded to include all of the polygons that meet the selection criteria.

The responses to comments that are provided in the following sections show that, contrary to the assertion by MacDonald, the remedial footprint identified in the TCAO does meet the requirements of cleanup according to the methods described in the DTR. Therefore, there is no technical justification for expanding the footprint to include additional polygons.

Comment ID: 140 **Organization:** NASSCO
DTR Section: 18
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

d. The TCAO Is Overly Conservative Because The CUT Did Not Adjust For Multiple Comparisons With The Reference Pool (Findings 15, 16, 18)

Comment No. 125-127

Staff's failure to adjust for multiple statistical comparisons is excessively conservative because it increases the probability of false-positive results. Ginn Report, at 51. As a result, some of the apparently significant results for toxicity and benthic community comparisons in the DTR may be erroneous, since failure to adjust for multiple comparisons across 15 comparisons for each toxicity and benthic community metric at NASSCO results in a 54% probability that at least one apparently significant result will occur as a result of chance alone. Id. [Comment No. 125, TCAO, at 18, DTR, at 18, Appendix 18]. Considering that only one station at NASSCO showed apparently significant differences from reference in the amphipod toxicity test, and only four stations (aside from NA22) showed apparently significant differences from reference in the bivalve larvae test under the DTR analysis, the overall triad results could be substantially affected if any of those hits were simply due to chance. Id. [Comment No. 126, TCAO, at 18, DTR, at 18]. This degree of "conservatism" is unwarranted, and extends beyond any reasonable or scientifically accepted means of achieving protectiveness. [Comment No. 127, TCAO, at 15, 16, 18, DTR, at 15, 16, 18].

Comment ID: 141 **Organization:** BAE Systems
DTR Section: 33, Appendix for Section 33, Table A33-3
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

1. Comment C.2.1 that "The sampling density is insufficient to accurately characterize the nature and extent of contamination at this type of
site" Is Incorrect (DTR § 33; DTR Appendix for Section 33, TableA33-3)

The DTR presents analyses of information collected at 60 stations at the Site in 2001/2002 by Exponent (2003). Comment C.2.1 of MacDonald 3/11/11 Expert Report states "The sampling density is insufficient to accurately characterize the nature and extent of contamination at this type of site."

MacDonald states that "sediment sampling conducted at the Shipyards Sediment Site was inadequate to accurately characterize the nature and extent of sediment contamination." This assertion is incorrect. The station distribution scheme was consistent with the manner in which most schemes are designed at contaminated sediment sites. Stations are distributed with the highest density near sources where the highest COC concentrations are expected (especially in depositional environments), and with lower densities in areas removed from the sources, where contaminants are expected to be more widely dispersed by waves and currents. In fact, MacDonald described such a station distribution scheme when he stated that "to address

concerns regarding spatial variability in sediment chemistry, investigators frequently design sediment sampling programs to provide a high density of samples in the vicinity of point source discharges
of contaminants."

At the Shipyard Sediment Site, it was expected that most contaminant sources would be located near the shoreline, and that the piers would create depositional environments that would facilitate deposition of contaminants near the sources, resulting in patchy distributions with elevated concentrations. In contrast, contaminant sources were not expected to be found outside the pier lines, and in those locations, contaminants would be expected to be dispersed by waves and currents in San Diego Bay, and their concentrations in sediments would be lower and more evenly distributed. Therefore, 43 of the 65 stations sampled at the Site in 2001/2002 were located within the pier line of the site, as estimated by the property boundaries presented in Attachment 1 of the TCAO. This area encompasses approximately 63 acres (See Sections 2.3.1 and 3.3.1 of the DTR). The station density within the pier line (i.e., where contaminant deposition would be expected to be greatest) was therefore 0.69 stations per acre, which is approximately 2.7 time greater than the station density outside the pier line (i.e., 0.26 stations per acre), where contaminants would be expected to be dispersed by waves and currents in San Diego Bay. Therefore, the station distribution scheme used at the Site was consistent with the scheme commonly used at contaminated sediment sites.

The sediment chemistry results of the 2001/2002 sampling at the Site confirmed the assumptions used to design the station distribution scheme. The chemical concentrations presented in Table A33-3 of the DTR and the concentration contours presented in Figures 4-3 to 4-21 of Exponent (2003) show that in general, the highest concentrations were found within the pier line and lower, more evenly distributed concentrations were found outside the pier line. Therefore, the station distribution scheme used at the Site is sufficient to characterize the nature and extent of sediment contamination.

There are no firm rules or agency guidance on the number of stations that should be sampled at a contaminated sediment site, because each site is unique. The number used to characterize a particular site is usually determined using the best professional judgment of the scientists, regulatory staff, and responsible parties involved with the site. These decisions take into account the site-specific nature of sources and transport mechanisms, and the effort and costs involved in both the site investigation and potential cleanup actions. This was the process used to develop the station distribution scheme for the Site. Therefore, the station densities used at the Site are considered sufficient to characterize the nature and extent of sediment contamination, and to develop a remedial footprint.

Comment ID: 142 **Organization:** NASSCO
DTR Section: 18
Comment:
IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

e.Under The CUT's Triad Approach, Shipyard Sediments Generally Show "Low" Likelihood Of Impacts On Aquatic Life (Findings 14–20)

Comment No. 128-131

Despite the aforementioned structural biases that skew Staff's decision framework in favor of finding impacts on aquatic wildlife at the Site, Site sediments still generally show "low" likelihood of impacts on aquatic life under Staff's triad approach. [Comment No. 128, TCAO, at 18-20, DTR, at 18-20]. For example, Staff has concluded that the health of the benthic community is "unlikely" to be adversely impacted by Site sediments at a majority of NASSCO stations (8 of 15), and is either "possibly" or "likely" impacted at only 5 and 2 stations, respectively. DTR, at Table 18-1. [Comment No. 129, TCAO, at 18, DTR, at 18.1, 18.4, 18.5].

Moreover, as discussed in detail above, Staff's benthic community analysis—which is the most direct evidence of impacts to benthic macroinvertebrates—categorized 13 of 15 stations at NASSCO as having only a "low" likelihood of benthic community degradation, even under Staff's extremely conservative framework. Id.; see also Ginn Report, at 44-45 (concluding that these stations actually present "no" likelihood of adverse effects, due to the lack of significant difference from reference conditions for all benthic community metrics and the mature benthic communities observed). [Comment No. 130, TCAO, at 18-20, DTR, at 18.1, 18.4, 18.5, 19, 20].

NASSCO appreciates Staff's efforts to ensure that the TCAO is adequately protective of aquatic life beneficial uses; however, Staff's framework is replete with excessively conservative assumptions and structural biases towards finding impairment to aquatic life. As a result, the conclusions in the TCAO are not reflective of the true condition of the Site, and lead to an overly conservative result, which should instead have been based upon a realistic site-specific risk assessment, as is required under Section 13304 and Resolution 92-49. [Comment No. 131, TCAO, at 14-20, DTR, at 14-20].

Comment ID: 143 **Organization:** NASSCO
DTR Section: 24
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

3. There Is No Significant Risk To Aquatic-Dependent Wildlife (Findings 19, 21-24, 32)

Comment No. 132-134

The TCAO concludes that aquatic-dependent wildlife uses (Wildlife Habitat (WILD); Preservation of Biological Habitats of Special Significance (BIOL); and Rare, Threatened, or Endangered Species (RARE)) in San Diego Bay are impaired "due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site." TCAO, at ¶ 21.

As noted above, however, the results of the sediment investigation indicate that, although contaminants of concern and other pollutants are present in Site sediments in elevated concentrations relative to reference, they do not pose risks to aquatic wildlife because they are not bioavailable, and because many constituents do not bioaccumulate. [Comment No. 132, TCAO, at 19, 21-24, DTR, at 19, 21-24].

By the same token, the two-tier risk assessment conducted for aquatic-dependent wildlife was overly conservative, employed unrealistic assumptions, and did not comply with relevant state and federal guidance in the process of concluding that "ingestion of prey items . . . within all four assessment units at the Shipyard Sediment Site poses an increased risk above reference to all receptors of concern (excluding the sea lion) . . . [including] BAP, PCBs, copper, lead, mercury, and zinc." TCAO, at ¶ 24. [Comment No. 133, TCAO, at 21-24, DTR, at 21-24]. For the reasons set forth below, the TCAO and DTR should have concluded that sediment at the Shipyard Sediment Site poses no significant risk to aquatic-dependent wildlife. [Comment No. 134, TCAO, at 21-24, DTR, at 21-24].

Comment ID: 144 **Organization:** NASSCO
DTR Section: 24.2.2
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

3. There Is No Significant Risk To Aquatic-Dependent Wildlife (Findings 19, 21-24, 32)

a. Regional Board Staff's Analysis Employs Assumptions That Are Overly Conservative And Unrealistic, And Bias The Results

Comment No. 135-148

In the process of conducting a Tier-II risk analysis, Staff made several assumptions that were overly conservative and biased the results of the analysis in a way that preordained the conclusion that aquatic-dependent wildlife uses were impaired by Shipyard sediment. [Comment No. 135, TCAO, at 24, DTR, at 24].

First, Staff assumed an area use factor ("AUF") of 1.0 for all receptors. This means that Staff assumed that the six receptors of concern—including the California least tern, California brown pelican, Western grebe, Surf scoter, California sea lion, and East Pacific green turtle—all derived 100% of their diet from prey obtained from the Shipyard. DTR, at Section 24.2.2, Table 24-6. This assumption is wholly unrealistic for all six receptors, and significantly magnified the hazard quotient for ever single receptor. Not only are the home ranges of all six species substantially greater than the 43 acre NASSCO Shipyard area, but also it defies belief that any receptor would choose to only forage an active industrial Shipyard where the habitat quality is low for all six indicator species. See Ginn Report, at 59-61. [Comment No. 136, TCAO, at 24, 32, DTR, at 24.2.2-24.2.4, 24.2.6, 32.2, Appendix 24].

As demonstrated in Table 6 of the Ginn Report, by assuming that the 43 acre NASSCO leasehold was the entire forage area of the six receptor species, as opposed to choosing the available habitat within San Diego Bay, the Staff ensured that the maximum hazard quotient for every receptor was well over 1.0. In contrast, using a realistic assumption of forage area based on San Diego Bay Habitat demonstrates that no hazard quotient would be over 0.20, well below 1.0. Accordingly, the TCAO/DTR conclusion that aquatic-dependent wildlife are impaired from sediment contamination at NASSCO is driven by this single policy decision. [Comment No. 137, TCAO, at 21-24, 32.2, DTR, at 21-24, 32.2].

Furthermore, Staff's failure to consider the actual AUF for the six indicator species did not comport with U.S.E.P.A. or California Department of Toxic Substances Control guidance documents on how to perform an ecological risk assessment. Ginn Report, at 61-63. Nor did Staff rely on any studies, guidelines, or agency documents when it made this policy decision, or conduct any study of its own to determine the actual use the six receptors at the NASSCO Shipyard. Alo Depo, at 333:11-334:2; 345:8-346:13. [Comment No. 138, TCAO, at 24, DTR, at 24.2]. Accordingly, not only did Staff's resolve to utilize an AUF of 1.0 lead to the conclusion of impairment, but also it was an arbitrary policy decision, which neither comports with realistic assumption nor standard ecological risk assessment guidance. Therefore, it is an arbitrary and capricious determination in the TCAO and DTR that should be reversed, and aquatic-dependent wildlife conclusions reworked. [Comment No. 139, TCAO, at 24, DTR, at 24.2, Appendix 24].

Comment ID: 145 **Organization:** BAE Systems
DTR Section: 33.1.2, Table 33-1. Tables A33-1, A33-2, A33-3
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

2. Comment C.2.2 that "The Composite SWAC Ranking Value provides a consistent, but incomplete, basis for ranking polygons for inclusion in the Proposed Remedial Footprint" is

Incorrect (DTR § 33.1.2, DTR Table 33-1; DTR Appendix for Section 33, Tables A33-1, A33-2 and A33-3)

The DTR used Composite SWAC Ranking Values as one line of evidence for identifying polygons to include in the remedial footprint at the Site. Comment C.2.2 of MacDonald 3/11/11 Expert Report states that "The Composite SWAC Ranking Value provides a consistent, but incomplete, basis for ranking polygons for inclusion in the Proposed Remedial Footprint."

MacDonald states that "the index does not consider the concentrations of other contaminants that could be elevated in sediments from the site. Specifically, lead, zinc, low molecular weight (L)PAHs all exceed toxicity thresholds in surficial sediments at one or more sampling stations." MacDonald then refers the reader to Table A33-3 of the DTR. Because LPAH is not addressed in Table A33-3, the basis of his assertion with respect to that group of chemicals is unclear. Also, MacDonald does not identify which toxicity thresholds he is referring to when he states that they were exceeded, so the basis of that assertion is also unclear. However, if 60% LAETs are calculated from the LAETs for lead and zinc presented in Table 9-10 of Exponent (2003), the resulting values of 150 and 720 mg/kg, respectively, are not exceeded for any of the polygons that are not included within the remedial footprint, as documented in Table 33-3 of the DTR. Therefore, MacDonald's assertion that lead and zinc exceed toxicity thresholds outside of the remediation footprint is untrue based upon site-specific thresholds calculated in a manner consistent with how the thresholds for the primary COCs were calculated.

In addition to the fact that lead and zinc did not exceed their estimated 60% LAET values outside the remedial footprint, Section 29.3 of the DTR describes how it was verified that secondary COCs, such as lead and zinc, were highly correlated with the primary COCs, to ensure that they would be addressed in a common remedial footprint. Table 29-4 of the DTR shows that both lead and zinc exhibited strong positive correlations with several of the primary COCs. The highest correlations for lead and zinc were found with copper, for which both correlations coefficients were >0.90 (i.e., 0.90 and 0.94, respectively). Therefore, the co-occurrence evaluation conducted in the DTR ensured that the secondary COCs were accounted for in the remedial footprint.

Comment ID: 146 **Organization:** BAE Systems
DTR Section: 33.1.2 Table 33-1, 33-6, A33-1, A33-2, A33-3
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

3. Comment C.2.3 that "The Composite SWAC Ranking Value was not applied consistently to identify polygons for inclusion in the Proposed Remedial Footprint" is Invalid (DTR Tables 33-1 and 33-6; DTR Appendix for Section 33, Tables A33-1, A33-2 and A33-3)

The DTR used Composite SWAC Ranking Values as one line of evidence for identifying polygons to include in the remedial footprint at the Site. Comment C.2.3 of MacDonald 3/11/11 Expert Report states that “The Composite SWAC Ranking Value was not applied consistently to identify polygons for inclusion in the Proposed Remedial Footprint."

MacDonald states the “a total of 15 stations with Composite SWAC Ranking Values higher than 5.5 were not included in the Proposed Remediation Footprint”, and that “Table 33-6 fails to provide an explanation for excluding ten polygons with Composite SWAC Ranking Values greater than 5.5 from the Proposed Remediation Footprint." The DTR clearly states on Page 33-1 that “The polygons were ranked based on a number of factors including likely impaired stations, composite surface-area weighted average concentrations for the five primary COCs, sitespecific median effects quotient (SS-MEQ) for non-Triad stations, and highest concentration of individual primary COCs." Therefore the selection of the polygons to include in the remedial footprint was based on multiple lines of evidence, as opposed to a single line of evidence such as the Composite SWAC Ranking Values. The use of a weight-of-evidence approach based on multiple lines of evidence is consistent with the manner in which most sediment quality evaluations are currently conducted in the U.S. by sediment quality practitioners (e.g., Burton et al. 2002a,b; Chapman and Anderson 2005; Chapman et al. 2002; Forbes et al. 2004, SFF 2007; Weisberg and Bay 2011), and therefore was considered appropriate for use at the Site (see Section 15 of the DTR).

As shown in Table 33-1 of the DTR, the 23 polygons with the highest Composite SWAC Ranking Values were included in the remedial footprint (see third column of the table), and all of those polygons had values of 7.6 or greater. As an example, Polygon NA09 was added to this group primarily because it had the 10th highest concentration of mercury (i.e., a primary COC) of all the polygons (see Table 33-4 of the DTR). Therefore, the SWAC Value of 5.5 was not the primary line of evidence used to include NA09 in the remedial footprint, and a SWAC Value of 5.5 was not used as a standalone justification for including any polygon in the remedial footprint, as MacDonald’s assertion implies. MacDonald’s assertion is therefore invalid.

MacDonald also states that the HPAH concentration of Polygon NA07 was listed as 15.85 mg/kg in Table A33-3 of the DTR, that this value exceeds the 60% LAET value of 15.3 mg/kg, and that, as a consequence, the rationale for excluding that polygon from the remedial footprint is based on all COCs being less that 60% LAET values (Table 33-6 of the DTR) is incorrect. McDonald’s statement that the HPAH value for Polygon NA07 is 15.85 mg/kg is correct, and Table 33-6 is, therefore, in error. Nevertheless, the Triad results indicate that NA07 is not likely impaired, with low sediment toxicity and low benthic community effects being found (see Table 33-6 of the DTR). Therefore, it is likely that the bioavailability of the HPAHs are reduced at this location, and the empirical biological results should be given more weight than the bulk sediment chemistry results when deciding whether to include this polygon in the remedial footprint. The decision to not include this polygon in the footprint is therefore justified.

Although MacDonald states that benthic macroinvertebrate data for Polygon NA07 was not included in the database he was provided, benthic data are available for this polygon (see Table 18-1 of the DTR).

Comment ID: 147 **Organization:** NASSCO
DTR Section: 24
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

3. There Is No Significant Risk To Aquatic-Dependent Wildlife (Findings 19, 21-24, 32)

b. Direct Evidence Supports The Conclusion That Wildlife Are Not Impaired (Findings 15, 18, 21-24)

Comment No. 149-153

If direct evidence of observed conditions aquatic life uses are not impaired, it also stands to reason that aquatic-dependent wildlife uses also are not impaired. [Comment No. 149, TCAO, at 15, 18, 23, 24, DTR, at 15, 18.4, 23, 24, Appendix 15]. Direct evidence presented in the DTR demonstrates that when compared to reference conditions, the number of fish, crustaceans, polychaetes, mollusks, and other organisms found at the NASSCO Shipyard is not significantly different. See Ginn Report, at 34-35 (Figures 3-4). [Comment No. 150, TCAO, at 15, 18, 23, 24, DTR, at 15, 18.4, 23, 24]. Furthermore, the Exponent Report demonstrates that PCB concentrations in fish and lobsters are higher in reference areas and in the "outside NASSCO" area of the leasehold (furthest from NASSCO's activities) than within the NASSCO Shipyard. Exponent Report, at Tables 10-2, 10-3, 10-4. [Comment No. 151, TCAO, at 24, 28, DTR, at 24, 28]. As described in Sections IV.A.2, above, there are very good reasons to conclude that aquatic life beneficial uses are not impaired at the NASSCO Shipyard, and the direct evidence to that effect supports that conclusion. [Comment No. 152, TCAO, at 14-20, 28 DTR, at 14-20, 28].

Moreover, it is worth noting that the neither the DTR nor the TCAO cite any studies demonstrating adverse impacts on the California least tern, California brown pelican, Western grebe, Surf scoter, California sea lion, or East Pacific green turtle in San Diego Bay. [Comment No. 153, TCAO, at 21-24, DTR, at 21-24].

Comment ID: 148 **Organization:** NASSCO
DTR Section: 15,21-24,28
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

3. There Is No Significant Risk To Aquatic-Dependent Wildlife (Findings 19, 21-24, 32)

c. Any Potential Negative Effects From Shipyard Contaminants Are Not Observed In Fish Beyond The Leasehold (Findings 15, 21-24, 28)

Comment No. 154-161

The DTR employed a weight-of-evidence approach to evaluate the exposure to and potential for adverse impacts from the Shipyard Site. As part of this approach, the DTR analyzed the tissue concentrations of contaminants of concern in fish caught inside the NASSCO leasehold, and compared them to concentrations in fish caught outside the leasehold and in reference conditions in San Diego Bay. DTR, at Table 28-9. The results demonstrated that there was no significant difference in the level of tissue concentrations for contaminants of concern between fish caught inside the NASSCO Shipyard, and at reference areas around San Diego Bay. Finley Report, at 28, 49-50 (Tables 13-14). [Comment No. 154, TCAO, at 21-24, 28, DTR, at 21-24, 28.3]. Rather, mercury in fish captured within the NASSCO leasehold was actually lower than reference conditions, and are not impacted for mercury at unsafe levels. DTR, at Table 28-9; Alo Depo, at 115:13 – 115:21, 116:8 – 116:20, 117:7 – 117:21. [Comment No. 155, TCAO, at 21-24, 28, DTR, at 21-24, 28.3]. In fact, the mercury levels of fillets from fish caught within the leasehold satisfy EPA's recommended guidance threshold for what constitutes "lower levels of mercury in fish." Alo Depo, at 116:8 – 116:20. [Comment No. 156, TCAO, at 21-24, 28, DTR, at 21-24, 28.3]. Additionally, the mean chemical concentrations measured in the edible fish tissues collected inside the NASSCO leasehold were not statistically different from those measured outside (but adjacent to) the leasehold. Finley Report, at 28-29, 50. Similarly, the mean chemical concentrations in fish caught outside (but adjacent to) the leasehold were not statistically different from those caught at reference stations, which were specifically selected to represent background conditions. Id. Thus, the fish tissue concentrations observed in fish did not vary significantly by location, suggesting that (1) spotted sand bass at the Site are meet regional background conditions and (2) shipyard chemicals do not adversely affect fish inside, or beyond, the leasehold. [Comment No. 157, TCAO, at 21-24, 28, DTR, at 21-24, 28.3].

Comment ID: 149 **Organization:** BAE Systems
DTR Section: 32.5.2, Table 32-21, 33.1.1, Table 33-2
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

4. Comment C.2.4 that "There is insufficient evidence to demonstrate that the SS-MEQ threshold (0.9) provides a reliable basis for

identifying polygons that are 'Likely' impacted" is Incorrect (DTR § 32.5.2; DTR Table 32-21; DTR § 33.1.3; DTR Table 33-2)

The DTR identifies a SS-MEQ threshold value of 0.9 for the five primary COCs as one line of evidence for evaluating potential benthic impairment at the Site. Comment C.2.4 of MacDonald 3/11/11 Expert Report states that "There is insufficient evidence to demonstrate that the SS-MEQ threshold (0.9) provides a reliable basis for identifying polygons that are 'Likely' impacted."

MacDonald states that the technical basis for selecting the 0.9 threshold is not presented in Section 32.5.2 of the DTR and that the underlying data with which the reliability calculations were made are not provided. However, the methods used to develop and evaluate the SS-MEQ are clearly described in the text of Section 32.5.2 of the DTR, and all of the related underlying data are presented in Table A32-11 of the DTR. As McDonald correctly noted, the data presented in Table 32-21 of the DTR show that a threshold value of 0.9 has an overall reliability of 70 percent, which was erroneously stated as 73 percent in the text of Section 32.5.2 of the DTR. The reduction in reliability of 3 percent is not statistically meaningful nor does the reduction diminish the SS-MEQ as a reliable basis for identifying polygons that are "likely" impacted.

The other measures of predictive reliability of the SS-MEQ threshold of 0.9 presented in Tables 32-21 and A32-11 of the DTR show that the threshold is biased toward being environmentally protective. Its ability to accurately predict locations that are not "likely impaired" (referred to as non-likely efficiency in Table A32-11 of the DTR) was 94 percent (i.e., 16 of 17 predictions). The only polygon erroneously predicted not to be likely impaired was NA22, which had a SS-MEQ value of only 0.35. However, as stated in Section 32.5.2 of the DTR, there is substantial evidence of non-COC related impairment from physical disturbance in that polygon. The ability of the threshold SS-MEQ of 0.9 to accurately predict "likely impairment" (referred to as likely efficiency in Table A32-11 of the DTR) was only 38 percent (i.e., 5 of 13 predictions). That is, the SS-MEQ threshold of 0.9 predicted impairment at a substantial number of locations without actual impairment (i.e., 62 percent of the stations), as well as stations with impairment.

The predictive reliability results for the SS-MEQ value of 0.9 indicate that there is a very high degree of confidence that polygons with SS-MEQ values less than 0.9 are not likely to be impaired. Therefore, the decision to exclude all polygons with SS-MEQ values less than 0.9 in the remedial footprint is environmentally protective. In contrast, there is much less confidence that polygons with SS-MEQ values greater than 0.9 are likely to be impaired. Therefore, the conservative decision to include all polygons with SS-MEQ values greater than 0.9 in the remedial footprint is also environmentally protective, because over half of those polygons may not be impaired.

Contrary to the assertion of MacDonald that there is insufficient evidence to demonstrate that the threshold SS-MEQ is reliable, the information presented above indicates that the threshold SS-MEQ of 0.9 is an environmentally protective predictor of both the presence and absence of impairment at the Site.

Comment ID: 150 **Organization:** NASSCO
DTR Section: 28
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

Comment No. 162-163

The TCAO concludes that human health beneficial uses for San Diego Bay (Contact Water Recreation (REC-1); Non-contact Water Recreation (REC-2); Shellfish Harvesting (SHELL); and Commercial and Sport Fishing (COMM)) are impaired "due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site." TCAO, at ¶ 25.

Although the results of the sediment investigation indicate that contaminants of concern and other pollutants are present in Site sediments in elevated concentrations relative to reference, they do not pose risks to human health because the NASSCO Shipyard is a secured facility that prohibits the public from engaging any of these beneficial uses, fish and shellfish beyond the NASSCO Shipyard do not exhibit elevated levels of Shipyard contaminants, and even if the public were able to catch fish and shellfish in the Shipyard, using well-established and reasonable assumptions to assess risk demonstrates that fish and shellfish from the Shipyard do not pose a threat to human health. [Comment No. 162, TCAO, at 25-28, DTR, at 25-28, Appendix 28].

As observed above for aquatic-dependent wildlife, Staff's two-tier risk assessment conducted for human health was overly conservative, employed unrealistic assumptions, and did not comply with relevant state and federal guidance. [Comment No. 163, TCAO, at 27-28, DTR, at 27.2, 28.2]. For the reasons set forth below, there TCAO and DTR should have concluded that sediment at the Shipyard Sediment Site poses no significant risk to human health.

Comment ID: 151 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

a. Human Health Cannot Be Impacted From Contamination In Fish Because Fishing Does Not Occur In The Shipyard (Findings 15-28)

Comment No. 164-170

The NASSCO Shipyard is a high-security area due to its work for the U.S. Navy, and is characterized by a lack of public access. In San Diego Bay, a security boom prevents unauthorized vessels from approaching any closer than 300 feet from the Shipyard. Expert Report of Brent L. Finley, Prepared in Regards to the California Regional Water Quality Control Board's Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 (San Diego Bay) (March 11, 2011) ("Finley Report"), at 4. From the shore, unauthorized personnel are prohibited from accessing the Shipyard by security guards, buildings, eight foot fences with razor wire, video surveillance, and alarm systems, and even approved guests are escorted around the site at all times. Id. These security measures absolutely prevent any unauthorized access to the NASSCO Shipyard. [Comment No. 164, TCAO, at 27-28, DTR, at 27.2.1, 28.2.2].

Furthermore, there is no documented instance of any fishing or shellfish collection – beyond that required by the Regional Board as part of the sediment investigation – taking place at the NASSCO Shipyard, and fishing is strictly prohibited at the NASSCO Shipyard. Alo Depo, 88:4-7. [Comment No. 165, TCAO, at 27-28, DTR, at 27.2.1, 28.2.2]. Accordingly, there is no justification for the DTR's assertion that "it is possible that NASSO or BAE Systems employees or U.S. Navy personnel may fish off of the piers, bulkheads, riprap, ships, etc." DTR, at 28-10. [Comment No. 166, TCAO, at 27-28, DTR, at 27.2.1, 28.2.2]. By the same token, although the Environmental Health Coalition has maintained that fishing has taken place at the Shipyards, that assertion is based completely on an unsubstantiated conversation that Ms. Laura Hunter claims to have had with some person at some point over the past twenty years. Deposition of Laura Hunter ("Hunter Depo"), at 20:24-22:2; 151:15-153:14. [Comment No. 167, TCAO, at 27-28, DTR, at 27.2.1, 28.2.2].

Furthermore, there is no indication that the security measures at the NASSCO Shipyard will be relaxed any time soon. NASSCO lease with the Port of San Diego continues through the year 2040, and the Port Master Plan indicates that the area is intended to be used as an industrial shipyard for the foreseeable future. Alo Depo, at 106-21-107:8. [Comment No. 168, TCAO, at 27-28, DTR, at 27.2.1, 28.2.2]. Furthermore, if at any point in the future the land use plan for the NASSCO Shipyard changed, the Regional Board could at that time determine whether the risk to human health posed by the new land use would change in any way. Id. at 107:23-108:6. [Comment No. 169, TCAO, at 27-28, DTR, at 27.2.1, 28.2.2].

Accordingly, it is completely unrealistic to expect that the public will engage in any of the beneficial uses found to be impaired in Finding 25 at the NASSCO Shipyard. [Comment No. 170, TCAO, at 25, 27-28, DTR, at 25, 27-28].

Comment ID: 152 **Organization:** NASSCO

DTR Section: 28
Comment:
IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

b. Fish Beyond The Shipyard Do Not Exhibit Significantly Elevated Levels Of Shipyard Contaminants And Do Not Present Risks To Human Health Relative To Reference Conditions (Finding 28)

Comment No. 171-172

It would be a concern if fish and shellfish picked up contaminants at the NASSCO Shipyard, and then migrated into areas where they could be caught by San Diego Bay anglers. Accordingly, fish and lobster were caught inside the NASSCO Shipyard and at reference areas around San Diego Bay, and tissue concentrations of contaminants of concern were compared. The results demonstrated that there was no significant difference in the level of tissue concentrations for contaminants of concern between fish caught inside the NASSCO Shipyard, and at reference areas around San Diego Bay. Finley Report, at 49-50 (Tables 13-14). [Comment No. 171, TCAO, at 28, DTR, at 28, Appendix 28]. The fact that fish tissue data collected from the NASSCO Shipyard is no different from tissue data collected from the reference areas “strongly suggests the discharges from the leasehold do not appear to have influenced fish tissue concentrations.” Id. at 28. [Comment No. 172, TCAO, at 28, DTR, at 28, Appendix 28]

Comment ID: 153 **Organization:** NASSCO
DTR Section: 27
Comment:
IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

c. The Tier I Risk Assessment Employed In the DTR Inappropriately used Macoma Nasuta Tissue (Findings 26, 27)

Comment No. 173-174

The Tier I Risk Assessment conducted by Staff used Macoma nasuta tissue from laboratory exposures to conduct the screening level assessment for human health risk. This was inappropriate because an appropriate "surrogate" species should show ecological and physiological similarities to a species that would naturally occur at the Shipyard and be harvested by humans. Ginn Report, at 77-78. [Comment No. 173, TCAO, at 26-27, DTR, at 26, 27.2]. In fact, Macoma nasuta is relatively rare at the NASSCO Shipyard, and is not subject to recreational harvesting by humans in California or elsewhere. Id. at 78. [Comment No. 174, TCAO, at 26-27, DTR, at 26, 27.2].

Comment ID: 154 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

Comment No. 175-198

Staff were aware that U.S.E.P.A guidance indicates that Tier II Risk Assessment exposure assumptions "should be based on an estimate of the reasonable maximum exposure (RME) expected to occur under both current and future conditions at the site. The RME is defined as the highest exposure that is reasonably expected to occur at a site." DTR, at 28-12 (emphasis added). Yet Staff's Tier II Risk Assessment assumes "that a person will somehow visit the NASSCO leasehold (despite the lack of access from both land and water) and consume fish/shellfish containing the maximum measured concentrations every day for 30 years. This clearly does not fit the definition of a reasonable maximal exposure and is in fact a worst-case screening analysis." Finley Report, at 9. [Comment No. 175, TCAO, at 28, DTR, at 28.2.2, 28.2.6].

Under the guise of being "conservative," Staff ignored relevant federal guidance and presented a Tier II Risk Assessment that is based on "a series of high-end, implausible exposure assumptions that do not involve common sense or reasonableness . . . ." Ginn Report, at 80. [Comment No. 176, TCAO, at 28, DTR, at 28]. As explained below, assumptions employed in Staff's Tier II Risk Assessment flawed it to such an extent that it "does not provide scientifically valid estimates of risk associated with the NASSCO site, and is of no value in making risk management decisions for the site." Id. at 80-81. [Comment No. 177, TCAO, at 28, DTR, at 28].

The Ginn Report succinctly summarizes four compounding assumptions employed by Staff:

1. All of the fish or shellfish tissue consumed each day comes from the shipyard site (i.e., FI [Fractional Intake] = 1.0)
2. Four percent of the arsenic in seafood is in the inorganic form
3. Risks for subsistence anglers are unrealistic
   a. The only species consumed are spotted sand bass and spiny lobster.
   b. The theoretical subsistence angler consumes only the whole-bodies of the fish and invertebrate species
4. Anglers have complete access to the highly-restricted shipyard site.

Ginn Report, at 81. The Finley Report concurs with Ginn's recitation of errors, and identifies several additional compounding errors:

a) There is no basis for assuming that a subsistence angler would only consume entire fish or shellfish,
b) The use of maximum chemical concentrations to represent tissue chemical concentrations yields a biased and potentially inaccurate estimate of health risk,
c) Considering the lack of access and industrial nature of the shipyard leasehold, the use of unmodified fish consumption rates from the Santa Monica Bay Study, which was conducted in a highly accessible recreational area, is inappropriate and inconsistent with EPA guidance,
d) The assumption that 4% of the measured arsenic in fish/lobster tissue is inorganic is unjustified, and
e) There is no basis for the assumption of a 30-year exposure duration at this location.

Finley Report, at 22.

Comment ID: 155 **Organization:** NASSCO
DTR Section: 32
Comment:
NOTE NASSCO'S COMMENTS No. 16 THRU No. 26 ARE CONTAINED HEREIN

III. THE TENTATIVE CLEANUP AND ABATEMENT ORDER RESULTS IN THE DISPARATE TREATMENT OF NASSCO, CONTRARY TO LAW

A. In Violation Of The Mandate Of State Board Resolution 92-49, And Principles Of Due Process And Equal Protection, The Order Would Treat NASSCO Differently Than Similarly Situated Dischargers (Findings 2, 6, 32, 36)

Resolution 92-49 provides that the "Regional Water Board shall . . . prescribe cleanup levels which are consistent with appropriate levels set by the Regional Water Board for analogous discharges that involve similar wastes, site characteristics, and water quality considerations." See also Barker Depo, at 345:12-345:17 (recognizing that a goal of Resolution 92-49 is to ensure that Regional Boards treat similar sites similarly). Principles of due process and equal protection also require both fundamental fairness, and that persons subject to legislation or regulation who are in the same circumstances be treated alike. U.S. Const. amend. XIV, §1; Cal. Const. art. I, §§ 7, 15.

Over the past decade, the Regional Board has prescribed cleanup levels for sediments at other shipyard and boatyard locations on San Diego Bay with analogous discharges involving similar circumstances as the Site. See e.g., San Diego Regional Board Order Nos. 88-86, 88-78, 89-31, 84-100, 94-101, 94-102, 95-21, 97-63, 99-06, 2001-303, R9-2002-0072. Barker Depo, Ex. 1210 at Exhibit A. However, despite substantial similarities between these sites and NASSCO, the Regional Board now seeks to impose radically more stringent cleanup levels upon NASSCO in departure from prior precedent and in violation of both due process and equal protection principles, and the consistency requirement expressly stated in Resolution 92-49. TCAO, at ¶ 32, DTR, at 32-1. [Comment No. 16, TCAO, at 32, 36, DTR, at 32, 36.4].

1. The Proposed Cleanup Levels Are Unprecedented Compared To Other Sediment Remediation Projects In San Diego Bay (Findings 32, 36)

Although similar sites are required to be treated similarly, Staff has proposed unprecedented cleanup levels for the Site, while setting much less stringent levels at other similarly situated sites. Response to NASSCO's RFAs, at 56. [Comment No. 17, TCAO, at 32, 36, DTR, at 32, 36.4]. Since the early 1990s, the Regional Board has remediated sediments at a number of shipyards, boatyards and other industrial sites in San Diego Bay. Many of these sites, including the Commercial Basin Boatyards, Paco Terminals, Convair Lagoon, and Campbell Shipyard, are similar to NASSCO in many respects, including but not limited to geographical location, water quality considerations, uses, wastes, beneficial uses, and receptors of concern. Barker Depo, at 118:14 – 140:1; 346:25 – 352:15; 354:22 – 361:18; 385:17 – 387:4, 564:25 – 565:23, 567:7 – 567:16; see also Barker Depo, Ex. 1210 at Exhibit A. [Comment No. 18, TCAO, at 32, 36, DTR, at 32, 36.4]. In particular, Campbell and NASSCO have similar physical, biological and chemical conditions, locations, site activities, waste materials and matrices, offsite pollutant inputs, and hydrodynamic and biogeographic zones. Barker Depo, at 362:15 – 365:5. [Comment No. 19, TCAO, at 2, 6, 32, 36, DTR, at 2.3, 6.3, 32, 36.4]. Yet, in spite of these similarities, the cleanup levels proposed for NASSCO are far more stringent than those of the other sites, including Campbell Shipyard, for the same constituents. See e.g., Barker Depo, 365:8 – 365:23. [Comment No. 20, TCAO, at Comment No. 21, TCAO, at 32, 36, DTR, at 32, 36.4].

For example, at Paco Terminals, Campbell Shipyard, and the Commercial Basin Boatyards requiring cleanup, the copper cleanup levels were 1000 mg/kg, 810 mg/kg, and 530mg/kg, respectively. Thus the copper cleanup levels for all of these sites are well above the post-remedial Surface-Area Weighted Average Concentration ("SWAC") (159 mg/kg) and dredge concentrations (121 mg/kg) proposed for NASSCO. Similarly, the mercury cleanup levels set for the Commercial Basin boatyards that required remediation were 4.8 mg/kg, which is once again almost ten times above the post-remedial SWAC (0.68) and dredge concentration (0.57) proposed for NASSCO. Cleanup levels for primary risk drivers, such as PCBs and TBT, are also significantly more stringent at NASSCO compared with Campbell. Barker Depo, Ex. 1210 at Exhibit A. [Comment No. 22, TCAO, at Comment No. 23, TCAO, at 32, 36, DTR, at 32, 36.4].

To reach these low cleanup levels, Staff has introduced excessive levels of conservatism in its analysis. [Comment No. 24, TCAO, at 14-28, 32, DTR, at 14-28, 32]. For example, Staff calculated cleanup levels for Campbell using an apparent effects approach; however, at NASSCO, Staff used the lowest apparent effects threshold, and then introduced a 40% safety buffer to further reduce the cleanup level, resulting in exceptionally low cleanup levels compared to other sites in the bay. Barker Depo, 373:14 – 374:22. [Comment No. 25, TCAO, at 14-28, 32, DTR, at 14-28, 32]. Moreover, cleanup levels at NASSCO are also more stringent than similar sites elsewhere in the nation. Barker Depo, at 944:18 – 947:11, 47:16 – 949:21. [Comment No. 26, TCAO, at 32, 36, DTR, at 32, 36.4].

Comment ID: 156 **Organization:** NASSCO
DTR Section: 12
Comment:

V. MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

A.Natural Attenuation Is Occurring And Should Be The Preferred Remedy (Findings 30, 36)

3. Site-Specific Circumstances Support Monitored Natural Attenuation As The Preferred Remedy (Finding 18, 23-24, 27-28, 30)

In addition to the fact that monitored natural attenuation is already occurring, the following site-specific circumstances support monitored natural attenuation as the preferred remedy for the Site:

a.The NASSCO Site Will Remain A Secured Shipyard Until At Least 2040 (Findings 28, 30)
The fact that NASSCO will remain a secured shipyard until at least 2040 supports implementation of monitored natural attenuation because security measures will prevent human exposure to site contaminants and wildlife during the recovery period. Exponent Report, at 18-6; Finley Report, at 6. [Comment No. 236, TCAO, at 28, 30, DTR, at 28.2, 30]. Additionally, the demands being made, and to be made, on the waters at the Site, given its use as an active shipyard, also support monitored natural attenuation. [Comment No. 237, TCAO, at 28, 30, DTR, at 28.2, 30].
Based on the operative land use plans, NASSCO property is required to be used for marine-oriented industrial uses, and is classified as prime industrial land. Finley Report, at 3; Alo Depo, at 106:21 – 107:8. Further, under the terms of NASSCO's current lease, NASSCO will remain a secured shipyard until at least 2040. Attachment C, San Diego Unified Port District Lease to NASSCO, and Amendments thereto ("Lease") . As an active industrial facility, the shipyard does not permit fishing, swimming, recreation, or other such uses at the Site. Armed military personnel, and other safeguards, including a 300 foot security boom, ensure that these restrictions are enforced. [Comment No. 238, TCAO, at 28, 30, DTR, at 28.2, 30]. Moreover, there is no indication that NASSCO will be used as a recreational area in the foreseeable future, indicating that existing security measures will continue to prevent exposure to humans during the recovery period. See Finley Report, at 3. [Comment No. 239, TCAO, at 28, 30, DTR, at 28.2, 30]. It is both common and appropriate to take these types of land use considerations into account in choosing an appropriate remedy. Alo Depo, at 107:23 – 108:6, 109:4 – 109:7. Yet,

the TCAO is based upon conservative assumptions that account for recreational, and other uses that are simply not relevant to the Site, especially considering that monitored natural attenuation is expected to remediate the sediments to the proposed levels long before NASSCO's lease expires. [Comment No. 240, TCAO, at 12, 18, 23-24, 27-28, 30, DTR, at 12, 18, 23-24, 27-28, 30].

b.NASSCO Implements Extensive Pollution Prevention Mechanisms To Eliminate The Possibility Of Direct Releases Of Contaminants (Finding 2, 30)
The shipyard has incorporated extensive pollution prevention controls to eliminate the possibility of direct releases of contamination, Exponent Report, at 18-6. These measures include (1) the collection and treatment of all rainwater and other liquids released within the shipyard's paved areas, with subsequent discharge to the sewer system; (2) onsite treatment of bilge and ballast water; (3) the implementation of state of the art Best Management Practices; and (4) ongoing training of all personnel in pollution prevention practices. Id. As a result, any significant future contribution of contaminants from shipyard sources is unlikely. Id. [Comment No. 241, TCAO, at 2, 30, DTR, at 2.3.1, 2.5, 30].
Taken together, the site-specific factors present at NASSCO strongly support monitored natural attenuation, and meet the criteria identified in the DTR that indicate that a site is "particularly conducive" to monitored natural attenuation. See DTR, at 30-2. [Comment No. 242, TCAO, at 2, 28, 30, DTR, at 2.3.1, 2.5, 28, 30].

Comment ID: 157 **Organization:** NASSCO
DTR Section: 34
Comment:
NOTE NASSCO'S COMMENTS No. 27 THRU No. 28 ARE CONTAINED HEREIN

III. THE TENTATIVE CLEANUP AND ABATEMENT ORDER RESULTS IN THE DISPARATE TREATMENT OF NASSCO, CONTRARY TO LAW

III.2. The Remedial Monitoring and Post-Remedial Monitoring Programs are unprecedented compared to other sediment remediation projects throughout SD Bay, and California (Findings 34, 36)

Staff has also proposed extensive remedial and post-remedial monitoring programs that are far more stringent than those required for other similar sediment remediation projects in San Diego Bay. Gibson Depo, at 103:23 – 104:12, 133:17 – 135:7 (testifying that the remedial and post-remedial monitoring programs described in the TCAO and DTR are more extensive than any other projects in San Diego Bay). For example, the Regional Board has never before required the implementation of a five- to ten-year post-remedial monitoring plan for a site not involving an engineered cap. Id. [Comment No. 27, TCAO, at 34, 36, DTR, at 34.2, 36.4].

In sum, by requiring significantly more stringent cleanup levels and monitoring programs for NASSCO and failing to regulate NASSCO in the same manner as other similarly situated shipyards and boatyards, the TCAO violates the consistency requirement expressly stated in

Resolution 92-49, as well as principles of due process and equal protection. [Comment No. 28, TCAO, at 32, 36, DTR, at 32, 36.4].

Comment ID: 158 **Organization:** NASSCO
DTR Section: 14 to 28
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

The Regional Board is authorized to adopt CAOs based only on sound scientific evidence that a potentially responsible party has “discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance . . . .” Cal. Water Code §13304(a) . Here, Staff alleges that NASSCO “caused or permitted the discharge of waste to the Shipyard Sediment Site, resulting in an accumulation of waste in the marine sediment [that] has caused conditions of contamination or nuisance in San Diego Bay that adversely affect aquatic life, aquatic-dependent wildlife, human health, and San Diego Bay beneficial uses.” TCAO, at ¶ 1. However, extensive scientific investigation conducted at the Site, including the sediment quality investigation upon which the findings and conclusions of the TCAO are purportedly based, indicates that beneficial uses at the Site are not unreasonably impaired and that active remediation, beyond monitored natural attenuation, is not warranted. Exponent Report, at 19-12 – 19-13; TCAO, at ¶ 13. [Comment No. 29, TCAO, at 13-28, DTR, at 13-28]

1. The Sediment Investigation Was Extensive and Unparalleled (Finding 13) [Comment No. 30, TCAO, at 13, DTR, at 13.1]

As documented in the TCAO and DTR, Staff’s findings are based primarily upon the results of a “detailed” sediment investigation that was conducted at the site in 2001 and 2002 by NASSCO and BAE Systems San Diego Ship Repair Facility (“BAE Systems”), under the direction and supervision of staff. TCAO, at ¶ 13; DTR, at 13-1 – 13-4. The investigation included sampling of five reference areas selected by Regional Board staff and fifteen triad stations within NASSCO’s leasehold alone, resulting in a comprehensive data set that measured sediment chemistry, sediment toxicity, benthic macroinvertebrate communities, bioaccumulation in fishes and invertebrates, and fish health using multiple independent indicators. Evaluation of Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 for the NASSCO Shipyard Sediment Site, Expert Report of Thomas C. Ginn, Ph.D. (“Ginn Report”), at 11-12. For each sampling station, synoptic measurements were made of sediment chemistry, sediment toxicity, and the structure of benthic macroinvertebrate communities. Id. Sediment toxicity was evaluated using three different toxicity tests, and the structure of benthic macroinvertebrate communities was assessed by analyzing five replicate samples from each station. Id. In addition, bioaccumulation was measured in invertebrates and fish that are prey to aquatic-dependent wildlife, and fish health was assessed by comparing the condition of 100 fishes caught at, and near the NASSCO leasehold, across a variety of indicators, including weight, length, age, and microscopic evaluation of organs for evidence of lesions or other abnormalities. Id. As a result, the investigation—which was conducted with substantial oversight and input from Staff, stakeholders, and the public—contains ample site-specific evidence, and has been described by Staff as "the most extensive sediment investigation ever conducted for a site in San Diego Bay," if not California. Exponent Report, at 1-2 – 1-4 (summarizing the directives and guidance provided by Regional Board staff throughout the planning and execution of the sediment investigation and Exponent Report); Deposition of David Barker ("Barker Depo"), at 80:2 – 80:22, 82:3 – 82:4, 2:14 – 83:23 (discussing the scope, quality, and Staff involvement in the sediment investigation); DTR, at 13-2 – 13-3 (summarizing Staff and stakeholder involvement in the sediment investigation).

The results of this extensive and unparalleled investigation, as discussed in detail below, found that risks to human health and aquatic-dependent wildlife at the shipyards "are well within acceptable levels" and that the sediment toxicity and adverse effects on benthic communities observed at certain locations are attributable to pesticides, not metals, butyltins, PCBs, or PAHs. Exponent Report, at 19-1. Moreover, the report found that aquatic life, aquatic-dependent wildlife, and human health beneficial uses are at approximately 95 percent of ideal conditions, and that any benefits from active remediation, such as dredging, would provide minimal incremental benefit at a very high cost. Id. at 19-13. As a result, the report concluded that "monitored natural recovery is therefore the most technically and economically feasible approach to addressing current sediment conditions at the shipyard." Id. Yet, despite the favorable results and recommendations from this comprehensive multimillion dollar sediment investigation, overseen by Regional Board Staff, the Cleanup Team now seeks to require large-scale dredging of sediments within, and adjacent to, NASSCO's leasehold to achieve cleanup levels that are unprecedented in San Diego Bay. [Comment No. 31, TCAO, at 14-32, 36, DTR, at 14-32, 36]. This aggressive approach violates the legal principles embodied in Section 13304 and Resolution 92-49, is contrary to existing scientific and technical evidence, and is not supported by the record. [Comment No. 32, TCAO, at 14-32, 36, DTR, at 14-32, 36].

Comment ID: 159 **Organization:** NASSCO
DTR Section: 30, 32, 34
Comment:
V. MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

B.Implementing The Order Will Cause Greater Harm To Beneficial Uses Than No Action (Findings 30, 32, 34)

Implementing the large-scale dredging described in the TCAO will result in greater harm to beneficial uses than leaving sediments in place and allowing contaminants to attenuate naturally. See Exponent Report, at § 18. [Comment No. 243, TCAO, at 30, 32, 34, DTR, at 30, 32, 34].

First, sediments buried below approximately 10 cm do not impact the water or marine environment because they are below the biologically active zone, and are therefore not biologically available. Gibson Depo, at 156:3 – 157:12. However, if dredging is required, these contaminants may be re-suspended in the water column, causing the concentrations of contaminants in the water phase to increase. Response to NASSCO's RFAs, at RFA No. 42 – 43. [Comment No. 244, TCAO, at 32, 34, DTR, at 32.5, 32.7, 34].
Second, Site sediments are currently supporting a mature and thriving benthic community, with total abundance and richness comparable to reference areas. See discussion at Section III.A.2.c., supra. Sediment profile imaging also shows the that the benthic community has attained a "mature equilibrium," as classified by an independent testing organization. Id. Dredging sediments from portions of the leasehold would (1) result in the immediate destruction of many of the existing mature benthic macroinvertebrate communities located at the Site; (2) destroy existing eelgrass beds; (3) risk re-suspension of buried contaminants; and (4) risk re-colonization of Site sediments by invasive species. See Exponent Report, at 18-9; Barker Depo, at 306:22 – 307:21. Accordingly, if significant portions of the leasehold are dredged, there is no guarantee that the healthy, mature benthic communities presently occupying the Site will return. Barker Depo, at 912:6 – 915:19 (confirming that Staff is unable to predict with any level of confidence what type of benthic community may be reestablished after dredging). [Comment No. 245, TCAO, at 18, 32, 34, DTR, at 18.4, 32.5, 32.7, 34].

Further, any positive impacts resulting from dredging would depend on the extent and timeframe in which dredged sediments recover to the equivalent of reference conditions following the cleanup. Id. at 18-8. Because observed impairments are attributable to continuing off-site discharges from storm drains and Chollas Creek, the recovery of benthic communities in dredged areas could be impeded as contaminants from urban runoff continue to be deposited at the Site, resulting in minimal benefits. Id., at 18-9. [Comment No. 246, TCAO, at 4, 12, 30, 32, 33, 34, DTR, at 4, 12.1, 30.1, 30.2, 32.5, 32.7, 33.1-33.4, 34].

Thus, dredging confers minimal benefits over natural attenuation, and risks serious detriment to beneficial uses. These negative impacts can and should be avoided, without compromising beneficial uses, by selecting monitored natural attenuation as the recommended remedy. [Comment No. 247, TCAO, at 30, 32, 33, 34, DTR, at 30, 32, 33, 34].

Comment ID: 160 **Organization:** BAE Systems
DTR Section: 32.5.2, Tables 32-19, 32-20, 32-21, 32-22
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

5. Comment C.2.5 that "There is insufficient evidence to demonstrate that the 60% LAET values provide a reliable basis for identifying

polygons that are 'Likely' impacted" is Invalid (DTR § 32.5.2; DTR Tables 32-19. 32-20, 32-21 and 32-22)

The DTR uses 60% LAET values for the five primary COCs as one line of evidence for evaluating potential benthic impairment at the Site. Comment C.2.5 of MacDonald 3/11/11 Expert Report states that "There is insufficient evidence to demonstrate that the 60% LAET values provide a reliable basis for identifying polygons that are "Likely" impacted."

MacDonald states that "the 60% LAET values presented in Table 32-19 are substantially higher than the sediment quality guidelines that were used in the Triad assessment presented in the DTR and those that have been routinely used to evaluate sediment quality conditions at marine and estuarine sites throughout the United States." He then presents a table that compares the 60% LAET values with the ERM values of Long et al. (1995). (It should be noted that McDonald is a co-author of the Long article and as such the reference point is suspect.)

The statement and comparisons made by MacDonald are flawed, because the 60% LAET values were derived as site-specific sediment quality values that reflect the mixtures of chemicals at the Site, in addition to other important factors such as the site-specific bioavailability of those chemicals. By contrast, the ERM values were derived from sediment chemistry and toxicity data collected throughout the U.S., without any consideration of bioavailability. They are therefore more suitable as initial screening values for a site, rather than values that can reliably predict the presence or absence of sediment toxicity on a site-specific basis. In fact, Long et al. (1995) recognized the limited usefulness of the ERM values when they concluded that the values "should be used as informal screening tools in environmental assessments", and "they are not intended to preclude the use of toxicity tests or other measures of biological effects."

Because the ERM values are generic screening values that do not consider bioavailability, it is not surprising that the 60% LAET values are greater than the ERM values, as the former values reflect the site-specific conditions that occur at the Site. Therefore, MacDonald's statement described above has no bearing on the usefulness of the site-specific 60% LAET values for identifying polygons that are likely impaired at the site.

The development of LAET values for the Site in Exponent (2003) provided conservative site-specific effects levels with which potential sediment toxicity can be evaluated. As described in Exponent (2003), the LAET values represented the lowest of the AET values calculated for the four biological tests evaluated at the Site: 10-d amphipod survival test, 48-h bivalve normality test, 15-min echinoderm fertilization test, and alterations of in situ benthic macroinvertebrate communities. All four of these tests are considered sensitive indicators of sediment toxicity, and three of the tests (i.e., all except the echinoderm test) are identified as the preferred tests for the use as part of the California Sediment Quality Objectives (SQOs, CSWRCB 2009) although, as described in the DTR, the Site is explicitly exempt from regulation by the SQOs. Therefore, as discussed in Exponent (2003), selection of the lowest AET of the four tests as the site-specific effects level for each COC, is a conservative and protective method for evaluating potential sediment toxicity. There is strong precedent for using LAETs as conservative effects levels, as they form the basis of the Sediment Management Standards for Washington State (Ecology

1995), and have been successfully used to manage contaminated sediments in that state for over 15 years. In addition, the approach used to develop the LAETs, has been reviewed and approved for site-specific use by EPA's Science Advisory Board (EPA 1989).

Given that the LAETs can be considered conservative and protective effects levels for evaluating potential sediment toxicity at the Site, the selection of the 60% LAET values for use in the DTR and TCAO provides an even greater layer of protectiveness for the sediment quality evaluations conducted at the site. MacDonald's assertion that there is insufficient evidence to demonstrate that the 60% LAET values provide a reliable basis for evaluating sediment toxicity at the Site is, therefore, invalid.

With respect to the supplemental Triad analysis conducted in 2009 at five stations outside the remedial footprint at the Site (and described in Section 35.5.2 of the DTR), MacDonald states that the conclusions resulting from that analysis are invalid because too few stations were evaluated, and the maximum COC concentrations were substantially below both the 60% LAET values and the SS-MEQ threshold value of 0.9. As described in Section 35.5.2 of the DTR, the five stations evaluated for the supplemental Triad analysis were selected because they had not been sampled for sediment toxicity or benthic community alterations in 2001/2002, were outside the remedial footprint, and had among the highest primary COC concentrations of all stations outside the footprint. The supplemental Triad analysis, therefore, provided valuable new information on whether adverse biological effects would potentially be found in unremediated areas after remediation was completed.

MacDonald states that more than five stations are needed to conduct a reliability analysis. However, he fails to recognize that the five supplemental Triad stations are supplemental to the 30 original Triad stations, and that there are a total of 35 stations with which the reliability of the 60% LAET and SS-MEQ evaluations can be determined. That is, the five supplemental stations provide additional information to that provided by the 30 original stations. MacDonald states that for the Tri-State Mining District and Calcasieu Estuary sites (MESL 2002, MacDonald et al. 2009) he used 70-100 stations to evaluate the reliability of toxicity thresholds. This statement is misleading because inspection of those reports shows that he actually used those stations and the reliability calculations to develop the site-specific toxicity thresholds, rather than to independently evaluate them. This is analogous to the manner in which the original 30 Triad stations were used to develop the site-specific thresholds for the Site. MacDonald did not conduct reliability evaluations of the site-specific thresholds using independent data that were not included in the development of the thresholds, as was done with the supplemental Triad stations for the Site. In addition, the Tri-State Mining District study addressed water bodies within a geographic area of over 3,500 square miles (i.e., 2,176,000 acres), and the Calcasieu Estuary study addressed water bodies within a geographic area of over 19 square miles (i.e., 12,400 acres). Given that those sites are vastly larger than the Site (i.e., approximately 144 acres), it is not surprising that larger numbers of sediment samples were collected to develop and validate the site-specific effects thresholds.

Because none of the stations located outside the remedial footprint at the Site had exceedances of the 60% LAETs for one or more of the primary COCs (see Table A33-2 of the DTR), it was not possible to sample sediments with such elevated COC concentrations, given the station selection criteria described above. In addition, the only station outside the remedial footprint where the threshold SS-MEQ value of 0.9 was exceeded was NA07 (i.e., 0.91), which was found to be not likely impaired based upon the original Triad evaluations for both sediment toxicity and benthic community effects. Therefore, it also was not possible to sample sediments outside the remedial footprint with SS-MEQ values greater than 0.9 for the supplemental Triad analysis.

Given the information presented above, the five stations selected for the supplemental Triad analysis had some of the highest concentrations of one or more of the primary COCs found outside the remedial footprint (see Table A33-2 of the DTR). The COCs for which concentrations were considered elevated for the five stations are as follows:
SW06: HPAH, PCBs, TBT
SW19: Hg
SW30: Cu, Hg, HPAH, PCBs, TBT
NA23: Cu, Hg, HPAH, PCBs, TBT
NA24: Cu, Hg, PCBs.

As stated in Section 32.5.2 of the DTR with respect to the results of the supplemental Triad analysis, “at all five stations, the SS-MEQ/60% LAET thresholds successfully predicted the absence of “Likely” benthic community impacts." This statement confirms that these thresholds are environmentally protective, and is consistent with the conclusions described above in the response to Comment C.2.4, that the SS-MEQ threshold of 0.9 is biased to be environmentally protective. Its ability to accurately predict the absence of impairment (referred to as non-likely efficiency in Table A32-11) was 94 percent (i.e., 16 of 17 predictions). If the results for the five supplemental Triad stations are added to those of the original Triad stations, the accuracy of the SS-MEQ in predicting the absence of impairment would increase to 95.5 percent (i.e., 21 of 22 predictions).

MacDonald states that “the samples that were collected to support the reliability assessment had SS-MEQ values that were substantially below the threshold that was used to identify “Likely” impacted samples: they ranged from 0.38 to 0.69 compared to the threshold of 0.9. Therefore, lower values than the selected SS-MEQ would also have provided a reliable basis for classifying these sediment samples as not “Likely” impacted." Considering that the SS-MEQ values ranged from 0.34 to 4.22 for the 30 original Triad stations (see Table A32-11 of the DTR), it is misleading to state that the difference between 0.9 and 0.69 is “substantial.” In addition, three of the original Triad stations with non-likely effects had an SS-MEQ value of 0.69 and an additional four original Triad stations with non-likely effects had SS-MEQ values of 0.66 to 0.68. Those results provide considerable support that the threshold SS-MEQ should be greater than 0.69, and it is highly unlikely that the results of the sediment quality evaluations would differ if the threshold SS-MEQ was adjusted to be another value within the narrow window between 0.69 and 0.9.

Based on all of the information presented above, MacDonald’s assertion that the 60% LAET/SS-MEQ values are not reliable for evaluating sediment toxicity at the Site is invalid.

Comment ID: 161 **Organization:** NASSCO
DTR Section: 32
Comment:

V. MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

C.Implementing The Tentative Cleanup And Abatement Order Would Have Significant Negative Economic and Social Impacts On NASSCO And The Community (Findings 30, 31, 32, 37)

Under Resolution 92-49, the Regional Board must take into account the total values involved, including economic and social values. The DTR concludes that dredging to alternative cleanup levels is technologically and economically feasible. TCAO, at ¶¶ 30, 31, DTR, at 30-7, 31-3. However, extensive dredging at NASSCO would result in significant negative impacts to NASSCO and the surrounding community; thus, taking these values into account, dredging is costly and unjustified, especially since there are little or no corresponding benefits to human health or the environment. [Comment No. 248, TCAO, at 30, 31, 32, 37, DTR, at 30, 31, 32, 37].

In particular, dredging in certain areas at NASSCO may jeopardize the integrity of slopes and structures at the leasehold, and is technologically infeasible in certain areas. Barker Depo, at 154:25 – 155:22, 156:23 – 157:16. For example, there are significant structural stability problems associated with dredging around piers, pilings, and steep slopes, such as those surrounding the floating drydock sump, which render dredging in such areas technologically infeasible. Id. Further, vital ship repair and construction activities will be significantly disrupted by dredging, and could result in delays or contractual breaches with the U.S. Navy and other customers. See, e.g., Exponent Report, at §§ 18.2, 18.4. [Comment No. 249, TCAO, at 30, 32, 33, DTR, at 30, 32.7, 33.1].

Large-scale dredging will also impact the surrounding community, and potentially present environmental justice issues, due to impacts including, but not limited to increased truck traffic, diesel emissions from trucks and heavy equipment, noise, accident risks, transportation of large volumes of waste through the neighborhood, increased traffic on local streets, and the need to establish large staging areas for dewatering activities. Id. [Comment No. 250, TCAO, at 32, 33, 37, DTR, at 32.7, 33.3, 37].

Comment ID: 163 **Organization:** BAE Systems
DTR Section: 18.3, Table 18-7
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

6. Comment C.2.6 that "The procedures that were used to designate sediment samples from the Shipyard Sediment Site as 'Likely'
impacted are not protective" is Misleading and Unsupported (DTR § 18.3; DTR Table 18-7)

The methods used in the DTR to evaluate sediment at the Site were selected in large part to be consistent with those recommended by EPA, as well as those commonly used to evaluate contaminated sediment sites in the U.S. by sediment quality practitioners. Comment C.2.6 of MacDonald 3/11/11 Expert Report states that "The procedures that were used to designate sediment samples from the Shipyard Sediment Site as "Likely" impacted are not protective."

MacDonald states that "the approach to defining the normal range of amphipod responses is not consistent with the practices that are currently recommended by the Science Advisory Group on Sediment Quality Assessment", and cites Sustainable Fisheries Foundation (2007) as the basis for that assertion. This statement is highly misleading because it provides the impression that there exists a formal science advisory group (potentially with governmental agency endorsement), and that the citation is a substantive document. In his October 2010 deposition, MacDonald stated that this advisory group was "an informal group of individuals who have a common interest in sediment quality assessments, that share information, meet from time to time to discuss technical issues." (MacDonald Deposition, at pp. 82-85.) He also stated that "all of the participants fund their own participation", "there is no headquarters", and "there is no website." (Id.) MacDonald further acknowledged that there is no formal group structure, no president, and no official list of members other than an email list. The citation provided by MacDonald is the unpublished proceedings of a workshop convened in British Columbia by the Sustainable Fisheries Foundation, a non-profit environmental organization of which MacDonald is one of the two Executive Directors. The purpose of the workshop was to advise the British Columbia Ministry of the Environment on sediment quality issues.

The "Science Advisory Group" referred to by MacDonald is simply an informal group of people with a common interest in sediment quality that has no formal charter, no endorsement or support by a governmental resource agency, no independent funding, no regulatory authority, and no formal advisory role. In addition, the citation referred to by MacDonald above is an unpublished summary of a workshop designed to advise a Canadian governmental agency, and sponsored by a non-profit environmental organization of which MacDonald is an Executive Director. It is clear that there is little independent and substantive support for MacDonald's assertion that the methods used for the Site are inconsistent with the common practice.

In contrast to MacDonald's assertion and citation discussed above, EPA has provided clear guidance on the selection of reference areas for environmental assessments (e.g., U.S. EPA 1994, 1997, 1999, 2000, 2005, 2006). A number of these EPA guidance documents are summarized in Section 17.2 of the DTR. Briefly, the EPA guidance recommends that reference areas reflect the habitat conditions and background levels of chemical contamination that would exist at a study site in the absence of site-related sediment contamination. The background conditions can incorporate levels of chemical contamination or biological responses that are considered representative of the general conditions in a water body removed from major contaminant sources. Therefore, consistent with EPA guidance (and stated Section 17.2 of the DTR), the selection of the reference areas for the Site was "consistent with the San Diego Water

Board's goal of establishing a reference condition that represents contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination." MacDonald's assertion that the selection of reference areas for the Site was inconsistent with current guidance is therefore incorrect, because the selection process was consistent with EPA guidance.

MacDonald states that the inclusion of reference stations with values of amphipod survival less than 80 percent is inappropriate. However, if such a selection criterion was used at the Site, it could potentially ignore the full range of amphipod responses that may occur in valid reference areas of San Diego Bay, and bias the reference envelope to fit a pre-conceived notion of what the minimum level of survival in a reference area should be. In contrast, the Washington State Sediment Management Standards (Ecology 1995), recognize that survival in the 10-d amphipod test based on Rhepoxynius abronius from reference areas can be as low as 75 percent, based on a survey conducted in multiple reference areas of Puget Sound, Washington. In addition, Phillips et al. (2001) identified control-adjusted survival thresholds as low as 75 and 77 percent for amphipod tests based on Eohaustorius estuarius and Rhepoxynius abronius, respectively.

In addition to MacDonald's unwarranted definition of the acceptable levels of amphipod survival in reference areas, his focus only on the sediment toxicity results for the reference stations is inappropriate because it ignores the additional information on sediment chemistry and benthic macroinvertebrate communities that was used to identify the reference stations for the Site. As documented in Table 17-2 of the DTR, each reference station was carefully evaluated using multiple lines of evidence before it was selected for use. MacDonald's focus on a single line of evidence (i.e., sediment toxicity) is therefore inconsistent with a weight-of-evidence evaluation and therefore inappropriate.

Comment ID: 165 **Organization:** NASSCO
DTR Section: 30
Comment:

V. MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

D.The Difference In Risk Reduction Between The Proposed Footprint And Monitored Natural Attenuation Is Insignificant And Does Not Meet The State Board's Test For Economic Feasibility (Finding 30-32, 36)

Resolution 92-49 requires that Regional Board "shall concur with any . . . cleanup and abatement proposal which the discharger demonstrates and the Regional Board finds to have a substantial likelihood to achieve compliance, within a reasonable time frame, with cleanup goals and objectives" that implement permanent solutions that do not require ongoing maintenance, wherever feasible. Resolution 92-49, at III.A. Further, the selected alternative must be economically feasible. Id. Economic feasibility refers to the objective balancing of the incremental benefit of attaining more stringent cleanup levels compared with the incremental cost of achieving those levels.; it does not refer to the discharger's ability to pay the costs of the cleanup. DTR, at 31-1. According to the DTR, the benefits of remediation are best expressed as the reduction in exposure of human, aquatic wildlife, and benthic receptors to site-related contaminants of concern. Id.

Applying this standard, it is clear that the difference in risk-reduction between dredging and monitored natural attenuation is insufficient to justify the ample additional costs associated with dredging. Dredging the NASSCO site alone in accordance with the TCAO is expected to cost many millions of dollars; however, there are minimal, if any, benefits associated with dredging that will not also be achieved through monitored natural attenuation. [Comment No. 251, TCAO, at 30, 31, 32, 36, DTR, at 30, 31, 32.7, 36.4].

First, as shown extensively throughout this letter and in the record, current conditions are protective of aquatic wildlife, aquatic-dependent wildlife, or human health when examined using realistic, risk-based assumptions under a neutral and scientifically appropriate decision framework. See Section III. [Comment No. 252, TCAO, at 14-28, DTR, at 14-28]. Second, observed risks generally are not correlated to shipyard chemicals. See Section III.B.1. Sediment toxicity is not statistically associated with any shipyard-associated chemicals, and causation analysis demonstrates that LAET exceedances are not the cause of observed reductions in aquatic life beneficial uses; rather, such effects are attributable to off-site sources and should abate once those sources are controlled. Id. Likewise, alterations of benthic macroinvertebrate communities are generally not related to shipyard chemicals. Id. Given these already favorable site conditions, any incremental benefits associated with dredging will be minimal, and not justified by the incremental costs, particularly where there is evidence that such dredging will cause greater environmental harm than leaving the sediment in place. [Comment No. 253, TCAO, at 30, 31, 32, 34, DTR, at 30, 31, 32, 34].

Additionally, the June 2009 sediment testing suggests that monitored natural attenuation is already occurring at rates that will attain the proposed post-remedial SWACs within a reasonable time; in fact, such levels have already been achieved through monitored natural attenuation at certain stations for the five primary contaminants of concern. See Section V.A.1. [Comment No. 254, TCAO, at 30, 32, DTR, at 30.1.1, 32.2 – 32.6]. The DTR also estimates that new sediments are deposited at a rate of 2 cm/yr, suggesting that clean sediments will quickly bury any residual contamination. Response to NASSCO's RFAs, at RFA No. 56. [Comment No. 255, TCAO, at 30, DTR, at 30.1]. Accordingly, the incremental benefits of dredging, if any, are minimal, and do not justify the substantial additional financial, social, and environmental costs associated with dredging. [Comment No. 256, TCAO, at 30, 31, 32, 36, DTR, at 30, 31, 32.7, 36.4].

Comment ID: 167 **Organization:** BAE Systems
DTR Section: 33.1.1
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

7. Comment C.2.7 that "The rationale for excluding polygon NA22 from the Proposed Remedial Footprint is inappropriate" is Invalid and
Unsupported (DTR § 33.1.1)

The DTR stated the Polygon NA22 will be evaluated as part of a separate TMDL process and therefore was not considered part of the Shipyards Site for the TCAO. Comment C.2.7 of MacDonald 3/11/11 Expert Report states that "The rationale for excluding polygon NA22 from the Proposed Remedial Footprint is inappropriate."

MacDonald states that "NA22 should be remediated because COCs in sediments are likely adversely affecting benthic invertebrates within this polygon", and that "the suggestion that the TMDL process will provide a more effective basis for making a decision on NA22 is invalid." However, these statements are invalid. As stated in Section 33 of the TCAO, "portions of polygons NA20, NA21, and NA22 as shown in Attachment 2 were omitted from this analysis because it falls within an area that is being evaluated as part of the TMDLs for Toxic Pollutants in Sediment at the Mouth of Chollas Creek TMDL and is not considered part of the Shipyard Sediment Site for purposes of the CAO." The decision to remove these polygons from the Site was therefore an administrative one, rather than a technical one, and therefore does not require technical justification as MacDonald implies. In addition, because MacDonald is not participating in the design of the TMDL process for these polygons he has no direct knowledge of what the process will include. Therefore, MacDonald's assertion regarding the manner in which NA22 will be addressed is unsupported.

Comment ID: 168 **Organization:** NASSCO
DTR Section: 18, 32
Comment:

VI.ADDITIONAL ISSUES

NASSCO offers the following points as additional clarification of the findings reached in the TCAO and the DTR.

A.The TCAO and DTR Should Be Corrected To Identify The Correct Number of Likely Stations (Findings 18, 32)
Table 18-1 in Volume II of the DTR, and the sections that follow, correctly summarize the outcome of the DTR Triad analysis. According to this analysis, there are six "likely" stations, two of which are at NASSCO (NA19 and NA22), and four of which are at BAE (SW04, SW13, SW22, and SW23). NA22 is footnoted in Table 18-1 as being excluded from the TCAO.

In Volume III of the DTR, however, there is a discussion of the Site-Specific Median Effects Quotient (SS-MEQ) derivation in Section 32.5.2, where these six "likely" stations are incorrectly described as three "likely" and three "possible" stations.

The SS-MEQ was derived by calculating the median concentration of individual COCs at 6 of the 30 Triad stations (Table 32-20). Three of the six included stations identified as likely impaired under the weight of evidence analysis described in Section 18 of this Technical Report (NA22, SW04, and SW13). Three possibly-impaired stations with the highest potential for chemically-associated effects (among possibly-impaired stations) were also included in SS-MEQ derivation (NA19, SW22, and SW23). These stations exhibited both "Moderate" toxicity and chemical concentrations just below levels indicative of the "High" LOE category by the Triad sediment chemistry ranking criteria (Table 18-1). The SS-MEQ threshold was then established by conservatively optimizing the performance of the quotient in predicting likely effects or the three most chemically-impaired possible stations (true positives) while minimizing false negatives.
DTR, at pp. 32-31 – 32-32 [Comment No. 257, TCAO at 32, DTR, at 32].

To correct any potential for misunderstanding, pages 32-31 and 32-32 of the DTR should be amended to reflect the following changes:
The SS-MEQ was derived by calculating the median concentration of individual COCs at 6 of the 30 Triad stations (Table 32-20). Three of the All six included stations were identified as likely impaired under the weight of evidence analysis described in Section 18 of this Technical Report (NA19, NA22, SW04, SW13, SW22, and SW123). Three possibly-impaired stations with the highest potential for chemically-associated effects (among possibly-impaired stations) were also included in SS-MEQ derivation (NA19, SW22, and SW23). These stations exhibited both "Moderate" toxicity and chemical concentrations just below levels indicative of the "High" LOE category by the Triad sediment chemistry ranking criteria (Table 18-1). The SS-MEQ threshold was then established by conservatively optimizing the performance of the quotient in predicting likely effects onr the threesix most chemically-impaired possible stations (true positives) while minimizing false negatives.

The TCAO correctly describes the Triad results. Finding 18 correctly summarizes that the Triad analysis resulted in six "likely" stations. Although the SS-MEQ derivation text is not directly reproduced, there is a footnote on page 17 that references this text, so the discrepancy is indirectly reproduced in the TCAO. So long as the edits to pages 32-31 and 32-32 are implemented, the TCAO's reference to Section 32.5.2 will not introduce any confusion.

Comment ID: 169 **Organization:** NASSCO
DTR Section: 32
Comment:

VI.ADDITIONAL ISSUES

B.The Use of Lowest Apparent Effects Threshold (LAETs) and Site-Specific Median Effects Quotient (SS-MEQ) Benchmarks Ensured That The Remediation Footprint Was Overly Protective (Finding 32)

The site-wide Triad study measured synoptic chemistry, toxicity, and surveyed the benthic community at 30 of the 66 Shipyard sediment investigation stations. Potential impacts of sediment chemicals to the benthic community at the 36 Non-Triad stations, for which no biological data were collected, was inferred through the use of site-specific chemistry benchmarks, developed from the Triad data. Two independent benchmarks were developed: The Site-Specific Median Effects Quotient (SS-MEQ) and Lowest Adverse Effects Threshold (LAET).

The SS-MEQ is a multiple chemical benchmark calculated from the median sediment concentration of the five primary COCs at the six stations that were scored as “likely impacted” in the DTR Triad analysis (NA19, NA22, SW04, SW13, SW22, and SW23). For each station, effects quotients (the ratio of measured concentration to median “likely impacted” concentration) were calculated for each of the primary COCs, and these were averaged to yield the multi-chemical SS-MEQ. See DTR at 32.5.2. Furthermore, for each primary COC, apparent effects thresholds (AETs) were developed for each of the seven biological endpoints evaluated in the DTR Triad analysis (three toxicity tests and four benthic community parameters or indices). The AET is simply the concentration above which adverse effects always occur. Accordingly, the lowest adverse effects threshold (LAET) is the lowest concentration of any of the seven AETs calculated for a given chemical.

Both the SS-MEQ and LAET values were used as benchmarks to identify the possibility of adverse effects on benthos at the non-Triad stations. Both benchmarks were tested and determined to be conservative measures for benthic community conditions at non-Triad stations. To test the protectiveness of the SS-MEQ and LAET values, SS-MEQ and LAET values were calculated for the 30 Triad stations (for which actual benthic condition assessment had been performed) to determine how well the SS-MEQ and LAET values predicted “likely” impacts to benthic communities. When compared to the 30 Triad stations, the 60% LAET results were completely protective with respect to predicting “likely” benthic impairment, since an AET is, by definition, a no-effect level, while inaccurately identifying one “false positive” (at NA07, as discussed above), where the LAET analysis suggested possible benthic impairment but the Triad analysis demonstrated no such impairment. Notably, the DTR used a benchmark equal to 60% of the LAET, which is highly protective because it builds in a buffer below the established no-effect level.

The SS-MEQ benchmark (which was set equal to 90% of the SS-MEQ) had only one false negative out of 30 Triad stations, with respect to predicting “likely” impairment of the benthic community (at Station NA22, which is being addressed outside the current remedial design), and eight false positives, which indicates that using 90% of the SS-MEQ is overly protective by including stations that were not in fact likely impaired stations.

Accordingly, the proposed cleanup was judged to be protective of benthos because it includes all non-Triad stations that exceed either of the 60% LAET or 90% SS-MEQ benchmarks, and both metrics incorporate a significant safety factor.
It is worth noting that the highest LAET and SS-MEQ multiples found outside the cleanup footprint at NASSCO occur at Station NA07 (HPAH = 63% LAET; SS-MEQ = 0.91). Station NA07 is a Triad station for which no impacts to the benthic community were identified, however, and a realistic analysis of food web risks to wildlife and human receptors shows that there are no significant risks. In fact, NA07 is one of the “false positives” identified above, because the benthic community assessment demonstrates “unlikely” benthic impacts. Therefore,

no risk-based justification for remediating NA07 exists, and NA07 was properly excluded from the proposed remedial footprint in the DTR. See Attachment B, Exponent Memorandum (May 25, 2011) at 10.

On behalf of San Diego Coastkeeper, Donald D. MacDonald submitted a report entitled, "Review and Evaluation of Tentative Clean-up and Abatement Order (No. R9-2011-001) for the Shipyard Sediment Site, San Diego Bay, San Diego, California" (March 11, 2011) (March MacDonald Report). At page 11, Mr. MacDonald notes that Table 33-6 is incorrect in that it states that for NA07, "All COCs [fall] below 60% LAET values." DTR, at Table 33-6. As described above, Mr. MacDonald is correct, and Table 33-6 should be edited to state, "Only oneAll COCs slightly abovebelow 60% LAET values (HPAH = 63% LAET)." Triad data demonstrates that there are no impacts to aquatic life at this station. [Comment No. 258, TCAO at 33, DTR, at 33.1].

Comment ID: 170 **Organization:** NASSCO
DTR Section: 33
Comment:
VI.ADDITIONAL ISSUES

C.The March MacDonald Report Improperly Interprets Composite SWAC Ranking Values As A Remediation Trigger

In the March MacDonald Report, Mr. MacDonald alleges that the DTR does not adequately explain why ten Shipyard Site stations with Composite SWAC Ranking Values greater than 5.5 were excluded from the proposed remedial footprint. (footnote) March MacDonald Report, at 11. Although he does not identify the ten stations, it appears that Mr. MacDonald is referring to Stations SW29, SW25, SW15, NA01, SW18, NA16, NA03, SW30, NA04, and SW11. See DTR Appendix for Section 33, at Table 33-1 (excluding the five stations identified in DTR, Table 33-6). Accordingly, Mr. MacDonald asserts that the DTR's rationale "for excluding stations with Composite SWAC Ranking Values greater than 5.5 is arbitrary and does not justify the exclusions." Id.

Mr. MacDonald's allegation is premised on his assumption that a Composite SWAC Ranking Value of 5.5 or greater alone is a remediation trigger sufficient to include a station in the remedial footprint. This is a foundational misunderstanding of the analysis performed in the DTR. In fact, the station-by-station Composite SWAC Ranking analysis (Section 33.1.2), station-by-station SS-MEQ analysis (Section 33.1.3), and the highest concentrations of individual COCs analysis (Section 33.1.4) were all considered simultaneously, along with Triad data and feasibility issues, to determine the remedial footprint. A brief review of the station-by-station SWAC Composite Ranking analysis found at DTR Section 33.1.2 (and supported by Table 33-1 in Appendix 33), demonstrates that it cannot alone be considered a remediation trigger. For example, if a SWAC Composite Ranking of 5.5 or greater alone had been considered a remediation trigger, then Station NA09 (currently part of the remedial footprint) would have been excluded because its SWAC Composite Ranking is only 5.4. DTR, Appendix for Section 33, at Table 33-1. [Comment No. 259, TCAO at 33, DTR, at 33.1, Appendix 33].

By the same token, there would be no discussion of Station NA22 with its low SWAC Composite Ranking of only 3.6. Id.

Furthermore, based on the weight of the evidence approach employed by the DTR, the ten stations with Composite SWAC Rankings of greater than 5.5 (including Stations SW29, SW25, SW15, NA01, SW18, NA16, NA03, SW30, NA04, and SW11) identified were properly excluded from the remedial footprint. In fact:

•None of the ten stations have a SS-MEQ value greater than the 0.90 benchmark. See DTR, Appendix for Section 32, at Table A32-12. In fact, none of the stations have SS-MEQ values of greater than 0.71. Id.
•None of the ten stations have high individual concentrations of COCs. See DTR, Tables 33-3, 33-4, and 33-5 (demonstrating that none of the ten stations rank among those stations with the highest concentrations of COCs).
•None of the ten stations exceed the 60% LAET benchmark. See DTR, Table 32-23 (no LAET exceedence for SW29 or SW30); Appendix to Section 32, Table A32-9.
•None of the ten stations have a “Likely” impaired Triad ranking.

Accordingly, it is of no moment that the DTR does not offer an explanation why the ten stations with SWAC Composite Rankings greater than 5.5 (including Stations SW29, SW25, SW15, NA01, SW18, NA16, NA03, SW30, NA04, and SW11) are not included in the remedial footprint simply because the SWAC Composite Ranking is not a remedial trigger, and numerous other analyses in the DTR demonstrate why those stations were not included in the remedial footprint. [Comment No. 260, TCAO at 33, DTR, at 33.1, Appendix 33].

(footnote) . Mr. MacDonald appears to have picked 5.5 as his cut-off value for Composite SWAC Ranking, because Station NA09’s 5.5 Composite SWAC Value is the lowest Composite SWAC Value of all the stations included in the remedial footprint.

Comment ID: 171 **Organization:** NASSCO
DTR Section: 32
Comment:

VI.ADDITIONAL ISSUES

D.Stations NA07, NA08, NA23, and NA27 Were Properly Excluded From the Remediation Footprint Because Dredging There Is Technologically Infeasible

The March MacDonald Report asserts that the DTR’s exclusion of Stations NA07 and NA23 from the remedial footprint based on technical infeasibility was erroneous. March MacDonald Report, at 17. According to the March MacDonald Report:
In order to be scientifically valid, these conclusions of technical infeasibility must be supported by detailed engineering studies of the existing slope and the impacts that various dredging techniques would have on the slope. The DTR provides no information about the existing sediment slope and includes no engineering studies to support its conclusion that dredging these

polygons is technically infeasible. For this reason, the technical infeasibility conclusion for these polygons is not scientifically defensible.
Id.
Contrary to the March MacDonald Report's assertion, the DTR does provide information about the technical infeasibility posed by dredging in Stations NA07, NA08, NA23, and NA27 (see DTR, Section 33.1.4). Furthermore, as discussed in the attached memorandum from Anchor QEA, no engineering studies are necessary to conclude that dredging in these stations is technologically infeasible. In fact, it is possible to determine that dredging is technically infeasible due to site characteristics alone. Attachment D, Memorandum by Michael Whelan, Anchor QEA (May 25, 2011) (Anchor QEA Memo), at 2-4. [Comment No. 261, TCAO at 33, DTR at 33].

Comment ID: 172 **Organization:** BAE Systems
DTR Section: 33.1.4, Table 33-6
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

8. Comment C.2.8 that "The rationale provided in Table 33-6 of the DTR for excluding certain polygons from the Remedial Footprint is not sufficient" is Misleading and Invalid (DTR Table 33-6; DTR §33.1.4)

The DTR provides substantial information on why various polygons at the Site were or were not included in the remedial footprint. Comment C.2.8 of MacDonald 3/11/11 Expert Report states that "The rationale provided in Table 33-6 of the DTR for excluding certain polygons from the Remedial Footprint is not sufficient."

MacDonald states that "the polygon SW03 was excluded from the Proposed Remedial Footprint, even though sediments within this polygon had elevated levels of cadmium." This statement is misleading because it implies that decisions about whether a polygon should be included in the remedial footprint are based solely on a single line of evidence. However, in considering the multiple lines of evidence collected at SW03, including direct measures of biological effects, this polygon was found to have a low potential for both sediment toxicity and benthic community effects and was therefore determined not to be likely impaired (see Table 18-1 of the DTR). Therefore, although cadmium concentrations may have been elevated in Polygon SW03, they did not result in moderate or high levels of biological effects, potentially due to reduced bioavailability. Because the weight-of-evidence scheme used at the Site identified SW03 as not likely impaired, that polygon was appropriately excluded from the remedial footprint. MacDonald's assertion is therefore invalid.

MacDonald also states that “technical infeasibility was identified as the rationale for excluding NA07, NA08, NA23, and NA27 from the Remedial Footprint”, and that this was “not supported by evidence in the record, such as engineering assessments, that would render these conclusions scientifically valid." MacDonald’s assertion regarding the determinations of technical infeasibility are invalid, because those determinations were made by a group comprised of multiple parties with a range of backgrounds and expertise, including resource agencies and shipyard operations personnel. Furthermore, there is no formal requirement that engineering studies be conducted to make a determination of technical infeasibility. In addition, NA07 and NA23 were found not to be likely impaired based on the original or supplemental Triad analyses (see Tables 18-1 and 32-22 of the DTR, respectively). In addition, all primary COCs were below their 60% LAET values and SS-MEQs were less than the threshold value of 0.9 at NA08 and NA27. Therefore none of these four polygons warrant inclusion in the remedial footprint, regardless of concerns related to technical feasibility. MacDonald’s statement regarding technical
infeasibility is therefore inappropriate, and ultimately irrelevant based on the chemical and biological indicators measured in the four polygons.

MacDonald also states that “no rationale was provided for excluding NA01, NA04, NA06, NA16, NA16 [sic], NA21, SW25, or SW29 from the Remedial Footprint." This statement was apparently derived largely from MacDonald’s erroneous assumption that polygons should be included in the remedial footprint based solely on Composite SWAC Ranking Values higher than 5.5. As discussed in the response to Comment C.2.3 above, the selection of the polygons to include in the remedial footprint was based on multiple lines of evidence, as opposed to a single line of evidence such as the Composite SWAC Ranking Values. In addition, the SWAC Value of 5.5 was not intended to be a threshold value. MacDonald’s assertion is therefore an artifact of his misunderstanding of how the Composite SWAC Ranking Values were used along with other lines of evidence, and is therefore invalid.

There are two discrepancies in MacDonald’s list. He erroneously identified Polygon NA06 as being excluded from the remedial footprint when, in fact, it is included in the footprint (see Attachment 4 of the TCAO). In addition, MacDonald erroneously listed Polygon NA16 twice. The reasons why the remaining six polygons in the above list were not included in the remedial footprint are found in various sections of the DTR and are summarized below:

- NA01: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.
- NA04: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.
- NA16: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.
- NA21: No primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.50) was less than the threshold value of 0.9.
- SW25: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.67) was less than the threshold value of 0.9.

 SW29: No primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.71) was less than the threshold value of 0.9.

MacDonald's assertion that the rationale for excluding the above six polygons was not provided in the DTR is therefore invalid.

Comment ID: 173 **Organization:** NASSCO
DTR Section: 32
Comment:

VII.CONCLUSION

For the reasons discussed herein, NASSCO proposes that the Site be addressed using monitored natural attenuation, as recommended in the Exponent Report.

Comment ID: 174 **Organization:** BAE Systems
DTR Section: 33
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

A. Responses to MacDonald's Evaluation of the Methodology Used (TCAO Finding 33; DTR § 33)

9. Comment C.2.9 that "The DTR failed to explicitly consider the potential effects on fish with small home ranges associated with exposure to contaminated sediments during the development of the Proposed Remedial Footprint" is Inaccurate (DTR § 33)

The DTR provided a detailed evaluation of potential effects of sediment contamination of fish at the Site. Comment C.2.9 of MacDonald 3/11/11 Expert Report states that "The DTR failed to explicitly consider the potential effects on fish with small home ranges associated with exposure to contaminated sediments during the development of the Proposed Remedial Footprint."

MacDonald states that "this represents a major limitation of the Proposed Remedial Footprint because fish with small home ranges are known to utilize benthic habitats at the site." MacDonald also states that "the polygons with concentrations of PCBs in sediments sufficient to adversely affect fish reproduction include NA01, NA04, NA07, NA16, SW06, SW18, and SW29 (see Table 1 of this document for more information on the hazard quotients that were calculated for these polygons)."

MacDonald's assertions are both inaccurate. As part of the 2001/2002 sampling at the Site, an extensive effort was made to capture gobies at the site in addition to other fish species. As stated on Page 2-7 of Exponent (2003), "attempts were also made to collect gobies, without success at either site." Representatives from the California Department of Fish and Game observed the fish collection effort, and agreed that gobies were absent or rare at the Site. During his deposition, MacDonald was asked if he was aware that gobies were searched for at the Site without success and he responded that “I am not aware of that." (MacDonald Deposition at 414.) During his deposition, MacDonald also conceded that he had not cited Exponent (2003) in his remediation footprint report (MacDonald 2009), and that he had conducted only a limited review of that document. (Id.) MacDonald also did not cite Exponent (2003) in his more recent MacDonald 3/11/11 Expert Report, and provided no indication in that report that he had reviewed Exponent (2003). Therefore, MacDonald failed to adequately review the foundational technical document for the Site (i.e., Exponent 2003), and has provided no other evidence to support his assertion that gobies are known to utilize the Site.

In MacDonald’s statements described above, he identified seven polygons that he asserts should be included in the remediation footprint at the Site based on hazard quotients calculated for PCBs, as summarized in Table 1 of his expert report. However, inspection of his Table 1 shows that the hazard quotients for the first five of the seven polygons did not match the results presented in MacDonald (2009). Closer inspection of MacDonald (2009) showed that the results in Table 1 were due to the absence of the numeral 1 in front of the hazard quotients presented for the first five polygons.

Despite the fact that the corrected hazard quotients in Table 1 range from 1.0 to 2.59, there is no appropriate technical basis for including those polygons in the remediation footprint, because the analyses conducted by MacDonald (2009) to develop those hazard quotients are flawed. Many of the problems with the hazard quotient determinations conducted by MacDonald (2009) were identified in his October 2010 deposition, and are discussed below.

A fundamental flaw in the fish analyses conducted by MacDonald (2009) was the assumption that gobies represent an appropriate indicator species for evaluating risks to benthic fish at the Site. As discussed above, gobies were not found at the Site after an extensive sampling effort conducted as part of the 2001/2002 sampling events. Therefore, the use of gobies as an appropriate indicator species for the site by MacDonald was inappropriate. Also discussed above was the fact that MacDonald provided no documentation that gobies occur at the Site, and that he admitted that he had not reviewed Exponent (2003) in sufficient detail to know the results of the fish survey conducted at the Site.

The species selected for detailed evaluation at the Site was the spotted sand bass (Paralabrax maculatofasciatus) because, as stated in Exponent (2003), this species preys primarily on benthic macroinvertebrates, exhibits limited spatial movements, and is abundant in numerous kinds of habitats within San Diego Bay, including the Site (i.e., as documented during the fish sampling effort prior to the 2001/2001 sampling events). These characteristics of the spotted sand bass make it an appropriate species for assessing contaminant exposure at the Site. This determination is reinforced by the results of tissue chemistry analyses. Spotted sand bass were collected at four locations, inside and outside the leaseholds of both shipyards, and the results showed that chemical concentrations in fish tissue from inside the leaseholds were greater than concentrations in fish collected immediately outside the leaseholds (Exponent 2003). The data therefore clearly indicate that spotted sand bass are sensitive to spatial differences in sediment chemistry concentrations at the Site. Despite the evidence that spotted sand bass should be, and are, responsive to sediment chemistry at the Site, MacDonald ignored this information and inappropriately asserts that gobies should be used as the indicator species for fish at the Site.

During MacDonald's October 2010 deposition, numerous methodological flaws in his analysis of PCBs in gobies were identified, all of which add considerable uncertainty to the results of the analysis, and call into question many of his conclusions. Each of those methodological flaws is briefly summarized below:

 Indicators Species: As discussed above, the selection of gobies as the indicator species for fish at the Site was inappropriate because they are not found at the site, and because the spotted sand bass was shown to be an effective indicator species for the site.

 Toxicity Reference Value (TRV): MacDonald (2009) used a study by Orn et al. (1998) to develop the TRV of 1.95 mg/kg wet weight for PCBs in fish. The study was based on zebrafish (Danio rerio) which, as a tropical freshwater species, does not occur in San Diego Bay, and therefore has questionable relevance to the marine fish species that reside in the bay. MacDonald first calculated a NOAEL10 and LOAEL11 for PCBs of 0.7 and 5.5 mg/kg dry weight, which spans a large range. He then calculated the TRV as the geometric mean of the NOAEL and LOAEL as 1.95 mg/kg. However, the mean value (i.e., 3.1 mg/kg) would have been considerably greater. In addition, in his October 2010 deposition, MacDonald stated that the TRV should have been 1.96 mg/kg (Page 236). Using a TRV of 1.96, the hazard quotient of 1.0 in Table 1 of MacDonald's expert report would decline to 0.99, which would remove the affected polygon from the high risk
category defined by MacDonald (2009).

 Toxicity Endpoint: MacDonald selected reproduction as the endpoint for developing the TRV for PCBs, and developed the TRV based on ovary weight and the gonad somatic index (GSI). However, he ignored the fact that other reproductive endpoints (i.e., percentage a spawning females, mean number of eggs per female, and median hatching time) showed no significant reductions in response to exposure to PCBs.

 Biota Sediment Accumulation Factor (BSAF): MacDonald used the BSAF of 1.61 determined for spotted sand bass at the Site in a memorandum by Zeeman (2004) that has not been published in the peer-reviewed literature.

 Lipid Content: MacDonald assumed that the lipid content of the gobies was 4 percent, based on the naked goby (Gobiosona bosc), and presented in an unpublished presentation by Lederhouse et al. (2007).

 Moisture Content: MacDonald assumed a whole-body moisture content of 80 percent for fish, to convert the wet-weight PCB concentrations presented in Orn et al. (1998) to dryweight concentrations.

In summary, MacDonald predicted PCB concentrations in gobies, a species that does not occur at the Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, a lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above items has uncertainties attached to it, which MacDonald (2009) did not acknowledge or attempt to quantify. If all the uncertainties are combined, it is clear that hazard quotients only marginally greater than 1.0 cannot be considered indicative of high risk to fish with any degree of confidence.

Inspection of Table 1 of the MacDonald 3/11/11 Expert Report shows that all of the hazard quotients were relatively low (i.e., less than 2.6), with SW18 being less than 1.0 (i.e., using the corrected TRV of 1.96 mg/kg), four polygons being less that 1.3 (i.e., NA01, NA07, NA16, SW06), one polygon being less than 1.8 (i.e., NA04), and the final polygon being less than 2.6 (i.e., SW29). Given the multiple uncertainties that were not acknowledged or quantified in the hazard quotient analysis conducted by MacDonald (2009), none of these observed hazard quotients can be considered high enough to indicate a high risk to fish at the Site with any statistically meaningful certainty. In addition, the results for the spotted sand bass that were evaluated at the Site by Exponent (2003) provide additional support for the conclusion that none of these polygons require remediation based on risks to fish. Therefore, MacDonald's assertion that the six polygons pose high risks to fish and should be included in the remedial footprint at the Site is based on hypothetical and technically questionable analyses, and is inconsistent with the empirical data on fish collected from the site. His assertion is therefore invalid.

Comment ID: 175 **Organization:** BAE Systems
DTR Section: 33, Appendix for Section 33, Table A33-3
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

1. Conclusion C.3.1 that "Developing the Proposed Remedial Footprint using Thiessen Polygons…is a scientifically valid method….However, the polygons developed at the Shipyard Sediment Site using this method are unusually large" is Invalid (DTR § 33; DTR Appendix for Section 33, Table A33-3)

The DTR developed polygons for the Site based on the 60 stations sampled in 2001/2002. Conclusion C.3.1 of MacDonald 3/11/11 Expert Report states that "Developing the Proposed Remedial Footprint using Thiessen Polygons…is a scientifically valid method." "However, the polygons developed at the Shipyard Sediment Site using this method are unusually large."

This conclusion is invalid, as described in detail in the response to Comment C.2.1. That is, the station distribution scheme was consistent with the manner in which sampling is commonly conducted at most contaminated sediment sites, with the highest density of stations located near sources where the highest COC concentrations are expected, and with lower densities in areas removed from the sources, where contaminants are expected to be more widely dispersed by waves and currents.

Comment ID: 176 **Organization:** BAE Systems
DTR Section: 33.1.2
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

2. Conclusion C.3.2 that "SWACs do not provide a basis for accurately assessing the impacts on benthic invertebrates or benthic fish" is
Invalid (DTR § 33.1.2)

The DTR used SWACs to evaluate risks to fish and wildlife that may utilize the Shipyards Site. Conclusion C.3.2 of the MacDonald 3/11/11 Expert Report states that "SWACs do not provide a basis for accurately assessing the impacts on benthic invertebrates or benthic fish."

This conclusion is invalid because SWACs are commonly used to evaluate risks to benthic fish at contaminated sediment sites, as they were at the Site. Contrary to MacDonald's assertion, other tools were used to evaluate risks to benthic invertebrates at the Site, including evaluations of sediment chemistry, sediment toxicity, in situ benthic macroinvertebrate communities, measures of chemical bioavailability, contaminant breakdown products in fish bile, and fish histopathology.

Comment ID: 177 **Organization:** BAE Systems
DTR Section: 32.5, 32.5.1, 32.5.5, 33.1.3
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

3. Conclusion C.3.3 that "Evaluating risks to benthic invertebrates using a sediment quality triad (SQT) approach is a scientifically valid
approach" and "the procedures described in the DTR for interpreting such data are not always consistent with the best current guidance" is
Invalid (DTR §§ 32.5, 32.5.1, and 32.5.2; DTR Tables 32-17 through 32-22; DTR § 33.1.3; Table 33-2)

The methods used in the DTR to evaluate sediment at the Site were selected in large part to be consistent with those recommended by EPA, as well as those commonly used to evaluate contaminated sediment sites in the U.S. by sediment quality practitioners. Conclusion C.3.3 of MacDonald 3/11/11 Expert Report states that "Evaluating risks to benthic invertebrates using a sediment quality triad (SQT) approach is a scientifically valid approach." "The procedures described in the DTR for interpreting such data are not always consistent with the best current guidance."

This conclusion is invalid, as described in detail in the responses to Comments C.2.4, C.2.5, and C.2.6. The methods used for the Site are consistent with EPA guidance and with the methods commonly used at contaminated sediment sites. In addition, they are both conservative and protective of benthic macroinvertebrate communities at the site.

Comment ID: 178 **Organization:** BAE Systems
DTR Section: 32.5, 32.5.1, 32.5.2, 33.1.3
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

4. Conclusion C.3.4 that "Virtually all of the SQT stations evaluated had concentrations of contaminants that indicated the benthic
invertebrates receive moderate to high exposure to contaminants at the Shipyard Sediment Site" is Invalid (DTR §§ 32.5, 32.5.1, and 32.5.2;
DTR Tables 32-17 through 32-22; DTR § 33.1.3; Table 33-2)

The DTR used multiple lines of chemical and biological evidence to evaluate potential benthic impairment at the Site. Conclusion C.3.4 of MacDonald 3/11/11 Expert Report states that "Virtually all of the SQT stations evaluated had concentrations of contaminants that indicated the benthic invertebrates receive moderate to high exposure to contaminants at the Shipyard Sediment Site."

This conclusion is invalid because exposure of benthic macroinvertebrates to certain contaminant concentrations at a site does not necessarily imply that ecological effects will result, as MacDonald implies. A major reason for this lack of direct relationship between exposure and effects is that the bioavailability of contaminants at a site often is less than 100 percent. Despite the fact that consideration of contaminant bioavailability is a fundamental concept in sediment quality assessments (e.g., Ankley et al. 1996; Di Toro et al. 1991, 2001, 2005; Maruya et al. 2011), MacDonald failed to adequately consider it in the present expert report, as well as in his independent assessment of the remedial footprint for the Site (MacDonald 2009). During his

October 2010 deposition, MacDonald was asked if he considered contaminant bioavailability in preparing his footprint report and he replied: "I have not done an evaluation to determine whether or not one or more of the chemicals of potential concern or contaminants of concern at the Shipyard Sediment Site are more or less bioavailable than they are in other locations in San Diego Bay." Therefore, although it is considered essential by many sediment quality practitioners to evaluate chemical bioavailability when assessing sediment quality, MacDonald (2009) ignored this important consideration for the Site. This is a fundamental flaw in MacDonald (2009), and is contrary to the emphasis placed on evaluations of contaminant bioavailability at the site by Exponent (2003).

The fact that the SQT relies on two kinds of biological indicators, in addition to sediment chemistry, is related largely to uncertainties regarding contaminant bioavailability. A major use of the two kinds of biological indicators (i.e., sediment toxicity tests and evaluations of in situ benthic macroinvertebrate communities) is to determine whether the measured chemical concentrations in bulk sediment are sufficiently bioavailable to result in adverse ecological effects. Therefore, because the use of sediment contaminant concentrations as standalone indicators of sediment toxicity is invalid for definitive assessments of sediment quality, MacDonald's assertion is incorrect.

Comment ID: 179 **Organization:** BAE Systems
DTR Section: 18.3, Tables 18-7, 18-8, 18-9
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

5. Conclusion C.3.5 that "The calculations of the 95% prediction limits were unduly influenced by inclusion of data for reference sediment
samples that had unacceptably low amphipod survival, bivalve normal development, and/or sea urchin fertilization…For the bivalve toxicity
test endpoint, insufficient data were compiled to support calculation of a valid reference envelope" is Invalid (DTR § 18.3; DTR Tables 18-7,
18-8 and 18-9)

The DTR describes how the reference stations for the sediment toxicity tests were carefully selected to represent the range of chemical concentrations and biological responses found in areas removed from contaminant sources in San Diego Bay. Conclusion C.3.5 of MacDonald 3/11/11 Expert Report states that "The calculations of the 95% prediction limits were unduly influenced by inclusion of data for reference sediment samples that had unacceptably low amphipod survival, bivalve normal development, and/or sea urchin fertilization." "For the bivalve toxicity test endpoint, insufficient data were compiled to support calculation of a valid reference envelope."

These conclusions are invalid, as described in detail in the response to Comments C.2.6. The methods used for the Site are consistent with EPA guidance, as well as the methods commonly used to assess sediment toxicity at contaminated sediment sites in the U.S. In addition, as described in Section 17.2 of the DTR, the methods are “consistent with the San Diego Water Board’s goal of establishing a reference condition that represents contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination." MacDonald’s assertion regarding the reference area data is therefore invalid.

Comment ID: 180 **Organization:** BAE Systems
DTR Section: 32.5.2, 33.1.3
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald’s Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

6. Conclusion C.3.6 that “The DTR switched assessment methods from the SQG1 to SS-MEQ to assess impacts on the benthic invertebrate community”, and “SS-MEQ does not provide an effects-based tool for predicting adverse effects on the benthic community” is Invalid (DTR § 32.5.2; DTR Table 32-21; DTR § 33.1.3; DTR Table 33-2; DTR Table 18-6)

The DTR describes how the SS-MEQ was developed to be an effects-based, site-specific indicator of potential benthic impairment at the Shipyards Site. Conclusion C.3.6 of MacDonald 3/11/11 Expert Report states that “The DTR switched assessment methods from the SQG1 to SSMEQ to assess impacts on the benthic invertebrate community”, and “SS-MEQ does not provide an effects-based tool for predicting adverse effects on the benthic community."

This conclusion is invalid, as described in detail in the response to Comments C.2.4, in which it was shown that the SS-MEQ is an environmentally protective predictor of both nonlikely and likely impairment at the Site. The switch from the SQG1 to the SS-MEQ was justified because the SQG1 is based on generic sediment quality values that do not explicitly consider the site-specific conditions at the Site. By contrast, the SS-MEQ was based exclusively on chemical and biological data collected at the site and, therefore is a more appropriate site-specific sediment assessment tool than the SQG1.

MacDonald’s assertion that the SS-MEQ does not provide an effects-based tool for predicting adverse effects on benthic macroinvertebrate communities is incorrect, as the SS-MEQ was specifically developed to be a site-specific effects-based assessment tool. As described in Section 32.5.2 of the DTR, the SS-MEQ was developed using the median sediment concentrations of the primary COCs at Stations NA19, NA22, SW04, SW13, SW22, and SW23. Inspection of Table

18-1 of the DTR shows that this set of stations included all six of the likely impaired stations found at the Site. Therefore, calculation of the median COC concentrations from the six likely impaired stations at the Site was directly analogous to the manner in which Long et al. (1995) developed the ERM values. In addition, the predictive reliability of the SSMEQ was evaluated, and the threshold value of 0.9 was selected, using the site-specific effects determinations for the 30 Triad stations, as well as the 5 supplemental Triad stations sampled at the Site. MacDonald's assertion that the SS-MEQ is not effects-based is, therefore, invalid.

Comment ID: 181 **Organization:** BAE Systems
DTR Section: 33 Tables 33-1, 33-6, A33-1, A33-2, A33-3
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

7. Conclusion C.3.7 that "The Proposed Remedial Footprint excludes polygons with composite SWAC Ranking Values greater than 5.5" is
Invalid (DTR Tables 33-1 and 33-6; DTR Appendix for Section 33, Tables A33-1, A33-2 and A33-3)

The DTR describes how the selection of polygons to include in the remedial footprint was based on multiple lines of evidence. Conclusion C.3.7 of MacDonald 3/11/11 Expert Report states that "The Proposed Remedial Footprint excludes polygons with composite SWAC Ranking Values greater than 5.5."

This conclusion is invalid, as described in detail in the response to Comments C.2.3. The DTR clearly states on Page 33-1 that "The polygons were ranked based on a number of factors including likely impaired stations, composite surface-area weighted average concentrations for the five primary COCs, site-specific median effects quotient (SS-MEQ) for non-Triad stations, and highest concentration of individual primary COCs." Therefore the selection of the polygons to include in the remedial footprint was based on multiple lines of evidence, as opposed to a single line of evidence such as the Composite SWAC Ranking Values. MacDonald's assertion is, therefore, invalid.

Comment ID: 182 **Organization:** NASSCO
DTR Section: 28
Comment:
IV.THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A.Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4.There is No Significant Risk To Human Health (Findings 25-28)

e.A Tier II Risk Assessment Using Reasonable Assumptions Demonstrates That Even If Fish Were Caught Within The Shipyard, They Do Not Present A Significant Risk To Human Health (Finding 28)

Even if Staff assume that security restrictions do not make it impossible for the public to fish and collect shellfish in the NASSCO Shipyard, using realistic exposure estimates to prepare a Tier II Risk Assessment reveals that fish and shellfish caught at the NASSCO Shipyard do not pose a significant risk to human health. [Comment No. 199, TCAO, at 28, DTR, at 28, Appendix 28]. The Finley Report performs just this analysis, and concludes that a properly conducted Tier II Risk Assessment, with reasonable but conservative assumptions, demonstrates that fish and shellfish caught at the NASSCO Shipyard do not pose a significant risk to human health. Finley Report, at 23-28. Accordingly, the DTR and TCAO should be revised to incorporate this analysis, and the conclusion that human health beneficial uses are impaired should be removed. [Comment No. 200, TCAO, at 28, DTR, at 28, Appendix 28].

Comment ID: 183 **Organization:** BAE Systems
DTR Section: 33 Tables 33-1, 33-6, A33-1, A33-3
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

8. Conclusion C.3.8 that "The Proposed Remedial Footprint excludes polygons, like NA07, with concentrations of contaminants in sediment that likely pose higher risks to human health and aquatic-dependent wildlife than some of the polygons included in the Proposed Remedial Footprint" is Unsupported (DTR Tables 33-1 and 33-6; DTR Appendix for Section 33, Tables A33-1, A33-2 and A33-3)

Conclusion C.3.8 of MacDonald 3/11/11 Expert Report states that "The Proposed Remedial Footprint excludes polygons, like NA07, with concentrations of contaminants in sediment that likely pose higher risks to human health and aquatic-dependent wildlife than some of the polygons included in the Proposed Remedial Footprint." However, MacDonald provided no technical basis for this assertion in Section C.2.

Comment ID: 184 **Organization:** BAE Systems
DTR Section: 33

Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

9. Conclusion C.3.9 that "Proposed Remedial Footprint excludes polygons with concentrations of contaminants in sediment that likely
pose high risks to benthic fish" is Invalid (DTR § 33)

The DTR describes how the remedial footprint was developed to be protective of fish, in addition to other ecological receptors. Conclusion C.3.9 of MacDonald 3/11/11 Expert Report states that "The Proposed Remedial Footprint excludes polygons with concentrations of contaminants in sediment that likely pose high risks to benthic fish."

This conclusion is invalid, as described in detail in the response to Comments C.2.9. The fish species selected for detailed evaluation at the Site (i.e., spotted sand bass) was appropriate because it preys primarily on benthic macroinvertebrates, exhibits limited spatial movements, and is abundant in numerous kinds of habitats within San Diego Bay. By contrast, MacDonald conducted a hypothetical evaluation of a species (i.e., goby) that was not found at the Site during fish collection efforts, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, a lipid content based on the naked goby, and an assumed 80 percent moisture
content in whole bodies of fish. Because each of the above items has uncertainties attached to it, which MacDonald did not acknowledge or attempt to quantify, the results of MacDonald's hypothetical evaluation are highly questionable, and cannot be interpreted with any degree of confidence. MacDonald's assertion that the remedial footprint does not include polygons that likely pose a high risk to benthic fish is therefore invalid.

Comment ID: 185 **Organization:** BAE Systems
DTR Section: 33.1.1
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald's Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

10. Conclusion C.3.10 that "The Proposed Remedial Footprint excludes polygons of portions of polygons, like NA20, NA21, and NA22, which are being considered in the Mouth of Chollas Creek TMDL" and "The TMDL process will not provide a vehicle for remediating contaminated sediment" is Invalid (DTR § 33.1.1)

The DTR describes how portions of the Site were removed from the site because they will be addressed in a separate TMDL evaluation. Conclusion C.3.10 of MacDonald 3/11/11 Expert Report states that “The Proposed Remedial Footprint excludes polygons or portions of polygons, like NA20, NA21, and NA22, which are being considered in the Mouth of Chollas Creek TMDL." “The TMDL process will not provide a vehicle for remediating contaminated sediment."

This conclusion is invalid, as described in detail in the response to Comments C.2.7. The decision to remove these polygons from the Site was an administrative decision, rather than a technical decision, and therefore does not require technical justification as MacDonald implies. In addition, because MacDonald is not participating in the design of the TMDL process for these polygons he has no direct knowledge of what the process will include. Therefore, MacDonald’s assertion that the manner in which these polygons will be addressed is both invalid and uniformed.

Comment ID: 186 **Organization:** BAE Systems
DTR Section: 33.1.4, Table 33-6
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald’s Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

11. Conclusion C.3.11 that “In order to be scientifically valid, these conclusions of technical infeasibility must be supported by detailed engineering studies” is Invalid (DTR Table 33-6; DTR § 33.1.4)

The DTR describes how potential remediation of several polygons was considered technically infeasible. Conclusion C.3.11 of MacDonald 3/11/11 Expert Report states that “In order to be scientifically valid, these conclusions of technical infeasibility must be supported by detailed engineering studies."

This conclusion is invalid, as described in detail in the response to Comments C.2.8. MacDonald’s assertion regarding the determinations of technical infeasibility are invalid, because those determinations were made by a group comprised of multiple parties with a range of backgrounds and expertise, including resource agencies and shipyard operations personnel. In addition, there is no formal requirement that engineering studies be conducted to make a determination of technical infeasibility. In addition, none of the affected polygons warranted inclusion in the remedial footprint, regardless of concerns related to technical feasibility. MacDonald’s statement regarding technical infeasibility is therefore invalid, and ultimately irrelevant based on the chemical and biological indicators measured in the affected polygons.

Comment ID: 187 **Organization:** NASSCO
DTR Section: 12
Comment:

IV.THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

B.The Tentative Cleanup and Abatement Order Is Technically Infeasible to Achieve Because Uncontrolled Sources Of Pollution Unrelated To NASSCO Are Impacting Sediment At The Shipyard (Findings 12, 30, 32, 33)

Contrary to Staff's conclusion in Finding 30 of the TCAO, it is neither technically feasible, nor prudent, to carry out the proposed cleanup while uncontrolled sources of pollution continue to impact the Site. See TCAO, at ¶ 30, DTR, at 30-7. [Comment No. 201, TCAO, at 30, DTR, at 30, 32.7.1]. Chollas Creek has been recognized as contributing to the accumulation of pollutants observed in marine sediments at the Site, and is not expected to be fully controlled for decades. Deposition of Craig Carlisle ("Carlisle Depo"), at 200:5-200:13. [Comment No. 202, TCAO, at 12, 33, DTR, at 12.1, 33.1.1]. If source control of Chollas Creek is not achieved before the cleanup is conducted, pollutants from Chollas Creek "could influence contaminant levels in sediment" and possibly cause the Site to become recontaminated. Barker Depo, 172:4 – 174:11. [Comment No. 203, TCAO, at 33, DTR, at 33.1-33.4].

Regulators have long recognized that "control[ling] other sources of contamination is crucial to successful remediation, regardless of the remedy selected, and should be implemented by regulatory agencies as a component of remedial action." Committee on Contaminated Marine Sediments, National Research Council, Contaminated Marine Sediments: Assessment and Remediation (1989), at 15, 17, 29. Ideally, source control should be achieved prior to active remediation because "the long-term effectiveness of any remedial option can be reduced if sediment transport acts to recontaminate the site." Interim Guide for Assessing Sediment Transport at Navy Facilities, SAR373164; see also Transcript, Meeting, State of California Lands Commission (October 20, 2007) (statement of Sylvia Rios), at 248:18 – 250:1 ("It is reasonable to conclude that storm water/urban runoff is now the most significant contributor of contamination into San Diego Bay. It is also reasonable to conclude that ongoing contamination from urban runoff must be resolved in order to effectively address the sediment contamination in this area. To do . . . otherwise, . . . is . . . to simply spend large amounts of money cleaning sediment of the bay only to find that stormwater runoff from upland sources has over time recontaminated the same area that has just been cleaned."). [Comment No. 204, TCAO, at 12, DTR, at 12.1].

Comment ID: 188 **Organization:** BAE Systems
DTR Section: 33
Comment:

V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald’s Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

12. General Conclusion #1 that “The results of an independent evaluation of the available data and information that I performed in 2009 indicate that additional polygons should be included in the sediment remedial footprint for the Shipyard Sediment Site (MacDonald 2009)” is Invalid (DTR § 33)

The DTR provides detailed justification as to why each polygon at the Site was or was not included in the remedial footprint. General Conclusion #1 of MacDonald 3/11/11 Expert Report states that “The results of an independent evaluation of the available data and information that I performed in 2009 indicate that additional polygons should be included in the sediment remedial footprint for the Shipyard Sediment Site (MacDonald 2009).

This conclusion is invalid, because the methods, results, and conclusions of MacDonald (2009) have come under severe technical criticism both at his October 2010 deposition, and in follow-up expert reports. The use of that report to justify that additional polygons should be included in the remedial footprint is therefore inappropriate from a technical standpoint.

Comment ID: 189 **Organization:** BAE Systems
DTR Section: 33.1 to 33.1.4, Tables 33-1 to 33-6
Comment:
V. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION C OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 33; DTR § 33)

B. Responses to MacDonald’s Conclusions Regarding the Proposed Remedial Footprint (DTR § 33)

13. General Conclusion #2 that “The following polygons pose unacceptable risks to fish and would likely or possibly adversely affect the benthic community: NA01, NA04, NA07, NA16, SW06, SW18, and SW29” and “In addition, polygon NA22 should be included in the Remedial Footprint because it…is not valid to exclude it based on its consideration in the TMDL process for the Mouth of Chollas Creek” is
Invalid (DTR §§ 33.1 through 33.1.4; DTR Tables 33-1 through 33-6).

The DTR provides detailed justification as to why each polygon at the Site was or was not included in the remedial footprint. General Conclusion #2 of MacDonald 3/11/11 Expert Report states that “The following polygons pose unacceptable risks to fish and would likely or possibly adversely affect the benthic community: NA01, NA04, NA07, NA16, SW06, SW18, and SW29." “In addition, polygon NA22 should be included in the Remedial Footprint because it…is not valid to exclude it based on its consideration in the TMDL process for the Mouth of Chollas Creek."

This conclusion is invalid with respect to fish, as described in detail in the response to Comment C.2.9, and also in abbreviated form in the response to Conclusion C.3.9. With respect to benthic macroinvertebrate communities, the comment is invalid because multiple site-specific indicators of sediment quality showed that the polygons do not pose risks to benthic macroinvertebrate communities, as follows:

- NA01: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.

- NA04: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ values (0.69) was less than the threshold value of 0.9.

- NA07: Not likely impaired based on Triad analysis.

- SW06: Not likely impaired based on the supplemental Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ values (0.63) was less than the threshold value of 0.9.

- SW18: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.62) was less than the threshold value of 0.9.

- SW29: No primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.71) was less than the threshold value of 0.9

Based on the information presented above, MacDonald's assertions that the six polygons pose risks to fish, and potentially risks to benthic macroinvertebrate communities, are both invalid.

Comment ID: 190 **Organization:** NASSCO
DTR Section: 4
Comment:

IV.THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

B.The Tentative Cleanup and Abatement Order Is Technically Infeasible to Achieve Because Uncontrolled Sources Of Pollution Unrelated To NASSCO Are Impacting Sediment At The Shipyard (Findings 12, 30, 32, 33)

1.To The Extent Minor Impacts Are Observed, Shipyard Contaminants Are Not The Source (Findings 4, 14-18, 30, 32, 33)

Sediment conditions at the Site are generally favorable; however, to the extent minor impacts are observed at NASSCO, triad results suggest that contaminants from Chollas Creek, not the shipyards, are linked to the observed environmental impacts. Ginn Report, at 44-45. [Comment No. 206, TCAO, at 4, DTR, at 4.3.1, 4.5, 4.7]. For example, stations NA20 and NA22—which are not associated with shipyard-related chemicals, but are within the area of apparent sediment deposition from the Chollas Creek storm water plume—are the only stations in the NASSCO leasehold with apparent benthic effects under the DTR analysis. Id.. [Comment No. 207, TCAO, at 33, DTR, at 33.1-33.4]. Further, as discussed in detail below, toxicity results indicate that the observed sediment toxicity is correlated with pesticides, rather than shipyard chemicals.

a. There Is No Correlation Between Concentrations of Shipyard Contaminants And Sediment Toxicity (Findings 14 – 18)
Chemicals potentially associated with the shipyards are generally not correlated with sediment toxicity and benthic macroinvertebrate community effects, even where such chemicals are present in concentrations above reference—suggesting that observed toxicity and benthic effects are not due to shipyard chemicals. Exponent Report, at 13-2. [Comment No. 208, TCAO, at 14-18, DTR, at 14-18]. Moreover, there are no demonstrable causal relationships between shipyard-associated chemicals and observed biological effects. Id.; see also DTR, at Table 20-1. [Comment No. 209, TCAO, at 14-18, DTR, at 14-18].

b. Correlations Are Observed Between Pesticide Concentrations And Sediment Toxicity (Findings 14 – 18)
By contrast, there is clear evidence that pesticides—which are not shipyard-associated chemicals—may be responsible for adverse biological effects observed at the shipyards, particularly adverse effects to bivalves. Exponent Report, at 9-6 – 9-7. [Comment No. 210, TCAO, at 18, DTR, at 4.7.1.3, 18.1-18.5]. Pesticide concentrations, specifically of chlordanes and DDTs, are more strongly correlated with impacts to aquatic life (including adverse effects on bivalve development and bivalve abundance) than are any of the shipyard-associated chemicals. Id. [Comment No. 211, TCAO, at 4, 18, DTR, at 4.7.3, 4.7.1.3, 18.1-18.5]. These results are consistent with the results of the SFEI Study, which also found correlations between pesticide concentrations and sediment toxicity in San Diego Bay, and suggest that observed toxicity responses, particularly at NA20 and NA22, are attributable to Chollas Creek. Exponent Report, at 9-6 – 9-7, 13-2; Thompson et al., Estimated Sediment Contaminant Concentrations Associated with Biological Impacts at San Diego Bay Clean-up Sites, at 6 (Jul. 2009) ("[C]hlordanes and DDTs had the highest correlations with all biological and SQO indicators."); Cleanup Team's Responses and Objections to Designated Party NASSCO's Second Set of Requests For Admissions ("Response to NASSCO's RFAs"), at RFA No. 28 (admitting that correlations between pesticide concentrations in sediment and sediment toxicity have been observed in San Diego Bay). [Comment No. 212, TCAO, 18, DTR, at 18.1-18.5].

c.Uncontrolled Sources of Contamination Unrelated to NASSCO Impact the Shipyard (Findings 4, 30, 32, 33)
Taken together, these results confirm that uncontrolled storm water and municipal separate storm sewer discharges, have impacted, and will continue to impact, the shipyard. DTR, at 4-1, et seq. [Comment No. 213, TCAO at 4, 30, 32, 33 DTR, at 4.1-4.7.3, 30, 32.7, 33.1.1]. Moreover, as discussed below, the ongoing Chollas Creek TMDL proceedings indicate that such discharges are unlikely to be controlled for decades:

(1) Urban Runoff From Chollas Creek Is A Significant Contributor Of Pollutants To The Shipyard (Findings 4, 30, 32, 33)

Significant regulatory efforts aimed at addressing conditions at Chollas Creek affirm that Chollas Creek is heavily polluted and a significant contributor of metals, pesticides, and other pollutants to sediments at the Site. DTR, at 4-1, 4-19. Since 1994, Chollas Creek storm water samples have frequently exceeded Basin Plan narrative water quality objectives for toxicity, and California Toxics Rule criteria for copper, lead, and zinc. DTR, at 4-12. As a result, Chollas Creek was placed on the Clean Water Act Section 303(d) List of Water Quality Limited Segments in 1996 for cadmium, copper, lead, zinc, and toxicity, with zinc, copper, and diazinon subsequently identified as causes of observed toxicity. Chollas Creek TMDL for Metals, Background, (available at http://www.waterboards.ca.gov/sandiego/water_issues/programs/tmdls/chollascreekmetals.shtml). It was also designated as a priority hot spot due to the presence of copper, DDT, chlordane, and diazinon in the sediments, and the presence of impacts to aquatic life. SDRWQCB, Proposed Regional Hot Spot Cleanup Plan (Dec. 1997), at 1-16; Exponent Report, at 1-16 -1-17. In 2002 and 2005, respectively, TMDLs were adopted for diazinon and metals in Chollas Creek, and the Regional Board is currently in the process of developing TMDLs for PCBs, PAHs, and chlordane at the mouth of Chollas Creek. Id.

These TMDLs and other regulatory efforts document severe pollution problems in Chollas Creek that ultimately affect the Site, since “each season’s major storms will effectively remove any metals accumulated in the creek sediment and transport then downstream to San Diego Bay.” Total Maximum Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek Tributary to San Diego Bay, Draft Technical Report (Dec. 1997), at 1-16. [Comment No. 214, TCAO, at 4, DTR, at 4.7.12]. Such plumes “are toxic to marine life and can introduce a large fraction of the total storm event’s production of suspended solids, copper, zinc, and lead to the Shipyard Sediment Site through settling of particles.” DTR, at 4-10; see also Barker Depo, at 921:14 – 922:15 (confirming that storm water outflows from Chollas Creek have contributed to the accumulation of pollutants in marine sediment at the Shipyard Sediment Site, and reach the inner portion of the leasehold). [Comment No. 215, TCAO, at 4, 30, 32, 33, DTR, at 4.1-4.7, 30, 32.7, 33.1.1]. Further, there is evidence that these discharges could influence the inner portions of the leasehold, including the areas slated for remediation. Barker Depo, at 923:8 – 923:15 (confirming that NA19, NA06, NA15 and NA17 are potentially subject to influence from Chollas Creek); Carlisle Depo, at 104:5 – 105:3 (same). [Comment No. 216, TCAO, at 4, 30, 32, 33, DTR, at 4.1-4.7, 30, 32.7, 33.1.1].

(2) Observed Toxicity And Benthic Community Effects Are Attributable To Discharges Of Municipal Storm Water (Findings 4, 14 – 18, 30, 32, 33)

Notably, the toxicity and benthic community hits described in the DTR occur at stations located in the vicinity of Chollas Creek or other discharges of municipal storm water, suggesting that non-shipyard sources are responsible for observed impacts to sediments at NASSCO. DTR, at Table 18-8; DTR at 4-5. By contrast, sediment toxicity is not statistically associated with shipyard chemicals; thus, elevated concentrations of shipyard chemicals (as measured by exceedance of LAET) were determined not to be the cause of any observed reductions in beneficial uses. Exponent Report, at 18-5. [Comment No. 217, TCAO, at 4, 15, 16, 18, DTR, at 4, 15, 16, 18]. Instead, the presence of pesticides, and the observed correlations between pesticides and toxicity, suggest that Chollas Creek and storm sewer discharges from areas outside the shipyards are contributing toxic levels of pesticides (and other chemicals) to shipyard sediments, and are responsible for any observed effects. Exponent Report, at 13-2 – 13-3, 18-5;

see also DTR, at 4-19. [Comment No. 218, TCAO, at 4, 30, 32, 33, DTR, at 4.1-4.7, 30, 32.7, 33.1.1].

Comment ID: 191 **Organization:** BAE Systems
DTR Section: 34
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

BAE Systems responds to the comments and conclusions of the MacDonald 3/11/11 Expert Report contained in Section "D" entitled "Expert Opinion #2: Alternative Cleanup Levels which states:

Limitations on the establishment and implementation of the Alternative Clean-Up Levels make it difficult to determine if San Diego Bay beneficial uses will be unreasonably affected by the post-remedial contamination levels. To assure that beneficial uses are protected, Remediation Monitoring and Post Remedial Monitoring must be improved to ensure that the Shipyard Sediment Site is remediated to the Alternative Clean-Up Levels.

(MacDonald 3/11/11 Expert Report, at p. 18.)

Comment ID: 192 **Organization:** NASSCO
DTR Section: 30
Comment:

IV.THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

B.The Tentative Cleanup and Abatement Order Is Technically Infeasible to Achieve Because Uncontrolled Sources Of Pollution Unrelated To NASSCO Are Impacting Sediment At The Shipyard (Findings 12, 30, 32, 33)

2.Remediation Goals Cannot Be Met Due To Re-Contamination From Other Sources (Findings 30, 32, 33, 36)

It is axiomatic that source control should be achieved prior to active remediation of sediment. See, e.g., Resolution 92-49, at ¶ III.E.1; EPA's Contaminated Sediment Management Strategy, EPA-823-R-98-001 (Apr. 1998), at 54 (recognizing pollution prevention and source control as methods that will allow contaminated sediments to recover naturally without unacceptable impacts to beneficial uses). [Comment No. 219, TCAO, at 36, DTR, at 36.4].

As discussed above, the administrative records both in this proceeding and the various Chollas Creek TMDL proceedings demonstrate unequivocally that Chollas Creek is adversely impacting sediments at NASSCO. See Section III. B. 1. supra. [Comment No. 220, TCAO, at 4, 30, 32, 33, DTR, at 4.1-4.7, 30, 32.7, 33.1.1]. Staff also admits that discharges from Chollas Creek impact sediment quality within the leasehold, that pesticide discharges to San Diego Bay are uncontrolled and correlated with toxic effects, and that sediment at NASSCO is adversely affected by sources of pollution unrelated to NASSCO or its operations. Response to NASSCO's RFAs, at 11, 13, 15, 17. [Comment No. 221, TCAO, at 4, 30, 32, 33, DTR, at 4.7.1.3, 4.7.3, 30, 32.7, 33.1.1]. However, despite extensive regulatory efforts, it is clear that complete source control cannot, and will not, be achieved in the foreseeable future. No reductions are required under the Chollas Creek metals TMDL until 2018, and full compliance is not required until October of 2028. Barker Depo, at 925:19 – 927:25 (admitting that Chollas Creek TMDL is not expected to be fully implemented until 20 years after adoption, and that no reduction is required for the first ten year period). [Comment No. 222, TCAO, at 12, DTR, at 12.1]. Further, it is "probable" that full compliance with the TMDLs will not be achieved within the timeframe set forth in the TMDL, because existing technology cannot reliably meet the TMDL and is cost-prohibitive. Deposition of Benjamin Tobler ("Tobler Depo"), at 90:6 – 92:5 ("[W]ithout getting into space-age technology, which is extremely cost-prohibitive, the only possible fix for the problem is sand filters. Sand filters do filter out metals, but even sand filters only get you into the general ballpark for meeting compliance. In other words, the best sand filters right now only just barely get you to the ballpark of compliance. There's no margin of safety with it."). [Comment No. 223, TCAO, 30, DTR, at 30.1-30.2]. Thus, according to Staff, it is "probable" that full compliance will not be achieved, even after 20 years and significant infrastructure improvements, "unless technology comes to the rescue." Id. [Comment No. 224, TCAO, at 12, DTR, at 12.1].

In sum, it is nonsensical to require massive dredging of site sediments before sources are fully controlled. Failing to fully implement source control risks recontamination from upland sources and Chollas Creek, and may end up requiring enormous sums of public and private money to be spent on successive CAOs, without achieving significant permanent changes in sediment conditions. (footnote) [Comment No. 225, TCAO, at 4, 30, 32, 33, DTR, at 4.7.1.3, 4.7.3, 30, 32.7, 33.1.1, 33.4].

(footnote) A prime example of the need for source control prior to remediation is the Convair Lagoon site: after significant funds were expended constructing a cap to remediate PCBs, PCBs were subsequently found on top of the cap, due to incomplete source control. The Board must avoid the risk of repeating a similar outcome at NASSCO by ensuring that Chollas Creek and other municipal storm water discharges are fully controlled prior to any active remediation.

Comment ID: 193 **Organization:** BAE Systems
DTR Section: 32
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

A. Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

MacDonald argues the "appropriateness and protectiveness of the Alternative Clean-Up Levels described in Section 32 of the TCAO and Finding 32 of the DTR are uncertain for several reasons" and proceeds to set forth comments. (Id.) BAE Systems responds to each comment.

1. Comment D.2.1 that "The Alternative Clean-Up Levels are substantially higher than background levels of the primary COCs in San Diego Bay" is Unsupported and Invalid (TCAO Finding 32; DTR § 32)

MacDonald states that "Clean-Up Levels that correspond with background conditions in San Diego Bay would provide the highest, practically achievable, level of protection to ecological receptors utilizing habitats in the vicinity of the Shipyard Sediment Site." However, because he fails to evaluate or even define his term "practically achievable", he provides no support for his assertion. By contrast the DTR provided extensive evaluations of both the protectiveness of the Alternative Cleanup Levels, as well as the technical and economic feasibility of cleaning up the entire site to background levels.

As stated in Section 32.2.3 of the DTR, "Protectiveness of the beneficial uses represented by aquatic-dependent wildlife and human health was assessed via estimation of post-remedial SWAC values of the remedial footprint. Post-remedial SWAC calculations were completed with the assumption that the SWAC inside the footprint would be remediated to background concentrations." The protectiveness of this approach for aquatic dependent wildlife was then evaluated, and it was concluded that "HQs for all receptors evaluated at the Site had a value less than 1.0 (Table 32-8), indicating that the COCs are unlikely to cause adverse ecological effects and that the post-remedial sediment chemistry conditions are protective of aquatic dependent wildlife and their associated beneficial uses." In addition, in Section 31 of the DTR, it was determined that "Based on these incremental costs versus incremental benefit comparisons, cleanup to background sediment quality levels is not economically feasible." Based on the considerations discussed above, the SWAC values identified in Section 32 of the DTR were selected as the Alternative Cleanup Levels for the Site (see Table 2 of the TCAO). It therefore is appropriate that the Alternative Cleanup Levels exceed background values, and MacDonald's assertion is invalid.

Comment ID: 194 **Organization:** NASSCO
DTR Section: 30
Comment:

V.MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

A.Natural Attenuation Is Occurring And Should Be The Preferred Remedy (Findings 30, 36)

Resolution 92-49 provides that, in determining the appropriate cleanup level, the Regional Board shall take into account the demands being made and to be made on the waters and the total values involved—beneficial and detrimental, economic and social, and tangible and intangible. Resolution 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure; rather, a site may be closed if the level will be attained "within a reasonable time frame," such as through monitored natural attenuation. Resolution 92-49, at III.A. [Comment No. 226, TCAO, at 36, DTR, at 36.4]. Site conditions and factors conducive to monitored natural attenuation include: (1) the presence of relatively low contaminant levels; (2) evidence that natural attenuation is occurring, or is reasonably certain to occur; (3) bioavailability and toxicity to benthic organisms under current conditions; (4) site activities and anticipated land uses; (5) stable sediment beds; and (6) the ability to monitor sediment concentrations and limit short-term exposure during the recovery period. DTR, at 30-2, Gibson Depo, at 151:1 – 153:8, 152:14 – 153:9; Attachment B, Exponent Memorandum (May 25, 2011). Based on these factors, monitored natural attenuation following source control is the appropriate remedy for the Site for the following reasons [Comment No. 227, TCAO, at 30, DTR, at 30.1.1].:

Comment ID: 195 **Organization:** NASSCO
DTR Section: 30
Comment:
V.MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

A.Natural Attenuation Is Occurring And Should Be The Preferred Remedy (Findings 30, 36)

1.Source Control Issues Affect All Potential Primary Remedies (Findings 4, 30, 32, 34)

The DTR acknowledges that monitored natural attenuation is a "readily employable and proven remediation strateg[y]," and that natural recovery processes are "active" at the Site. DTR, at 30-1, 30-3; see also Barker Depo, at 255:19 – 256:1. Although, Staff did not recommend natural recovery as the primary remedy for the Site because "[c]omplete control of site sources has not been fully demonstrated to a level that would assure adequate rates of recovery," Staff's "person most knowledgeable" on the issue testified that recontamination from off-site sources would affect all potential remedies. DTR, at 30-3; Barker Depo, at 278:6 – 279:2. Thus, lack of source control should not serve to favor dredging, at the expense of monitored natural attenuation. Barker Depo, at 278:6 – 279:2. [Comment No. 228, TCAO, at 4, 30, 32, 34, DTR, at 4.3, 4.7, 30, 32.7, 34.4].

Comment ID: 196 **Organization:** NASSCO
DTR Section: 30
Comment:
V.MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

A.Natural Attenuation Is Occurring And Should Be The Preferred Remedy (Findings 30, 36)

2.The 2009 Testing Demonstrates That Natural Attenuation Is Occurring (Findings 30, 32, 36)

Recent testing conducted by Exponent on behalf of the Parties in 2009 ("2009 Testing") confirms that the already favorable sediment conditions observed in 2002 are improving through natural attenuation. [Comment No. 229, TCAO, at 30, 32, DTR, at 30.1.1, 32.2 – 32.6]. Specifically, the 2009 Testing indicates that the SWACs for the five primary contaminants of concern have decreased substantially since 2001/2002, and in many cases are only slightly higher than post-remedial SWACS, suggesting that Staff's cleanup goals can be achieved in a reasonable time through monitored natural attenuation. Barker Depo, Ex. 1228. [Comment No. 230, TCAO, at 30, 32, DTR, at 30.1.1, 32.2 – 32.6]. In fact, for the locations sampled in 2009, which were selected because they are considered representative of site-wide conditions, three of the five SWACs for primary contaminants of concern have already attained the post-remedial SWACs that would be required by the TCAO, and the remaining two are only slightly above the post-remedial SWACs. [Comment No. 231, TCAO, at 30, 32, DTR, at 30, 32].

For example, the copper SWAC at the five 2009 Testing stations decreased from 183.3 mg/kg in 2001/2002 to 167.8 mg/kg in 2009, representing an 8.5% decrease attributable to monitored natural attenuation. Barker Depo, Ex. 1228, at A. Further, the 2009 copper SWAC for these locations was only slightly higher than the required post-remedial SWAC of 159 mg/kg, suggesting that Staff's site-wide cleanup goals are likely to be achieved for copper in a reasonable time simply by allowing natural attenuation to continue. Id. The results are even more dramatic with respect to other primary contaminants of concern, where the 2009 sampling data showed that: (1) the mercury SWAC has decreased by 49% to 0.8 mg/kg, only slightly above the required post-remedial SWAC of 0.68 mg/kg; (2) the HPAH SWAC has decreased by 18.8% to 2,293.3 ug/kg, and is actually lower than the required post-remedial SWAC of 2,451 ug/kg indicating that the post-remedial HPAH SWAC has already been achieved for at least five stations via natural processes; (3) the PCB SWAC has decreased by 23.6% to 188.7 ng/g, which is already lower than the required SWAC of 194 ng/g indicating that the post-remedial PCB SWAC has already been achieved for at least five stations via natural processes; and (4) the TBT SWAC has decreased by 71.6% to 23.3 ug/kg and is already substantially lower than the required post-remedial SWAC of 110 ug/kg indicating that the post-remedial TBT SWAC has already been achieved for at least five stations via natural processes. Id. at B – E. In fact, the latter data for TBT is also consistent with previous Regional Board findings at the Commercial Basin boatyards, where TBT was found to naturally degrade quickly and was therefore not actively remediated. RWQCB Order No. 88-79, at ¶¶ 18- 19. [Comment No. 232, TCAO, at 30, 32, 36, DTR, at 30, 32, 36.4].
Additionally, NASSCO incorporates by reference the arguments and evidence submitted by BAE with respect to the AMEC sampling conducted in late 2010, which shows similar results as the 2009 Testing and further confirms that natural attenuation is occurring at the Site. [Comment No. 233, TCAO, at 30, 32, 36, DTR, at 30, 32, 36.4].

Based on these data, it is clear that on a SWAC basis, natural remediation is already occurring at the site for all five primary contaminants of concern, suggesting that Staff's proposed cleanup levels will be achieved in a reasonable time without active dredging. [Comment No. 234, TCAO, at 30, 32, DTR, at 30, 32]. This is particularly true considering that natural attenuation is occurring despite the physical disturbances associated with shipyard activities. Since Site contaminants are also not generally bioavailable, and toxicity to benthic organisms under current conditions is low, the Site is a prime candidate for natural attenuation. Because natural attenuation is already occurring and is expected to achieve the cleanup levels in the TCAO within a reasonable time, requiring dredging would be inappropriately conservative. [Comment No. 235, TCAO, at 18, 19, 30, 32, DTR, at 18, 19, 30, 32].

Comment ID: 197 **Organization:** NASSCO
DTR Section: 30
Comment:

V.MONITORED NATURAL ATTENUATION IS THE PROPER REMEDY

A.Natural Attenuation Is Occurring And Should Be The Preferred Remedy (Findings 30, 36)

3.Site-Specific Circumstances Support Monitored Natural Attenuation As The Preferred Remedy (Finding 18, 23-24, 27-28, 30)
In addition to the fact that monitored natural attenuation is already occurring, the following site-specific circumstances support monitored natural attenuation as the preferred remedy for the Site:

a.The NASSCO Site Will Remain A Secured Shipyard Until At Least 2040 (Findings 28, 30)
The fact that NASSCO will remain a secured shipyard until at least 2040 supports implementation of monitored natural attenuation because security measures will prevent human exposure to site contaminants and wildlife during the recovery period. Exponent Report, at 18-6; Finley Report, at 6. [Comment No. 236, TCAO, at 28, 30, DTR, at 28.2, 30]. Additionally, the demands being made, and to be made, on the waters at the Site, given its use as an active shipyard, also support monitored natural attenuation. [Comment No. 237, TCAO, at 28, 30, DTR, at 28.2, 30].

Based on the operative land use plans, NASSCO property is required to be used for marine-oriented industrial uses, and is classified as prime industrial land. Finley Report, at 3; Alo Depo, at 106:21 – 107:8. Further, under the terms of NASSCO's current lease, NASSCO will remain a secured shipyard until at least 2040. Attachment C, San Diego Unified Port District Lease to NASSCO, and Amendments thereto ("Lease") . As an active industrial facility, the shipyard does not permit fishing, swimming, recreation, or other such uses at the Site. Armed military personnel, and other safeguards, including a 300 foot security boom, ensure that these restrictions are enforced. [Comment No. 238, TCAO, at 28, 30, DTR, at 28.2, 30]. Moreover, there is no indication that NASSCO will be used as a recreational area in the foreseeable future, indicating that existing security measures will continue to prevent exposure to humans during the recovery period. See Finley Report, at 3. [Comment No. 239, TCAO, at 28, 30, DTR, at 28.2, 30]. It is both common and appropriate to take these types of land use considerations into account in choosing an appropriate remedy. Alo Depo, at 107:23 – 108:6, 109:4 – 109:7. Yet, the TCAO is based upon conservative assumptions that account for recreational, and other uses that are simply not relevant to the Site, especially considering that monitored natural attenuation is expected to remediate the sediments to the proposed levels long before NASSCO's lease expires. [Comment No. 240, TCAO, at 12, 18, 23-24, 27-28, 30, DTR, at 12, 18, 23-24, 27-28, 30].

Comment ID: 198 **Organization:** BAE Systems
DTR Section: 32
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

A. Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

2. Comment D.2.2 that "Neither the TCAO nor the DTR explicitly identify numerical Alternative Clean-Up Levels for the protection of aquatic life" is Invalid (TCAO Finding 32; DTR § 32) MacDonald states that "Without evidence in the record demonstrating that potential for adverse effects on fish were considered, I conclude that the Alternative Clean-Up Levels were developed without considering the potential for adverse impacts on fish." This assertion is invalid since extensive evaluations of risks to fish were evaluated at the Site, using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003). MacDonald's assertion is therefore invalid.

Comment ID: 199 **Organization:** BAE Systems
DTR Section: 32, Table 18-7
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

A. Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

3. Comment D.2.3 that "The Alternative Clean-Up Levels fail to include numerical limits to protect benthic macroinvertebrates" is Invalid
(TCAO Finding 32; DTR § 32; DTR Table 18-7) MacDonald states that "The metric for evaluating sediment chemistry data in the non-
Triad samples is not effects based." He then identifies the SS-MEQ as the metric he is referring too. However, as discussed in detail in the previous response to MacDonald's Conclusion C.3.6, the SS-MEQ was developed in the DTR to be a site-specific, effects-based, protective tool for evaluating benthic impairment. MacDonald's assertion is therefore invalid.

MacDonald also states the reference pool used to evaluate the results of the 10-d amphipod test was invalid because it included several survival values less than 80 percent. However, as discussed in detail in the previous response to MacDonald's Comment C.2.6, the group of stations included in the reference pool was appropriate, because they were relatively uncontaminated and represented the range of sediment chemical concentrations and biological responses found in areas located away from contaminant sources in San Diego Bay. MacDonald's assertion is therefore invalid.

MacDonald also states that the reference pools for the bivalve and echinoderm sediment toxicity tests were invalid because the bivalve reference pool included only four stations, and the

echinoderm reference pool included two samples with fertilization rates of less than 70 percent. Aside from the justifications identified for the amphipod test above, the results for the bivalve and echinoderm tests identified in the DTR were identical to those found by Exponent (2003), using a different reference pool for the echinoderm test and a different statistical procedure for both tests (i.e., analysis of variance in the Exponent report and a reference-envelope approach in the DTR).
That is, both studies found no significant effects for the echinoderm test, and significant effects at the same 12 stations for the bivalve tests. These results show that the statistical results for both of these tests were robust, since they were the same using two methods of analysis. MacDonald's assertion that the results for those two tests were invalid is therefore incorrect.

Comment ID: 200 **Organization:** BAE Systems
DTR Section: 32
Comment:
VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

A. Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

4. Comment D.2.4 that "The Alternative Clean-Up Levels fail to include numerical limits to protect fish" is Invalid (TCAO Finding 32; DTR
§ 32) MacDonald states the "My analysis of data from the Shipyard Sediment Site indicates that benthic fish are at risk throughout portions of the site and at least seven polygons were not included in the Proposed Remedial Footprint that had unacceptable risks to fish (MacDonald 2009)." However, as describe in detail in the previous response to MacDonald's Comment C.2.9, his analysis of risk to fish suffered from numerous flaws and uncertainties. Briefly, MacDonald predicted PCB concentrations in gobies, a species that does not occur at the Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, a lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above "assumptions" has uncertainties attached to it, which MacDonald (2009) did not acknowledge or attempt to quantify. By contrast with MacDonald's hypothetical analysis of risk to fish, empirical data collected at the Site were evaluated for the spotted sand bass by Exponent (2003) and unacceptable risks were not found. MacDonald's assertion regarding risks to fish at the Site is therefore invalid.

Comment ID: 201 **Organization:** BAE Systems
DTR Section: 32, 34
Comment:
VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

A. Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

5. Comment D.2.5 that "The shortcomings of the Alternative Clean-Up Levels lead to uncertainties in the protectiveness of the remediation.
This problem can be addressed, at least in part, by setting stringent Remediation and Post Remedial Monitoring requirements" is Invalid
(TCAO Findings 32 and 34; DTR §§ 32 and 34).

The TCAO and DTR presently include detailed and extensive remediation and post remedial monitoring requirements. In addition, additional monitoring details will be proposed and reviewed in the Remedial Monitoring Plan, which will be prepared within 90 days from adoption of the CAO. MacDonald's concern with respect to the monitoring requirements is therefore invalid.

Comment ID: 202 **Organization:** BAE Systems
DTR Section: 32
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

A. Responses to MacDonald's Comments Regarding "Uncertainties Associated with the Alternative Clean-Up Levels" (TCAO Finding 32; DTR § 32)

6. Comment D.2.6 that "The TCAO provides no evidence that the cleanup of the remedial footprint will restore any injury, destruction or loss
of natural resources" is Unwarranted and Invalid (TCAO Finding 32; DTR § 32)

MacDonald states that Section 32 of the TCAO "concludes that the proposed remedial action will restore any natural resources that may have been injured by releases of hazardous substances at the Shipyard Sediment Site", and that the Regional Board "has not conducted a natural resource damage assessment at the Shipyard Sediment Site and, hence, has no basis for making this assertion." MacDonald also states that the Regional Board "does not have authority for conducting natural resource damage assessments", and that "all statements regarding the injury to natural resources, natural resource service losses, and associated damages must be removed from the TCAO and DTR."

MacDonald's assertions are an unwarranted extrapolation of a single mention of "natural resources" in the TCAO, in which it is simply states that "Cleanup of the remedial footprint will restore any injury, destruction, or loss of natural resources." The statement in no way addresses service losses, monetary damages, or any of the other parameters unique to natural resource damage assessments. The statement simply articulates that the cleanup of the remedial footprint at the Site will improve environmental conditions such that natural resources like those evaluated in detail at the Site (i.e., benthic macroinvertebrates, fish, and aquatic dependent wildlife) will benefit. Contrary to MacDonald's statements, the DTR and TCAO have extensively evaluated many of the adverse effects that are defined as injuries in a natural resource damage assessment, such as exceedances of sediment quality guidelines, sediment toxicity, bioaccumulation, fish histopathology, and risks to wildlife from contaminated prey. It should also be noted a number of the items present in the DTR and TCAO were developed in cooperation with Natural Resource Trustees, including U.S. Fish and Wildlife Service, California Department of Game, and the National Oceanographic and Atmospheric Administration. Many of MacDonald's assertions are administrative jurisdictional comments. MacDonald lacks the qualifications to render comments regarding jurisdictional issues. MacDonald's assertions are therefore unwarranted and invalid.

Comment ID: 203 **Organization:** BAE Systems
DTR Section: 32, 34
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

B. Responses to MacDonald's Conclusions Regarding the Alternative Clean-Up Levels (TCAO Findings 32, 34; DTR §§ 32, 34)

1. Conclusion D.3.1 that "It is essential that the Remediation Monitoring program provide a reliable basis for documenting the water quality
standards have been violated outside the construction area during remedial activities" is Unsupported and Invalid (TCAO Findings 32,
34; DTR §§ 32, 34)

As described in more detail in responses related to MacDonald's Section E (infra), the remedial monitoring program for the Site provides a reliable basis for monitoring water quality during remediation, and will be further developed and enhanced after the Remediation Monitoring Plan is submitted within 90 days after the CAO is adopted.

Comment ID: 204 **Organization:** BAE Systems
DTR Section: 32, 34
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

B. Responses to MacDonald's Conclusions Regarding the Alternative Clean-Up Levels (TCAO Findings 32, 34; DTR §§ 32, 34)

2. Conclusion D.3.2 that "It is essential that the Remediation Monitoring program…provide a reliable basis for documenting that the target

clean-up levels for sediment have been reached within the remedial footprint and that the remedial activities have not further contaminated areas located outside the remedial footprint" Is Unsupported and Invalid (TCAO Findings 32, 34; DTR §§ 32, 34)

As described in more detail in responses related to MacDonald's Section E (infra), the remedial monitoring program for the Site provides a reliable basis for monitoring sediment quality during remediation, and will be further developed and enhanced after the Remediation Monitoring Plan is submitted within 90 days after the CAO is adopted.

Comment ID: 205 **Organization:** BAE Systems
DTR Section: 32, 34
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

B. Responses to MacDonald's Conclusions Regarding the Alternative Clean-Up Levels (TCAO Findings 32, 34; DTR §§ 32, 34)

3. Conclusion D.3.3 that "It is essential that the Remediation Monitoring program provide data of sufficient quality and quantity to determine if the Alternative Clean-Up Levels have been met at the Shipyard Sediment Site following implementation of remedial measures" is Unsupported and Invalid (TCAO Findings 32, 34; DTR §§ 32, 34)

As described in more detail in responses related to MacDonald's Section F, the post remedial monitoring program for the Site provides a reliable basis for ensuring that the Alternative Cleanup Levels are met following remediation.

Comment ID: 206 **Organization:** BAE Systems
DTR Section: 32, 34
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

B. Responses to MacDonald's Conclusions Regarding the Alternative Clean-Up Levels (TCAO Findings 32, 34; DTR §§ 32, 34)

4. Conclusion D.3.4 that "It is essential that the San Diego Regional Board be prepared to require additional remediation if the Alternative
Clean-Up Levels have not been met following completion of the remedial activities at the site" is Unsupported and Premature (TCAO
Findings 32, 34; DTR §§ 32, 34)

The Regional Board will be able to use the extensive of amount information provided by the post remedial monitoring program to evaluate the success of the remediation, and to determine what, if any, addition actions may be warranted.

Comment ID: 207 **Organization:** BAE Systems
DTR Section: 32
Comment:

VI. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION D OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 32; DTR § 32)

B. Responses to MacDonald's Conclusions Regarding the Alternative Clean-Up Levels (TCAO Findings 32, 34; DTR §§ 32, 34)

5. Conclusion D.3.5 that "The Natural Resource Trustees may conduct a natural resource damage assessment to evaluate injuries to natural resources" is Inappropriate and Unsupported.

MacDonald lacks the qualification to render any opinions regarding what the Natural Resource Trustees may or may not do, and, therefore, his conclusion is inappropriate.

Comment ID: 208 **Organization:** BAE Systems
DTR Section: 34
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

BAE Systems responds to the comments and conclusions of the MacDonald 3/11/11 Expert Report contained in Section "E" entitled "Expert Opinion #3: Remediation Monitoring", which states:

The requirements for Remediation Monitoring, as specified in Section B.1.l of the TCAO and in Section 34.1 of the DTR, do not mandate
development and implementation of a Remediation Monitoring Plan that will provide the data and information needed to assess compliance with water quality standards, to evaluate the effectiveness of remedial measures, or to identify the need for further dredging to achieve clean-up goals at the Shipyard Sediment Site. Therefore, the Remediation Monitoring requirements must be revised to address each of these issues.

(MacDonald 3/11/11 Expert Report, at p. 21.)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

1. Comment E.2.1 that "water quality impacts can be adequately assessed only by comparing results of real-time monitoring of turbidity
and dissolved oxygen and sampling of contaminants of concern" is Invalid (TCAO Finding 34; DTR § 34)

The DTR specifies that real-time monitoring of turbidity and dissolved oxygen will be conducted within 250 and 500 ft of construction area, with the 250-ft samples representing an early warning of potential problems and the 500-ft samples representing the point of compliance.
In addition, prior to monitoring, a model of turbidity and synoptic water quality measures will be developed for ambient conditions to ensure that turbidity is an appropriate parameter for evaluating water quality. Contaminants of concern will not be sampled directly because, in part, real-time measurements would not be possible. Instead, turbidity and dissolved oxygen concentrations will be used as surrogate measurements to determine whether water quality standards are likely to be violated in real time. This monitoring scheme is considered both appropriate and effective.

Comment ID: 209 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

2. Comment E.2.2 that "The DTR allows Dischargers to take all water quality samples from up-current locations which would mask true
water quality impacts" is Premature and Unsupported (DTR § 34.1.1) The locations of the water quality monitoring stations will be determined during preparation of the Remedial Action Plan (RAP), which will be prepared within 90 days from adoption of the CAO. The Remediation Monitoring Plan will be part of the RAP, and the detailed locations of the water quality monitoring stations will be proposed and reviewed for technical adequacy as part of that submittal. The details and justification of the proposed locations will be
provided in that document.

Comment ID: 210 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

2. Comment E.2.2 that "The DTR allows Dischargers to take all water quality samples from up-current locations which would mask true water quality impacts" is Premature and Unsupported (DTR § 34.1.1) The locations of the water quality monitoring stations will be determined during preparation of the Remedial Action Plan (RAP), which will be prepared within 90 days from adoption of the CAO. The Remediation Monitoring Plan will be part of the RAP, and the detailed locations of the water quality monitoring stations will be proposed and reviewed for technical adequacy as part of that submittal. The details and justification of the proposed locations will be provided in that document.

Comment ID: 211 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

3. Comment E.2.3 that "The DTR's failure to define the size of the construction area means that samples can be collected far from the locus of the dredging activity" is Premature and Unsupported (DTR § 34.1.1) The detailed locations of the water quality monitoring stations will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan. Details such as the definition of the construction area will be provided in that submittal.

Comment ID: 212 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

4. Comment E.2.4 that "The DTR fails to provide the rationale for collecting water samples at a depth of 10 feet" is Premature and Unsupported (DTR § 34.1.1) The final specification for sampling depth(s) for water quality monitoring will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 213 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

5. Comment E.2.5 that "Dischargers are free to collect samples at times when daily water quality impacts are likely to be the lowest and mask the true water quality impacts during remediation" is Premature and Unsupported (DTR § 34.1.1) The time of day at which samples will be collected for water quality monitoring will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 214 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

6. Comment E.2.6 that "The DTR's fails to require collection of water samples on at least a daily basis" is Premature and Unsupported (DTR § 34.1.1) The final temporal sampling frequency and strategy will be proposed and reviewed for
technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 215 **Organization:** BAE Systems
DTR Section: 34.1.1
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Water Quality (TCAO Finding 34; DTR § 34)

7. Comment E.2.7 that "The DTR's fails to define best management practices for dredging activities" is Premature and Unsupported (DTR

§ 34.1.1) The best management practices for dredging activities at the Site will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 216 **Organization:** BAE Systems
DTR Section: 34.1.2
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Sediment (DTR § 34.1.2)

1. Comment E.3.1 that "The DTR allows Dischargers to collect only one sediment sample from each polygon in the Proposed Remedial
Footprint, which will not provide sufficient data to assess compliance with clean-up goals" is Premature and Unsupported (DTR § 34.1.2)
The final sampling scheme for sediment monitoring will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 217 **Organization:** BAE Systems
DTR Section: 34.1.2
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Sediment (DTR § 34.1.2)

2. Comment E.3.2 that "The DTR fails to identify the locations that must be sampled to confirm that clean-up goals have been met" is
Premature and Unsupported (DTR § 34.1.2) The final sampling scheme for sediment monitoring will be proposed and reviewed for
technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 218 **Organization:** BAE Systems
DTR Section: 34.1.2
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Sediment (DTR § 34.1.2)

3. Comment E.3.3 that "The TCAO and the DTR provide inconsistent requirements on sampling depth" is Premature and Unsupported
(DTR § 34.1.2) Any inconsistencies regarding sampling depth will be resolved when the in the Remediation Monitoring Plan is prepared.

Comment ID: 219 **Organization:** BAE Systems
DTR Section: 34.1.2
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Sediment (DTR § 34.1.2)

4. Comment E.3.4 that "The DTR should specifically require that samples be collected within the top 10 cm" is Premature and
Unsupported (DTR § 34.1.2) The sediment sampling depth for remediation monitoring will be finalized when the Remediation Monitoring Plan is prepared and reviewed by the Regional Board.

Comment ID: 220 **Organization:** BAE Systems
DTR Section: 34.1.2
Comment:
VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Sediment (DTR § 34.1.2)

5. Comment E.3.5 that "The DTR's 120% of background trigger level for additional dredging is ambiguous and arbitrary" is Premature and
Unsupported (DTR § 34.1.2) The 120% of background trigger levels recognizes natural variability in sediment chemical concentrations. As stated in Section 34 of the DTR, "Environmental data has natural variability which does not represent a true difference from expected values. Therefore, if remedial monitoring results are within an acceptable range of the expected outcome, the remedial actions will
be considered successful." The details of how this trigger level will be applied will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 221 **Organization:** BAE Systems
DTR Section: 34.1.2
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Comments Regarding Deficiencies of the Remediation Monitoring Requirements – Sediment (DTR § 34.1.2)

6. Comment E.3.7 that "The DTR fails to specify the criteria when a sand cap would be necessary and who would make such a determination" is Premature and Unsupported (DTR § 34.1.2)

The details of how and when the application of sand caps will be made will be will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan. In addition, the Regional Board will oversee any decisions regarding application of sand caps.

Comment ID: 222 **Organization:** BAE Systems
DTR Section: 34
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

C. Responses to MacDonald's Conclusions Regarding the Remediation Monitoring Program (DTR § 34)

1. Comment E.4.1 that "The DTR must include detailed requirements for surface-water sampling" is Premature and Unsupported (DTR § 34)

The details of the surface-water monitoring program will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 223 **Organization:** BAE Systems
DTR Section: 34
Comment:

VII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION E OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

C. Responses to MacDonald's Conclusions Regarding the Remediation Monitoring Program (DTR § 34)

2. Comment E.4.2 that “The DTR must make…changes to the sediment portion of the Remediation Monitoring program” is Premature and Unsupported (DTR § 34)

The details of the sediment monitoring program will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

Comment ID: 224 **Organization:** BAE Systems
DTR Section: 34.2
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

BAE Systems responds to the comments and conclusions of the MacDonald 3/11/11 Expert Report contained in Section “F” entitled “Expert Opinion #4: Post Remedial Monitoring”, which states:

The requirements for Post Remedial Monitoring, as specified in Section D of the TCAO and in Section 34.2 of the DTR, do not mandate development and implementation of a Post Remedial Monitoring Plan that will provide the data and information needed to determine if the remaining pollutant concentrations in the sediments will not unreasonably affect San Diego Bay beneficial uses. In other words, the current Post Remedial Monitoring requirements do not require collection of the data and information needed to evaluate the effectiveness of remedial measures and identify the need for further remediation to achieve clean-up goals at the Shipyard Sediment Site. Therefore, Post Remedial Monitoring results will not provide a comprehensive basis for objectively evaluating the effectiveness of the remedial measures or the need for further remediation to achieve the clean-up goals at the Shipyard Sediment Site.
(MacDonald 3/11/11 Expert Report, at p. 28.)

A. Responses to MacDonald’s Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

1. Comment F.2.1 that “Neither the TCAO nor the DTR establish narrative remedial action objectives (RAOs) for each San Diego Bay beneficial use” is Untrue (DTR § 34.2)

The remedial action objectives are stated as the Alternative Cleanup Levels in Section 32 of the TCAO. For the protection of aquatic life, the objective is to “remediate all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community” (see Table 2 of the TCAO). To protect aquatic dependent wildlife and human health, the objective is to achieve the site-wide sediment SWACs for the five primary COCs that are specified in Table 2 of the TCAO.

Comment ID: 225 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

2. Comment F.2.2 that "It is not clear that attainment of the Remedial Goals…ensure that San Diego Bay beneficial uses will not be unreasonably affected by sediment-associated contaminants at the Shipyard Sediment Site" is Invalid (TCAO § D.3.c.1)

The specifications described in Section D of the TCAO on how the monitoring results for sediment chemistry, sediment toxicity, and bioaccumulation will be evaluated are objective, quantitative, and environmentally protective. They will therefore ensure that beneficial uses in San Diego Bay will be protected in the future.

Comment ID: 226 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

3. Comment F.2.3 that "The procedures that are prescribed for calculating Site-Wide SWACs will not provide the data required to determine the concentrations of COCs within each polygon at the Shipyard Sediment Site" is Incorrect (TCAO § D)

As stated in Section D of the TCAO, sediment chemistry and sediment toxicity will be evaluated at five stations distributed throughout the remedial footprint to evaluate the success of the remediation with respect to benthic macroinvertebrates. In addition, subsamples of sediment from the 65 stations used for the compositing analysis will be archived for potential future analysis. Therefore, the SWAC results based on the compositing of sediments will not be the only method by which the effectiveness of the remediation will be assessed.

Comment ID: 227 **Organization:** BAE Systems
DTR Section: 32.2.1, 34.2
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

4. Comment F.2.4 that "Compositing surface sediment into six polygon groups is inappropriate because it will mask the true extent of contamination remaining at the Shipyard Sediment Site" is Invalid (DTR §§ 32.2.1, 34.2)

The stratification scheme described in Section 32.2.1 of the DTR will subdivide the overall Site into six polygon groups, thereby allowing SWACs to be calculated for those different subsections of the site, as well as for the overall site. This stratification scheme will provide valuable interpretive information on the spatial distribution of COC concentrations throughout the site, that would not be available if only a single site-wide SWAC was evaluated. The six polygon groups include three polygons in each of the northern and southern halves of the overall site, and the three polygons within each half of the overall site represent the remedial footprint, the polygons adjacent to or proximal to the remedial footprint, and the polygons distant from the footprint. Therefore, contrary to MacDonald's assertion, the stratification and compositing scheme specified in the DTR will document the true spatial extent of COC concentrations throughout the Site, rather than mask that distribution. MacDonald's assertion is therefore invalid.

Comment ID: 228 **Organization:** BAE Systems
DTR Section: 34.2
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

5. Comment F.2.5 that "The 0-2 cm horizon is not the appropriate sediment depth to sample to evaluate attainment of conditions that support beneficial uses" is Incorrect (DTR § 34.2)

The 0-2 cm sediment horizon is appropriate because it will allow direct comparisons of chemical concentrations and sediment toxicity results with pre-remediation sediment data, because the latter data was also generated using the 0-2 cm horizon. In addition, the 0-2 cm sediment horizon will provide a more sensitive indicator of potential re-contamination of the remediated areas, as the chemical concentrations in any newly deposited sediment will be minimally diluted by concentrations in the underlying sediment.

Comment ID: 229 **Organization:** BAE Systems
DTR Section: 34.2.1
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

6. Comment F.2.6 that "Collecting replicate sub-samples of composite sediment samples is not an appropriate method of evaluating the
effectiveness of remedial monitoring" is Incorrect (DTR § 34.2.1)

The subsampling and replication scheme described in Section D of the TCAO is appropriate to meet the stated objective as follows: "the three replicate sub-samples of composite samples provide an estimate of variances in the compositing process." This kind of information is very useful, because homogenizing a solid matrix such as sediment is difficult, and sometimes incomplete. The subsampling scheme will therefore improve the estimates of the COC concentrations in each of the polygon groups and thereby facilitate the evaluations of remedy effectiveness.

Comment ID: 230 **Organization:** BAE Systems
DTR Section: 34.2.2, Table 34-1
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

7. Comment F.2.7 that "Trigger Concentrations for Primary COCs…will not effectively identify conditions at the Shipyard Sediment Site that
unreasonably affect San Diego Bay beneficial uses" is Invalid (TCAO § D.1.c.6; DTR § 34.2.2; DTR Table 34-1)

MacDonald states that "The Trigger Concentrations are likely to be relatively unhelpful…because they are not based on the concentrations of COCs that need to be achieved to support attainment of the beneficial uses." However, in Section 34.2.2 of the DTR it is stated that "These concentrations represent the surface-area weighted average concentration expected after cleanup, accounting for the variability in measured concentrations throughout the area", and that "it is critical to account for the natural variability of the predicted post-remedial SWAC." Therefore, the Trigger Concentrations were developed appropriately with the realistic recognition that measurements of sediment chemical concentrations always are associated with some degree of error. MacDonald's assertion is therefore invalid.

Comment ID: 231 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

8. Comment F.2.8 that "Neither the TCAO nor the DTR provided the rationale for collecting sediment samples at nine sampling stations…to support bioaccumulation testing" is Incorrect (TCAO, Attachments 3 and 4)

Inspection of Attachments 3 and 4 of the TCAO show that the nine stations selected for bioaccumulation analysis are distributed along the entire length of the remedial footprint, and thereby will provide a relatively complete assessment of potential bioaccumulation throughout the site.

Comment ID: 232 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

9. Comment F.2.9 that "The criteria presented in the TCAO for interpreting the results of the bioaccumulation tests…are not effects-based"
is Irrelevant (TCAO § D)

The bioaccumulation criteria specified in Section D of the TCAO were designed to document that bioaccumulation levels are responding the sediment remediation and are showing a decreasing trend in Year 2, relative to post-remediation levels, and decreasing or continuous trends in Years 5 and 10. The bioaccumulation evaluations were therefore designed appropriately for their intended use.

Comment ID: 233 **Organization:** BAE Systems

DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

10. Comment F.2.10 that "The requirements for collecting and analyzing sediment samples for evaluating sediment chemistry for benthic
exposure and sediment toxicity are inadequate" is Invalid (DTR § 34)

The five stations selected for evaluations of sediment chemistry and toxicity were the only five stations in the remedial footprint found to have likely impairment based on the Triad analyses described in the DTR (see Section 18 of the DTR). Therefore they represent the highest priority areas for remediation and are appropriately identified for monitoring of sediment chemistry and toxicity to evaluate benthic exposure. It should also be recognized that subsamples of sediment from all 65 polygons will be archived as part of the sediment compositing analysis, and will therefore be available for future chemical analysis if necessary.

Comment ID: 234 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

11. Comment F.2.11 that "Neither the TCAO nor the DTR present decision rules that describe how the sediment chemistry data generated in the Post Remedial Monitoring program will be used to inform decisions on the need for further actions at the site" is Incorrect (TCAO § D)

In Section D of the TCAO, the decision rule for sediment chemistry is identified as "sediment chemistry below SS-MEQ and the 60% LAET thresholds." If these criteria are not achieved, the Regional Board will then evaluate whether further actions at the site are warranted.

Comment ID: 235 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Post Remedial Monitoring Requirements (TCAO Finding 34; DTR § 34)

12. Comment F.2.12 that "Neither the TCAO nor the DTR present decision rules that describe how the sediment toxicity data generated in the Post Remedial Monitoring program will be used to inform decisions on the need for further actions at the site" is Incorrect (TCAO § D)

In Section D of the TCAO, the decision rule for sediment toxicity is identified as "toxicity not significantly different from conditions at the reference stations described in Finding 17." If this criterion is not achieved, the Regional Board will then evaluate whether further actions at the site are warranted.

Comment ID: 236 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

1. Conclusion F.3.1 that "Narrative remedial action objectives and specific indicators of attainment of those objectives…should be included in the TCAO" is Incorrect (TCAO Finding 34; TCAO § D; DTR § 34)

The remedial action objectives are stated as the Alternative Cleanup Levels in Section 32 of the TCAO, and the indicators of attainment are presented in Table 2 and Section D of the TCAO.

Comment ID: 237 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

2. Conclusion F.3.2 that "Sediment samples should be collected from all 66 polygons and evaluated for sediment chemistry to provide the data needed to determine if the site-wide SWAC for the five priority COCs have been met. The sediment samples should not be composited" is Invalid (TCAO Finding 34; TCAO § D; DTR § 34)

Subsamples of sediment from all 65 polygons will be archived as part of the sediment compositing analysis, and will therefore be available for future chemical analysis if necessary. In addition the five stations selected for evaluations of sediment chemistry and toxicity were the only five stations in the remedial footprint found to have likely impairment based on the Triad analyses, and therefore represent the highest priority areas for monitoring of sediment chemistry and toxicity to evaluate benthic exposure.

Comment ID: 238 **Organization:** BAE Systems
DTR Section: 32, 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

3. Conclusion F.3.3 that "Sediment samples for evaluating attainment of the Alternative Clean-Up Levels should be collected from the 0-10 cm horizon to better reflect the biologically active zone in San Diego Bay" is Unsupported (TCAO Findings 32, 34; DTR §§ 32, 34)

The 0-2 cm sediment horizon was selected for monitoring because it will allow direct comparisons of chemical concentrations and sediment toxicity results with pre-remediation sediment data. In addition, the 0-2 cm sediment horizon will provide a more sensitive indicator of potential re-contamination of the remediated areas than would the 0-10 cm horizon.

Comment ID: 239 **Organization:** BAE Systems
DTR Section: 34.2.2, Table 34-1
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

4. Conclusion F.3.4 that "Trigger concentrations should be revised to correspond to the post-remedy SWACs for the five primary COCs" is
Invalid (DTR § 34.2.2; DTR Table 34-1)

As discussed in the response to Comment F.2.7, the Trigger Concentrations were developed appropriately with the realistic recognition that measurements of sediment chemical concentrations always are associated with some degree of error. MacDonald's assertion is therefore invalid

Comment ID: 240 **Organization:** BAE Systems
DTR Section: 19, 32, 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

5. Conclusion F.3.5 that "The rationale for selecting the nine sampling locations for bioaccumulation testing should be provided. In addition, bioaccumulation testing should include a 56-day time-to-steady-state test" is Unsupported (TCAO Findings 19, 32, 34; DTR §§ 19, 32, 34)

The nine stations selected for bioaccumulation analysis are distributed along the entire length of the remedial footprint, and thereby will provide a relatively complete assessment of potential bioaccumulation throughout the site. In addition, the 28-day bioaccumulation test with Macoma nasuta proved to be an effective tool for evaluating bioaccumulation in the DTR, so there is no need for the 56-day test.

Comment ID: 241 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

6. Conclusion F.3.6 that "Biological-effects based criteria should be established for interpreting the results of the bioaccumulation tests" is
Incorrect (TCAO § D)

The bioaccumulation criteria specified in Section D of the TCAO were designed to document that bioaccumulation levels are responding the sediment remediation and were therefore designed appropriately for their intended use.

Comment ID: 242 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

7. Conclusion F.3.7 that "The number of polygons that are sampled for evaluating sediment chemistry , sediment toxicity, and benthic
invertebrate community structure must be increased to include all of the polygons included in the Proposed Remedial Footprint and all of
the polygons that are located adjacent to the footprint polygons" is Unsupported (TCAO Findings 34; DTR § 34)

The five stations selected for evaluations of sediment chemistry and toxicity were the only five stations in the remedial footprint found to have likely impairment based on the Triad analyses, represent the highest priority areas for remediation, and are therefore appropriately identified for monitoring of sediment chemistry and toxicity to evaluate benthic exposure. In addition, subsamples of sediment from all 65 polygons will be archived as part of the sediment compositing analysis, and will therefore be available for future chemical analysis if necessary.

Comment ID: 243 **Organization:** BAE Systems
DTR Section: 34
Comment:

VIII. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION F OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO FINDING 34; DTR § 34)

B. Responses to MacDonald's Conclusions Regarding the Post Remedial Monitoring Requirements (TCAO Finding 34. TCAO § D; DTR § 34)

8. Conclusion F.3.8 that "The decision rules that will be used to determine the need for further action…must be clarified" is
Unsupported (TCAO § D)

In Section D of the TCAO, the decision rule for sediment chemistry is identified as "sediment chemistry below SS-MEQ and the 60% LAET thresholds", and the decision rule for sediment toxicity is identified as "toxicity not significantly different from conditions at the reference stations described in Finding 17." If these criteria are not achieved, the Regional Board will then evaluate whether further actions at the site are warranted.

Comment ID: 244 **Organization:** BAE Systems
DTR Section: 34
Comment:

IX. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION G OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

BAE Systems responds to the comments and conclusions of the MacDonald 3/11/11 Expert Report contained in Section "G" entitled "Expert Opinion #5: Trigger Exceedance Investigation" which states:

The Trigger Exceedance Investigation and Characterization process, described in Section D.4 of the TCAO, will not provide a basis for compelling the Dischargers to conduct further remediation to achieve clean-up goals at the Shipyard Sediment Site.

(MacDonald 3/11/11 Expert Report, at p. 33.)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Trigger Exceedance Investigation and Characterization Process (TCAO § D.4)

1. Comment G.2.1 that "Exceedance of the Trigger Concentrations does not trigger further remedial actions" is Invalid (TCAO § D.4). MacDonald states that exceedance of one or more Trigger Concentrations leads to an investigation of the exceedance rather than "automatically triggering additional clean-up", and that "By giving the Dischargers discretion to follow-up on exceedances of Trigger Concentrations using various methods other than additional clean-up, it is virtually certain that additional remedial work will not be conducted." MacDonald's "deduction" to an exceedance of a Trigger Concentration is unfounded and amounts to supposition. As stated in Section D of the TCAO, the purpose of the Trigger Exceedance Investigation and Characterization is "to determine the cause(s) of the exceedance" and to recommend "an approach, or combination of approaches, for addressing the exceedance(s)." The TCAO therefore lays out a rational approach with numerous details to evaluate the underlying cause of any exceedance of a Trigger Concentration, so that it can be addressed in the present, and prevented in the future. The Regional Board will review all of this information and determine the best path forward. MacDonald's assertion that the process is flawed is invalid.

Comment ID: 245 **Organization:** BAE Systems
DTR Section: 34
Comment:

IX. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION G OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

A. Responses to MacDonald's Comments Regarding Deficiencies of the Trigger Exceedance Investigation and Characterization Process (TCAO § D.4)

2. Comment G.2.2 that “The DTR and TCAO fail to establish Trigger Concentrations based on the Alternative Clean-Up Levels for aquatic
life” is Invalid (TCAO § D.4) MacDonald states that Trigger Exceedance Investigation and Characterization process “ignores exceedances of the effect threshold for benthic invertebrates and the potential effects on fish." MacDonald fails to recognize that, as described in Section D of the TCAO, post remedial monitoring will be conducted using a variety of other indicators not directly related to the SWAC trigger concentrations. Those indicators are bioaccumulation evaluations using Macoma nasuta, sediment chemistry, sediment toxicity using both the amphipod and bivalve tests, and evaluation of in situ benthic macroinvertebrates communities. All of these indicators will be measured at multiple stations throughout the remedial footprint and all of them will provide information related to potential effects on benthic macroinvertebrates and benthic-feeding fish. MacDonald’s assertion is therefore invalid.

Comment ID: 246 **Organization:** BAE Systems
DTR Section: 34
Comment:

IX. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION G OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

A. Responses to MacDonald’s Comments Regarding Deficiencies of the Trigger Exceedance Investigation and Characterization Process (TCAO § D.4)

3. Comment G.2.3 of MacDonald (2011) states that “Trigger Concentrations have been established for five COCs only” is Invalid (TCAO § D.4) MacDonald states that the Trigger Exceedance Investigation and Characterization process focuses on the five primary COCs, and “ignores exceedances of toxicity thresholds for other chemicals." However, MacDonald fails to recognize that, as documented in the DTR, the five primary COCs were the primary risk drivers at the Site because they exhibited the highest exceedances with respect to toxicity thresholds. In addition the secondary COCs were highly correlated with the primary COCs, such that they are addressed in a common remedial footprint. In addition, as documented in Section D of the TCAO, the evaluations of sediment chemistry to assess benthic exposure will determine concentrations of arsenic, cadmium, chromium, lead, nickel, silver, zinc, and LPAHs, in addition to the five primary COCs. MacDonald’s assertion is therefore invalid.

Comment ID: 247 **Organization:** BAE Systems
DTR Section: 34
Comment:

IX. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION G OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

A. Responses to MacDonald’s Comments Regarding Deficiencies of the Trigger Exceedance Investigation and Characterization Process (TCAO § D.4)

4. Comment G.2.4 of MacDonald (2011) states that “The Trigger Concentrations…may not provide an effective basis for evaluating the potential for adverse effect…because they are statistically based values, rather than effect-based values” is Invalid (TCAO § D.4) As previously discussed in the response to Comment F.2.7, the Trigger Concentrations were developed appropriately with the realistic recognition that measurements of sediment chemical concentrations always are associated with some degree of error. MacDonald’s assertion is therefore invalid.

Comment ID: 248 **Organization:** BAE Systems
DTR Section: 34
Comment:

IX. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION G OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

B. Responses to MacDonald’s Conclusions Regarding the Trigger Exceedance Investigation and Characterization Process (TCAO § D.4)

1. Conclusion G.3.1 that “The Dischargers should not be given authority to make recommendations regarding the actions that will be taken to address exceedances of the Trigger Concentrations” but “Rather, the San Diego Regional Board must retain the authority to review the data and make such decisions” is Invalid (TCAO § D.4) The TCAO lays out a rational approach with numerous details for evaluating the cause of any exceedances of the Trigger Concentrations, so that it can be addressed in the present, and prevented in the future. The Regional Board will review all of this information and determine the best path forward. MacDonald’s conclusion is therefore invalid.

Comment ID: 249 **Organization:** BAE Systems
DTR Section: 34
Comment:

X. RESPONSES TO COMMENTS AND CONCLUSIONS IN SECTION G OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

B. Responses to MacDonald’s Conclusions Regarding the Trigger Exceedance Investigation and Characterization Process (TCAO § D.4)

2. Conclusion G.3.2 that “The TCAO should clearly identify the actions that need to be taken if the Trigger Concentrations are exceeded” is
Invalid (TCAO § D.4) As stated above, the TCAO lays out a rational approach for evaluating the cause of any exceedances of the Trigger Concentrations, and for determining the best path forward. Because it is not possible to a priori anticipate and address all possible contingencies with respect to exceedances of Trigger Concentrations and their possible causes, as MacDonald acknowledges in his conclusion, it is unrealistic to a priori identify the actions that need to be taken if the Trigger Concentrations are exceeded. MacDonald’s conclusion is therefore invalid.

Comment ID: 250 **Organization:** BAE Systems
DTR Section: 33
Comment:

X. RESPONSES TO THE RECOMMENDATIONS IN SECTION H OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

BAE Systems responds to the recommendations of the MacDonald 3/11/11 Expert Report contained in Section "H" entitled "Summary of Recommendations" which states:

there are a number of important deficiencies in these documents that have the potential to compromise the effectiveness of the cleanup
and the monitoring programs that will be conducted to assess its sufficiency. The following recommendations are provided to assist
the San Diego Regional Board in revising the TCAO and DTR in a manner that serves the long-term public interest relative to the Shipyard Sediment Site.

(MacDonald 3/11/11 Expert Report, at p. 35.)

1. Recommendation H.1 that polygons NA01, NA04, NA07, NA16, NA22, SW06, SW18, and SW29 be included in the remedial footprint is
Invalid and Should Not be Adopted (TCAO Finding 33, Attachments 2, 3, 4; DTR § 33)

As discussed previously, none of the eight polygons identified by MacDonald warrants inclusion in the remedial footprint. He erroneously identified Polygon NA06 as being excluded from the remedial footprint when, in fact, it is included in the footprint (see Attachment 4 of the TCAO). In addition, MacDonald erroneously listed Polygon NA16 twice. The reasons why the remaining six polygons in the above list were not included in the remedial footprint are found in various sections of the DTR and are summarized below:

NA01: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.

NA04: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.

NA07: Not likely impaired based on Triad analysis.

NA16: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.69) was less than the threshold value of 0.9.

NA22: Addressed in a separate process for the Mouth of Chollas Creek TMDL.

SW06: Not likely impaired based on the supplemental Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ values (0.63) was less than the threshold value of 0.9.

SW18: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.62) was less than the threshold value of 0.9.

SW29: No primary COCs exceeded their 60% LAET values, the SS-MEQ value (0.71) was less than the threshold value of 0.9.

MacDonald's recommendation to include any of the above eight polygons is therefore invalid.

Comment ID: 251 **Organization:** BAE Systems
DTR Section: 34, 35
Comment:

X. RESPONSES TO THE RECOMMENDATIONS IN SECTION H OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

2. Recommendation H.2 that the Remediation Monitoring requirements for surface water should be revised in include a variety of additional
details is Unnecessary and Should Not be Adopted (TCAO Findings 34, 35; DTR §§ 34, 35)

As discussed previously, the TCAO specifies that a Remedial Action Plan (RAP) will be prepared within 90 days from adoption of the CAO, and that the Remediation Monitoring Plan will be part of the RAP. The Remediation Monitoring Plan will include numerous additional details on the water quality monitoring program that will be reviewed for technical adequacy by the Regional Board. Because these additional details will be provided in the Remediation Monitoring Plan, MacDonald's recommendation that they be provided in the TCAO is unnecessary.

Comment ID: 252 **Organization:** BAE Systems
DTR Section: 34, 35
Comment:

X. RESPONSES TO THE RECOMMENDATIONS IN SECTION H OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

3. Recommendation H.4 that the Remediation Monitoring requirements for sediment should be revised in include a variety of addition details is Unnecessary and Should Not be Adopted (TCAO Findings 34, 35; DTR §§ 34, 35)

As discussed above, the TCAO specifies that the Remediation Monitoring Plan will be prepared after adoption of the CAO. The Remediation Monitoring Plan will include numerous additional details on the sediment monitoring program that will be reviewed for technical adequacy by the Regional Board. Therefore, MacDonald's recommendation that they be provided in the TCAO is unnecessary.

Comment ID: 253 **Organization:** BAE Systems
DTR Section: 34, 35
Comment:
X. RESPONSES TO THE RECOMMENDATIONS IN SECTION H OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

4. Recommendation H.5 that the Remediation Monitoring should be revised to include decision rules for evaluating the dredging results is
Unnecessary and Should Not be Adopted (TCAO Findings 34, 35; DTR §§ 34, 35)

The decision rules for evaluating the dredging results will be proposed in the Remedial Monitoring Plan and reviewed for technical adequacy by the Regional Board. Therefore, MacDonald's recommendation that they be provided in the TCAO is unnecessary.

Comment ID: 254 **Organization:** BAE Systems
DTR Section: 34, 35
Comment:
X. RESPONSES TO THE RECOMMENDATIONS IN SECTION H OF THE MARCH 11, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO § D.4)

5. Recommendation H.6 that the Post Remediation Monitoring requirements should be revised as described in Section F of the MacDonald expert report is Unwarranted and Should Not be Adopted (TCAO Findings 34, 35; DTR §§ 34, 35).

As discussed above in the responses to MacDonald's detailed comments and conclusions for Section F of his expert report, his suggested changes to the Post Remediation Monitoring requirements are unwarranted.

Comment ID: 255 **Organization:** BAE Systems
DTR Section: 34
Comment:
X. RESPONSES TO THE RECOMMENDATIONS IN SECTION H OF THE MARCH 1, 2011 MACDONALD EXPERT REPORT FOR THE SAN DIEGO SITE (TCAO D.4)

6. Recommendation H.7 that the Trigger Exceedance Investigation and characterization process should be revised as described in Section G of the MacDonald expert report is Unwarranted and Should Not be Adopted (TCAO § D.4)

As discussed above in the responses to MacDonald's detailed comments and conclusions for Section G of his expert report, his suggested changes to the Trigger Exceedance Investigation and Characterization process are unwarranted.

Comment ID: 257 **Organization:** NASSCO
DTR Section: 14,18,19.1,Appen 18,19
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

The TCAO concludes that aquatic life beneficial uses (Estuarine Habitat (EST), Marine Habitat (MAR), and Migration of Aquatic Organisms (MIGR))) in San Diego Bay are impaired "due to the elevated levels of pollutants present in the marine sediment at the Shipyard Sediment Site." TCAO, at ¶ 14. However, the results of the sediment investigation indicate that, although contaminants of concern and other pollutants are present in Site sediments in elevated concentrations relative to reference, they do not pose risks to aquatic life because they are not bioavailable, and because many constituents do not bioaccumulate. [Comment No. 33, TCAO, at 14, 18, 19 DTR, at 14, 18, 19.1, Appendix 18, Appendix 19].

Risks to aquatic life at the shipyard were evaluated by sampling and assessing both benthic macroinvertebrates and fish. Ginn Report, at 12. Effects on benthic macroinvertebrates were assessed using a triad approach, involving the synoptic collection of data on sediment chemistry, toxicity, and benthic community structure, and effects on fish were assessed by comparing fish living at the Site to fish caught in reference areas in San Diego Bay. Id. The results of these site-specific analyses showed little or no effects on aquatic life; in particular, the results confirmed that (1) sediment toxicity is absent from all but one station, with only one station showing any significant difference from reference conditions, and even then only by only a few percent; (2) measurements of four indices of benthic macroinvertebrate communities are not different from reference conditions; (3) fish show no elevation in significant liver lesions or other abnormalities related to chemical exposures at the site; and (4) predicted exposures of aquatic-dependent wildlife fall below the thresholds for which adverse effects are expected. Id. at 15-16. [Comment No. 34, TCAO, at 15-19, DTR, at 15-19, Appendix 15, Appendix 18].

Yet, through a series of overly-conservative (and unjustified) assumptions, Staff has erroneously concluded that aquatic beneficial uses are impaired, and that active remediation of Site sediments is needed. However, as discussed below, when analyzed using scientifically defensible methods, the data actually supports the conclusion that Site sediments pose no significant risk to aquatic life at NASSCO. Ginn Report, at 56 (concluding that all stations at NASSCO except for NA22, would be characterized as either unimpacted or likely unimpacted when analyzed using established, conventional assessment criteria). [Comment No. 35, TCAO, at 15, DTR, at 18.1].

Comment ID: 258 **Organization:** NASSCO
DTR Section: 18
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

a. Shipyard Chemicals And Other Pollutants Are Present In The Sediment, But Do Not Pose Risks To Aquatic Life (Findings 15 - 19)

The results of the sediment investigation indicate that, although contaminants of concern and other pollutants are present in Site sediments in elevated concentrations relative to reference, they do not pose risks to aquatic life because they are not bioavailable, and because many constituents do not bioaccumulate. [Comment No. 36, TCAO, at 19, DTR, at 19.1]. However, because the Staff's weight of the evidence decision framework emphasizes sediment chemistry, the DTR is skewed towards finding effects, even where the data supports the opposite conclusion. [Comment No. 37, TCAO, at 15, 16, 18 DTR, at 15, 16, 18, Appendix 15, Appendix 18]. Although the use of a weight of the evidence assessment based upon multiple lines of evidence (MLOE) is a generally accepted approach to evaluating sediment quality, the particular weight of the evidence framework described in the DTR does not follow accepted standards of practice for sediment assessments, resulting in a consistent bias in favor of finding impairment. Ginn Report, 13. [Comment No. 38, TCAO, at 15, DTR, at 15.1-15.4]. Because any weight of the evidence analysis necessarily requires the use of "best professional judgment," accuracy is dependent upon the expertise of the personnel interpreting the data, and may be flawed if based on unreasonable assumptions, or manipulation of the individual lines of evidence ("LOE") used in the analysis. Id. at 14. For the reasons discussed below, the DTR analysis is overly-conservative, fails to accurately portray Site conditions, and results in arbitrary cleanup levels with no risk-basis:

Comment ID: 260 **Organization:** NASSCO
DTR Section: 16,18,19
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

a. Shipyard Chemicals And Other Pollutants Are Present In The Sediment, But Do Not Pose Risks To Aquatic Life (Findings 15 - 19)

(2) Shipyard Contaminants Are Present, But Not Bioavailable (Findings 16, 18, 19)

Another key flaw in Staff's weight of the evidence approach is the absence of an evaluation of the chemical bioavailability information in Staff's decision framework, which the EPA has recognized as "critical" to the success of weight of the evidence assessments. Ginn Report, at 15. Rather than using causal criteria to determine whether site contaminants are bioavailable, the DTR improperly equates high concentrations of chemicals with possible impacts to aquatic life. DTR, at Table, 18-1. Specifically, the DTR simply assumes that site chemicals are bioavailable, and causing adverse impacts to aquatic life, when chemistry exceeds empirical Sediment Quality Guidelines ("SQGs"), or when any statistically significant difference from reference is observed in toxicity tests. DTR, at 16-1, 18-3. Staff's failure to consider the bioavailability of chemicals at the Site is both "unscientific" and inconsistent with current standards of practice for sediment assessments. Id. [Comment No. 65, TCAO, at 16, 18, 19 DTR, at 16.1, 18.3, 19]. It is also particularly concerning considering that bioavailability analyses and site-specific toxicity and benthic community analyses support the conclusion that Site chemicals are not bioavailable and therefore do not impact beneficial uses at the Site—even where such chemicals are present in elevated concentrations relative to reference. Ginn Report, 18-19; Importance of Bioavailability for Risk Assessment of Sediment Contaminants at the NASSCO Site, Expert Report Prepared by Herbert E. Allen, Ph.D. (March 11, 2011) ("Allen Report"), at 9. [Comment No. 66, TCAO, at 18, 19, DTR, at 18.1, 18.3, 18.5, 19].

Bioavailability is a measure of the potential for a chemical to enter into ecological or human receptors; accordingly, the operative risk-measure for benthic invertebrates is not the total concentration of chemicals in sediments, but rather, the portion of such chemicals that are biologically available. Allen Report, at 2. Thus, the form of a chemical substance often dictates whether or not there will be any aquatic impairment. For example, a fish may be unaffected by the addition of a copper wire to its tank, whereas the addition of copper sulfate may be lethal. See, Alo Depo, at 225:13 – 226:16; Barker Depo, at 91:16 – 92:9.

It is thus well-known that chemical concentrations alone do not necessarily predict biological effects, and that conflicting triad data may signal that contaminants are not bioavailable—particularly where sampling indicates that contamination is present, but toxicity or benthic biological results are not significantly different from reference. Ginn Report, at 47, Allen Report, at 9. [Comment No. 67, TCAO, at 19, DTR, at 19.1]. Further, even where chemicals are bioavailable "bioavailability does not necessarily indicate the presence of adverse effects." DTR, at 19-1. [Comment No. 68, TCAO, at 19, DTR, at 19.1.

The DTR recognizes that causal criteria are preferred in the assessment of sediments, but concludes that contaminants in the sediment are bioavailable using empirical Sediment Quality Guidelines, without applying causal criteria that consider bioavailability. Allen Report, at 7. Using empirical SQGs based on total sediment pollution concentrations as screening levels, rather than causal SQGs, can lead to inaccurate risk predictions because empirical SQGs often mischaracterize sediments as toxic when they are not, and vice versa, and are not predictive of toxicity. Allen Report, at 7-8. [Comment No. 69, TCAO, at 18, DTR, at 18.2].

Given the results of the toxicity tests performed at the Site, it is clear that empirical SQGs have not accurately characterized Site sediments. As discussed in detail above, the toxicity and benthic community tests indicate that only a small fraction of stations in the NASSCO leasehold do not meet the reference conditions, which suggests that even though contaminants may be present, they are not affecting biota at the Site. [Comment No. 70, TCAO, at 18-20, DTR, at 18-20]. Further, Staff has agreed that the shipyard data support the conclusion that contaminants at the Site are not bioavailable:

Q: Okay. So looking at the toxicity test results for the NASSCO stations, would you agree that these results suggest that contaminants in the sediment are not bioavailable?
A: Let's see. For the amphipod survival and urchin fertilization, I would agree with that, yes, that – that the – yeah, the toxicity results are not indicating bioavailability.

* * * * *
Q: This summarizes the benthic community results for the Shipyard Sediment Site; correct?
A: Okay, yes.
Q: Looking at the benthic community results for the NASSCO stations in this table, do these suggest that contaminants in sediment are not bioavailable?
A: Yes.
* * * * *
Q: Wouldn't you agree that the bioavailability of metals in the sediment at NASSCO is less than thresholds such as the ERLs and ERMs?
A: So the – the scenario is at the NASSCO site where the metals are higher than the ERLs and ERMs, you are – you are asking if the site-specific information indicates that that is not bioavailable to the – in the same degree as what the ERM and ERM – yes, I would.
Q: That's correct?
A: Yes.

Barker Depo, at 104:22 – 105:5; 105:15 – 105:22; 111:18 – 112:17. [Comment No. 71, TCAO, at 18, 19, DTR, at 18.3, 19]. Staff also neglected to consider that the potential for toxicity of metals in sediments depends on the degree to which they bind with other constituents in sediment, primarily sulfide and natural organic matter. Allen Report, at 10. [Comment No. 72, TCAO, at 18, 19 DTR, at 18.3, 19]. When these factors are considered, it becomes clear that binding of the metals cadmium, copper, lead, mercury, nickel, and zinc in the sediments at NASSCO is sufficiently strong to render sediments nontoxic to benthic organisms, consistent with the observed toxicity and benthic community results. Allen Report, at 23. [Comment No. 73, TCAO, at 18, 19, DTR, at 18.3, 19].

Staff's failure to consider bioavailability in the DTR is arbitrary and capricious, especially in light of the fact that toxicity and benthic community test results do not show significant impacts to aquatic life. Without an appropriate bioavailability analysis, Staff's assumption that contaminants are bioavailable based on empirical SQGs, and the corresponding conclusion that aquatic life at the Site is therefore impaired, are unjustified—particularly in light of Staff's recognition that direct evidence, including toxicity and benthic community data, suggest that contaminants are, in fact, not bioavailable. [Comment No. 74, TCAO, at 15-18, DTR, at 15.3, 16.1, 17, 18].

Comment ID: 261 **Organization:** NASSCO
DTR Section: 14-20
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

a. Shipyard Chemicals And Other Pollutants Are Present In The Sediment, But Do Not Pose Risks To Aquatic Life (Findings 15 - 19)

(3) Some Shipyard Contaminants Do Not Bioaccumulate (Findings 15-19)

The DTR cites the finding that "bioaccumulation is occurring at the shipyard" as one basis for concluding that aquatic life at the site is impacted. DTR, at 14-1, 19-1. However, the DTR's conclusion that Site sediments impact aquatic life is overly-conservative, since substances may bioaccumulate in laboratory tests, but not adversely affect the benthic community and because not all shipyard chemicals were found to bioaccumulate. Barker Depo, at 98:19 - 98:22; DTR, at 19-1. [Comment No. 75, TCAO, at 15-19, DTR, at 15.1- 15.3, 16-19].

Narrative water quality objectives applicable to the Site require that "all waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life." DTR, at 1-13 (citing the Water Quality Control Plan for the San Diego Basin, September 8, 1994). However, Staff's Macoma tissue bioaccumulation testing indicates only that chemicals are present in the exposed Macoma; it does not assess whether the presence of such chemicals are at levels sufficient to cause toxicity or detrimental physiological responses, in violation of the water quality objective. Allen Report, at 20. Requiring cleanup based on the bioaccumulation potential of constituents, without conducting an appropriate risk-assessment to determine whether the observed bioaccumulation poses risks to consumer organisms, is both overly-conservative and unjustified. Id. [Comment No. 76, TCAO, at 15-20, DTR, at 15.1- 15.3, 16-20].

Moreover, many chemicals of concern at the Site are not statistically related to biological effects, and some chemicals do not bioaccumulate in aquatic life. See DTR, at Table 20-1. For example, for many contaminants of concern—including all primary contaminants of concern—the bioaccumulation test was the only test showing any statistical relationship between the chemical at the Site and a biological response to that chemical. This suggests that the concentrations observed in the Macoma laboratory testing did not accurately predict adverse responses in consumer organisms at the Site. Barker Depo, at 95:22 – 98:16. [Comment No. 77, TCAO, at 18-20, DTR, at 18.1, 18.5, 19, 20, Appendix 19]. Moreover, other constituents, including cadmium, chromium, nickel, selenium, silver, and PPT showed no statistical relationship with biological effects and also did not bioaccumulate in laboratory tests. DTR, at Table 20-1.

[Comment No. 78, TCAO, at 18-20, DTR, at 18.1, 18.5, 19, 20, Appendix 19]. Similarly, bioaccumulation relationships for arsenic and zinc, although statistically significant, were each controlled by only a single data point. DTR, at 19-1. [Comment No. 79, TCAO, at 18-20, DTR, at 18.1, 18.5, 19, 20, Appendix 19].

Considering the possibility that a substance could bioaccumulate in a laboratory test, yet not be associated with actual adverse effects to the benthic community, these results (together with direct evidence showing a mature and thriving benthic community at the Site), suggest Staff's conclusions concerning benthic harms are overstated. [Comment No. 80, TCAO, at 18-20, DTR, at 18-20].

Comment ID: 262 **Organization:** NASSCO
DTR Section: 17, 18.1,18.3,18.5
Comment:
IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

b.Sediment Toxicity Is Very Low And Lower Than Most Other Locations In San Diego Bay (As Well As Most Other Bays And Estuaries Throughout The Country) (Findings 14-18)

The DTR is overly-conservative because it concludes that there are impacts on aquatic life, even though the preponderance of sediment toxicity results show that Site sediments are nontoxic. Ginn Report, at 26; DTR, at 14-1, Table 18-8. [Comment No. 81, TCAO, at 18, DTR, at 18.1, 18.3, 18.5]. In fact, sediment toxicity at NASSCO is not only objectively low, but also lower than most other locations in San Diego Bay (as well as most other bays and estuaries nationwide). [Comment No. 82, TCAO, at 17-18, DTR, at 17, 18.3, Appendix 18]. Of 42 total toxicity tests conducted (excluding NA22), 37 tests showed conditions at NASSCO were as protective as background, with respect to toxicity. Alo Depo, at 269:2 – 270:21. In particular, (1) amphipod toxicity was found at only 1 of 15 stations at NASSCO, at which survival, at 70%, was only 3% below the statistical reference range and was equal to one of the reference stations; (2) toxicity to sea urchins was not found at any of the 15 stations at NASSCO; and (3) toxicity to bivalves was found at only 5 of 15 stations at NASSCO. Accordingly, the data are clear that sediments at NASSCO have "low" toxicity, if any. DTR, at Tables 18-8, 18-9; see also Ginn Report, at 26. [Comment No. 83, TCAO, at 18, DTR, at 18.1, 18.3, Appendix 18]. However, under Staff's biased weight of the evidence framework, nine NASSCO stations are characterized as having "low" toxicity, despite data showing no statistical differences from reference conditions under any of the three toxicity tests. DTR at Tables 18-9; Alo Depo, at 272:3 – 272:20. This is misleading, and Staff's framework should be revised to include a "no" or "nontoxic" category for toxicity results in order to accurately characterize stations that are not different from reference—as the State Board recognized when developing the State of California

Part 1 Sediment Quality Objectives (which include both "nontoxic" and "low" toxicity categories). [Comment No. 84, TCAO, at 15, 18, DTR, at 15.3, 15.4, 18.1, 18.3, 18.5, Appendix 18].

Comment ID: 263 **Organization:** NASSCO
DTR Section: 17-17,18
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

b.Sediment Toxicity Is Very Low And Lower Than Most Other Locations In San Diego Bay (As Well As Most Other Bays And Estuaries Throughout The Country) (Findings 14-18)

(1)The Amphipod Survival Test Indicates That Shipyard Sediments Do Not Pose A Risk To Aquatic Life (Findings 14-18)

The amphipod survival test, which is the most reliable and widely-used of the three toxicity tests conducted, indicates that Site sediments do not pose risks to aquatic life. Ginn Report, at 26; DTR, at Table 18-8. Amphipod toxicity was found at only 1 of 15 stations measured at NASSCO (NA11). DTR, at Table 18-8. At that station, amphipod survival, at 70%, was only 3% below the statistical reference range of 73% and only 1% lower than the lowest reference station—representing a very small variance from reference conditions. Id.; Alo Depo, at 245:22 – 246:19, 247:3 – 247:6. [Comment No. 85, TCAO, at 18, DTR, at 18.3, Appendix 18]. Further, measured solely by the other toxicity and benthic community tests conducted (i.e., BRI, abundance, taxa, Shannon-Weiner diversity, sea urchin fertilization, and bivalve larvae development), NA11 was not impaired compared to reference conditions. Alo Depo, at 248:5 – 250:23. [Comment No. 86, TCAO, at 18, DTR, at 18.3, 18.4, Appendix 18]. Accordingly, it is overly conservative to conclude that NA 11 is "moderately" toxic based solely upon the amphipod survival result described above, when six of the seven direct lines of evidence show that NA11 is equivalent to reference, and the single line of evidence not meeting the reference condition differs by only a few percentage points. See Id. [Comment No. 87, TCAO, at 18, DTR, at 18.3, 18.4, Appendix 18]. Taken together, the favorable amphipod survival test data support the conclusion that Site sediments pose no risks to aquatic life. [Comment No. 88, TCAO, at 14-18, DTR, at 14-17, 18.1, 18.3-18.5, Appendix 18].

Comment ID: 264 **Organization:** NASSCO
DTR Section: 14-18
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

b.Sediment Toxicity Is Very Low And Lower Than Most Other Locations In San Diego Bay (As Well As Most Other Bays And Estuaries Throughout The Country) (Findings 14-18)

(2) The Echinoderm Fertilization Test Indicates That Shipyard Sediments Do Not Pose A Risk To Aquatic Life (Findings 14-18)

The echinoderm fertilization test indicates that Site sediments do not pose risks to aquatic life, because the results showed that there were no statistically significant differences between background reference conditions and Site sediment with respect to sea urchin fertilization. DTR, at Table 18-8; Alo Depo, 252:13 – 253:2. [Comment No. 89, TCAO, at 18, DTR, at 18.3, Appendix 18]. Further, the lowest fertilization rate measured at NASSCO was 72%, which far exceeds the reference 95% lower prediction limit of 41.9%. Ginn Report, at 26. [Comment No. 90, TCAO, at 18, DTR, at 18.3, Appendix 18]. Accordingly, Site sediments pose no risk to echinoderm fertilization, and the favorable results of the echinoderm fertilization test support the conclusion that Site sediments do not pose risks to aquatic life. [Comment No. 91, TCAO, at 14-18, DTR, at 14-17, 18.1, 18.3, 18.5, Appendix 18].

Comment ID: 265 **Organization:** NASSCO
DTR Section: 14-18
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

b.Sediment Toxicity Is Very Low And Lower Than Most Other Locations In San Diego Bay (As Well As Most Other Bays And Estuaries Throughout The Country) (Findings 14-18)

(3) The Bi-Valve Larvae Test Indicates That Shipyard Sediments Do Not Pose A Risk To Aquatic Life (Findings 14-18)

The bivalve larvae test indicates that Site sediments do not pose risks to aquatic life, because the results showed that 10 of 15 stations had high percentages of normal larvae that exceeded the reference range. Ginn Report, at 26; DTR, at Table 18-8. [Comment No. 92, TCAO, at 18, DTR, at 18.3, Appendix]. Although the remaining 5 stations were below reference, the two other toxicity tests showed that amphipod survival and sea urchin fertilization were not significantly different from reference for those stations. DTR, at Table 18-8. [Comment No. 93, TCAO, at 18, DTR, at 18.3, Appendix 18]. These latter indicators should be given more weight because of the experimental nature and variable results of the bi-valve larvae tests, both within replicates at the Site stations and at reference stations. Exponent Report, at Table 6-3; Ginn Report, at 24-26. For example, observed normality in replicate tests on sediment collected at NA01 varied from 6% to 80%, and normality in replicate tests on sediment from reference station 2243 varied from 8% to 79%. Id. Overall, 10 of the 30 triad stations tested exhibited variability between replicates of an order of magnitude, or greater, casting doubts on the reliability of this test as an accurate measure of toxicity. Id. [Comment No. 94, TCAO, at 15, 17, 18, DTR, at 15.1, 17, 18.3, Appendix 18].

Overall, since the majority of stations exhibited rates of normal bi-valve larvae development equal to or better than reference ranges, and the remaining five stations showed no toxicity according to other, more reliable measures, the bi-valve larvae test results support the conclusion that Site sediments do not pose risks to aquatic life. [Comment No. 95, TCAO, at 14-18, DTR, at 14-17, 18.1, 18.3, 18.5, Appendix 18].

Comment ID: 266 **Organization:** NASSCO
DTR Section: 15, 20
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

b. Sediment Toxicity Is Very Low And Lower Than Most Other Locations In San Diego Bay (As Well As Most Other Bays And Estuaries Throughout The Country) (Findings 14-18)

(4) Surveys Of Lesions In Fish Show A Greater Prevalence Of Lesions In Fish Caught In Reference Areas Than In Fish Caught At NASSCO (Findings 15, 20)

In addition to sediment chemistry, toxicity, and benthic community composition, the Exponent Report also compared observed contaminant-related lesions in fish caught at five different areas within San Diego Bay (reference stations, Inside NASSCO, Outside NASSCO, Inside BAE Systems, and Outside BAE Systems), and found that shipyard fish are “healthy, with no elevation in significant liver lesions or other abnormalities related to chemical exposures at the site.” Ginn Report, at 15. See also DTR, App. 15, at 15 (discussing the results of the fish histopathology analysis). [Comment No. 96, TCAO, at 15, DTR, at 15.3, Appendix 15].
In particular, the fish histopathology results revealed that:

• Of 70 kinds of lesions evaluated, only three were significantly elevated at one or more shipyard locations relative to reference conditions. Exponent Report, at 8-42.

• Where lesions were found in shipyard fish, the severity of the lesions found in most individuals were considered mild. Shipyard fish did not display any of the serious liver lesions typically found at heavily contaminated sites in the United States. Id., at 8-48.

• "A greater number of lesions (i.e., 6) were significantly elevated in the reference area compared to the shipyard sites, documenting that pathological conditions occur in parts of San Diego Bay away from the shipyards." Id.

• Growth and condition of fish were not affected by proximity to the shipyards, or the presence of the two most abundant liver lesions. Id

Because no adverse effects to fish can be associated with specific chemical concentrations in the sediment, it would be inappropriate to derive specific chemical-based cleanup levels from the fish histopathology data in the DTR. Exponent Report, at 9-22. The DTR therefore correctly concludes that "the fish histopathology data does not indicate that the fish lesions observed in the data set can be conclusively attributed to contaminant exposure at the Shipyard Sediment Site." DTR, at Appendix 15; see also Alo Depo, at 296:18 – 296:22 (testifying that the fish histopathology data was not considered in reaching conclusions on aquatic life impairment). [Comment No. 97, TCAO, at 15, 20, DTR, at 15, 20, Appendix 15].

Overall, however, the results of the fish histopathology analysis do suggest that spotted sand bass are not adversely affected by chemicals present in the sediments, water, or prey at NASSCO. Ginn Report, at 41-42. [Comment No. 98, TCAO, at 15, DTR, at 15.3, Appendix 15]. For example, as indicated above, the growth and condition of spotted sand bass near the shipyards were comparable to fish in reference areas. Id. [Comment No. 99, TCAO, at 15, DTR, at 15.3, Appendix 15]. The survey also revealed a greater prevalence of lesions in fish caught in reference areas than in fish caught at the shipyards (i.e., the total number of lesions that were significantly elevated was greater in fish caught at the reference sites than caught at the shipyards). Exponent Report, at 9-22. [Comment No. 100, TCAO, at 15, DTR, at 15.3, Appendix 15]. Of the 70 lesions evaluated the incidence of only four were considered as being significantly elevated near the shipyards, whereas the incidence of six were significantly elevated at reference areas, when compared with one or more shipyard sites. Id. [Comment No. 101, TCAO, at 15, DTR, at 15.3, Appendix 15]. Additionally, most of the lesions found in shipyard fish were "mild," and the pathologist observed no serious liver lesions of the types commonly associated with contaminated sites. Id. [Comment No. 102, TCAO, at 15, DTR, at 15.3, Appendix 15]. Taken together, these results indicate that sediments at the shipyard do not pose risks to aquatic life. [Comment No. 103, TCAO, at 14, 15, 20, DTR, at 14, 15, 20, Appendix 15].

Comment ID: 267 **Organization:** NASSCO
DTR Section: 14,15,20
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

b. Sediment Toxicity Is Very Low And Lower Than Most Other Locations In San Diego Bay (As Well As Most Other Bays And Estuaries Throughout The Country) (Findings 14-18)

(5) The CUT's Analysis Of PAHs In Fish Bile Does Not Support The Conclusion That Shipyard Sediments Adversely Impact Aquatic life (Findings 14, 15, 20)

The DTR correctly concludes that "the [fluorescent aromatic compound] concentrations observed in the fish collected cannot be conclusively attributed to contaminant exposure at the Shipyard Sediment Site." DTR, at A15-14. In fact, fish bile analyses conducted at the Site suggest that fish at the shipyards are no more greatly exposed to PAHs than fish at other locations in San Diego Bay. Exponent Report, at 8-49. [Comment No. 104, TCAO, at 15, DTR, at 15.3, Appendix 15]. No statistically significant differences in PAH breakdown products were found at the shipyards relative to the reference location, and concentrations of bile breakdown products in fish from within the Site were generally less than concentrations in fish from outside the leaseholds. [Comment No. 105, TCAO, at 15, DTR, at 15.3, Appendix 15]. Taken together, these data support the conclusion that that Site sediments are not impairing aquatic life beneficial uses. Exponent Report, at xxxiii, 8-49. [Comment No. 106, TCAO, at 14, 15, 20, DTR, at 14, 15, 20, Appendix 15].

Comment ID: 268 **Organization:** NASSCO
DTR Section: 14-20
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

c. The Benthic Community Assessment Shows That Shipyard Sediments Are Not Causing Impacts To Aquatic Life (Findings 14- 20)

The benthic macroinvertebrate assessment—which is perhaps the most informative test since it measures the actual responses of organisms living in, or on, sediments at the Site—shows a mature and thriving benthic community at the Site, and provides direct evidence that Site sediments are not negatively impacting aquatic life. Ginn report, at 28; DTR, at Tables 18-8, 18-12. [Comment No. 107, TCAO, at 14-20, DTR, at 14-20, Appendix 18]. The benthic community assessment evaluated benthic communities at the site according to four metrics: BRI-E, abundance, taxa, and Shannon-Wiener diversity. DTR, at Table 18-12. Of these 60 individual comparisons, there were only three significant differences from reference pools—all of which occurred at stations NA20 (number of taxa) and NA22 (number of taxa and abundance). Id., at 31. [Comment No. 108, TCAO, at 18, DTR, at 18.4]. When the benthic macroinvertebrate metrics are combined into an overall line of evidence, all of the NASSCO stations, except for NA20 and NA22, show no significant differences whatsoever from reference. DTR, at Table 18-13. [Comment No. 109, TCAO, at 18, DTR, at 18.4]. Yet, these remaining stations are categorized as having "low" effects—even though there are no significant differences from reference under any of the four benthic community metrics. Id. These stations are properly categorized as having "no" effects, since there are no significant differences from reference conditions; suggesting that there are "low" effects is misleading and inaccurate. Ginn Report, at 32. [Comment No. 110, TCAO, at 18, DTR, at 18.4].

Additionally, NA20 is erroneously designated as having "moderate" benthic effects, on the grounds that one of the four benthic community metrics (number of taxa) showed statistically significant differences from reference. Id., at 32-33; DTR, at Table 18-12. However, the number of benthic taxa observed at NA 20 was 22, which is equal to the 95% LPL of the reference pool, and therefore should not be classified as statistically different. Ginn Report, at 32; DTR, at Table 18-12. [Comment No. 111, TCAO, at 18, DTR, at 18.4]. Additionally, NA20 is located in the vicinity of active piers; given that chemical concentrations at NA20 are generally much lower than in other areas, it is likely that any effects observed are the result of physical disturbances rather than contaminated sediments. Ginn Report, at 36. [Comment No. 112, TCAO, at 18, DTR, at 18.1, 18.2, 18.4]. Taking these results into consideration, the only station to show any statistically significant difference from reference benthic community conditions is NA22, which is located adjacent to the mouth of Chollas Creek and, as discussed below, is influenced by sources beyond the shipyard and physical disturbances. [Comment No. 113, TCAO, at 18, DTR, at 18.4].

In sum, and as detailed further below, nearly all of the benthic macroinvertebrate sampling stations at NASSCO show no adverse effects when compared with reference conditions based on the DTR assessment (and one of the two stations showing effects was inappropriately classified based on one metric). Ginn Report, at 40. [Comment No. 114, TCAO, at 18, DTR, at 18.4]. Multiple measures indicate that there are healthy benthic macroinvertebrate communities at the Site, with the possible exception of one station located adjacent to Chollas Creek. Id. [Comment No. 115, TCAO, at 18, DTR, at 18.4]. Accordingly, the direct assessment of benthic macroinvertebrate communities at NASSCO directly refutes the conclusion in the DTR that some areas at NASSCO have "likely" or "possible" effects on benthic macroinvertebrates as a result of shipyard discharges. [Comment No. 116, TCAO, at 14-18, 20, DTR, at 14-17, 18.1, 18.4, 18.5, 20].

Comment ID: 269 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

First, Staff assume that the Fractional Intake ("FI") of recreational and subsistence anglers that catch and eat fish and/or lobster from San Diego Bay would come entirely from fish and/or lobsters caught at the Shipyard Site. DTR, at 28-13 (Table 28-7), 28-17. This assumption is unrealistic on many levels. As noted above, Shipyard Site security measures absolutely bar public access. [Comment No. 178, TCAO, at 28, DTR, at 28.2.2, 28.2.5]. Moreover, the NASSCO Shipyard area is only 43 acres in size – there is no indication that this small area could support the angling demand of all of San Diego Bay's recreational and subsistence anglers every day for thirty years, even if it was publicly accessible for fishing and lobstering. [Comment No. 179, TCAO, at 28, DTR, at 28.2.2, 28.2.5].

Comment ID: 270 **Organization:** NASSCO
DTR Section: 28.2.6
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

Second, Staff assume that four percent of arsenic is in the inorganic form. As described in the Ginn Report, this is a highly conservative assumption. Ginn Report, at 85-87. The Finley Report goes even further, pointing out that Staff chose this estimate without any justification, and noting that Staff did not collect or analyze fish tissue from the NASSCO Shipyard for inorganic arsenic. Finley Report, at 21. [Comment No. 180, TCAO, at 28, DTR, at 28]. The Ginn Report concludes that the "the DTR's conclusion that inorganic arsenic in seafood theoretically harvested at the NASSCO site 'poses a theoretical increased' cancer risk when compared to reference areas is not valid, and does not form the basis for concluding that beneficial uses are impaired or that any active remediation of sediments would be required to reduce arsenic exposure." Ginn Report, at 87. [Comment No. 181, TCAO, at 28, DTR, at 28, Appendix 28].

Comment ID: 271 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

Third, Staff assume that subsistence anglers always consume the entire fish or shellfish, including the skin, guts, filter organs, etc., and not just the filet or edible portion. DTR, at 28-17. However, assuming that all subsistence anglers always consume the entire fish is excessively conservative, particularly when Staff has not shown that any subsistence anglers actually fish at or near the shipyard, or investigated how often such anglers, if any exist, would consume the entire fish. Finley Report, at 10-12. [Comment No. 182, TCAO, at 28, DTR, at 28.2]. With respect to lobsters, there is no evidence in the DTR that subsistence anglers could harvest enough lobsters from the shipyard to maintain a 30 year daily consumption rate of 161 g/day, or that all such lobsters would be eaten whole, including the shell, internal organs and meat. Id. [Comment No. 183, TCAO, at 28, DTR, at 28.2]. Regarding fish, while it is true that certain ethnic groups may use the whole body of harvested fish in soups or stews, members of such groups typically "gut" the fish to remove the liver and other soft organs prior to consumption. Ginn Report, at 89. [Comment No. 184, TCAO, at 28, DTR, at 28.2, 28.3]. In fact, the Santa Monica Bay seafood consumption study—which formed the basis for the consumption rates used in the DTR—found that only one percent of surveyed anglers consumed whole fish that had not been gutted. Id. [Comment No. 185, TCAO, at 28, DTR, at 28.2, 28.3]. Thus, rather than blindly assuming that all anglers always consume un-gutted whole body fish, it would have been more reasonable to assume that a certain proportion of harvested seafood is consumed in this manner based on site-specific data. [Comment No. 186, TCAO, at 28, DTR, at 28.2, 28.3]. Footnote: The distinction between consuming whole fish "gutted" or "not gutted" is important because the liver and other fatty internal organs in fishes typically contain much higher concentrations of PCBs than muscle tissue. Id. Thus, failing to account for the fact that many people will either fillet or gut fish prior to consuming them will result in an overestimation of risk.

Comment ID: 272 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

Fourth, Staff assume that subsistence anglers only consume spotted sand bass or lobster, even though data from other species commonly available to anglers were available. For example, topsmelt (atherinops affins) and jacksmelt (atherinops californiensis), both of which had much lower maximum concentrations of PCBs than spotted sand bass, typically comprise a significant proportion of the sport catch from shore and pier areas. Ginn Report, at 88. [Comment No. 187, TCAO, at 28, DTR, at 28, Appendix 28]. Accordingly, to avoid overestimating exposure, the dietary portion assumed to be comprised of un-gutted whole body fish should have been apportioned across species according to expected catch rates since (1) San Diego Bay anglers very likely will catch many species other than lobster or spotted sand bass, and (2) chemical concentrations vary widely amongst different fish species. Id., at 88. [Comment No. 188, TCAO, at 28, DTR, at 28, Appendix 28]. Moreover, it is clear from San Diego Bay-specific fishing reference materials that fish are not equally distributed throughout the Bay, but rather, fish are "attracted to certain habitats based on prey availability, physical structures, and hydrodynamic conditions." Id., at 92. [Comment No. 189, TCAO, at 28, DTR, at 28, Appendix 28].

Comment ID: 273 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

Fifth, Staff assumes that maximum measured chemical concentrations are representative of typical exposure for recreational and subsistence fishers, despite the fact that multiple samples were collected at each sampling station. DTR, at 28-17. This simplistic approach "gives no insight as to the potential variability in the risk estimates as a function of the range and frequency of measured contaminant levels. In essence, each of the risk estimates presented by the RWQCB relies on a single measured (in this case, maximum) value, which can yield a highly biased risk estimate, particularly if the underlying data set is skewed." Finley Report, at 14. [Comment No. 190, TCAO, at 28, DTR, at 28, Appendix 28]. In support of its approach, the DTR cites a 1989 EPA guidance document, however, the Finley Report cites to recent 2005 EPA risk assessment guidance, which states that, "significant risk management decisions will often benefit from a more comprehensive assessment…such assessments should provide central estimates of potential risks in conjunction with lower and upper bounds (e.g., confidence limits) and a clear statement of the uncertainty associated with these estimates" (USEPA 2005); p. 1-9 – 1-10). [emphasis added]." Id. [Comment No. 191, TCAO, at 28, DTR, at 28, Appendix 28]. At the very least, the DTR should have included risk estimates based on measures of central tendency, such as means or averages, and/or distributions of the underlying measured concentrations, as opposed to single-point measurements. [Comment No. 192, TCAO, at 28, DTR, at 28, Appendix 28].

Comment ID: 274 **Organization:** NASSCO
DTR Section: 28.2.2.1
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

4. There is No Significant Risk To Human Health (Findings 25-28)

d. Staff's Reliance on High-End, Implausible Exposure Scenarios For The Tier II Risk Assessment Does Not Provide A Scientifically Valid Estimate of Risk (Finding 28)

Sixth, Staff's risk assessment presumes that anglers have free and complete access to the shipyard, even though access to the shipyard is currently highly restricted, and is expected to remain so for the foreseeable future. See Section IV.A.4.a, above. [Comment No. 193, TCAO, at 28, DTR, at 28.2.2]. In light of the strict security regulations at NASSCO, described in Section IV.A.4.a, above, it is patently unreasonable to assume that anglers could access the shipyard, let alone fish every day for 30 years and subsist solely fish and shellfish caught at the leasehold. Id. [Comment No. 194, TCAO, at 28, DTR, at 28.2.2]. In addition, according to a recent fishing guide, the closest fishing area to the NASSCO Shipyard is approximately 0.7 miles away, with no marked fishing areas or important fishing habitats anywhere near the NASSCO Shipyard. Ginn Report, at 92-94, Figure 7. [Comment No. 195, TCAO, at 28, DTR, at 28.2.2]. Based on these practical fishing realities, it is "inconceivable that an angler would fish 100 percent of the time for 30 years and obtain all seafood at the NASSCO shipyard site." Id. at 94. [Comment No. 196, TCAO, at 28, DTR, at 28.2.2, 28.2.6].

Likewise, it is inappropriate, and contrary to EPA guidance, to assume that unmodified fish consumption rates from a highly accessible recreational area, such as Santa Monica Bay, are representative of fish consumption rates from a secure, industrial facility, such as NASSCO.

[Comment No. 197, TCAO, at 28, DTR, at 28.2.2, 28.2.6]. "The Santa Monica Bay study assessed anglers in an area where fishing is freely allowed via party or private boats, numerous piers and/or jetties, and the beach. Given the severe access restrictions of the NASSCO shipyard from land (the shore or from piers/jetties) and water (anglers on boats), it is obvious that fish consumption rates in the NASSCO leasehold are not comparable to those in Santa Monica Bay." Finley Report, at 17. [Comment No. 198, TCAO, at 28, DTR, at 28.2.2, 28.2.6].

Comment ID: 280 **Organization:** SDG&E
DTR Section: 32.5.2
Comment:

1.3 Non-Triad Approach Fails to Address Causal Connection Between COCs and Benthic Risk and 60% is Arbitrary and Without Scientific Support

The Non-Triad Data Approach used by CRWQCB (2010) to address benthic risk potential using sediment chemistry results is likewise critically flawed and cannot be used to quantify or understand the relative causal contribution of the five COCs to adverse toxic effects on macroinvertebrate communities (Conder, 2011a). The first part of the Non-Triad approach, a comparison of station chemistry results to 60% of the LAET values, is flawed because the use of the 60% value is arbitrary and is not supported by any technical or regulatory guidance. The DTR lacks any technical support or other scientific evidentiary record to validate the use of a 60% LAET. Additionally, the LAET does not establish causality between chemicals and adverse effects because it is developed using sediments containing an arbitrary mixture of chemicals. This deficiency equally applies to the second portion of the CRWQCB (2010) Non-Triad Data Approach, the SS-MEQ (Conder, 2011a). Neither the 60% LAET nor the SS-MEQ incorporates bioavailability considerations, such as normalization of concentrations of organic compounds in sediment by the amount of organic carbon (Conder, 2011a). The shortcoming regarding a lack of bioavailability in the CRWQCB (2010) benthic assessments was also noted by Allen (2011) in his analysis of chemical exposures to benthic invertebrates at the NASSCO portion of the Site. Allen (2011) arguments also apply to the BAE portion of the Site since a main criticism is that the CRWQCB (2010) primarily relied upon concentrations of total chemical in sediment (at both BAE and NASSCO) without regard to other conditions or factors that may influence bioavailability.

The Toxic Unit approach outlined in Conder (2011a) is a causal approach that is superior to an empirical evaluation in assessing benthic risk and should replace the CRWQCB (2010) sediment chemistry line of evidence used in the Triad, and should be used for understanding aquatic life risk potential where Triad data are unavailable, replacing the current Non-Triad Data Approach. The Toxic Unit
approach explicitly evaluates causality between individual chemicals and Aquatic Life BUI in a manner that includes TBT, explicitly considers bioavailability of the five Site primary COCs and takes into account toxicity of individual COCs that are not addressed in the Triad or non-Triad approaches (Conder, 2011a). The Toxic Unit approach used in Conder (2011a) is similar to that used by Allen (2011) to evaluate the benthic risks associated with metals and PAHs at the NASSCO portion of the Site. However, Allen (2011) failed to incorporate a Toxic Unit analysis of PCBs or TBT despite the availability of exposure and effects data (Conder, 2011a). As such,

the Allen (2011) analysis remains incomplete with regards to the effects of PCBs and TBT at the NASSCO portion of the Site.

Comment ID: 281 **Organization:** SDG&E
DTR Section: 18 and 32
Comment:

1.4 Revised Remedial Footprint Based Upon Causal Approach to Benthic Risk Evaluation

For the existing Triad stations, a revised approach using the Toxic Unit in place of the current SQGQ1-based sediment chemistry line of evidence was used (Conder, 2011a). A sediment chemistry result of "Moderate/High" was assumed when any of the COCs exhibited a Toxic Unit greater than 1 and "Low" when all of the COCs exhibited Toxic Units less than or equal to 1 (Tables 1-19). The existing CRWQCB (2010) Triad framework (Table 18-14) was then used to interpret Triad results for each of the 30 Triad stations using these revised Toxic Unit-based sediment chemistry line of evidence results along with existing toxicity and benthic community lines of evidence. Results of the analysis (Table 19 for stations originally classified by CRWQCB (2010) as "Possible" or "Unlikely" and Table 19 of Conder (2011a) for stations originally classified by CRWQCB (2010) as "Likely") indicate that the following Triad stations exhibit a Triad designation that includes "Likely": NA11, NA19, SW04, SW13, and SW17.

For the Non-Triad stations, the Toxic Unit approach was used in place of the deficient SS-MEQ and 60% LAET evaluations. Benthic risk potential equivalent to a Triad result that includes "Likely" was assumed for stations in which any of the COCs exhibited a Toxic Unit greater than 1 (Tables 1-19). Non-Triad with this designation included: NA10, NA18, NA21, NA27, NA28, SW01, SW10, SW14, SW16, SW24, and SW34.

The results of the revised Likely and Non-Triad analyses (using the Toxic Unit approach) were used to revise the remedial footprint to address potential Aquatic Life BUI. Stations identified by the revised Toxic Unit-based Triad and Non-Triad Data approaches were assumed to represent polygons exhibiting Aquatic Life BUIs and should be considered for inclusion into the remedial footprint to address potential Aquatic Life BUI (Figure 1). This footprint should be fully evaluated on the basis of overall technical and economic feasibility in a manner consistent with the approaches discussed in CRWQCB (2010).

Alternate footprints to protect Aquatic Life BUIs have been proposed by others (MacDonald, 2009, 2011; Spadaro et al., 2011). The Toxic Unit approach used to derive the proposed footprint shown in Figure 1 is superior to the SQG-based evaluation used in part to identify polygons for remediation by MacDonald (2009, 2011) because the latter approach relies on empirical SQGs that suffer from the same weaknesses as the SQGQ1, SS-MEQ, and 60% LAET approaches (lack of chemical causality between concentrations and effects). The Toxic Unit approach is also a more scientifically-rigorous chemical line of evidence than the approach Spadaro et al. (2011) used to derive an alternate footprint to address Aquatic Life BUI in the BAE portion of the Site. Spadaro et al. (2011) relied heavily on a simple ranking of the total concentrations of COCs in sediment without regard to bioavailability or effects levels (Table 6 of Spadaro et al., 2011). This level of simplicity is the least technically-defensible approach to understanding chemical effects on benthic invertebrates of any approach used at the Site to date.

Comment ID: 282 **Organization:** NASSCO
DTR Section: 18.5
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

a. Shipyard Chemicals And Other Pollutants Are Present In The Sediment, But Do Not Pose Risks To Aquatic Life (Findings 15 - 19)

(1) The TCAO Overstates The Sediment Chemistry Prong Of The Triad Analysis (Findings 15-20)

The TCAO overstates the sediment chemistry prong of the triad analysis both because (1) differences in sediment grain size and total organic carbon between the reference pool and shipyard sediments, which are unrelated to shipyard discharges, skew the results in favor of finding higher sediment chemistry at NASSCO, and because (2) Staff's MLOE decision framework is driven primarily by sediment chemistry, even though most experts place greater weight on biological lines of evidence, particularly benthic community analysis. Ginn Report, at 14, 17-19. [Comment No. 39, TCAO, at 15-20, DTR, at 15-20, Appendix 15, Appendix 18, Appendix 19].

(b) The MLOE Analysis Places Undue Weight On Sediment Chemistry And Neglects Direct Biological Measures, Contrary To Generally Accepted Guidance (Findings 15, 16, 18, 20)

Additionally, the MLOE analysis supporting the TCAO is inconsistent with other published decision frameworks, and places undue emphasis on the sediment chemistry line of evidence in violation of sound scientific and technical principles. [Comment No. 51, TCAO, at 15, 16, 18, 20, DTR, at 15, 16, 18, 20]. Specifically, the TCAO and DTR framework is fundamentally flawed because it concludes that adverse effects on benthic macroinvertebrates are "likely" or "possible" whenever sediment chemistry is characterized as "high"—regardless of whether significant sediment toxicity or adverse effects on benthic invertebrates are also observed. DTR, at Table 18-4. [Comment No. 52, TCAO, at 18, DTR, at 18.2]. As a result, the chemistry line of evidence unilaterally trumps the others, causing the TCAO and DTR reach conclusions about conditions at the Site that are not technically justified. Ginn Report, at 48. Staff's framework is further biased by its lack of a "no" effects category – meaning that stations will be characterized as having at least "low" levels of effects, even where results are indistinguishable from reference conditions – contrary to methods published by others, including the State Water Resources Control Board. Id. [Comment No. 53, TCAO, at 18, DTR, at 18.2].

The State and Regional Boards have consistently recognized that sediment is a "complex matrix that makes establishment of an objective" based on a single line of evidence "problematic." See, e.g., Staff Report, Water Quality Control Plan for Enclosed Bays and Estuaries, Part 1, Sediment Quality (September 16, 2008) ("Phase 1 SQO Staff Report"), at 5-8. It is also well-understood that there are significant weaknesses and confounding factors that make sediment chemistry a poor diagnostic tool when used in isolation, and lead to the fundamental principle that impacts due to contaminants should not be inferred unless the weight of the evidence clearly supports such an inference. Ginn Report, at 13. [Comment No. 54, TCAO, at 15, 16, DTR, at 15, 16]. Staff, too, has correctly recognized that chemistry data alone is insufficient to predict biological impacts, and that it is preferable to rely on biological lines of evidence to assess biological impacts. DTR, at 15-1 ("[S]ediment chemistry provides unambiguous measurements of pollutant levels in marine sediment, but provides inadequate information to predict biological impact."); Deposition of David Gibson ("Gibson Depo"), at 143:7 - 143:21 ("Q. Should this direct line of evidence of toxicity be given more weight than chemistry? A. As a biologist, I would say yes because the reaction of the organism itself is a better indicator of true risk than the chemistry alone; but they do have to both be considered together."); Alo Depo, at 228:33 – 229:3 (agreeing that "the biologically based lines of evidence are the most important since they are direct measures of what is being protected."). [Comment No. 55, TCAO, at 15, 16, DTR, at 15-16].

On its face, the direct measurements of biological conditions included in the DTR reveal that only a minimal fraction of the stations at NASSCO do not meet reference conditions. Ginn Report, at 49. Specifically, (1) benthic communities are equivalent to reference conditions at 14 of 15 stations in the NASSCO leasehold, with the only "moderately" impacted station located at the mouth of Chollas Creek; (2) amphipod toxicity was found at only 1 of 15 stations at NASSCO, at which survival, at 70%, was only 3% below the statistical reference range and was equal to one of the reference stations; (3) toxicity to sea urchins was not found at any of the 15 stations at NASSCO; and (4) toxicity to bivalves was found at only 5 of 15 stations at NASSCO. DTR, at Tables 18-8 and 18-13. [Comment No. 56, TCAO, at 18, DTR, at 18.3-18.4]. Note that the bivalve test used in the shipyard investigation, as required by Board Staff, was an experimental method and produced highly inconsistent results, even among replicates of individual samples and for reference samples. Accordingly, applying Staff's own weight-of-the-evidence framework, the results of this test should carry less weight than the amphipod and sea urchin tests since there is a lower level of confidence associated with this particular test. Ginn Report, at 49-50; Alo Depo, at 255:18 – 255:25 (agreeing that the bivalve test is more susceptible to confounding factors and its association with ecological receptors is less certain than the amphipod survival test). [Comment No. 57, TCAO, at 18, DTR, at 18.3-18.4].

Despite these favorable toxicity results, the skewed weight-of-the-evidence scheme in the DTR determines that seven stations at NASSCO have either "possible" or "likely" impacts on benthic macroinvertebrates, based primarily upon the sediment chemistry results for those stations. DTR, at Tables 18-1 and 18-4. [Comment No. 58, TCAO, at 18, DTR, at 18.2]. Where chemical and biological indicators disagree, it is inappropriate to simply assume, without further investigation, that effects on benthic macroinvertebrates are "possible" or "likely," as was done in the TCAO and DTR. In so doing, Staff overemphasizes elevated sediment chemistry, resulting in a decision framework that is consistently biased in favor of finding impacts, even where toxicity and benthic effects are equivalent to reference conditions. Ginn Report, at 53 – 54. [Comment No. 59, TCAO, at 18, DTR, at 18.1-18.5].

Further, despite Staff's acknowledgement that relying solely on chemical concentration data does not account for factors that affect bioavailability of contaminants in sediment, Staff inexplicably failed to further investigate stations that were designated as "likely" impaired due to "high" chemistry results (such as NA19 and NA22), or to sufficiently evaluate alternative causal explanations. [Comment No. 60, TCAO, at 18, DTR, at 18.1]. Accordingly, Staff's approach directly contradicts current regulatory guidance (which recommends placing greater weight on biological lines of evidence when indicators diverge), resulting in the misclassification of NA17 and NA19 as "possibly" and "likely" impaired, respectively, despite little or no indication of toxicity or benthic community effects. Ginn Report, at 52-54, 56 (quoting U.S. EPA Sediment Classification Methods Compendium (U.S. EPA 1992)); see also Alo Depo, at 297:3 – 298:3, 298:22 – 299:7, 299:8 – 300:17. The issue is underscored clearly by examining station NA19, where Staff has categorized the station as "likely" impaired based solely upon high chemistry and the bi-valve larvae test, even though six of the seven lines of direct evidence indicate no significant differences from reference. Alo Depo, 263:22 – 265:17. [Comment No. 61, TCAO, at 18, DTR, at 18.1].

A scientifically defensible approach to integrating LOE results is essential to ensure a valid MLOE conclusion, particularly where chemical and biological indicators yield disparate results. Ginn Report, at 45-46. Unfortunately, the DTR includes little explanation of how Staff's decision framework was derived, and fails to provide any citation from scientific literature supporting the framework used or the undue emphasis placed on sediment chemistry. Ginn Report, at 46. [Comment No. 62, TCAO, at 18, DTR, at 18.1-18.5]. Staff has also openly acknowledged that its recommended framework has never been published or peer-reviewed. Alo Depo, at 297:3 – 298:3. This is particularly concerning considering that Staff's framework is significantly more conservative than existing, published frameworks—including the State of California Sediment Quality Objective (SQO) framework, in which triad data indicating "high" chemistry, "reference" benthic communities, and "nontoxic" or "low" sediment toxicity would result in a station being designated as "likely unimpacted" (as contrasted with "possibly" or "likely" impacted, under Staff's framework). [Comment No. 63, TCAO, at 18, DTR, at 18.1-18.5]. Since Staff's approach simultaneously contravenes accepted guidance and overstates the chemistry prong of the triad analysis relative to direct biological evidence, the resulting conclusions in the TCAO and DTR are not scientifically or technically valid, and do not support the proposed remediation. [Comment No. 64, TCAO, at 15, 16, 18, DTR, at 15, 16, 18.1, 18.2, 18.5].

Comment ID: 283 **Organization:** City of San Diego
DTR Section: 5
Comment:
I.

STAR & CRESCENT BOAT COMPANY IS APPROPRIATELY NAMED AS A DISCHARGER BECAUSE IT IS THE LEGAL SUCCESSOR TO SAN DIEGO MARINE CONSTRUCTION COMPANY.

A.INTRODUCTION

Star & Crescent Boat Company ("Star & Crescent Boat") claims that there is no evidence it is a legal successor to San Diego Marine Construction Company ("SDMCC"), one of the parties potentially responsible for contamination of the Shipyard Sediment Site as a result of its historical shipyard operations. Yet the very evidence submitted by Star & Crescent Boat with its comments to the Board demonstrates that it was a mere continuation of San Diego Marine Construction Company ("SDMCC"), if not a fraudulent transfer to hide or escape liabilities, such that Star & Crescent Boat is a corporate successor of SDMCC. A detailed review of the evidence Star & Crescent Boat submitted in fact demonstrates the strength of the successor liability case against Star & Crescent Boat and proves it is the proper successor and that Star & Crescent Boat is appropriately named as a Discharger to this proceeding.

The evidence demonstrates that a few years after SDMCC changed its name to Star & Crescent Investment Company ("Investment Company"), Investment Company, led by O.J. Hall, Jr., created Star & Crescent Boat (installing himself and his children as directors) so as to transfer its $800,000 harbor business to it, for which it received grossly inadequate consideration. Following the transfer, Star & Crescent Boat, led by O.J. Hall, Jr.'s children, continued the harbor business while Investment Company retained control over Star & Crescent Boat, reviewing its operations, financials, and dictating and approving its directors salaries, bonuses and its stock dividends (actually marked "approved" by O.J. Hall, Jr. in Board of Directors meeting minutes). The evidence also shows there was officer and director overlap between the two companies, first with O.J. Hall, Jr. leading both companies, and later via Kenneth Beiriger as a director of both companies and via Investment Company—still led by O.J. Hall, Jr.—controlling Star & Crescent Boat. Also, O.J. Hall, Jr.'s three children--Judy Hall, Stephen Carlstrom and Janet Miles--were the directors and shareholders of Star & Crescent Boat.

The evidence also supports the conclusion that the creation of Star & Crescent Boat and transfer of assets and liabilities to it was fraudulent in nature, based on sham initial director appointments, unsupported stock valuations, and questionable stock swaps, which is another basis for successor liability.

B.STATEMENT OF RELEVANT FACTS AS TO STAR & CRESCENT BOAT COMPANY

SDMCC operated a shipyard in the northern part of the Shipyard Sediment Site from approximately 1915 to 1972. In 1972, SDMCC sold its shipyard assets to Campbell Industries. Immediately thereafter, in July 1972, SDMCC changed its name to Star & Crescent Investment Company ("Investment Company") by consent of SDMCC's directors/shareholders, O.J. Hall, Jr. and G.E. Hall. (S&C Boat Ex .10{"S&C Boat Ex.__" shall refer to the exhibits submitted by Star & Crescent Boat with their Written Commnet Submission}).

Star & Crescent Boat was incorporated on April 7, 1976. Six directors were appointed that same day: Carole Lechlietner, Monica Triplett, Kay Harpold, Gail Lary, Jacqueline Rhodes and Dorine Schamens. (S&C Boat Ex. 16). Just two days later, on April 9, 1976, each of the initial directors of Star & Crescent Boat resigned simultaneously without explanation and six new directors were appointed: O.J. Hall, Jr., Judy Hall, Kenneth Beiriger, Stephen Carlstrom, Raleigh Miles, and Janet Miles. (S&C Boat Ex. 17). O.J. Hall, Jr. and Kenneth Beiriger were elected the President and Vice President-Treasurer, respectively, of Star & Crescent Boat on that same day, April 9, 1976. (Id). O.J. Hall, Jr. was simultaneously a director of Investment Company when he was elected a director and President of Star & Crescent Boat Company. (S&C Boat Exs. 10, 11-14, 17). Kenneth Beiriger became an Investment Company director by at least 1977, if he was not already previously, and remained an Investment Company director simultaneously with his directorship at Star & Crescent Boat from at least 1977 to 1983. (S&C Boat Exs. 11-14,17-18, City Ex. 1-2{"City Ex. __" shall refer to the exhibits/evidence attached hereto and submitted herewith by City of San Diego.}). Judy Hall, Janet Miles and Stephen Carlstrom are O.J. Hall, Jr.'s children. (City Ex. 3). Raleigh Miles appears to be the husband of Janet Miles and O.J. Hall's son-in-law.

Immediately after the replacement of the first group of "directors" by O.J. Hall, Jr. and others either related to Investment Company or his children{In addition to Kenneth Beiriger, discussed above, the remaining directors were the children of O.J. Hall, Jr.}, on April 9, 1976, Star & Crescent Boat, via its new O.J. Hall, Jr./family-led group of directors, voted to acquire the significant harbor business related assets--over $800,000 worth--of Investment Company in exchange for 1,500 shares of newly created stock of the new Star & Crescent Boat. (S&C Boat Ex. 23) As Star & Crescent Boat had just been created two days earlier, these shares were basically created out of thin air. Even assuming a "value" could be ascribed to the newly created stock of Star & Crescent Boat at that time, the directors, on April 9, 1976, only placed its alleged "par value" at $10 per share, making the 1,500 shares worth at most $15,000. (Id.). Thus, Star & Crescent Boat "purchased" the $800,000+ harbor business of Investment Company for at most $15,000.

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At the same time it designated the par value of the newly created 1,500 shares to be $10 per share, the Star & Crescent Boat O.J. Hall, Jr./family led-directors also designated the "fair market value" of the newly created shares to be over $700,000, without any basis whatsoever, two days after the company was created out of thin air. (Id). At the time of the valuation, the brand-new Star & Crescent Boat owned no capital, was not engaged in any business, and had no other identified assets. (Id.) No accounting statements were attached to the corporate minutes to indicate that an audit or any other accounting investigation supported the valuation. (Id.) The numbers were simply chosen by the directors, who conveniently were in charge of both sides of the transaction.

It is unclear where the $15,000 came from for the initial consideration for the shares, given the relationship between Investment Company and Star & Crescent Boat at the time of this transaction and their co-leadership by O.J. Hall, Jr., as the head of the family enterprise, as well as their relationship thereafter. (S&C Boat Ex. 11-14, 17, 23; City Ex. 1-2). Due to the relationship, it likely came from O.J. Hall, Jr. and Investment Company, since he (and his family) controlled both companies. It is similarly unclear whether Star & Crescent Boat really assumed a claimed $86,000 of liabilities of Investment Company as stated in the April 9, 1976 Board of Directors meeting minutes, given the relationship of the companies and the fact that Investment Company was still paying Star & Crescent Boat's directors' salaries and bonuses, and determining and approving its stock dividends, for at least several years following the transaction, as also discussed in detail immediately below. (S&C Boat Ex. 11-14,17 and City Ex. 1-2).

Regardless, even if both the $15,000 and $86,000 are taken into account as consideration, Investment Company, led by O.J. Hall, Jr., still transferred its $800,000+ harbor business to Star & Crescent Boat, also led by O.J. Hall, Jr. and his family, at its inception for, at most, pennies on the dollar, for Star & Crescent to continue that business. At the same time as the transaction was taking place, Star & Cresent Boat and Investment Company were both under O.J. Hall, Jr's direct control. (S&C Boat Ex. 10, 17).

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Six months after the creation of Star & Crescent Boat and the issuance of these 1,500 shares to Investment Company as the consideration for the purchase of the $800,000 of assets of Investment Company, Investment Company gave the shares back to Star & Crescent Boat. (S&C Ex. 23). This is not entirely surprising given that this was clearly a family enterprise and the directors of Star & Crescent Boat O.J. Hall, Jr.'s children. Star & Cresent Boat and Investment Company remained under O.J. Hall, Jr's control when this gift of shares took place, as even after O.J. Hall, Jr. resigned as a director of Star & Crescent Boat, he retained control over Star & Crescent Boat via his presidency and directorship at Investment Company. (S&C Boat Ex. 11-14, City Ex. 1-2). After O.J. Hall, Jr. resigned his directorship from Star & Crescent Boat, his son, Stephen Carlstrom, became President and Mr. Carlstrom, Judy Hall, and Janet Miles—three of his four children—were the shareholders. (S&C Boat Ex. 17, City Ex. 3).

While Star & Crescent Boat made "payments" to Investment Company from its dividends for this stock over the next several years, during that same time, Investment Company was controlling and determining the amount of Star & Crescent Boat's dividend payments, as well as its directors' salaries and bonuses, and other operational and financial aspects of the business as well, as it operated under the umbrella of Investment Company as clearly part of the family enterprise:

•Investment Company and Star & Crescent Boat Company are discussed together in minutes of the Board of Directors meetings for Investment Company for years after Star & Crescent Boat's creation. Further, the minutes and proposals therein, including discussions and proposals regarding Star & Crescent Boat, were "Approved" by O.J. Hall, Jr. and K.N. Beringer, both Investment Company directors. (S&C Boat Ex. 11-14).

•Salaries and bonuses for Star & Crescent Boat directors in 1978 were dictated and approved by Investment Company and its directors O.J. Hall, Jr. and K.N. Beiriger. (S&C Boat Ex. 11-12).

•In 1979 and 1981, the minutes of Investment Company Board of Directors meetings state that Investment Company reviewed Star & Crescent Boat's operations and financials and that the salaries and bonuses, and dividends, of Star & Crescent Boat Company were determined and approved by O.J. Hall, Jr. and K.N. Beiriger, directors of Investment Company. (S&C Boat Ex. 13-14).

•In 1981, Investment Company guaranteed a $300,000+ loan for Star & Crescent Boat. (S&C Boat Ex. 30).

Investment Company and Star & Crescent Boat Company are also discussed together in the minutes of Board of Directors meetings for Star & Crescent Boat Company in the years following Star & Crescent Boat's creation. (S&C Boat Ex. 30, City Ex. 1-2).

Minutes from Star & Crescent Boat Board of Directors meetings from 1980 discussed Investment Company employee pay checks and stated that Investment Company and O.J. Hall approved of Star & Crescent Boat director salaries. (City Ex. 1-2).

•In 1986, Star & Crescent Boat merged with San Diego Harbor Excursions. (S&C Boat Ex. 32).

C. STAR & CRESCENT BOAT COMPANY HAS SUCCESSOR LIABILITY FOR SDMCC.

The general rule of successor liability under the laws of California is that the corporate purchaser of another corporation's assets presumptively does not assume the seller's liabilities, unless:

(1) there is an express or implied agreement of assumption;

(2) the transaction amounts to a consolidation or merger of the two corporations;

(3) the purchasing corporation is a mere continuation of the seller; or

(4) the transfer of assets to the purchaser is for the fraudulent purpose of escaping liability for the seller's debts.

Ortiz v. South Bend Lathe (1975) 46 Cal. App. 3d 842, 846, disapproved on other grounds in Ray v. Alad Corp. (1977) 19 Cal. 3d 22, 34; Fisher v. Allis-Chalmers Corp. Prod. Liab. Trust (2002) 95 Cal.App.4th 1182, 1188.

Here, as discussed further below, the evidence demonstrates that Star & Crescent Boat was a mere continuation of SDMCC/Investment Company, and also indicates that the creation of Star & Crescent Boat and Investment Company's transfer of assets to it was also of a fraudulent nature to escape or hide liabilities.

1.Star & Crescent Boat Is A Mere Continuation of SDMCC/Investment Company.

With respect to the mere continuation exception, in discussing this exception to the general rule of successor non-liability, the California Supreme Court in Ray v. Alad stated that liability has been imposed on a successor corporation upon a showing of one or both of the following factual elements:

1) no adequate consideration was given for the predecessor corporation's assets and made available for meeting the claims of its unsecured creditors;

2) one or more persons were officers, directors, or stockholders of both corporations. Ray v. Alad, supra, 19 Cal. 3d at p. 29 (citing cases).

In this matter as to Star & Crescent Boat, both of these factors are met.

a.There Was Grossly Inadequate Consideration Paid for Investment Company's $800,000 Harbor Assets.

On April 7, 1976, Star & Crescent Boat was created, with six "directors" who all, two days later, simultaneously resigned without explanation and were replaced by O.J. Hall, Jr., the president and director of Investment Company, along with five others, at least one of whom was also related to Investment Company (Kenneth Beiriger), with the remainder being O.J. Hall, Jr.'s children and one of their spouses. (S&C Boat Ex. 16, 17; City Ex. 3). Simultaneously with this uniform directorship replacement with O.J. Hall, Jr./family-led Investment Company personnel, Investment Company transferred its $800,000+ harbor business to Star & Crescent Boat to continue that business in exchange for, at most, $15,000 of newly created stock of Star & Crescent Boat and Star & Crescent Boat's assumption of $86,000 of liabilities—grossly inadequate consideration for the significant assets conferred on Star & Crescent Boat. (S&C Boat Ex. 17).

The consideration becomes even more grossly inadequate and the marked mere continuation of the business revealed when one examines the inter-relationship of Investment Company and Star & Crescent Boat over the next several years following its creation and this asset transfer. This was clearly a family enterprise that O.J. Hall, Jr. created and controlled. While Star &

Crescent Boat focuses in its Comment on how these shares were really worth over $700,000 and how Star & Crescent Boat paid this back to Investment Company over the next few years (after Investment Company actually gave the shares back to Star & Crescent Boat six
/ / /
months later!){For reasons unknown. As discussed further infra, the facts suggest that these transactions may also have been fradulent in nature to escape or hide liabilities}, it leaves out the critical facts that 1) it was O.J. Hall, Jr. and family who created the alleged $700,000 "fair market value" for this stock out of thin air on April 9, 1976, two days after Star & Crescent Boat was created, when the stock's par value was a maximum $15,000 (S&C Boat Ex. 17); 2) that O.J. Hall, Jr.'s children were the shareholders of Star & Crescent Boat (S&C Boat Ex. 17, 23; City Ex. 3) and 3) that Star & Crescent Boat was operationally and financially controlled by Investment Company following its creation such that any dividend payments being made by Star & Crescent Boat to Investment Company for this stock were basically payments to itself and the family business, because O.J. Hall, Jr. and Kenneth Beiriger, Investment Company officers and directors, were designating and approving the amounts of the dividends of Star & Crescent Boat! (S&C Boat Ex. 11-14; City Ex. 1-2).

The documents submitted by Star & Crescent Boat itself with its Comment undisputedly reflect that Investment Company and Star & Crescent Boat Company were closely inter-related and controlled by O.J. Hall, Jr. and family and Kenneth Beriger, and basically the same family-run company. They are discussed together in minutes of the Board of Directors meetings for Investment Company for years after Star & Crescent Boat's creation. (S&C Boat Ex. 11-14). Discussions and proposals regarding Star & Crescent Boat were all "Approved" by O.J. Hall, Jr. and K.N. Beringer (Mr. Beiriger was also a Star & Crescent Boat director) including the designation of and approval of salaries and bonuses for Star & Crescent Boat directors in 1978; the review of Star & Crescent Boat's operations and financials and designation of and approval of the salaries and bonuses, and dividends, of Star & Crescent Boat Company in 1979 and 1981; and Investment Company's guaranty of a $300,000+ loan for Star & Crescent Boat in 1981. (S&C Boat Ex. 11-14, 30).

Moreover, additional documents produced by Star & Crescent Boat reflect that Investment Company and Star & Crescent Boat Company are also discussed together in the minutes of Board of Directors meetings for Star & Crescent Boat Company in the years following Star & Crescent Boat's creation, meetings which were at least in part led by Mr. Beiriger. Minutes from Star & Crescent Boat Board of Directors meetings from 1980 discussed Investment Company employee pay checks and stated that Investment Company and O.J. Hall, Jr. approved of Star & Crescent Boat director salaries. (City Ex. 1-2).

These facts and evidence—largely submitted by Star & Crescent Boat itself in this proceeding—demonstrate that there was not adequate consideration was paid for Investment Company's assets, and the relationship between Investment Company and Star & Crescent Boat was such that Star & Crescent Boat was a mere continuation of Investment Company.

b.Directors and Officers of Investment Company Were Directors and Officers of Star & Crescent Boat and/or Controlled Star & Crescent Boat.

Star & Crescent Boat does not dispute that Investment Company shareholder and director O.J. Hall, Jr. was directly involved in the creation of Star & Crescent Boat in that he became a director (and President) of Star & Crescent Boat two days after its inception and remained such for six months. (S&C Boat Ex. 17; p. 10 of S&C Comment). It also does not dispute that Kenneth Beiriger was simultaneously an Investment Company director and Star & Crescent Boat director at the same time for several years. (S&C Boat Ex. 11-14, 17, 30, p.10 of S&C Comment).

However, for some reason, Star & Crescent Boat turns a blind eye to the fact that even after O.J. Hall, Jr. stepped down as a director of Star & Crescent Boat in October 1976, he continued to control Star & Crescent Boat because he was a director and President of Investment Company, as is reflected in the numerous Board of Directors meetings of Investment Company wherein he approved Star & Crescent Boat operations, financials, director salaries and bonuses, and stock dividends. (S&C Boat Ex. 11-14, 30, City Ex. 1-2).

Star & Crescent Boat also wholly ignores the fact that the directors and shareholders of Star & Crescent Boat were all O.J. Hall, Jr.'s children. (S&C Ex. 17, 23; City Ex. 3).

The evidence clearly demonstrates officer and director overlap between the two companies, by key directors, a family-run enterprise by O.J. Hall, Jr. and his children, and control by Investment Company over Star & Crescent Boat following its creation. While director and officer overlap is not the only factor in assessing successor liability under a mere continuation theory, here, as discussed in detail, supra, it is certainly not the only fact demonstrating the mere continuation. When all of the facts are coupled and reviewed together with the legal standard, Star & Crescent Boat is proven to be the successor to SDMCC under the mere continuation theory.

c.Star & Crescent Boat May Have Been Created to Accomplish a Fraudulent Transfer of Liabilities of SDMCC/Investment Company.

While Star & Crescent Boat all but brushes aside this other exception to the rule against successor liability, the facts and the evidence strongly suggest that the transaction whereby Star & Crescent Boat was created with fake directors and its subsequent unsupported stock valuations and stock swaps was for a fraudulent purpose of trying to escape or hide certain liabilities.

The facts support that Star & Crescent Boat was created by Investment Company for the financial purpose of shifting assets and liabilities from Investment Company to this new entity. The installment of the initial six "directors" on April 7, 1976 was clearly a sham, given their uniform, simultaneous resignations two days later and immediate replacement by the O.J. Hall, Jr./family-led Investment Company directors. (S&C Boat Ex. 16-17). The creation of 1,500 shares of Star & Crescent Boat stock out of thin air—again, simultaneously with the installment of the O.J. Hall, Jr. family led directors—and designation by the directors that it had a par value of $15,000 but a "fair market value" of over $700,000—smacks of fraud. (S&C Boat Ex. 17). How could 1,500 newly created shares of a brand new company have a fair market worth of almost three-quarter of a million dollars, when at most, the capital behind them is $15,000?

The fraudulent scheme continued when Investment Company, six months later, for unclear reasons, actually gave these shares back to Star & Crescent Boat (probably because the directors were O.J. Hall, Jr.'s children), and then was paid by Star & Crescent Boat, at least somewhat, for these shares over the next several years, out of its dividends, which dividends were designated and approved by Investment Company. Investment Company appears to have achieved payment to itself for transferring assets and liabilities to a new company, which it continued to control, as reflected on the Board of Directors meeting minutes. (S&C Boat Ex. 11-14, City Ex. 1-3). Thus, there is also a strong suggestion of fraud in the transactions creating and sustaining Star & Crescent Boat and yet another basis for a finding of successor liability.

Comment ID: 284 **Organization:** City of San Diego

DTR Section: 4.7.1.3
Comment:
II.

THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS TECHNICALLY INFEASIBLE TO ACHIEVE BECAUSE UNCONTROLLED SOURCES OF POLLUTION UNRELATED TO NASSCO ARE IMPACTING SEDIMENT AT THE SHIPYARDS.

A.THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT "THE PLUME OF CONTAMINATED WATER FROM CHOLLAS CREEK DURING RAIN EVENTS HAS BEEN SHOWN TO EXTEND MORE THAN A KILOMETER FROM THE DISCHARGE POINT INCLUDING THE AREAS WITHIN NASSCO'S LEASEHOLD, AND CONTRIBUTES AN ARRAY OF POLLUTANTS TO THE SITE."

In its comments submitted on May 26, 2011, NASSCO argues that "…The plume of contaminated water from Chollas Creek during rain events has been shown to extend more than a kilometer from the discharge point including the areas within NASSCO's leasehold, and contributes an array of pollutants to the site.{Nassco's Comments On The San Diego Regional Water Quality Control Board Cleanup Team's September 15, 2010 Tentative Cleanup And Abatement Order No. R9-2011-0001. Draft Technical Report, And Shipyard Administrative Record ("NAASCO's Comments"),p. 35}"

The findings cited are based on studies conducted by Schiff et al (2003) and Chadwick et al (1999). The Schiff (2003) plume maps (figures 2 through 8 in Schiff (2003)) which show temperature, salinity, turbidity (beam attenuation), and toxicity results right up to the shore are likely not based directly on any data collected from these areas. Nowhere in Schiff (2003) is there mention of the authors having received access to these restricted areas to perform the sampling. The City believes the results showing the area of impacts on these figures are extrapolations based on Kriging the extent of the plume. This geostatistical method referred to as Kriging does not take into account advection, dispersion, or transformation. Where hard boundaries exist such as shorelines, Kriging will extrapolate right up to the boundary. However, in theory, advection to a hard boundary is very limited and movement toward a hard boundary tends to be via diffusion, which is a very slow process compared to advection. Schiff (2003) do not provide data indicating the Chollas Creek freshwater plume extends up to the shoreline. The use of Kriging or other geostatistical methods to predict concentrations beyond the boundaries of sampling is incorrect. Geostatistical tools are developed for characterizing data within the sampled area. Such tools have no predictive abilities, and thus should not have been used to determine the area influenced by the surface waters of Chollas Creek.

A similar deficiency is noted in the hydrodynamic model presented by Chadwick (1999). This model does not appear to take into account physical obstructions to flow such as ships docked at NASSCO piers 3-6 at the mouth of Chollas Creek, which is a typical situation. Such ships almost (or sometimes do) touch bottom at that location, which creates a physical impediment to flow from Chollas Creek to the Shipyard. The Doppler meters used to calibrate the hydrodynamic model were most likely placed outside of piers and probably could not show the effects of the piers on waters between them. Again, the locations of the Doppler meters are not provided in the report and so it is impossible to review this data. Also this model uses a 100 meter grid which cannot be reasonably used to conclude movements of sediments at the scale of Chollas Mouth which is less than 100 m wide. Collectively these issues with the hydrodynamic modeling efforts in the shoreline area indicate model predicted results for this area are inaccurate.

So, while data collected during the 1999 period when the Chadwick study was being conducted and subsequently showed plumes of Chollas Creek water extending into San Diego Bay, there is no data showing that this Chollas Creek water or sediments from Chollas Creek circulate up to the remedial footprint of the shipyards site.

The U.S. Navy SPAWAR conducted a modeling study of discharges of sediments from Chollas Creek (Chadwick, et al, undated). They used sediment discharge data measured in Chollas Creek in 2001. In this study SPAWAR modeled 10 years of storms from Chollas Creek and the movement of sediments into San Diego Bay using a 3 dimensional estuary model. SPAWAR estimated that 46 to 92% of sediments discharging from Chollas Creek would be trapped in the creek mouth and not enter San Diego Bay. The amount of trapping would be dependent on the size of storm. Smaller storms would result in greater trapping in the mouth and larger storms would result in lower trapping in the mouth.

If Chollas Creek was a source of chemicals of concern (COCs) to the Shipyard, one would expect to see decreasing concentrations from Chollas Creek to the Shipyards site. When looking at the chemical concentrations of the COCs in Chollas Creek sediments, there is not a chemical gradient starting at Chollas Creek and decreasing to the Shipyards. Looking at Cadmium, which is not a COC, but which is more representative of urban runoff, there are gradients of Cadmium leading from Chollas Creek to the Shipyards. Based on this analysis of chemical gradients, the City submits that Chollas Creek is not a significant contributor of COCs to the Shipyard site.

If Chollas Creek was a source of COCs to the Shipyard, one would expect to see similar ratios of COCs in the Chollas creek mouth as one sees in other Shipyard sediment locations. When COC ratios are analyzed to evaluate differences or consistencies between locations, it appears that COC ratios are not consistent between the shipyards area and the mouth of Chollas Creek. Thus, the City concludes that Chollas Creek is not a source of Shipyard site COCs (Cu, PCB, Hg or TBT).

The statements made by NASSCO and RWQCB staff under deposition regarding how Chollas Creek is impacting the Shipyards sediment site outside the mouth of Chollas Creek are speculative and not based on any direct measurements or well calibrated field-verified models.

B.THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT "…THE STORM WATER CONTAINS PCBS, PYROGENIC HYDROCARBONS, OIL AND GREASE, SYNTHETIC ORGANICS, AND HEAVY METALS, AMONG OTHER POLLUTANTS."

In its comments submitted on May 26, 2011, NASSCO argues that "…The storm water contains PCBs, pyrogenic hydrocarbons, oil and grease, synthetic organics, and heavy metals, among other pollutants.{NASSCO's Comments, p36}"

In fact, PCBs have never been detected in Chollas Creek water. In fact, the RWQCB discontinued the requirement for PCB monitoring in Chollas Creek because PCBs had never been detected. PCBs found in Chollas Creek mouth or Shipyard sediments are likely from sources other than Chollas Creek.

C.THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT "TO THE EXTENT MINOR IMPACTS ARE OBSERVED AT NASSCO, TRIAD RESULTS SUGGEST THAT CONTAMINANTS FROM CHOLLAS CREEK, NOT THE SHIPYARDS, ARE LINKED TO THE OBSERVED ENVIRONMENTAL IMPACTS."

In its comments submitted on May 26, 2011, NASSCO argues that "to the extent minor impacts are observed at NASSCO, triad results suggest that contaminants from Chollas Creek, not the shipyards, are linked to the observed environmental impacts{NASSCO's Comments, p. 36-38}." NASSCO then proceeds to argue that "…For example, stations NA20 and NA22 – which are not associated with shipyard-related chemicals, but are within the area of apparent sediment deposition from the Chollas Creek stormwater plume – are the only stations in the NASSCO leasehold with apparent benthic effects under the DTR analysis.."

NA20 and NA22 are located next to the piers where full thrust engine testing takes place, resulting in significant physical disturbance to the underlying sediments. Navy collected bathymetry data shows sediment elevation contours in this area suggesting of significant "blow-out" of sediments, likely from propeller activity during engine testing. The physical disturbance may be the factor affecting the benthic community. In fact, levels of chemicals of concern throughout the shipyard sediment site do not correlate with observed benthic community effects. However, at the only locations where significant physical disturbances take place routinely, benthic community effects are observed.

Next, in support of the same proposition that triad results suggest that contaminants from Chollas Creek, not the shipyards, are linked to the observed environmental impacts, NASSCO argues NASSCO argues that correlations are observed between pesticide concentrations and sediment toxicity and that "there is clear evidence that pesticides – which are not shipyard-associated chemicals – may be responsible for adverse biological effects observed at the shipyards, particularly adverse effects to bivalves{NASSCO's Coments, p. 36}."
/ / /

This statement drawn from conclusions made in the Exponent Report (Exponent, 2003) was based on only four samples. Four samples do not provide sufficient statistical power to conclude that there is or is not a correlation. Correlation analysis conducted on other chemicals of concern utilized upwards of 60 samples. The conclusion that there is "clear evidence that pesticides …may be responsible for adverse effects..."should not be drawn on the basis of 4 samples.

Next, in support of the same proposition that triad results suggest that contaminants from Chollas Creek, not the shipyards, are linked to the observed environmental impacts, NASSCO argues NASSCO argues that "Urban Runoff from Chollas Creek Is A Significant Contributor of Pollutants To The Shipyard{NASSCO's Comments, p. 37-38}."
Conclusions regarding the fate and transport of sediments from Chollas Creek are based on:

•no direct measurement of sediment loads to the inner portions of the shipyard site.
•The use of a technique called Kriging from points in the Bay where turbidity and toxicity data were measured during a storm to the
shoreline. This technique is a mathematical algorithm for estimating the difference in concentrations between two known points and does not take into account the hydrodynamic effects of hard barriers to flow and sediment flux that are found at the Shipyard inner site. This technique is inappropriate for drawing conclusions on fate and transport of suspended sediments and does not accurately estimate sediment transport.

No comparison of mass discharges from Chollas Creek that may have migrated to the inner Shipyard area with mass discharges from historical shipyard operations were made. Statements made regarding the contribution of Chollas Creek to the inner Shipyard area are speculative and not based on any direct data or well calibrated models.

Comparisons conducted by the City of mass discharges from Chollas Creek that may have migrated to the inner Shipyard area with likely mass discharges from historical shipyard operations suggest that the amount of chemical of concern mass at the shipyard site is more than 98% from shipyard operations. The concentrations within storm water are far lower than the concentrations in Shipyard waste discharges that were likely to occur prior to the enforcement of regulatory restrictions on those discharges began in the 1980s.

Next, in support of the same proposition that triad results suggest that contaminants from Chollas Creek, not the shipyards, are linked to the observed environmental impacts, NASSCO argues NASSCO argues that Observed Toxicity and Benthic Community Effects Are Attributable to Discharges Of Municipal Storm Water. Further, that "…the presence of pesticides, and the observed correlations between pesticides and toxicity, suggest that Chollas Creek and storm sewer discharges from areas outside the shipyards are contributing toxic levels of pesticides (and other chemicals) to shipyard sediments, and are also responsible for any observed effects.{NASSCO's Comments, p. 38}"

This statement drawn from conclusions made in the Exponent Report (Exponent, 2003) was based on only four samples. Four samples do not provide sufficient statistical power to conclude that there is or is not a correlation. Correlation analysis conducted on other chemicals of concern utilized upwards of 60 samples. The conclusion that Chollas Creek is causing observed toxicity because of pesticides should not be drawn on the basis of 4 samples.

Additionally, as stated elsewhere in responses to other NASSCO comments, the studies to date on the fate and transport of sediments from Chollas Creek do not show sediments migrating to the inner Shipyards site. Organochlorine pesticides would be attached to sediments due to their hydrophobicity. Studies to date show most (46% to 92% depending on the storm) of sediments remaining trapped in the Chollas Creek mouth and not even extending out to San Diego Bay. Of those that continue to the shipping channel in San Diego Bay during larger storms, data and modeling studies do not show significant migration to the inner shipyard.

D.THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT "REMEDIATION GOALS CANNOT BE MET DUE TO RE-CONTAMINATION FROM OTHER SOURCES."

In its comments submitted on May 26, 2011, NASSCO argues that "Remediation Goals Cannot Be Met Due to Re-Contamination From Other Sources{NASSCO's Comments, p. 38-39}." The City is committed to complying with the Chollas Creek metals TMDL. While actions are not required prior to 2018, 80% reduction is required by 2018. The City has analyzed and evaluated different means of achieving compliance and is currently developing a plan that the City believes should achieve compliance. There are numerous technologies more effective (and not more costly) than sand filters at removing metals, including dissolve fractions, that are being considered for implementation throughout the Chollas Creek watershed.

As noted in responses to comments above, the discharges from Chollas Creek do not significantly affect inner Shipyard sediments. Predictions of mass discharges from Chollas

Creek of copper, zinc, and lead as the TMDL is being implemented suggest that there will be no measureable increase in sediment concentrations of these constituents after remediation of Shipyards is complete. Accordingly, there should be no concerns that remediation goals cannot be met because of any concerns regarding recontamination from Chollas Creek.

Comment ID: 285 **Organization:** City of San Diego
DTR Section: 9
Comment:

III.

SAN DIEGO GAS & ELECTRIC ("SDG&E") IS APPROPRIATELY NAMED AS A DISCHARGER.

As demonstrated below, there is copious evidence that SDG&E's operations caused or contributed to discharges of the subject pollutants into the Shipyard Site.

A.THERE IS SUFFICIENT EVIDENCE TO SHOW THAT PCBS WERE RELEASED FROM THE SDG&E SILVERGATE SUBSTATION/SWITCHYARD AREA AND THAT THE CONDITIONS AT THIS SUBSTATION/SWITCHYARD LED TO THE SUBSEQUENT DISCHARGE OF PCBS INTO THE STORM DRAIN IN SAMPSON STREET AND, ULTIMATELY, TO THE SHIPYARDS SITE AND SAN DIEGO BAY.

The TN& Associates 2006 Underground Storage Tank closure report presents analytical results of samples collected from soils in the substation area beneath and adjacent to the closed underground storage tanks. These analytical results show concentrations of PCBs ranging from 56 to 125,000 micrograms per kilogram. The maximum concentration is higher than contamination found in the Shipyards sediments. Shipyard sediment site background is 84 micrograms per kilogram.
/ / /

The RBF 2006 Water Quality Technical Report and the 2006 SDG&E Hydrology report for the Silvergate substation/switchyard upgrade and modification project both state that "Approximately 3.0 acres of the site currently drains by means of surface flow to Sampson street." Both reports go on to state "The site drains to the west side of Sampson Street where runoff flows to a curb inlet and catch basin (prior to the intersection of the railroad tracks on Sampson Street." This evidence shows that: 1) PCBs were released to soils at the substation/switchyard, and 2) the substation/switchyard drained to the Sampson street storm drain, which City drawings show leads to the Shipyards Sediment site and San Diego Bay. Therefore, PCBs were released at the substation/switchyard. Rainwater left the substation/switchyard and entered Sampson Street, the storm drain, and San Diego Bay.

SDG&E has not presented any documentation or testimony stating that they removed released PCBs from substation/switchyard soils prior to a rain event or that they took any steps to treat runoff to remove PCBs from that runoff before leaving the substation/switchyard. SDG&E has produced no documentation or testimony stating that the transformers, capacitors, or other PCB containing equipment or vessels in the substation/switchyard were placed in secondary containment at the time of construction in the 1940s (SAR193281). The presence of secondary containment in 2004 as cited in the ENV America 2004 site investigation report (SAR193281) is not evidence of secondary containment having been put in place at the time of original construction. The standard practice in the 1940s for ransformer and capacitor construction was to not place them in secondary containment because in the 1940s there were no regulations requiring that secondary containment be installed for these devices. In fact, the presence of PCBs in substation/switchyard soils during demolition in 2006 is direct evidence that SDG&E did not take steps to remove PCBs that had been released from soils at the substation/switchyard.

B.THERE IS SUFFICIENT EVIDENCE TO SHOW THAT SDG&E DISCHARGED PCBS TO THE SHIPYARDS SITE AND SAN DIEGO BAY VIA THE COOLING TUNNELS.

The 2006 SDG&E Hydrology Report states: “The roof and cooling water deck (south-west of the powerhouse) currently drain into the cooling water tunnels.” September 10, 1974, SDG&E Internal Correspondence (SAR193394) states that turbine room sump pumps discharged to the cooling water discharge tunnel. Silver Gate Power Plant Waste Water Treatment Facility Training Manual (No Date) states: “The floor drains are in areas where large amounts of oil may be spilled.” (SAR193675). San Diego Gas and Electric Spill Prevention Control and Countermeasure Plan Silver Gate Power Plant (October 27, 1981) listed the following specific equipment in the turbine room and on the cooling water deck:

•(35-50KW) Steam Turbine – Generator Sets
•8 (2,500 to 3,000 gallon) Turbine Lubricating Oil tanks
•Power and 2 Lighting Transformers Near GU 2 on CW Deck
•Auxiliary and 1 Lighting Transformers Near GU 1 on CW Deck

A U.S. EPA report published September 25, 1976 titled “PCBs in the United States Industrial Use and Environmental Distribution” lists the uses of PCBs in Heat Transfer fluids, Hydraulic Fluids, Lubricants, Transformers, Capacitors, Plasticizer Applications, and Miscellaneous Industrial. A Monsanto sales manual for PCBs published in 1944 states that the primary benefit of PCBs is how they stabilize oils under high temperature conditions. It is easy to conclude from this fact record that the SDG&E turbines and transformers used PCB containing oils because of the high temperatures at which they operated. One can also conclude that the turbines leaked oils. The presence of lubricating oil tanks is evidence that a reserve of oil for the turbines was necessary for the turbines to operate. Therefore, the turbines must have lost oil. Oil is not a volatile substance, so the primary means of loss would be through leaks. The leaks from the turbines would have been collected in the turbine sumps and pumped to the cooling water lines as stated in the above cited documents. Therefore, there is a direct link between turbine leaks and discharges in the cooling water lines. SDG&E has provided no documentation or testimony stating that they did not use PCB containing oils in their turbines, hydraulic systems, or transformers. SDG&E has not provided any evidence or testimony showing that the turbines never leaked.

Simply put, because concentrations of PCBs in cooling water tunnel sediments or sediments near cooling water tunnels are lower in concentration than in other Shipyard sediments is not sufficient evidence to prove that no PCBs were ever discharged from the cooling water tunnels. In fact, the presence of any PCBs in the cooling water tunnels is evidence that PCBs were discharges and that the cooling water discharge is one of the sources of PCBs in the Shipyards site and San Diego Bay.

C.THE PCBS DETECTED IN CATCH BASIN CB1 IS FURTHER EVIDENCE THAT SDG&E HAD DISCHARGED PCBS TO THE SAMPSON STREET STORM DRAIN AND SUBSEQUENTLY TO THE SHIPYARDS SEDIMENT SITE AND SAN DIEGO BAY.

PCBs were detected In CB-1 after a visual inspection suggested that sampling was warranted. The 2006 TN and Associates letter presenting the results of their investigation of what drains led to the catch basin stated that a 6 inch roof drain led to the catch basin from the SilverGate Power Plant. This statement was not documented with any as-built drawings showing the 6 inch roof drain. No photos of the roof drain were presented. Samples were collected from the roof. Samples contained PCBs ranging from non detect to 1,400 micrograms per kilogram. 1,400 micrograms per kilograms is higher than found in most Shipyard sediment samples. Shipyard background was set at 84 micrograms per kilogram, which was established to take into account general urban activity, which would include atmospheric deposition.

Irrespective of whether the investigators discovered a specific source on the roof, the high sample showed that there had been a release to the roof materials, whether from the constituents within the roof materials themselves, or from a release from the power plant resulting in deposits on the roof. The drainage of the roof is stated to lead to CB-1. PCBs were detected in CB-1. Drawings of CB-1 show that it leads to SW4 in Sampson Street, which leads to the Shipyards Site and San Diego Bay. Therefore, there is evidence showing: 1) a release of PCBs to the roof of the Silvergate Power Plant, 2) transport from the roof of the Silvergate Power Plant to CB-1, 3) the presence of PCBs in CB-1, and 4) transport from CB-1 to the Shipyards Site and San Diego Bay.

D.THERE IS SUFFICIENT EVIDENCE TO SHOW THAT THE SDG&E SILVERGATE POWER PLANT BILGE PUMPING SYSTEM THROUGH NOBLES LAKE DISCHARGED PCBS AND OTHER WASTES TO THE SHIPYARDS SITE AND SAN DIEGO BAY.

The September 10, 1974, SDG&E Internal Correspondence (SAR193834) presents the figure shown below (Figure 1). This figure clearly shows that the bilge pumps lead to an 8 inch pipe that leads to Nobles Lake. The bilge pumps emptied the basement of the Silvergate Power Plant, which contained boiler blow down tanks, boiler pumps, and hydraulic systems. Figure 2 from Technical Report for RWQCB Investigation Order No. R9-2004-0026 Silver Gate Power Plant, San Diego, CA July 14, 2004, ENV America Inc., shows the wastes discharged from the Silvergate Power Plant. (SAR193272-SAR193329). This figure clearly documents oily wastes being discharged directly to San Diego Bay, either through Nobles Lake or through the Cooling Water Discharge.

Figure 3 from the same ENV America report, shows the Nobles Lake area. This 1950 aerial photo also shows a ditch leading directly to the Shipyards site and San Diego Bay.

Figure 4 from the same ENV America report, also shows the Nobles Lake area. This 1952 aerial photo shows a new pond dug in the vicinity of Nobles Lake and the ditch, but not directly on Nobles Lake or the ditch.

Figure 5 from the same ENV America report, also shows the Nobles Lake area. This 1953 aerial photo shows the new pond no longer there, but Nobles Lake and the ditch are clear in the photo.

Figure 6 from the same ENV America report, purportedly taken in 1955 shows the Nobles Lake releasing oily wastes to the surface and to the ditch leading to San Diego bay.

The ENV America report (2004) states: "Basement bilge water consisted of liquids that accumulated in trenches in the plant basement. The WWTP manual (SDGE 1978) lists the following waste sources: turbine drains, boiler drains, condenser drain, pump drains, cooling water supply drains, water box drains, service air compressor drains, fire pump drains, relief valve drains, condensate storage and overflow, and condensate makeup pump drains. The basement bilge system was divided into two areas: the turbine side and the boiler side. Diagrams from 1965 show that bilge water from the turbine side was piped into the discharge cooling water tunnels and the bilge water from the boiler side was pumped via an 8 inch diameter pipeline to an oil-water separating pond located on Parcel 2 referred to as 'Nobles Lake,' which was used for evaporation and settling. However it is noted that an ACE application SDGE 1972 stated that only blowdown and cooling water were discharged to the CW tunnels whereas other wastes were disposed of by evaporation, discharge to sewer, or offsite disposal. Some water from the pond was discharged to the Bay. (SAR193289)

In a SDG&E internal correspondence dated September 10, 1974, A.W. Hovland wrote " The oil-water settling pond known as "Nobles Lake" is presently filled to overflowing condition, thus the discharge from Silver Gate will eventually find a path to the San Diego Bay." (SAR193394)

Figure 7 shows the sampling locations of the SDG&E tidelands lease area (ENV America, 2004).

Figure 8 shows a 1952 aerial photo with the sampling locations from the 2004 ENV America report overlaid on the site. Note the ENV America investigation did not sample the oil/water separator location, known as "Nobles Lake" or the ditch running along the fenceline to San Diego Bay. The investigation focused primarily on the pond that aerial photos showed existed only from 1951 or 1952 to 1952. However, historical aerial photos and documents show the oil/water separator and ditch existing from at least 1950 to 1974. Therefore, the ENV America (2004) sampling results would not adequately characterize residual contamination in the tidelands due to SDG&E documented waste management operations in that area.

Figure 9 shows the approximate location of Nobles Lake based on analysis of aerial photos, the assumed location of Nobles Lake in the ENV Americas 2004 investigation, and another location for Nobles Lake based on a 1974 SDG&E memo. The ENV Americas 2004 investigation apparently relied on the 1974 SDG&E memo and did not use historical aerial photos to identify true location of the oil/water separator and ignored the ditch observed in the aerial photos. The diagram also shows a discharge pipe from Nobles Lake to San Diego Bay. The investigation did not locate this pipe.

A U.S. EPA report published September 25, 1976 titled "PCBs in the United States Industrial Use and Environmental Distribution" lists the uses of Aroclor 1242, 1248, 1254, and 1260 in hydraulic oils; 1248 and 1254 in vacuum pumps; 1242 in turbines; 1242, 1254, and 1250 in transformer oils; and 1242 and 1254 in capacitors.

Data from the Shipyards sediment investigation show Aroclor 1242 and 1248 at higher relative concentrations in the northern end of the Shipyards site closer to the ditch leading from Nobles Lake, and 1254 and 1260 at higher relative concentrations near the SW4 outfall, which drained the substation/switchyard. Discharges from Nobles Lake to the northern end of the

Shipyards site near the BAE Pier 1 area, based on the fact record, would have contained oils from hydraulic systems, pumps, and turbines, which would be expected to be higher in relative concentration of Aroclor 1242 and 1248. Discharges from the substation/switchyard would have contained oils from transformers and capacitors, which would be expected to have higher relative concentration of Aroclor 1254 and 1260. Shipyard sediment Aroclor data show these general trends.

In conclusion, the evidence shows:

•PCBs were a component in oils within the Power Plant.
•Oils spilled within the boiler room side of the power plant were intentionally pumped to an oil/water separator called "Nobles Lake"
•Nobles Lake discharged oily waste to the Shipyards Sediment site and San Diego Bay, at a minimum, via a ditch observable in numerous aerial photos, and possibly via a discharge pipe.
•Aroclor ratios found in Shipyard sediments reflect the different types of wastes that were discharged from Nobles Lake and from the substation/switchyard.

The investigations conducted by SDG&E and their consultants to date have not adequately characterized the discharges or residual contamination left from these operations and do not refute the evidence showing the discharge of PCBs to the Site. The Aroclor mix in the Shipyard sediment site reflect the conceptual site model of the different waste types produced by SDG&E and their discharge locations and transport pathways.

Comment ID: 286 **Organization:** City of San Diego
DTR Section: 11
Comment:

IV.

THERE IS SUFFICIENT EVIDENCE TO CONCLUDE THAT THE PORT HAS RESPONSIBILITY FOR DISCHARGES FROM ITS MS4 FACILITIES.

In its comments submitted on May 26, 2011, the Port argues that because it does not own SW4 and SW9 of the MS4 permits, that its status as co-permittee under the NPDES permit for MS4 discharges does not make it liable for discharges into or from that part of the MS4 system{The San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument, p. 13-16}.
/ / /

The MS4 permit requires all co-permittees to prohibit discharges into its MS4 system. The agreement between the co-permittees is that each co-permittee will implement programs to prevent discharges to the MS4 that runs through its jurisdiction. The Port District is a unique entity in that it is an overlay entity. The land within the Port District is also incorporated in the City of San Diego. However, the Port District has all rights of inspection and action on the land within its jurisdictional boundaries – namely, the tidelands. The City may have the easement that allows the storm drain to pass through the tidelands to drain the upland areas and tideland areas. But, the Port District is fully responsible, both under the MS4 permit and under its agreements with the co-permittees, to take all necessary actions to prevent discharges of pollutants into the MS4 system that runs through lands that are under the Port District's jurisdiction. Thus, to the extent there is any determination that discharges of the subject pollutants from the MS4 system have caused or contributed to a condition or nuisance or pollution at the Site, the Port should be liable as a Discharger.

Comment ID: 287 **Organization:** City of San Diego
DTR Section: 33.1.1
Comment:

V.

THE PROPOSED REMEDIAL FOOTPRINT PROPERLY EXCLUDES POLYGON NA22.

The Coast Keeper / Environmental Health Coalition ("EHC")comments state that the "Proposed Remedial Footprint excludes eight polygons that, under the DTR's own methodology, should have been included" and that "[t]he Proposed Remedial Footprint improperly excludes NA22" and that "[t]he DTR acknowledges that polygon NA22 is "Likely" impaired and should be remediated because Contaminants of Concerns in sediments are likely adversely affecting benthic invertebrates within this polygon{San Diego Coastkeeper and Environmental Health Coalition Technical Comments, Legal Argument, and Evidence ("EHC Comments"), p.25-26}."

In reply, NA22 is located next to the piers where full thrust engine testing takes place, resulting in significant physical disturbance to the underlying sediments. Additionally, tugboat movements throughout the day and night most days of the year and large ship movements to and from piers in the Mouth of Chollas Creek further disturb sediments. Navy collected bathymetry data shows sediment elevation contours in this area suggesting of significant "blow-out" of sediments, likely from propeller activity during engine testing. The physical disturbance may be the most significant factor affecting the benthic community. In fact, levels of chemicals of concern throughout the shipyard sediment site do not correlate with observed benthic community effects. However, at the only locations where significant physical disturbances take place routinely, benthic community effects are observed.

EHC also comments that "The TMDL process cannot provide a vehicle for remediating contaminated sediment within the NA22 polygon. A new and separate remediation process—another Cleanup and Abatement Order—would need to be initiated after completion of the Creek Mouth TMDL to address existing contaminated sediment in NA22, if it is not remediated under the current Order. When asked in depositions, no Cleanup Team member could point to a TMDL that had been implemented through dredging. This means that removing NA22 from the Proposed Remedial Footprint virtually guarantees that it will never be dredged—even though the DTR agrees that it is "Likely" impaired. Furthermore, TMDLs are given a long time period—typically twenty years—before they need to be implemented. Adding this delay together with the time it would take to develop another cleanup and abatement order to address NA22 means that any possible cleanup of NA22 would not be for decades down the road. It is a waste of time and resources to put off remediating NA22 when a framework for its remediation has already been established in this process{EHC Comments, p. 26}."

In reply, the upper and lower Newport Bay organochlorine compound TMDL includes stipulations in its implementation plan for dredging of sediments in addition to special studies, natural attenuation, and discharge controls. The dischargers, among numerous other requirements, are to submit a report that "Evaluate[s] feasibility and mechanisms to fund future dredging operations within San Diego Creek, Upper and Lower Newport Bay." See Santa Ana Regional Water Quality Control Board Resolution No. R8-2007-0024 (City Ex. 4). It is not unheard of to use a TMDL to compel a discharger to remediate contaminated sediments. It is the expectation of the City that the Regional Board will use the Chollas Mouth TMDL to compel dischargers to take necessary actions to mitigate the impairment and another cleanup and abatement order will not be necessary.

Comment ID: 288 **Organization:** Star & Crescent
DTR Section: 5
Comment:

REPLY COMMENT I

Star & Crescent Boat Company is Not a Successor to
San Diego Marine Construction Company.

S&C Boat submits this reply comment in response to Designated Party Campbell Industries, MCCSD, and San Diego Marine Construction Corporation's ("Campbell's") Comment No. 1, which states:

San Diego Marine Construction Company (subsequently Star & Crescent) did not sell its leasehold to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972. In Finding 6 of the Draft Technical Report, in the first sentence of the second paragraph of Section 6.3.1, it states, "San Diego Marine Construction Company (subsequently Star & Crescent) sold its leasehold to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972." This statement is incorrect. San Diego Marine Construction Company (subsequently Star & Crescent) sold the business and assets of its Marine Division to MCCSD, a wholly owned subsidiary of Campbell Industries in July 1972.

("Designated Party Campbell Industries Comments on Draft Technical Report," p. 1, lines 12-20 (emphasis added).)

As written, it is not clear to which entity Campbell refers when it uses the term "Star & Crescent" in its comment. To the extent that the comment purports to state that San Diego Marine Construction Company ("SDMCC") became S&C Boat, the comment is inaccurate.

As reflected in S&C Boat's May 26, 2011 comment submittal, SDMCC was comprised of three divisions: the Marine Division (which operated on the Shipyard Sediment Site), the Boat Division (which operated the harbor excursion business north of the San Diego-Coronado Bay Bridge), and the Investment Division{United States Tax Xourt's opinion in Estate of Oakley J. Hall, Deceased, Southern California First National Bank, Executor v. Commissioner of Internal Revenue (1975) (attached as Exhibit 1 to S&C Boat's May 26, 2011 comment letter), pp. 1 and 3.}. In 1972, Campbell purchased SDMCC's interest in the Shipyard Sediment Site and SDMCC surrendered its Shipyard Sediment Site{See Exhibit 1 to S7C Boat's May 26, 2011 comment letter, p. 8.} lease with the Port. Campbell later entered into its own lease with the Port for the Shipyard Sediment Site{Surrender Port Lease, dated July 14, 1972 (attached as Exhibit 8 to S&C Boat's May 26th, 2011 comment letter); and Port District Ordinance Accepting Surrender of Lease from SDMCC (attached as Exhibit 9 to S&C Boat's May 26th, 2011 comment letter).

Thereafter, also in 1972, SDMCC changed its name to Star & Crescent Investment Company ("Investment Co.") {Certificate of Ammendment of Articles of Incorporation (attached as Exhibit 10 to S&C Boat's May 26, 2011 comment letter)}. It was not until 1976, four years after the sale of the shipyard business and surrender of the Shipyard Sediment Site lease that S&C Boat was incorporated {Articles of Incorporation of S&C Boat, filed on April 7, 1976 (attached as Exhibit 16 to S&C Boat's May 26, 2011 comment letter)}. Following its incorporation in 1976, S&C Boat purchased only specified assets of the Investment Co.'s harbor excursion business{Minutes of Meeting of Board of Directors of S&C Boat dated April 9, 19876 (attached as Exhibit 17 to S&C Boat's May 26, 2011 comment letter)}. S&C Boat did not purchase all assets and liabilities of Investment Co., but, as documented in S&C Boat's May 26, 2011 comment letter, only purchased very limited assets of Investment Co., and Investment Co. continued to own and operate assets unrelated to S&C Boat until 1991.

Thus, for the reasons described herein and explained in further detail in S&C Boat's initial comment submission dated May 26, 2011, S&C Boat has no knowledge of, and never had any involvement with, the business or assets of SDMCC's Marine Division. While San Diego Marine Construction Company did change its name to Star & Crescent Investment Co., San Diego Marine Construction Company did not subsequently become Star & Crescent Boat Company.

Comment ID: 289 **Organization:** Star & Crescent
DTR Section: 5
Comment:

REPLY COMMENT II

The Port's Reference to S&C Boat's Alleged Insurance Assets
is Inaccurate and Improper.

S&C Boat submits this reply comment in response to Designated Party San Diego Unified Port District's ("Port's") Comment No. III (A) (5), which states:

Based on its review of relevant documents, the Port believes that Star & Crescent has millions of dollars of liability coverage that would be potentially applicable to the remediation and monitoring efforts. Additionally, Star & Crescent has stipulated that it has assets totaling between $750,000 and $1 million. […]

The Port is aware that the Star & Crescent entity that is currently named in the TCAO and DTR disputes its successor liability for the other predecessor entities that operated at the Shipyard Sediment Site. […] Regardless of whether the current Star & Crescent entity is liable for the earlier operations at the Shipyard Sediment Site, the identified insurance assets would still apply, so long as the insured entity is named as a discharger under the TCAO and DTR. Thus, if the TCAO and DTR were amended to name all of the potentially liable entities - San Diego Marine Construction Company, Star and Crescent Boat Company and Star & Crescent Investment Co. -- the insurance assets should be available to address directly any established liability, whether or not these entities are still in existence.

("San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument," pp. 10-11 (citations omitted, emphasis added).)

The Water Board must reject the Port's assertion that certain additional entities be named to the TCAO and DTR purely based upon their potential insurance coverage. Consideration of such facts by the Water Board would be contrary to fact and would violate established legal doctrine regarding the admissibility of such insurance information.

The Water Board is charged with making a determination about whether S&C Boat is a "discharger" responsible for costs associated with remediating or monitoring contamination at the Shipyard Sediment Site. The only relevant inquiry in determining whether a party is a "discharger" is whether there is a basis in law to attach "discharger" or responsible party obligations. For the reasons stated in its May 26, 2011 submission of comments, S&C Boat is not liable because it did not directly contribute to the contamination and is not liable under the law for any contamination caused by any other entities.

Making inquiries and assumptions about whether S&C Boat has insurance proceeds available to pay for remediation of contamination for which it is not liable is inappropriate{This inquiry is just as inappropriate as, and no more unreasonable than, if the Water Board were asked to consider the status of Wal-Mart's insurance coverage for the purpose of paying for remediation of the Shipyard Sediment Site. Like Wal-Mart, S&C Boat has no liability for the contamination caused at the Shipyard Sediment Site, and therefore, any question about availability of insurance coverage is both inappropriate and irrevelant.}. Although S&C Boat understands that the possibility of accessing a large insurance policy's proceeds might seem attractive to the Port and the Water Board, where there is no right to those proceeds, the existence of insurance does not matter. The only proper question is that of legal liability.

A.The Port's Reference to the Existence and Amount of Alleged Insurance Coverage Is Not Factually Supported.

The Port alleges that S&C Boat has "millions of dollars of liability coverage" for remediation and monitoring activities. The Port's allegations are inaccurate to the extent they attempt to establish that S&C Boat has insurance coverage, or that a certain amount of insurance funds are available to respond to remediation efforts. That statement is not supported by any facts, is wildly speculative, and misleads the Water Board into believing that if it were to assign liability to S&C Boat, there would be ample funds available for cleanup efforts.

At this time, despite diligent efforts, S&C Boat has not obtained any insurance proceeds and, despite tendering claims to numerous insurance carriers, has received no agreement for defense or indemnity from any insurance carrier. Nevertheless, consideration of these facts by the Water Board is inappropriate.

B.Reference to Alleged Insurance Coverage Violates the Rules of Evidence, Is Irrelevant to the Shipyard Sediment Site Matter, and Is Prejudicial to S&C Boat.

Even assuming the Port District's allegations regarding insurance proceeds were true, the Water Board's consideration of this information would violate established legal doctrine regarding the admissibility of such evidence. Further, such evidence is irrelevant to the issue about which the Water Board is responsible for making a determination – the issue of liability. Finally, suggestion that such insurance coverage exists is prejudicial to S&C Boat.

The law is clear that evidence of insurance is inadmissible to prove wrongdoing. The California Evidence Code specifically states that "[e]vidence that a person was, at the time a harm was suffered by another, insured wholly or partially against loss arising from liability for that harm is inadmissible to prove negligence or other wrongdoing." (Cal. Evid. Code § 1155.)

Further, the question of insurance is irrelevant. Whether S&C Boat has insurance coverage has no bearing whatsoever on the issue before the Water Board - whether S&C Boat is legally responsible for the alleged acts of another corporate entity. The only appropriate inquiry is whether S&C Boat meets the legal requirements for liability, which it does not. The existence or absence of insurance coverage is of no consequence to the matter before the Water Board and is not relevant.

Courts routinely give juries specific instructions on this very issue. The standard rule provided to jurors is: "You must not consider whether any of the parties in this case has insurance. The presence or absence of insurance is totally irrelevant. You must decide this case based only on the law and the evidence." (Judicial Council of California Civil Jury Instructions (2011), No. 105 (emphasis added.) In this matter, the Water Board is subject to a similar requirement, and must consider only relevant facts and law.

Last, introduction of such evidence is prejudicial to S&C Boat. Discussion of this irrelevant information could improperly encourage the Water Board to make its decision regarding liability based on information having nothing to do with the facts or law regarding liability. Improperly (and inaccurately) suggesting that S&C Boat has the ability to pay for cleanup from insurance proceeds misdirects the Water Board's focus from the only legitimate issue before it – that is, liability – under which its task is to determine whether S&C Boat bears any responsibility for the contamination in the first place.

In a case where a trial court had discussed evidence of an alleged wrongdoer's insurance coverage, a California Court of Appeal reversed the judgment, stating that such evidence is both irrelevant and prejudicial. (Blake v. E. Thompson Petroleum Repair Co. (1985) 170 Cal.App.3d 823, 830 (citations omitted).) The courts have made specific findings that the existence of liability insurance is irrelevant to the question of liability. (Bell v. Bayerische Motoren Werke Aktiengesellschaft (2010) 181 Cal.App.4th 1108, 1122-1123.) In fact, attempts to introduce such evidence are sometimes considered so inappropriate and such a flagrant violation of the law that they can constitute grounds for attorney misconduct. (Blake at 830, citing Neumann v. Bishop (1976) 59 Cal.App.3d 451, 469; Witkin, Cal. Evidence (2d ed. 1966) § 374, pp. 332-333.)

Evidence regarding alleged insurance coverage has nothing to do with the Water Board's task of determining whether S&C Boat bears liability for the actions of a separate corporate entity. It is inadmissible, irrelevant, and prejudicial, and must be disregarded.

C.The Port's Suggestion to Name Additional Entities Is Inappropriate and Not Factually Supported.

The Port District's suggestion that the Water Board should name S&C Boat simply to access insurance proceeds, "regardless of whether the current Star & Crescent entity is liable for the earlier operations at the Shipyard Sediment Site" is inappropriate and lacks any factual basis. The Water Code requires a legal determination be made to name a party as a "discharger" in a Cleanup and Abatement Order. Only a person who discharges waste into the waters of the state, creating a condition of pollution or nuisance, is liable under the statutory mandates of the Water Code. (Cal. Water Code Sec. 13304(a).) The Water Code liability is without regard to insurance proceeds.

As documented in S&C Boat's May 26, 2011 submission, there is no evidence that S&C Boat is directly liable for the contamination, or that S&C Boat is the legal successor to any liable party. That should end the inquiry by the Water Board. The availability of insurance (or the lack thereof) is not a valid consideration in making that legal determination.

Comment ID: 290 **Organization:** Port District
DTR Section: 5
Comment:

The San Diego Unified Port District (Port) submits the following response to Star & Crescent Boat Company's (S&C Boat) comments on the Tentative Cleanup and Abatement Order (TCAO) and Draft Technical Report (DTR). S&C Boat asks to be removed from the TCAO/DTR as a "discharger" on the grounds that it is not the corporate successor of San Diego Marine Construction Company (SDMCC). However, a review of the facts confirms that the Regional Water Quality Control Board correctly identified S&C Boat as a discharger on this basis.

I.BRIEF BACKGROUND

Rather than start with the incorporation of S&C Boat, a correct perspective on the factual background requires an earlier start. Oakley J. Hall, Sr. (Hall Sr.) founded SDMCC in the early part of 1900 and ran the corporation until his death in 1967. SDMCC originally comprised three different divisions, a marine division, a boat division and an investment division. As S&C Boat acknowledges, the boat division was commonly known as "Star and Crescent Boat Company." In 1972, after Hall Sr.'s death, SDMCC sold the marine division to a subsidiary of Campbell Industries. SDMCC then changed its name to S&C Investment.

On April 7, 1976, S&C Boat incorporated. There is no evidence S&C Boat had any assets or stock of its own at that point. Two days later, S&C Boat held a special meeting at which the original directors of that company resigned and new directors took their place. The new directors each had close ties with S&C Investment and many were also directors of S&C

Investment. The new directors included Oakley Hall, Jr. (Hall Jr.), who had controlled SDMCC following his father's passing. At this same meeting, S&C Boat agreed to accept an offer by S&C Investment. Under the terms of this offer, S&C Boat accepted all assets and liabilities of S&C Investment's harbor excursion business in exchange for all of the stock of S&C Boat. Contrary to S&C Boat's repeated claim, there is no evidence in the record that S&C Investment held any other assets or was running any other businesses at the time it transferred the boat division assets and liabilities to S&C Boat. Rather, the earliest evidence of S&C Investment's other businesses is more than a year and a half after S&C Boat agreed to acquire the boat division. In 1991, S&C Investment dissolved.

S&C Boat's assertion that it is not the corporate successor of the boat division and SDMCC is untenable. For decades S&C Boat held itself out as the successor to these entities for marketing and business development purposes. By way of example, a 1994 S&C Boat proposal submitted to the Port asserts that S&C Boat's history is essentially Hall Sr.'s history "for the two are inseparably linked." (Exhibit A{Reference to alphabetic exhibits refer to the Port's exhibits attached to the Declaration of Scott E. Patterson in support of the Port's instant submittal and reference to numeric exhibits shall refer to S&C Boat's exhibits in support of its submittal.} [May 1, 1994 S&C Boat Response to Port Request for Proposals for Water Taxi Service], p. PORT011898 [emphasis added].) S&C Boat went on to state that Hall Sr. was its founder and driving force for over 50 years. (Ibid.) Similar references to this history and lineage can still be found to this day on S&C Boat's website. (Exhibit I [Website screen images].) Now, when the "inextricable link" does not serve its interests, S&C Boat disavows any connection.

II.NUMEROUS GROUNDS FOR SUCCESSOR-IN-INTEREST LIABILITY EXIST

One who acquires the assets of a corporation also acquires the liabilities of that corporation in four different scenarios:

(1)When there is an express or implied agreement of assumption of liability;
(2)When the transaction amounts to consolidation or merger of the two corporations;
(3)When the purchasing corporation is a mere continuation of the seller; or
(4)When the transfer of assets to the purchaser is for the fraudulent purpose of escaping liability. (Ray v. Alad, (1977) 19 Cal. 3d 22, 28.)

The first scenario is met because S&C Boat assumed all liabilities at the time it acquired S&C Investment's assets. In addition, the facts support a finding that the second and third scenarios have also been satisfied as the transaction between S&C Investment and S&C Boat amounted to both a de facto merger and because S&C Boat was a "mere continuation" of SDMCC by way of S&C Investment.

A.S&C Boat Assumed S&C Investment's Liabilities

Whether S&C Boat expressly or impliedly assumed liability for a portion of the Shipyard Sediment Site is a question of fact. (In the Matter of the Petition of Purex Industries, Inc., State Board Order No. WQ- 97-04, 1997 Cal. ENV. LEXIS 3, *10.) A review of the offer that S&C Boat accepted S&C Boat illustrates that the parties intended to transfer all of S&C Investment's boat operation assets along with all of S&C Investment's boat operation liabilities. Specifically, S&C Boat agreed to receive "all of [S&C Investment's] right, title, and interest of every kind and description in and to its business and assets pertaining to its harbor excursion business," "but subject to all liabilities of said business as of March 31, 1976, as relate to its harbor excursion business." (Exhibit 17 [Minutes of Meeting of Board of Directors of S&C Boat dated April 9, 1976], p. S&C0050.)

S&C Boat contends that it did not agree to accept all liabilities because the offer referenced an exhibit that listed assets and liabilities of the harbor excursion business. However, nothing in the offer indicates S&C Investment was retaining any harbor excursion business assets or liabilities or that S&C Investment intended to retain any harbor excursion business assets or liabilities. Rather, as noted, the central agreement was that S&C Boat would take on "all liabilities of said business."

Thus, when read in full context, the exhibit list served as nothing more than a list of the known harbor excursion business assets and liabilities, not a limitation on the intended scope of the transfer. Because S&C Investment was presumably unaware at the time of the liabilities at issue in this matter, the fact this liability was not included on the list is neither surprising nor material. It is not surprising because an unknown liability could not be specifically identified. (See In the Matter of the Petition of Purex Industries, Inc., State Board Order No. WQ- 97-04, 1997 Cal. ENV. LEXIS 3, *14.) It is not material because the express language of the offer makes clear the intent to transfer "all liabilities," not just known liabilities. In short, the agreement contains no language that would support the conclusion that S&C Investment intended to transfer known liabilities and to retain unknown liabilities.

S&C Boat's contention that S&C Investment "continued to own and operate its many other diverse assets, and continued to be responsible for the debts and liabilities associated therewith" finds no support in any evidence. (See, S&C Boat Written Submittal, p. 6.) S&C Boat cites as support S&C Investment minutes from December 1977 and later, more than a year and a half after the S&C Boat transaction. (Id., at fn. 44; Exhibit 11.) Nothing in these minutes indicates S&C Investment was running any of the identified operations in April 1976 or earlier. Similarly, S&C Boat's person most knowledgeable testified in deposition that he was unaware of any other S&C Investment assets in April 1976, apart from those being transferred to S&C Boat. (Exhibit J [Excerpts from Palermo Deposition].) In sum, the only known S&C Investment operations in April 1976 related to the sole remaining SDMCC operation – the boat division. S&C Boat is thus not entitled to a presumption that S&C Investment retained any assets or liabilities at that time.

B.Since S&C Boat Merged With S&C Investment it Assumed S&C Investment's Liabilities

An entity may also be held liable for its predecessor's liabilities if the transaction amounts to a consolidation or merger.

1.All Requisite Factors Establishing De Facto Merger Can Be Established

Following Ray, the Court of Appeal in Marks v. Minnesota Mining & Manufacturing Co. (1986) 187 Cal.App.3d 1429, 1436, formulated the following inquiry for determining "whether a transaction cast in the form of an asset sale actually achieves the same practical result as a merger" for the purposes of successor liability: "(1) was the consideration paid for the assets solely stock of the purchaser or its parent; (2) did the purchaser continue the same enterprise after the sale; (3) did the shareholders of the seller become shareholders of the purchaser; (4) did the seller liquidate; and (5) did the buyer assume the liabilities necessary to carry on the business of the seller?" (Ibid.) All of the factors set forth in Ray are present here.

First, it is undisputed that S&C Boat transferred all of its stock in exchange for S&C Investment's assets and liabilities. For this same reason, the third element is also met. Because S&C Investment owned all of S&C Boat's stock, the S&C Investment shareholders would have been the owners of all of S&C Boat's stock.

As to the second element, S&C Boat "continued the same enterprise" as S&C Investment after the transfer. In particular, S&C Boat operated the same harbor excursion business using the same Star & Crescent name with the same vessels from the same locations. Likewise, as to the fourth element, S&C Investment ceased the only known business operations that it had at the time. There is no evidence S&C Investment continued any boating operations at San Diego Bay immediately after the transfer. Further, contrary to S&C Boat's central claim, there is no evidence that S&C Investment was conducting any other operations in April 1976, as opposed to December 1977 or later. Thus, while S&C Investment did not actually liquidate immediately after the transaction, there is no evidence that it continued conducting any business after the transaction until at least December 1977.

Finally, as noted above, the fifth element is satisfied as S&C Boat "assumed the liabilities necessary to carry on the business of the seller." S&C Boat specifically assumed the liabilities necessary to operate the harbor excursion division. These liabilities included specific notes payable, employee advances, charter deposits and vacation and holiday pay.

2.Additional Evidence Establishes Merger

Any claim that S&C Boat and S&C Investment continued after the transaction as two clearly distinct operations is negated by review of S&C Investment's corporate documents and additional documents. In fact, for years after the transaction, S&C Investment continued to exert extensive control over S&C Boat finances and corporate decisions, as reflected in the following evidence:

•During an annual meeting of S&C Investment on December 23, 1977, S&C Investment agreed to increase the salaries and bonuses for S&C Boat as "required under the terms of the … agreement" between S&C Investment and S&C Boat. (Exhibit 11 [Minutes from S&C Investment's Annual Meeting of Stockholders on December 23, 1977].)
•On June 8, 1979 S&C Investment again approved the schedule of dividends paid, bonuses and salaries to officers of S&C Boat. (Exhibit 13 [Minutes from S&C Investment's Board of Directors on June 8, 1979].)
•S&C Boat and S&C Investment purchased insurance together in 1979. (See Exhibit C [Minutes from S&C Boat's Board of Directors dated September 19, 1979 identifying "Marine Insurance for 1979-1980 is $67,245.19, less Lake Mead Ferry Services (approximately $8,000)."].) Lake

Mead Ferry Service was a S&C Investment subsidiary Nevada Corporation. (See Exhibit 14 [Minutes from S&C Investment Board of Directors Meeting on March 9, 1981].)
•On March 9, 1981, S&C Investment guaranteed repayment of a loan issued to S&C Boat. Exhibit 14 [Minutes from S&C Investment Board of Directors Meeting on March 9, 1981].) In that same meeting S&C Investment again agreed to the schedule of dividends paid, bonuses and salaries to S&C Boat's directors and also indicated it had no objection to S&C Boat's desire to dissolve its Sub-Chapter S status.

Likewise, other documents indicate that S&C Boat continued to hold itself out as part of S&C Investment. Specifically, a lease with the Port on February 4, 1977, almost one year after the asset transfer, identifies S&C Boat as "a division of Star and Crescent Investment Co." (Exhibit B.) Based on the foregoing, S&C Boat cannot persuasively argue that it was a new and distinct corporation, free from the historic liabilities of S&C Investment that existed at the time of the asset transfer in April 1976.

S&C Boat Operated as a "Mere Continuation" of S&C Investment

Under California law, a corporation acquiring the assets of another corporation is the latter's "mere continuation" upon a showing that "(1) no adequate consideration was given for the predecessor corporation's assets and made available for meeting the claims of its unsecured creditors," or "(2) one or more persons were officers, directors, or stockholders of both corporations." (Ray, supra, 19 Cal. 3d at 29.) While either element would suffice for successor liability under a continuation theory, both factors can be readily established.

1. Transfer of Stock and Later Payment for Repurchase of Stock Does Not Amount to Adequate Consideration

Mere continuation will be found when there is "insufficient consideration running from the new company to the old." (Maloney v. American Pharmaceutical Co., (1988) 207 Cal. App. 3d. 282.) Here, S&C Boat was not an ongoing company with its own value when it "purchased" S&C Investment's harbor excursion business. In essence, S&C Investment traded all of its documented assets in April 1976 to a company which otherwise had "no assets, no liabilities, [and] no equity capital." (Exhibit 17 [Minutes from S&C Boat's Board of Directors Meeting], p. S&C0047.) Stock in a company whose only assets are the assets it just received is not adequate consideration.

S&C Boat appears to implicitly concede this point, instead arguing that adequate consideration was given because S&C Investment later sold the stock that it received for $765,400. However, this does not disprove the absence of adequate consideration for numerous reasons. First, this was a later transaction, not the transaction at the relevant point – April 1976 when S&C Investment divested itself of the assets. Second, this "sale" involved a promissory note, under which S&C Investment apparently agreed to relinquish the only consideration it received for its assets in exchange for a promise to be paid five years later. Third, S&C Investment sold the stock to the directors of S&C Boat, Stephen P. Carlstrom, Judy Hall and Janet Miles, who also were Hall, Jr.'s children and wife. (See Exhibit 22 [Shareholder certificates for S&C Boat dated October 26, 1976] and Exhibit K [Hall, Jr. Obituary].) In fact, Hall, Jr. had long before expressed to the Port his desire to transfer ownership of his harbor excursion business to his children. (Exhibit H [October 12, 1976 correspondence].)

As such, while the exact mechanisms of the transactions are somewhat blurry because of S&C Boat's failure to provide supporting documents, what can be determined it this. S&C Investment divested itself of all known assets in exchange for stock in a new company with no assets other than S&C Investment's assets. S&C Investment then later agreed, in essence, to front the price of the sale of this stock back to S&C Boat's leaders, who were the children and spouse of the man that had been controlling S&C Investment. This does not constitute adequate consideration.

2.There was a Commonality of Directors Between the Two Entities

Regardless of whether adequate consideration was paid, "mere continuation" successor liability can be found on the basis of the similarity of the companies' leadership at the point of the transaction. Contrary to S&C Boat's claims, S&C Boat and S&C Investment had far more than one person in common. Rather, at the April 9, 1976 meeting for S&C Boat, the following directors and officers were elected, Hall, Jr. (President), Leona Jackson (Secretary), Stephen P. Carlstrom (Vice President), Kenneth Beiriger (Vice President/Treasurer), Judy Hall, Janet Miles and Raleigh Miles. These officers of this newly formed corporation were virtually identical to the officers of S&C Investment at the time. In particular, the officers of S&C Investment in the 1970's were O.J. Hall, Jr. (President) K.N. Beiriger (Vice President) and Leona Jackson (Secretary). (See Exhibits E [Correspondence dated November 6, 1973 to the Port from S&C Investment, K.N. Beiriger, V.P.], F [Correspondence dated January 14, 1975 to the Port from S&C Investment, Hall, Jr. President], and G [April 9, 1976 signed offer from S&C Investments, O.J. Hall, Jr. President and Leona Jackson, Secretary].)

S&C Boat also erroneously contends that there was no commonality of shareholders. However, S&C Boat has provided no evidence of who the shareholders were at this point in time and offers no explanation as to why its unsupported claims on this point should be credited. Regardless, as noted above, immediately after the transaction, the shareholders of S&C Boat were the same shareholders of S&C Investment because S&C Investment owned all of the S&C Boat stock. Thus, there was a high level of commonality between S&C Boat's directors and shareholders and S&C Investment's directors and shareholders.

III.SAN DIEGO WATER BOARD SHOULD ALSO NAME S&C INVESTMENT AS A DISCHARGER

The San Diego Water Board should also consider naming SDMCC, Star and Crescent Boat Company, a division of SDMCC, S&C Investment and Star and Crescent Ferry Company as dischargers in addition to S&C Boat. (See State Water Board Order Nos. WQ 86-16 ("Multiple parties should properly be named in cases of disputed liability."); and WQ-89-14 (A dissolved corporation may be named in a Cleanup and Abatement Order).

IV.CONCLUSION

The evidence produced thus far presents a serious question as to whether these S&C Investment and S&C Boat maintained separate identities. In fact as established and admitted by S&C Boat, the two entities are "inseparably linked." San Diego Water Board's basis for assigning liability to S&C Boat has merit and it should not hesitate in continuing to name S&C

Boat as a discharger. Thus, S&C Boat's requests for revising the TCAO to remove S&C Boat as a responsible party and rescinding any designation as a "discharger" should be denied.

Comment ID: 291 **Organization:** NASSCO
DTR Section: 31, 32
Comment:

EHC/Coastkeeper Comment No. 1: The law requires cleanup to background except where evidence in the record demonstrates that alternative cleanup levels greater than background water quality are appropriate.

The Porter-Cologne Act establishes the framework pursuant to which the San Diego Regional Water Quality Control Board ("Regional Board") may reasonably protect water quality in California. Cal. Water Code §§ 13000 et seq. To the extent EHC/Coastkeeper suggest that the Water Code sets forth a rebuttable presumption of cleanup to background in all cases, EHC/Coastkeeper misstate the law.

I. The Water Code Recognizes That Beneficial Uses Are Not Unreasonably Affected By All Changes To Chemical Concentrations In Sediments

A. The Water Code Allows Dischargers To Clean Up Or Abate The Effects Of Wastes

EHC/Coastkeeper misstates the applicable legal standard to the extent that they suggest the California Water Code sets forth a rebuttable presumption of cleanup to background in all cases. Rather, the California Water Code Section 13304 requires a discharger to "clean up or abate the effects of the waste . . . ." (emphasis added). Although the statute is often misquoted by using the conjunctive "and" in place of the disjunctive "or" (for example, when referring to a "cleanup and abatement order"), the legislature's deliberate use of the disjunctive word "or" in the statute makes clear that wastes need not be cleaned up if the effects can be abated. Accordingly, the plain language of Section 13304 supports the conclusion that a cleanup under Section 13304 can be based on abating the effects of the waste, without remediating to background chemical levels.

In fact, the express language of the statute indicates that cleanup levels above background are acceptable if the sediment does not unreasonably affect beneficial uses, and therefore fails to constitute either "pollution" or a "nuisance." Specifically, the Regional Board's jurisdiction under Section 13304 is triggered where a discharge "creates, or threatens to create, a condition of pollution or nuisance," and it is on this basis that the Regional Board has issued the instant Tentative Cleanup And Abatement Order No. R9-2011-0001 ("TCAO"). Cal. Wat. Code § 13304; TCAO, at ¶ 1 (alleging conditions of contamination and nuisance that adversely affect aquatic-life, aquatic-dependent wildlife, and human health beneficial uses). As discussed in NASSCO's Comment Nos. 10 and 11 (NASSCO's Comments on the San Diego Regional Water Quality Control Board Cleanup Team's September 15, 2010 Tentative Cleanup and Abatement Order No. R9-2011-0001, Draft Technical Report, and Shipyard Administrative Record, May 26, 2011, "NASSCO's Initial Comments"), the Water Code recognizes that beneficial uses are not unreasonably impaired by all changes to chemical concentrations in sediments, and that certain concentrations may be above background conditions, yet not constitute a state of "pollution" or "nuisance."

B. The Water Code Implicitly Recognizes That Industrial Discharges Are Permissible As Long As They Do Not Unreasonably Impair Other Beneficial Uses

The California Water Code also implicitly recognizes that industrial uses, including industrial discharges, are acceptable uses of water bodies as long as discharges from those facilities do not unreasonably impair other beneficial uses. If this were not so, permits for the discharge of any wastewater would be denied since there is at least some impact on waters associated with any discharge. Interpreting the statute to require cleanup to background sediment chemistry regardless of the effect of the contaminants on beneficial uses ignores these realities, reads the word "unreasonably" out of the definition of pollution, and effectively imposes a "zero discharge" requirement on all industrial dischargers—an obviously unreasonable result. ("Pollution" means an "alteration of the quality of the water of the state by waste to a degree which unreasonably affects . . . beneficial uses"). Cal. Wat. Code § 13050(l) (emphasis added){Notably, other Regional Boards have not invoked State Water Board Resolution No. 92-49 ("Resolution 92-49") to require that sediment must be cleaned to background. See San Diego Regional Board Order Nos. 88-86, 88-78, 89-31, 94-100, 94-101, 94-102, 95-21, 97-63, 99-06, 2001-303, R9-2002-72. See also In the Matter of the Petition of Environmental Health Coalition and Eugene Sprofera, Order No. WQ 92-09, State Water Resources Control Board, September 17, 1992 ("Paco Terminals"). Instead, the Regional Board calibrated cleanup levels to be protective of beneficial uses, regardless of whether that level was at background concentrations or above.}. Similarly, the legislative history of the Porter-Cologne Act confirms that the Regional Boards must balance economic and water quality interests, and that, although "waste disposal and assimilation are not included in the definition of beneficial uses, . . . they are recognized as part of the necessary facts of life, to be evaluated and subject to reasonable consideration and action by regional boards." See Recommended Changes in Water Quality Control, Final Report of the Study Panel to the California State Water Quality Control Board, Prepared for the California Legislature, March 1969, at Appendix A, at 21. See also, id. at 7 (requiring balancing of interests); id. at Appendix A at 26 ("[I]t would be very confusing to refer to waste disposal, dispersion and assimilation as any kind of beneficial uses of water. However, this omission is not intended to question the obvious facts that ultimately the residual substances remaining after treatment of wastes must, in most instances, reach waters of the state, and economic benefits to a waste discharger … relate inversely to the cost of treatment. These economic values are recognized in paragraph 2 of Section 13000.").

C. The Water Code Mandates That Regional Boards Use The Most Cost-Effective Methods For Cleaning Up Or Abating The Effects Of Contamination Or Pollution

Finally, California Water Code Section 13307, which authorizes the California State Water Quality Control Board ("State Board") to adopt policies for Regional Boards to follow in the oversight of cleanup and abatement activities, mandates that the State Board's policies "shall include . . . [p]rocedures for identifying and utilizing the most cost-effective methods . . . for cleaning up or abating the effects of contamination or pollution." Cal. Wat. Code § 13307(a)(3). Thus, taken together, California Water Code Sections 13304 and 13307 allow for the abatement of the effects of past discharges on water quality in the most cost-effective manner. Rather, the key inquiry is whether beneficial uses at the Site are unreasonably affected by the elevated sediment chemistry observed at the Site and/or whether site conditions (1) are injurious to health, indecent or offensive to the senses, or obstructs the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affect at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and (3) occur during, or as the result of, the treatment or disposal of wastes. Cal Wat. Code §§ 13050(l)-(m). As discussed extensively in NASSCO's Initial Comments, Site sediments do not pose any unacceptable risk to aquatic life, aquatic-dependent wildlife, or human health, and do not unreasonably affect beneficial uses.

II. The Regional Board Must Consider The Totality Of Factors Affecting Water Quality In Selecting The Cleanup Levels Under Resolution 92-49, Including Economic And Technological Feasibility

As discussed below, the Regional Board must consider the totality of factors affecting water quality in selecting alternative cleanup levels under State Water Resources Control Board Resolution 92-49 ("Resolution 92-49").

A. Resolution 92-49 Requires Alternative Cleanup Levels To Be Protective Of Beneficial Uses, But Grants The Regional Board Substantial Discretion In Determining Alternative Cleanup Levels

To the extent that the Regional Board finds—despite substantial evidence to the contrary—that site conditions do create a condition of pollution or nuisance, the plain terms of Resolution 92-49 do not require cleanup to background unless it is both technologically and economically feasible (i.e., cost-effective) to do so. Specifically, Resolution 92-49 provides that the Regional Board "shall . . . ensure that discharges are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. . . ."

The State Board has described the analysis required by Resolution 92-49 as follows:

> Resolution 92-49 directs the RWQCBs to ensure that water affected by an unauthorized release attains either background water quality or the best water quality which is reasonable if background water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved,, beneficial and detrimental, economic and social, tangible and intangible; in approving any alternative cleanup levels less stringent than background . . . any such cleanup level shall (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less stringent than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards.

Resolution 92-49, at III.G. See also, In the Matter of the Petition of Unocal Corporation, State Board Order No. WQ 98-12, at 2 (quoting Resolution 92-49); In the Matter of the Petition of Landis Incorporated, State board Order No. WQ 98-13, at 2 (same); In the Matter of the Petition of Unocal Corporation, Order No. 99-10, at 2; In the Matter of the Petition of Chevron Pipe Line

Company, State Board Order No. WQ 2002-0002; In the Matter of the Petition of Environmental Health Coalition and Eugene Sprofera, Order No. WQ 92-09, at 4.

Further, the text of Resolution 92-49 requires an analysis of cost-effectiveness and technological and economic feasibility in determining cleanup levels. See Resolution 92-49, at 6-7 ("The Regional Water Board shall . . . ensure that dischargers shall have the opportunity to select cost-effective methods for . . . cleaning up or abating the effects [of wastes discharged and] . . . require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, cleanup and abatement.") (emphasis added).

B. There Is Substantial Evidence In The Record That Cleanup To Background Is Infeasible, Beneficial Uses At The Site Are Not Impaired, And Monitored Natural Attenuation Will Achieve Cleanup Goals

As discussed in NASSCO's Initial Comments, active remediation is not economically or technologically feasible within the meaning of Resolution 92-49; rather, monitored natural attenuation is the appropriate remedial alternative considering the demands being made and to be made on the waters at the Site, and the total values involved—beneficial and detrimental, economic and social, and tangible and intangible. To the extent the regulatory scheme requires cleanup to background unless economically and technologically infeasible, there exists substantial evidence in the record demonstrating that (1) beneficial uses at the site are not impaired, (2) monitored natural attenuation will achieve the cleanup goals articulated in the TCAO in the most cost-effective manner, and (3) cleanup to background is not feasible, both economically and technologically.

III. EHC/Coastkeeper Misstates The Requirements Of Resolution 92-49

Citing Resolution 92-49, EHC/Coastkeeper argues that Section 2550.4 of the California Code of Regulations requires that cleanup levels must be set to background water quality, unless the Regional Board analyzes economic and technological feasibility on a pollutant-by-pollutant basis, and determines that cleanup to background is either economically or technologically infeasible on a pollutant-by-pollutant basis. Tellingly, Resolution 92-49 has been in existence for decades; yet, no Regional Board, State Board, or court appears to have ever interpreted it in the manner EHC/Coastkeeper now suggest.

This is because, under Resolution 92-29, the Regional Board "may prescribe an alternative cleanup level less stringent than background sediment chemistry concentrations if attainment of background concentrations is technologically or economically infeasible – as long as the less stringent cleanup level is protective of beneficial uses." Draft Technical Report ("DTR"), at 32-3. Additionally, the State Board grants substantial discretion to Regional Boards in setting alternative cleanup levels under Resolution 92-49. In sum, Resolution 92-49 is intended to ensure that any alternative cleanup levels are protective, and that cleanups are cost-effective. Requiring constituent-by-constituent economic and technological feasibility analyses would make no sense considering the practicalities of sediment cleanup, and would be contrary to the Regional Board's obligation to take into account "the resources, both financial and technical, available to the person[s] responsible for the discharge" in overseeing investigations and cleanups under Resolution 92-49..

A. Section 2550.4 Does Not Require Alternative Cleanup Levels, or Economic And Technological Feasibility Analyses To Be Conducted
On A Constituent-By-Constituent Bases

Citing Resolution 92-49, EHC/Coastkeeper argues that Section 2550.4 of the California Code of Regulations governs the setting of alternative cleanup levels for the Site, and requires the Regional Board to select concentration limits for each constituent subject to remediation. Resolution 92-49, at III.G. ("[I]n approving any alternative cleanup levels less stringent than background, apply Section 2550.4 of Chapter 15 . . .; any such alternative cleanup level shall: (1) be consistent with maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Water Quality Control Plans and Policies adopted by the State and Regional Water Boards."). As discussed below, Section 2550.4 does not operate to require constituent-by-constituent analysis in this cleanup.

1. Chapter 15 Was Not Designed As General Guidance For Sediment Remediation, And Is Only Applicable To The Extent "Feasible" According To The Plain Terms Of Resolution 92-49

Chapter 15, including Section 2550.4, was not designed as general guidance for sediment remediation; rather it sets forth detailed siting, construction, monitoring, and closure requirements for existing and new waste treatment, storage, and disposal facilities. Thus, Chapter 15 provides technical criteria for establishing water quality protection standards, monitoring programs, and corrective action programs for releases from waste management units, much of which is inapplicable to sediment remediation.

The explicit terms of Resolution 92-49 also provides that "discharges subject to [Water Code] Section 13304 may include discharges of waste to land; such discharges may cause, or threaten to cause, conditions of soil or water pollution or nuisance that are analogous to conditions associated with migration of waste or fluid from a waste management unit." In such cases, Resolution 92-49 provides that the Regional Board should implement the provisions of Chapter 15, only to the extent applicable to cleanup and abatement, as follows:

(a) If cleanup and abatement involves corrective action at a waste management unit regulated by waste discharge requirements issued under Chapter 15 the Regional Water Board shall implement the provisions of that chapter;

(b) If cleanup and abatement involves removal of waste from the immediate place of release and discharge of the waste to land for treatment, storage or disposal, the Regional Water Board shall regulate the discharge of the waste through waste discharge requirements issued under Chapter 15, provided that the Regional Water Board may waive waste discharge requirements under WC Section 13269 if the waiver is not against the public interest (e.g if the discharge is for short-term treatment or storage, and if the temporary waste management unit is equipped with features that will ensure full and complete containment of the waste for the treatment or storage period); and

(c) If cleanup and abatement involves actions other than removal of the waste, such as containment of waste in soil or ground water by physical or hydrological barriers to migration (natural or engineered), or in-situ treatment (e.g. chemical or thermal fixation or bioremediation), the Regional Water Board shall apply the applicable provisions of Chapter 15 to the extent that it is technologically and economically feasible to do so.
Resolution 92-49, at III.F.
However, because Chapter 15 was developed to address releases from hazardous waste management units, not to articulate goals for the remediation of sediment, the State Board recognizes that Chapter 15 applies to cleanups only to the extent "feasible."

Here, there is no basis for analogizing the Site to a waste management unit, particularly since the site sediments were found not pose risks to aquatic, aquatic-dependent wildlife, or human health beneficial uses in an extensive and unparalleled sediment investigation, conducted with substantial oversight from the Regional Board. Moreover, cleanup and abatement actions are explicitly exempted from the provisions of Section 2550.4, provided that "remedial actions intended to contain such wastes at the place of release shall implement applicable provisions of [Chapter 15] to the extent feasible." 23 Cal. Code Regs. §2511.

Additionally, Chapter 15 also provides that "alternatives to construction or prescriptive standards contained in this chapter may be considered. Alternatives shall . . . be approved where the discharger demonstrates that (1) the construction or prescriptive standard is not feasible as provided in subsection (c) of this section, and (2) there is a specific engineered alternative that (A) is consistent with the performance goal addressed by the particular construction or prescriptive standard; and (B) affords equivalent protection against water quality impairment."). In fact, Chapter 15 itself provides that it is not feasible to comply with a prescriptive standard in Chapter 15 if it "(1) is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives which meet the criteria [described above]; or (2) is impractical and will not promote the attainment of applicable performance standards. Regional Boards shall consider all relevant technical and economic factors including, but not limited to, present and projected costs of compliance . . ." 23 Cal. Code Regs. §2510.

Application of Chapter 15, including the requirements of Section 2550.4, in the manner EHC/Coastkeeper suggests is clearly not "feasible." Id.; 23 CCR § 2511; Resolution 92-29, at III.F. First, it is impractical to conduct distinct analyses of alternative cleanup levels for each individual pollutant where substantial evidence demonstrates that secondary pollutants are co-located with primary pollutants and will be remediated to protective levels in a common footprint. Similarly, conducting economic and technological feasibility analyses on a pollutant-by-pollutant basis is economically infeasible, and nonsensical given the engineering realities of dredging.

2. The Regional Boards Have Substantial Discretion To Select Alternative Cleanup Levels, Provided That They Are Protective

As discussed above, Section 2550.4 relates to waste discharge and monitoring requirements for hazardous waste management units, and in-situ containment of wastes, to the extent "feasible"; however, even to the extent that the Regional Board must apply these requirements in approving alternative cleanup levels, the applicable requirements pertain, at best, to water quality monitoring with respect to in situ remediation of waste discharges. As discussed above, Section 2550.4 addresses concentration limits in the context of waste discharge and monitoring requirements, and is intended only to ensure that alternative cleanup levels set above background levels are adequately protective. This understanding is confirmed by State Water Resources Control Board guidance, which states that

> Resolution 92-49 is flexible and permits a regional board to set alternative cleanup levels less stringent than background concentrations if attainment of background concentrations is infeasible. Any such alternative cleanup level may not unreasonably affect beneficial uses and must comply with all applicable Water Quality Control Plans and Policies. The Resolution allows for consideration of adverse impacts of any cleanup itself as well as natural attenuation if cleanup goals can be met in a reasonable time.

State Water Resources Control Board Memorandum From Craig Wilson To John Robertus (February 22, 2002), at SAR097571- 81) ("Wilson Memo"). Notably, although the Wilson Memo references Section 2550.4, it makes no direct mention of any requirement to set alternative cleanup levels, or analyze economic or technological feasibility, on a constituent-by-constituent basis. Id. In fact, it provides that the Regional Board has "substantial" discretion in setting alternative cleanup levels, and notes that Resolution 92-49 requires alternative cleanup levels less stringent than background to "be consistent with maximum benefit to people of the state" and requires consideration of "all demands being made and to be made on the waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." Wilson Memo, at SAR097579. Further, this determination is to be "made on a case-by-case basis, and is based on considerations of reasonableness under the circumstances at the site." Id. Thus, to the extent that Section 2550.4 is applicable to the cleanup and abatement of sediment contamination, EHC/Coastkeeper clearly misinterprets Section 2550.4 as requiring alternative cleanup levels (and the concomitant economic and technological feasibility analyses) to be conducted on a pollutant by pollutant basis.

Rather, Section 2550.4 addresses concentration limits in the context of waste discharge and monitoring requirements, and is intended only to ensure that alternative cleanup levels set above background levels are adequately protective. That is, to the extent applicable to cleanup levels, Section 2550.4 simply requires the Regional Board to (1) set alternative cleanup levels at the lowest level that are economically and technologically feasible, and (2) ensure that concentrations of contaminants at such levels "do not pose a substantial present or potential hazard to human health or the environment" (i.e., ensures that the cleanup level is protective of beneficial uses). Here, the Regional Board has set excessively conservative cleanup levels that are protective of human health and the environment, which, if anything, will require the parties to expend much more than is economically feasible, at considerable expense to the parties named on the TCAO. See, e.g., NASSCO and Southwest Marine Detailed Sediment Investigation, Exponent (October 2003) ("Exponent Report"), at 19-13; Deposition of David Barker ("Barker Depo"), at 204:21 – 206:6.

Additionally, in selecting the alternative cleanup levels, the Regional Board has expressly considered the applicable requirements of Resolution 92-49 and California Code of Regulations Section 2550.4. TCAO, at ¶ 32; DTR, at 32-1 – 32-2. In doing so, the Regional Board set alternative levels on a constituent-specific basis for both primary COCs and secondary COCs. Primary COCs are those associated with the greatest exceedance of background, and the highest magnitude of potential risk at the Site. Cleanup levels for primary COCs, were set using the post-remedial SWAC as a concentration limit. TCAO, at ¶ 32. Secondary COCs, which are associated with lower exceedances of background, were also extensively and individually evaluated, and were found to be highly correlated with Primary COCs and thus adequately addressed in the common footprint. The Regional Board also assessed risk to wildlife receptors under projected post-remedial conditions, and confirmed that the alternative cleanup levels adequately protect aquatic-dependent wildlife and human health beneficial uses. DTR, at § 32. By contrast, EHC/Coastkeeper has provided no credible evidence that concentrations below the proposed alternative cleanup levels, but above background, pose "substantial present or potential hazard to human health or the environment."

3. EHC/Coastkeeper Has Cited No Precedent Supporting Its Novel Interpretation Of Resolution 92-49

Finally, we are aware of no cleanups where the Regional Board has required separate alternative cleanup level or feasibility analyses for each and every constituent involved, particularly where distinct constituents are correlated, as here. Nor has EHC/Coastkeeper pointed to any State Board or court decisions supporting its novel interpretation of Resolution 92-49.

IV. Conclusion

For the foregoing reasons, Resolution 92-49 does not require constituent-by-constituent analysis of alternative cleanup levels, or economic or technological feasibility, and EHC/Coastkeeper's comment is without merit.
[NASSCO Comment No. 262, TCAO, at ¶¶ 31, 32, DTR, at §§ 31, 32]

Comment ID: 294 **Organization:** NASSCO
DTR Section: 31, Appendix 31
Comment:

EHC/Coastkeeper Comment No. 4: The Regional Board's findings must be supported by evidence in the record.

I. Assessment Of Impacts To Beneficial Uses And Economic Feasibility Analysis Under Resolution No. 92-49 Support Monitored Natural Attenuation As The Appropriate Remedy

EHC/Coastkeeper correctly notes that an agency's findings must be supported by the weight of the evidence in the record. EHC/Coastkeeper Comments, at 3. However, EHC/Coastkeeper's specific contentions that the alternative cleanup levels set by the Regional Board are insufficiently protective, and the corresponding implication that cleanup to background is technologically and economically feasible, are without merit.

In fact, considering that the results of the sediment investigation showed that "aquatic life, aquatic-dependent wildlife, and human health beneficial uses are at approximately 95 percent of ideal conditions, and active remedial alternatives will result in improvements that are minimal—on the order of only a percent or so"—any active remediation, including cleanup to background, is economically infeasible{Additionally, there is evidence in the record that cleanup to background is technologically infeasible. Barker Depo, at 246:11 – 248:3 (describing dredging of the volume of sediments required to reach background levels as "an expensive challenge" and noting that "the board has not had regulatory experience with dealing with that volume of material . . . .").}. Exponent Report, at 19-13; Barker Depo, at 204:21 – 206:6 ("Q: So, solely for [the economic feasibility] step of the equation, if you have a negligible – negligible benefit on one side, I assume that there – anything more than a negligible cost would mean it's not economically feasible. A. Right. . . . Q. If there's absolutely no benefit of an incremental reduction in cleanup, then there's no cost that would justify that, correct? . . . A: That type of scenario would – could support an alternative cleanup level to background. I don't know if that's what you're asking. But that is a point where the board could make a decision that no further cleanup could be required."). [NASSCO Comment No. 265, TCAO, at ¶¶ 30, 31, 32, DTR, at §§ 30, 31, 32, Appendices 31, 32]

II. EHC/Coastkeeper's Contention That Additional Cleanup, Beyond The TCAO Footprint, Is Economically Feasible Is Without Merit

Resolution 92-49 defines the term "economic feasibility" as follows:

> Economic feasibility is an objective balancing of the incremental benefit of attaining further reductions in the concentrations of constituents of concern as compared with the incremental cost of achieving those reductions. The evaluation of economic feasibility will include consideration of current, planned, or future land use, social, and economic impacts to the surrounding community including property owners other than the discharger. Economic feasibility, in this Policy, does not refer to the discharger's ability to finance the cleanup. Availability of financial resources should be considered in the establishment of reasonable compliance schedules.

Resolution 92-49, at III.H.1.b. Additionally, as discussed in the DTR, analyzing economic feasibility involves "estimating the costs to remediate constituents of concern at a site to background and the costs of implementing other alternative remedial levels. An economically feasible cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits." DTR, at 31-1.

A. The Record Is Clear That Cleanup To Background Is Economically Infeasible

EHC/Coastkeeper erroneously states that the record does not support a finding that cleanup to background is economically infeasible. Under Resolution 92-49, determining economic feasibility requires an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions. Further, Resolution 92-49 explicitly provides that "[e]conomic feasibility . . . does not refer to the discharger's ability to finance cleanup;" rather, an economically feasible cleanup level is one where the incremental cost of further reductions in primary COCs outweighs the incremental benefits. Resolution 92-49, at III.H.

The DTR analysis compared incremental benefits of further cleanup, expressed in terms of exposure reduction to target receptors, with the incremental cost of achieving those benefits, and determined that the degree of exposure reduction does not justify the incremental cost of such reductions, beyond approximately $33 million. DTR, at 31-2 - 31-3. This analysis is consistent with the requirements of Resolution 92-49, and is supported by evidence in the record. DTR, at § 31, Appendix 31. Moreover, as discussed above, due to the generally favorable site conditions, any active remediation is economically infeasible under the terms set forth in Resolution 92-49. Exponent Report, at 19-13. In fact, it is well-known that cleanup of sediment to background levels in San Diego Bay is economically infeasible: to date, because of economic infeasibility, none of the sediment site in San Diego Bay have been remediated to background conditions. Cleanup Team's Responses and Objections To Designated Party BAE's First Set Of Requests for Admission, Admission Nos. 44 – 46 (admitting that it is economically and technologically infeasible to remediate the Site to background, and that the Regional Board has never required remediation to background sediment quality levels for any other site within the San Diego Bay).

The record contains no evidence that cleanup to background is economically feasible; in fact, EHC/Coastkeeper has not even provided evidence that cleanup to the alternative cleanup levels is economically feasible, let alone evidence supporting its position that cleanup to background levels is feasible. [NASSCO Comment No. 266, TCAO, at ¶ 31, DTR, at § 31, Appendix 31]

B. No Other Sediment Sites In San Diego Bay Have Been Remediated To Background

Moreover, EHC/Coastkeeper cannot point to a single sediment site in San Diego Bay that has been remediated to background levels; rather the consensus is clear, and the Regional Board's Sediment Site Cleanup Team ("Cleanup Team") admits, that cleanup to background is technologically and economically infeasible. See, e.g., Cleanup Team's Responses and Objections To Designated Party NASSCO's Second Set of Requests For Admissions, at RFAs 18- 21 (admitting that it is economically and technologically infeasible to require remediation to background sediment quality levels (as defined by Resolution 92-49), and admitting that the

Regional Board has never required remediation to background sediment quality levels at any other site in San Diego Bay).
[NASSCO Comment No. 267, CAO at ¶¶ 31, 32, DTR, at §§ 31, 32, Appendices 31, 32]

C. The Alternative Cleanup Levels Were Selected Based On An Overly Conservative Interpretation Of Chemistry And Biological Data, Not Economic Feasibility

EHC/Coastkeeper erroneously states that the economic feasibility analysis was the primary basis for the selection of the alternative cleanup levels; however, this is a patently false statement. The selection of alternative cleanup levels was based on the Regional Board's analyses of many factors, including), including individual station and Sitewide chemistry data, biological data (i.e., toxicity tests, benthic community analysis, SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility. Further, based on these criteria, the selected cleanup levels are excessively conservative, as discussed extensively in NASSCO's Initial Comments.

Thus, contrary to EHC/Coastkeeper's assertions, the economic feasibility analysis was not intended to select a specific remedial scenario, and was not the primary basis for selection of any specific scenario. Rather, the analysis was intended to determine whether a point of diminishing returns on invested resources was apparent in the cost-benefit relationship, and then identify the most cost-effective level of effort—assuming that areas of higher contamination were preferentially selected for removal (as is typical). Accordingly, EHC/Coastkeeper's statement that "the economic feasibility analysis drives the entire cleanup" is incorrect. In actuality, the final selection of a remedial footprint in the DTR was based on simultaneous consideration of many factors (as is legally required under Resolution 92-49), including individual station and Sitewide chemistry data, biological data (i.e., toxicity tests, benthic community analysis, SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility. In fact, considering the results of these analyses, the proposed cleanup is extremely conservative, as discussed in NASSCO's Initial Comments. [NASSCO Comment No. 268, CAO at ¶¶ 31, 32, 33, DTR, at §§ 31, 32, 33, Appendices 31, 32, 33]

EHC/Coastkeeper's assertion that "the economic feasibility analysis in Section 31 determined the alternative cleanup levels" is a mischaracterization of the analysis in the DTR, which contains highly conservative analyses of individual station and Sitewide chemistry data, biological data (including toxicity tests, benthic community analysis, and SPI data), technical feasibility, and specific beneficial use objectives, in addition to economic feasibility.

D. The DTR Conservatively Estimated The Costs Of Cleanup To Alternative Cleanup Levels

The DTR states that criteria including "total cost, volume of sediment dredged, exposure pathways of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife, and human health), effects on the shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources." DTR, at 31-1. EHC/Coastkeeper suggests that "benefits to human health, wildlife, aquatic-dependent wildlife, and other beneficial uses from removing pollutants" were not "quantified"; however, the economic feasibility analysis does quantify benefits in terms of exposure reduction. Further, using reasonable assumptions, such a quantification would not justify any active remediation. Extensive scientific investigation conducted at the shipyards, including the sediment quality investigation upon which the findings and conclusions of the TCAO are purportedly based, indicates that beneficial uses at the site are not unreasonably impaired and that active remediation would "result in improvements that are minimal—on the order of only a percent or so." Exponent Report, at 19-13. [NASSCO Comment No. 269, CAO at ¶¶ 31, 32, DTR, at §§ 31, 32, Appendices 31, 32]

Yet, active remediation, including the remediation described in the TCAO, would destroy existing mature and thriving benthic communities at the Site, and result in significant negative impacts to NASSCO and the surrounding community, including but not limited to (1) the potential to jeopardize the integrity of slopes and structures at the leasehold, (2) disruption of vital ship repair and construction activities that could result in delays or contractual breaches with the U.S. Navy and other customers, (3) increased truck traffic, (4) diesel emissions from trucks and heavy equipment, (5) noise, (6) accident risks, (7) transportation of large volumes of contaminated sediment through neighborhoods, and (8) the need to establish large staging areas for dewatering activities. Exponent Report, at §§ 18.2, 18.4; Barker Depo, at 306:22 – 307:21. Taking all of these factors into account suggests that the alternate cleanup levels are not economically feasible, and certainly do not weigh in favor of further cleanup. [NASSCO Comment No. 270, CAO at ¶¶ 31, 32, DTR, at §§ 31, 32, Appendices 31, 32]

E. Cleanup Levels Below The Proposed Alternative Cleanup Levels Are Not Justified Given The Favorable Site Conditions, And Are Economically Infeasible Regardless Of Whether The Eleven Cost Scenarios Are Analyzed Independently, Or In Groups Of Six

As discussed in NASSCO's Initial Comments, the alternative cleanup levels are overly conservative, based on a series of excessively cautious assumptions concerning potential impacts to aquatic life, aquatic-dependent wildlife, and human health. The proposed economic feasibility analysis is similarly overly conservative, and requires cleanup well beyond the point at which the incremental benefits are justified by the incremental costs of further cleanup, considering that it has been demonstrated that monitored natural attenuation will ensure that the (excessively conservative) alternative cleanup levels are met within a reasonable time. Thus, any cleanup beyond the point identified in the DTR is similarly economically infeasible, given the favorable conditions observed at the Site. This is so regardless of whether cleanup scenarios are assessed independently, or in groups of six, as discussed below.

The economic feasibility analysis was a theoretical exercise designed for a single purpose – to provide an incremental cost-benefit analysis for the full spectrum of cleanup possible at the Shipyard Site, including cleanup to background conditions. Eleven scenarios were evaluated based upon the Cleanup Team's best professional judgment that eleven data points would be sufficient to establish a cost-benefit relationship. Additionally, the analysis required that each scenario represent a comparable incremental increase in the level of remedial effort necessary; thus, because 11 divides evenly into 66 (whereas 10 or 12 or 15 does not), using 11 data points facilitated assurance that each scenario represented a comparable incremental increase in level of effort. As described in the DTR, the Regional Board ordered all 66 polygons according to their composite SWAC ranking, which it determined was the best single metric for comparing relative Chemicals of Concern ("COC") levels{As described in the DTR, the sediment chemistry data used to calculate SWAC values for the economic feasibility analysis were the same data set used to asses all aspects of risk and beneficial use impairment at the Shipyard Site. Contrary to EHC/Coastkeeper's assertions, there are no "pollution reduction assumptions," other than the assumption that remediation areas under all scenarios will eventually equilibrate to background COC concentrations. Exposure reduction, as defined in the DTR, is simply the reduction in Sitewide SWAC that results from complete remediation of any specified area. It is an objective value, calculated mathematically from sediment chemistry data alone, and is not dependent on any given exposure scenario or assumptions. The exposure senario evaluated in both the human and aquatic-dependent wildlife risk assesments in the DTR are generally proportional to the Sitewide SWAC, therefore SWAC reduction is an appropriate metric for general conclusions about reduction of exposure and risk to human and wildlife receptors.}. Each scenario was defined to be incrementally larger than the previous scenario by six polygons. Scenario 1 included the six most contaminated polygons (based on composite SWAC ranking), Scenario 2 included the 12 most contaminated polygons, Scenario 3 the 18 most contaminated polygons, etc. Scenario 11 included the entire Shipyard Site (66 polygons). This "worst first" approach provides a rational and direct manner in which to assess incremental net benefits of the full spectrum of potential cleanup effort. [NASSCO Comment No. 271, CAO at ¶ 31, DTR, at ¶ 31, Appendix 31]

Resolution 92-49 requires economic feasibility to be considered in setting appropriate cleanup levels, and requires the Regional Board to use best professional judgment in evaluating the point at which the incremental benefits of further cleanup are no longer justified by the incremental costs. Thus, selection of the point at which incremental benefits no longer justify incremental costs is primarily a policy decision, requiring best professional judgment, not a simple mathematical determination.

Here, however, regardless of whether the 11 hypothetical cost scenarios are grouped into five ranges or presented as 11 independent calculations, the underlying cost-benefit relationship is the same. In fact, EHC/Coastkeeper's Figure 1, which depicts the eleven cost scenarios graphed individually, illustrates the same trend that is apparent in DTR Figure 31-1, and lends credence to Regional Board's determination that cleanup to background is economically infeasible. Specifically, under both scenarios, the benefit per dollar spent is relatively high and flat for the first three scenarios, but decreases dramatically with the additional cleanup associated with scenario 4 (i.e., above $33 million total cost), suggesting that cleanup above $33 million total cost is not economically feasible, given the minimal incremental benefits. In fact, cleanup beyond the economically feasible point as defined in the DTR results in an exposure reduction of less than 7 percent per $10 million spent after $33 million; less than 4 percent after $45 million; and zero at $185 million. DTR, at 32-40. Exposure reductions of merely a few percentage points do not justify the expenditure of tens of millions of dollars, and would clearly violate Resolution 92-49's economic feasibility provisions. [NASSCO Comment No. 272, CAO at ¶ 31, DTR, at § 31, Appendix 31]

Moreover, the Cleanup Team's analysis is based on chemical concentrations only. If the best measure of water quality is used (i.e., direct measurements of toxicity and benthic community analyses at NASSCO), then there is no incremental benefit of dredging any areas at NASSCO; thus, the economically feasible remedy is natural attenuation. [NASSCO Comment No. 273, CAO at ¶ 31, DTR, at § 31, Appendix 31]

III. EHC/Coastkeeper's Proposed Constituent-By-Constituent Economic Feasibility Analysis And Is Not Required By Resolution 92-49, And Is Technically Invalid

As discussed in NASSCO's Response to EHC/Coastkeeper Comment No. 1, above, there is no requirement in Resolution 92-49 that requires a constituent-by-constituent economic feasibility analysis. Moreover, EHC/Coastkeeper's proposed constituent-by-constituent economic feasibility analysis is not scientifically valid.

EHC/Coastkeeper asserts that averaging the pollutant reduction concentration for the five primary COCs, as was done in the DTR masks variability in pollutant exposure reduction for individual pollutants, and suggests that, when pollutants are analyzed individually, progression from cost scenario 6 ($69.5 million-$85.3 million) to cost scenario 7 ($85-$101.6 million) results in "more than 20% exposure reduction in mercury." However, EHC/Coastkeeper's proposed constituent-by-constituent reanalysis of the economic feasibility data merely illustrates that the five COCs are not identically distributed across the site, without addressing the issue of net remedial cost-benefit. Attachment A, Exponent, Critique of Comments and Untimely Expert Evidence Offered by the Environmental Health Coalition and Coastkeeper, City of San Diego, San Diego Unified Port District, San Diego Gas & Electric, and the U.S. Navy (June 23, 2011) ("Exponent Critique"), at 2. It also confirms that incremental benefits generally decrease with increasing cost. Id. [NASSCO Comment No. 274, CAO at ¶ 31, DTR, at § 31, Appendix 31]

Of particular concern, EHC/Coastkeeper's proposed reanalysis also obfuscates the net benefits, leading to absurd results and illustrating why this analysis is a poor standalone basis for selecting a remedy (something it was never intended to do). Specifically, EHC/Coastkeeper's proposed analysis fails to recognize that the mercury SWAC achieved in scenario 7 is actually well below the site-specific reference concentration (i.e., background UPL) for mercury. Id. Under current conditions, the mercury SWAC at the shipyard is not highly elevated relative to background (only 1.2x background UPL prior to any remediation), and very quickly approaches background as the highest composite SWAC polygons are remediated. Accordingly, at scenario 6, mercury is essentially at background. Under scenarios 7 to 11, the mercury SWAC is predicted to be below background, because the remaining unremediated stations all have mercury concentrations below the background UPL (see Figure 1, below). Scenarios 9 and 10 actually predict a rise in mercury SWAC with continued remediation, because areas with mercury levels below background are being dredged and the dredged area is assumed to equilibrate to the higher background level after remediation. As a result, the apparent "reduction" in mercury exposure from scenario 6 to scenario 7 actually produces no benefit to the public relative to the reference condition (defined as 100% exposure reduction), at a cost of more than $16 million.

[NASSCO Comment No. 275, CAO at ¶ 31, DTR, at § 31, Appendix 31]

Comment ID: 295 **Organization:** NASSCO
DTR Section: 31
Comment:
EHC/Coastkeeper Comment No. 5: The Order's conclusion that cleanup to background water quality levels is economically infeasible is arbitrary and capricious and not supported by substantial evidence in the record.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above.

Comment ID: 296 **Organization:** NASSCO
DTR Section: 31
Comment:
EHC/Coastkeeper Comment No. 6: The economic feasibility analysis arbitrarily assessed costs in six-polygon groups.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above.

Comment ID: 297 **Organization:** NASSCO
DTR Section: 31; Appendix 31; Table A31-2
Comment:
EHC/Coastkeeper Comment No. 10: There is no explanation in the economic feasibility analysis why polygons identified with a "depth to clean" as the undefined term "sur" have differing "dredging depth[s]."

The term "sur" indicates polygons in which only surface chemistry is available (i.e., from the upper 2 centimeters of sediment). In most cases, a 3-foot dredging depth was assumed, with an additional one-foot overdepth allowance, representing the minimum practicable thickness of dredging.

There are four exceptions to this assumption, involving cases where immediately adjacent polygons had better-defined depths to clean material. These cases are as follows: (1) the dredging depth at polygons SW13 and SW16 were assumed to be 5 feet because of their position adjacent to SW08 (dredged to 6 feet based on sediment core) and SW17 (dredged to 7 feet based on sediment core); (2) the dredging depth at polygon SW05 was assumed to be 5 feet because of its position adjacent to SW04 and SW02 (both dredged to 5 feet based on sediment cores); (3) the dredging depth at polygon NA15 was assumed to be 7 feet because of its position between NA09 (dredged to 9 feet based on sediment core) and NA17 (dredged to 5 feet based on sediment core).

NASSCO Comment No. 276, DTR, at 31; Appendix 31; Table A31-2]

Comment ID: 298 **Organization:** NASSCO
DTR Section: 31
Comment:
EHC/Coastkeeper Comment No. 11: DTR Appendix 31 Table A31-2 groups the economic feasibility results together in an arbitrary manner.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 4, above.

Comment ID: 299 **Organization:** NASSCO
DTR Section: 31
Comment:
EHC/Coastkeeper Comment No. 12: DTR Figure 31-1 would have looked different if results had been presented for each of the eleven cost scenarios.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above.

Comment ID: 300 **Organization:** NASSCO
DTR Section: 31, Appendix 31
Comment:
EHC/Coastkeeper Comment No. 13: The DTR incorrectly summarizes cumulative exposure reduction percentages per $10 million spent.

EHC/Coastkeeper argues that the cumulative exposure reduction calculations provided in the Cleanup Team's discovery response to EHC/Coastkeeper contradicts the assertion in the DTR that "exposure reduction drops below 7 percent per $10 million after $33 million, below 4 percent after $45 million, and drops to zero at $185 million." DTR, at 32-40. However, in doing so, EHC/Coastkeeper blatantly ignores the distinction between incremental and cumulative costs and benefits.

Consistent with Resolution 92-49, Section 31.2 of the DTR clearly states that the economic feasibility analysis is based on a comparison of incremental costs and benefits, and the conclusion presented is also clearly labeled as having an incremental cost basis, not cumulative. This is appropriate given that an economic feasibility analysis conforming to Resolution 92-49 must determine the point at which additional remediation no longer produces an additional benefit that is sufficient to justify the associated additional expense of such remediation.

[NASSCO Comment No. 277, CAO at ¶ 31, DTR, at § 31, Appendix 31]

Comment ID: 301 **Organization:** NASSCO
DTR Section: 31
Comment:
EHC/Coastkeeper Comment No. 14: The economic feasibility was not determined on a constituent-by-constituent basis.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above.

Comment ID: 302 **Organization:** NASSCO
DTR Section: 31, Appendix 31
Comment:
EHC/Coastkeeper Comment No. 15: The economic feasibility data was not presented in a scaled manner.

The analysis presented in EHC/Coastkeeper Comments, Figure 3 differs only in form from that presented in EHC/Coastkeeper Comments, Figure 2. It contains no additional information, other than the inclusion of background as a reference point. Consistent with the bar chart, a slope change in the plotted figure (i.e., a decrease in benefit per unit cost) can be seen at approximately $33 million total cost. The benefit/cost ratio generally continues to decrease with costs above this point.

[NASSCO Comment No. 278, CAO at ¶ 31, DTR, at § 31, Appendix 31]

Comment ID: 303 **Organization:** NASSCO
DTR Section: 31
Comment:
EHC/Coastkeeper Comment No. 16: The DTR's economic feasibility conclusions based on DTR Figure 31-1 are arbitrary and capricious.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above. As discussed in those responses, there is substantial technical and logical support that the DTR actually conservatively estimates the point at which the incremental costs of further cleanup outweigh the incremental benefits.

Comment ID: 304 **Organization:** NASSCO
DTR Section: 31, 32, Appendices 31, 32
Comment:

EHC/Coastkeeper Comment No. 17: The conclusion that the alternative cleanup levels are the lowest levels economically achievable is arbitrary and capricious and not supported by the evidence.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above Within the meaning of Resolution 92-49, "economically achievable" and "economically feasible" are specific terms of art referring to the requirement that the Regional Board engage in "an objective balancing of the incremental benefit of attaining further reduction in the concentrations of primary COCs as compared with the incremental cost of achieving those reductions." DTR, at 31-1. Resolution 92-49 explicitly states that these terms "do not refer to the dischargers' ability to finance the cleanup." Id.

As discussed above, applying Resolution 92-49, there is ample evidence in the record demonstrating that cleanup to background is economically infeasible, and the alternative cleanup levels are overly-conservative and economically infeasible. Exponent Report, at 19-13, Barker Depo, at 204:21 – 206:6. EHC/Coastkeeper has cited no evidence in the record to support the contention that lower cleanup levels are economically feasible.

[NASSCO Comment No. 279, CAO at ¶¶ 31, 32, DTR, at §§ 31, 32, Appendices 31, 32]

Comment ID: 305 **Organization:** NASSCO
DTR Section: 31
Comment:

EHC/Coastkeeper Comment No. 18: The economic feasibility analysis fails to demonstrate that the chosen alternative cleanup levels represent the "best water quality" based on all demands.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 4, above.

Comment ID: 306 **Organization:** NASSCO
DTR Section: 32, 33, 34, Appendix 32
Comment:

EHC/Coastkeeper Comment No. 19: The Order fails to meet legal requirements for cleanup to pollutant levels greater than background.

In selecting the alternative cleanup levels, the Regional Board expressly considered the requirements of Resolution 92-49 and California Code of Regulations Section 2550.4. TCAO, at ¶ 32; DTR, at 32-1 – 32-2. In doing so, the Regional Board set alternative levels on a constituent by constituent basis for primary COCs, using the post-remedial SWAC as a concentration limit. TCAO, at ¶ 32. Primary COCs are those associated with the greatest exceedance of background, and the highest magnitude of potential risk at the Site. Secondary COCs, which are associated with lower exceedances of background, are highly correlated with Primary COCs and are likewise addressed in the common footprint. The Regional Board also assessed risk to wildlife receptors under projected post-remedial conditions, and confirmed that the alternative cleanup levels adequately protect aquatic-dependent wildlife and human health beneficial uses. DTR, at § 32. By contrast, EHC and Coastkeeper have provided no credible evidence that concentrations below the proposed alternative cleanup levels, but above background, pose "substantial present or potential hazard to human health or the environment."

After implementing the SWAC approach, it is true that some sediment concentrations at the surface will exceed the post-remedial SWAC threshold, and some will be below it; however, such an approach is acceptable under Resolution 92-49 since natural processes can be relied on to reduce concentrations below the alternative cleanup level within a reasonable time. Because monitored natural attenuation is already occurring at the Site, deposition of clean sediment in the excavated areas and other natural recovery processes would lower the SWAC further in the years following sediment removal, and all concentrations are expected to meet the alternative cleanup level within a reasonable time. See NASSCO's Initial Comments, at 39-41 (citing substantial evidence that monitored natural attenuation is occurring).

EHC/Coastkeeper also suggests that the 120% of background trigger level for additional dredging could lead to site-wide pollutant concentrations above the alternative clean-up levels. However, the 120% trigger simply recognizes natural variability in sediment chemical concentrations. As stated in Section 34 of the DTR, "environmental data has natural variability which does not represent a true difference from expected values." DTR, at 34-1 (emphasis added). The 120% trigger is thus intended only to prevent additional unnecessary dredging due to natural variability, and does not represent "a process by that [sic] allows the remediated areas to be 20% more polluted than background pollutant levels," as EHC/Coastkeeper suggests. Further, the details concerning the application of this trigger level will be proposed and reviewed thoroughly for technical adequacy in conjunction with the development of the Remediation Monitoring Plan.

[NASSCO Comment No. 280, CAO at ¶¶ 32, 33, 34, DTR, at §§ 32, 33, 34, Appendix 32]

Comment ID: 307 **Organization:** NASSCO
DTR Section: 32, Appendix 32
Comment:
Same as Comment ID 60

EHC/Coastkeeper Comment No. 20: The site-wide alternative cleanup levels were calculated based on remediating to background pollutant levels.

It is correct that post-remedial SWAC calculations were completed with the assumption that the SWAC inside the footprint would be remediated to the background UPL concentrations derived in Section 29 of the DTR. DTR, at 32-12. However, it should be noted that in reality, the SWAC within the footprint following remediation may well be less than the background UPL, or result in chemical concentrations below background in certain areas.

In order to calculate a Sitewide post-remedial SWAC for any scenario or reason, it is necessary to assume an average COC concentration for the remediated area. Attachment A, Exponent Critique, at 3. Background was selected as a conservative (i.e., more protective) alternative to lower values, even though the site data clearly show that areas with individual COC concentrations below the background UPL currently exist at the Site, which suggests that concentrations are likely to be even lower following remediation. Thus, EHC/Coastkeeper's concern that the post-remedial SWAC is not protective is invalid.

[NASSCO Comment No. 281, CAO at ¶ 32, DTR, at § 32, Appendix 32]

Comment ID: 308 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 21: The remediation monitoring fails to require remedial areas to achieve background levels.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 19, above.

[NASSCO Comment No. 282, CAO at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 309 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 22: The "120% of background" could lead to site-wide pollutant concentrations above the Alternative Clean-up Levels.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 19, above.

[NASSCO Comment No. 283, CAO at ¶ 34, Directive A.2.a, DTR at § 34, Appendix 34]

Comment ID: 310 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 23: The Regional Board cannot approve the Order and DTR with the 120% of background second-pass rule because it fails to ensure that Alternative Cleanup Levels will not be exceeded.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 19, above.

[NASSCO Comment No. 284, CAO at ¶ 34, Directive A.2.a, DTR at § 34, Appendix 34]

Comment ID: 311 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 24: The "120% of background" decision rule violates the Order's corrective action directive.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 19, above.

[NASSCO Comment No. 285, CAO at ¶ 34, Directive A.2.a; A.2.c, DTR at § 34, Appendix 34]

Comment ID: 312 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 25: The "120% of background" decision rule for a second dredging pass is ambiguous.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 19, above.

[NASSCO Comment No. 286, CAO at ¶ 34, Directive A.2.a, DTR at § 34, Appendix 34]

Comment ID: 313 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 26: The Post Remedial Monitoring fails to evaluate whether Alternative Cleanup Levels are achieved.

The post-remedial monitoring plan is the most extensive ever adopted by the Regional Board for a Site not involving a sediment cap. Deposition of David Gibson ("Gibson Depo"), at 133:17 – 135:7 (describing the post-remedial monitoring plan as "extensive" and unprecedented in scope). Further, the assertion that the post-remedial monitoring plan "considers the remedy 'successful' at pollutant concentrations greater than the alternative cleanup levels" is misleading. Rather, when measuring post-remedial sediment conditions, it is necessary to take into account the natural variability in the data collected when determining whether the alternative cleanup levels have been met. Gibson Depo, at 133:17 – 135:7. The trigger concentrations were thus developed appropriately, recognizing the reality that measurements of sediment chemical concentrations always are associated with some degree of error. Thus, trigger concentrations were set to "represent the surface-area weighted average concentration expected after cleanup, accounting for the variability in measured concentrations throughout the area" in recognition that "it is critical to account for the variability of the predicted post-remedial SWAC." DTR, at 34-7.

[NASSCO Comment No. 287, CAO at ¶ 34, Order Directive D, DTR at § 34, Appendix 34]

Comment ID: 314 **Organization:** NASSCO
DTR Section: 33, 34, Appendices 33, 34
Comment:

EHC/Coastkeeper Comment No. 27: The Order sets the "Remedial Goals" as compliance with "Trigger Concentrations" above the Alternative Cleanup Levels - and in some cases ABOVE existing pollutant levels.

As described in the DTR, post-remedial trigger concentrations seek to account for random variation that is inherent in any sampling data. DTR, at 34-7. It has been determined that a post-remedial SWAC concentration equivalent to the trigger concentration is statistically indistinguishable from the target post-remedial SWAC, given the number of samples that make up the SWAC. Attachment A, Exponent Critique, at 4.

EHC/Coastkeeper's assertion that the cleanup can be completed without removing any mercury from the Site is misleading, and takes the post-remedial trigger out of the context in which it is to be used. While the trigger concentration for mercury (0.78 mg/kg) is higher than the pre-remedial Sitewide SWAC (0.72 mg/kg), it is much lower than the concentration in the remedial footprint. As noted above (see response to Comment No. 14), the mercury SWAC at the Site is not highly elevated (1.2x background), and average mercury levels do not presently pose a significant risk to any receptor. The primary cleanup goal with respect to mercury is to remove isolated areas of elevated mercury, not to lower the Sitewide SWAC. Elevated mercury is limited to a few areas, and these areas have been targeted by the DTR recommended cleanup. Eight of the 10 polygons with the highest surface concentrations of mercury are included in the proposed footprint (see DTR Table 33-4), with concentrations ranging from 4.5 to 1.2 mg/kg. The post-remedial monitoring program will ensure that these target areas are remediated, and verify that the target Sitewide mercury SWAC (which is only slightly lower than the pre-remedial SWAC) is achieved within reasonable statistical precision. Id.

Figure 1:

[NASSCO Comment No. 288, CAO at ¶¶ 33, 34, Order Directive D, DTR at §§ 33, 34, Appendices 33, 34]

Comment ID: 315 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 28: The Post Remedial Monitoring program will mask ongoing pollutant problems.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 64-65, 68.

Compositing samples over the entire site is a meaningful way to analyze and assess average concentrations across the site. Sitewide average concentration (in the form of SWAC) is the basis for specifying the alternative cleanup levels, and is the appropriate basis on which to assess cleanup success. Attachment A, Exponent Critique, at 4.

The stratification scheme described in the DTR is intended to provide interpretive information concerning the spatial distribution of COC concentrations throughout the Site, and will document, not mask, the true spatial extent of COC concentrations throughout the Site. Id.

Similarly, the subsampling and replication framework described in Section D of the TCAO is an appropriate method to assess whether the alternative cleanup levels were achieved and the remediation was successful. Id. Collecting replicates is useful to provide an estimate of variances in the compositing process, and will improve the estimates of the COC concentrations in each of the polygon groups and facilitate evaluation of remedy effectiveness. Id.

[NASSCO Comment No. 289, CAO at ¶ 34, Directive D, DTR at § 34, Appendix 34]

Comment ID: 316 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 29: The Post Remedial Monitoring program fails to require samples from each polygon at the site.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 28, above.

In addition to composited average concentrations at areas across the Site, post-remedial toxicity testing will be conducted at a specified number of stations within the remedial footprint, to assess that organisms with a small home range are protected (see DTR Section 34.2.3).

[NASSCO Comment No. 290, CAO at ¶ 34, Directive D.1.c, DTR at § 34, Appendix 34]

Comment ID: 317 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 30: Compositing surface sediment into six polygon groups during Post Remedial Monitoring will mask the true extent of contamination remaining at the Shipyard Sediment Site.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 28 and 32.

[NASSCO Comment No. 291, CAO at ¶ 34, Directive D, DTR, at § 34, Appendix 34]

Comment ID: 318 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 31: The "success" of the clean-up will rely heavily on data from polygons that were not dredged.

Sitewide SWAC values are being used to assess the cleanup success. It is necessary to determine SWAC values in order to evaluate whether the remedial goals expressed in the alternative cleanup levels have been met, and SWAC measurements necessarily include data from areas outside the remedial footprint. Attachment A, Exponent Critique, at 5.

[NASSCO Comment No. 292, CAO at ¶ 34, Directive D, DTR, at § 34, Appendix 34]

Comment ID: 319 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 32: The Post Remedial Monitoring program's six sampling areas are arbitrary.

The six sampling areas were defined in a systematic and rational manner. Attachment A, Exponent Critique, at 5. Site stations were pooled into zones of each shipyard with similar size, bathymetry, distance from shore, and COC concentration. Id. All polygons within a group are either contiguous or in close proximity. Id.

[NASSCO Comment No. 293, CAO at ¶ 34, Directive D, DTR, at § 34, Appendix 34]

Comment ID: 320 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 33: The Post Remedial Monitoring plan's requirement to test replicate sub-samples of composited sediment samples tests how good the lab is, not the variability of pollutants remaining at the Site.

The described replication is not intended to assess variability in the site chemistry or conditions. As described in the DTR, "The three replicate sub-samples of composite samples provide an estimate of variances in the compositing process" (DTR, page 34-5). This is an important quality control check on the post-remedial monitoring procedure. Attachment A, Exponent Critique, at 5.

[NASSCO Comment No. 294, CAO at ¶ 34, Directive D, DTR, at § 34, Appendix 34]

Comment ID: 321 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 34: The Post Remedial Monitoring plan will not provide the data to verify whether the remediation has been effective in protecting human health and aquatic-dependent wildlife.

The post-remedial monitoring plan is designed to verify that remedial objectives (i.e., post-remedial SWAC values) have been met, and is among most extensive ever imposed in any sediment cleanup in San Diego Bay. Gibson Depo, at 133:17 – 135:7. It has been determined by the Regional Board Staff and demonstrated in the DTR that these objectives are protective of beneficial uses. Further, as NASSCO discussed extensively in its initial comments, there is substantial evidence that the remedial objectives, which are much lower than previous cleanups as similar sites in San Diego Bay, are overly conservative.

[NASSCO Comment No. 295, CAO at ¶ 34, Directive D, DTR, at § 34, Appendix 34]

Comment ID: 322 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 35: The sub-sampling approach will not provide Regional Board staff with the information necessary to determine whether remediation has been effective at protecting human health or aquatic-dependent wildlife.

This comment is addressed in NASSCO's Response to EHC/Coastkeeper Comment No. 33, above.

[NASSCO Comment No. 296, CAO at ¶ 34, Directive D, DTR, at § 34, Appendix 34]

Comment ID: 323 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 36: Failure to assure that the Alternative Cleanup Levels are met through the remediation process renders the cleanup illegal.

As discussed in rebuttal to other comments herein, the TCAO does not fail to assure that the alternative cleanup levels are met through the remediation process. First, it is necessary to assume an average COC concentration for the remediated area in order to calculate a sitewide post-remedial SWAC. Attachment A, Exponent Critique, at 5. The fact that the post-remedial SWAC calculations were completed with the assumption that the SWAC inside the footprint will be remediated to the background concentrations derived in Section 29 of the DTR is a conservative (i.e., protective) assumption, since it is likely that the SWAC within the remedial footprint following the remediation will be less than the background UPL. Id.

Second, the 120% background trigger for a second dredging pass is not a "failure to assure the alternative cleanup levels are met." Rather, this is a means of accounting for the natural variability in sediment conditions in determining whether the alternative cleanup levels have been met. Gibson Depo, at 133:17 – 135:7 (confirming that there is natural variability in the data collected, and that the purpose of post-remedial monitoring is to ensure the cleanup standard has been met); Id. If such variability is not accounted for, additional dredging could be triggered even though the post-remedial SWAC has been met. Accordingly, "it is critical to account for the variability of the predicted post-remedial SWAC" and trigger concentrations must be set to "represent the surface-area weighted average concentration expected after cleanup, accounting for the variability in measured concentrations throughout the area." DTR, at 34-7. The trigger concentrations were thus developed appropriately, recognizing the reality that measurements of sediment chemical concentrations always are associated with some degree of error.

[NASSCO Comment No. 297, CAO at ¶ 34, Directive D.6, DTR, at § 34, Appendix 34]

Comment ID: 324 **Organization:** NASSCO
DTR Section: 32
Comment:

EHC/Coastkeeper Comment No. 37: The proposed cleanup fails to require the best water quality reasonable.

Resolution 92-49 authorizes the Regional Board to set cleanup levels above background, where background conditions cannot be restored considering economic and other factors. DTR, at 36-7. Any determination of "the best water quality reasonable" must therefore include an economic feasibility analysis; for the reasons discussed above, the Regional Board's analysis is overly conservative, and monitored natural attenuation is the only economically feasible remedy, given the minimal incremental benefit associated with active remediation versus monitored natural attenuation. Exponent Report, at 19-13; Barker Depo, at 204:21 – 206:6.

EHC/Coastkeeper argues that the proposed cleanup fails to require the best water quality reasonable for the following reasons: (1) narrative alternative cleanup levels for aquatic life cannot ensure that beneficial uses will not be unreasonably affected at the Site; (2) the footprint is too small; and (3) the remedial and post-remedial monitoring are insufficient. Each of these erroneous assertions is addressed in reply to EHC/Coastkeeper Comment Nos. 38 – 77, below.

[NASSCO Comment No. 298, CAO at ¶¶ 32, 33, Directives A, B.1.1, D, DTR, at §§ 32, 33, Appendices 32, 33]

Comment ID: 325 **Organization:** NASSCO
DTR Section: 32
Comment:

EHC/Coastkeeper Comment No. 38: The Alternative Clean-up Levels cannot ensure that fish and benthic invertebrate beneficial uses will not be unreasonably affected at the Shipyard Sediment Site.

Benthic invertebrate communities are protected by inclusion of "likely impacted" Triad stations in the proposed remedial footprint, and application of protective site-specific chemistry benchmarks (SS-MEQ and LAET), as well as additional safety buffers, to assess non-Triad stations. Attachment A, Exponent Critique, at 6. Moreover, a detailed statistical comparison of histopathology (i.e., incidence of lesions) in fish captured at the Site with reference area fish has already indicated that there are no significant adverse effects in Site fish as a result of observed chemistry concentrations. Exponent Report, at §§ 8.2, 9.3.4.

[NASSCO Comment No. 299, TCAO, at ¶ 32, Directives A.2.a, A.2.c, DTR, at § 32]

Comment ID: 326 **Organization:** NASSCO
DTR Section: 17, 29, 32, Appendices 17, 32
Comment:

EHC/Coastkeeper Comment No. 39: The Order and DTR fail to include numeric clean-up levels for benthic invertebrates and fish.

EHC/Coastkeeper suggests that the alternative cleanup levels will not be protective of benthic invertebrates and fish, when in fact, the TCAO and DTR are highly protective of both benthic invertebrates and fish.

EHC/Coastkeeper relies primarily on the conclusions in the March 2011 MacDonald Report, which is currently subject to a motion for exclusion due to Mr. MacDonald's unethical conduct during the discovery process (including destruction of evidence). Mr. MacDonald's report acknowledges that "reliance on multiple lines of evidence is generally recommended for assessing contaminated sediments," but claims that the cleanup levels are not protective of aquatic life based on several invalid criticisms, including: (1) SS-MEQ, which is the metric Mr. MacDonald refers to as being used to evaluate sediment chemistry data in the non-triad samples, is not effects-based; (2) the reference pool used to evaluate the results of the amphipod test is invalid because it included several survival values below 80%; and (3) reference pools for the bivalve and echinoderm toxicity tests were invalid because the bivalve reference pool included only four stations and the echinoderm reference pool included two samples with fertilization rates below 70%.

All three of these critiques are invalid. First, Mr. MacDonald's assertion that SS-MEQ does not provide an effects-based tool for predicting adverse effects on benthic communities is incorrect, as the SS-MEQ was specifically developed to be a site-specific, effects-based assessment tool. DTR, at § 32.5.2. It was developed using all six of the "likely" impaired stations that were found at the Site under the DTR's effects-based triad analysis, and is therefore directly analogous to the manner in which Long, et al. (1995) developed ERM values. Attachment A, Exponent Critique, at 6. Further, the predictive reliability of SS-MEQ was evaluated, and a threshold of 0.9 selected, using the site-specific effects determinations for the 30 triad stations, as well as the five supplemental triad stations sampled at the Site. Accordingly, there is no scientific basis for asserting that SS-MEQ is not effects-based. Id. Additionally, using SS-MEQ rather than SQGQ1 to assess impacts on benthic communities is justifiable because the SQGQ1 is based on generic sediment quality values that do not explicitly consider site-specific conditions, whereas SS-MEQ is based on chemical and biological data collected at the Site. Id.

Second, Mr. MacDonald's criticisms of the reference pool as it relates to the amphipod toxicity test are unfounded. The reference pool for the Site was selected by the Regional Board to comply with EPA guidance, as well as methods commonly used by environmental practitioners in assessing sediment. DTR, at § 17.2 (summarizing EPA guidance documents for reference pool selection). Applicable guidance states that reference areas should reflect the habitat conditions and background levels of chemical contamination that would exist at a study site in the absence of site-related sediment contamination. Attachment A, Exponent Critique at 7. Reference conditions should incorporate levels of chemical contamination or biological responses that are considered representative of the general conditions of a water body removed. Thus, the DTR appropriately sought to select reference areas "consistent with the San Diego Water Board's goal of establishing a reference condition that represents contemporary bay-wide ambient background contaminant levels that could be expected to exist in the absence of the Shipyard Sediment Site discharges and some level of natural variability in toxicity and benthic communities that could exist due to factors other than sediment contamination." Id. If, as Mr. MacDonald suggests, reference stations with amphipod survival of less than 80% were excluded, the analysis would ignore the full range of responses that occur in valid reference areas in San Diego Bay, and bias the analysis to in favor of a pre-conceived notion concerning what the minimum level of survival in reference areas should be. Notably, sediment management standards from other jurisdictions recognize that amphipod survival in reference areas may be as low as 75%. See BAE Initial Comments (citing Washington State Sediment Management Standards (Ecology 1995); Phillips et al. (2001)).

Third, Mr. MacDonald's criticisms of the reference pools for the remaining toxicity tests are also unjustified. In addition to the above discussion concerning the selection of reference pools, the results of the DTR bivalve and echinoderm tests were the same as those found by Exponent, using a different reference pool and different statistical procedures (analysis of variance vs. reference envelope). Id. Accordingly, these results demonstrate that the statistical results for both tests are robust, since they were the same under two different methods of analysis. Id.

Lastly, Mr. MacDonald's criticisms focus on the toxicity results for reference stations to the exclusion of other factors involved in selection of the reference pool; however, additional information, such as chemistry and benthic community information, was also used to select the reference pool.

[NASSCO Comment No. 300, TCAO, at ¶¶ 17, 29, 32, Directives A.2.a, A.2.c, DTR, at § 17, 29, 32, Appendices 17, 32]

Comment ID: 327 **Organization:** NASSCO
DTR Section: 15, 32, Appendices 15, 32
Comment:

EHC/Coastkeeper Comment No. 40: Failure to include numeric cleanup levels to protect fish is particularly egregious, as no information was presented in the Order or the DTR on how the potential for adverse effects on fish were explicitly considered.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 60.

EHC/Coastkeeper erroneously states that the TCAO and DTR provide no information concerning the potential for adverse effects on fish at the Site. However, the DTR contains detailed analyses assessing impacts to spotted sand bass, including fish histopathology analysis and PAH metabolite analysis in fish bile, as well as evaluations of chemistry data and indirect impacts to fish via the benthic community. Exponent Report, at §§8.2, 8.3, 9.3.4, 9.3.5. As discussed in NASSCO's Initial Comments, empirical data were collected at the Site and evaluated for effects on spotted sand bass, and unacceptable risks were not found. Exponent Report, at §§8.2, 8.3, 9.3.4, 9.3.5. The Regional Board also conducted an independent analysis, based on the data collected by Exponent, extensively evaluating the potential effects of sediment contamination on fish at the Site, and concluded that no effects could be conclusively attributed to contaminant exposure at the Site. DTR, at A15.1, A15.2. Because no adverse effects on fish were detected, numeric cleanup levels for fish are not necessary. Attachment A, Exponent Critique, at pp. 7-8. Moreover, even though there are no demonstrated adverse effects on fish, the TCAO conservatively requires remediation of "all areas determined to have sediment pollutant levels likely to adversely affect the health of the benthic community," which would also protect benthic fish. TCAO, at Table 2; Attachment A, Exponent Critique, at 8.

[NASSCO Comment No. 301, TCAO, at ¶¶ 15, 32, Directives A.2.a, A.2.c, DTR, at §§ 15, 32, Appendices 15, 32]

Comment ID: 328 **Organization:** NASSCO
DTR Section: 14-19, 32, Appendices 15, 17, 18, 19, 32
Comment:
EHC/Coastkeeper Comment No. 41: The lines of evidence developed to assess benthic invertebrate communities are likely to be minimally protective as they rely on comparisons to a reference pool that included samples that would not meet criteria for negative control samples.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 59-60.

Consistent with California Water Code Section 13304 and State Water Board Resolution, a reference pool should represent San Diego Bay conditions absent Shipyard Sediment Site discharges. That is, an appropriate reference pool for benthic community assessment should include all stressors and conditions that could affect the benthic community, with the exception of site-related chemical contamination. Attachment A, Exponent Critique, at 8. The DTR correctly states that the reference pool is intended to distinguish between pollution effects at the Site, and those found generally in the surrounding water body. DTR, at 17-2. Meeting criteria for negative laboratory controls is not a criterion for reference selection. Id. Attachment A, Exponent Critique, at __. The presence of all non-Site related stressors, including background chemical contamination, are part of the reference condition. Id.

[NASSCO Comment No. 302, TCAO, at ¶¶ 14-19, 32, Directives A.2.a, A.2.c, DTR, at §§ 14-19, 32, Appendices 15, 17, 18, 19, 32]

Comment ID: 329 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:
EHC/Coastkeeper Comment No. 42: The Proposed Remedial Footprint is too small to ensure that the remaining pollutant levels will not unreasonably affect present and anticipated beneficial uses of San Diego Bay.

Size of the remedial footprint is irrelevant to the assessment of beneficial uses or remediation to mitigate beneficial use impairment. Attachment A, Exponent Critique, at 8. The only relevant consideration is whether residual sediment chemicals are protective of beneficial uses, as determined by exposure assessment on an appropriate spatial scale. Id. At many sites, remedial goals can be achieved through the selective removal of hot spot contamination. Id.

Further, there is ample evidence set forth in NASSCO's Initial Comments demonstrating that the cleanup is excessively conservative, and that site conditions do not warrant any remediation beyond monitored natural attenuation, which is already occurring.

[NASSCO Comment No. 303, TCAO, at ¶¶ 32, 33, Attachment 2, DTR, at §§ 32, 33, Appendices 32, 33]

Comment ID: 330 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:

EHC/Coastkeeper Comment No. 43: Problems with the development of the Proposed Remedial Footprint results in a cleanup that achieves less than the best water quality reasonable.

EHC/Coastkeeper states that the following five factors relating to the development of the footprint result in a cleanup that achieves less than the best water quality reasonable: (1) an insufficient number of samples were collected to accurately determine the nature and extent of contamination at the Site, given the variability of contaminants; (2) ranking the polygons using the SWAC value fails to consider potential adverse effects on human health or the environment, and ignores certain contaminants; (3) the footprint excludes 15 polygons with higher chemistry than the least-contaminated polygon in the proposed footprint; (4) the thresholds used to determine whether polygons are "Likely" impacted are problematic, including the use of SS-MEQ and 60% LAET; and (5) the DTR does not adequately consider potential adverse effects on fish with small home ranges.

First, as discussed in NASSCO's Initial Comments, Site conditions are generally favorable, and any active remediation will result in only minimal benefits. Second, under Resolution 92-49, the Regional Board is required to consider economic feasibility in setting alternative cleanup levels; an expanded footprint would not be consistent with the requirements of Resolution 92-49 given the fact that only minimal benefits, if any, would be achieved, at substantial cost to the parties named to the TCAO. Third, for the reasons discussed below, these comments are without scientific merit, and do not support an expanded footprint.

[NASSCO Comment No. 304, TCAO, at ¶¶ 32, 33, DTR, at §§ 32, 33, Appendices 32, 33]

Comment ID: 331 **Organization:** NASSCO
DTR Section: 13, 32, Appendix 32
Comment:

EHC/Coastkeeper Comment No. 44: An insufficient number of samples were collected to accurately determine the nature and extent of contamination at the 148-acre Shipyard Site, given the variability of contaminants at the site.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 30.

EHC/Coastkeeper suggests that an insufficient number of samples were collected to accurately determine the nature an extent of contamination at the Site; however the sediment investigation by Exponent, upon which the DTR analyses are based, was conducted with substantial oversight from the Regional Board and has been described by Regional Board Staff ("Staff") as "the most extensive sediment investigation even conducted for a site in San Diego Bay," if not California. Barker Depo, at 80:2 – 80:22; 82:3 – 82:4, 83:14 – 83:23. See also DTR, at 13-2 – 13-3 (summarizing Staff and stakeholder involvement in the sediment investigation); Exponent Report, at 1-2 – 1-4 (summarizing the directives and guidance provided by Staff throughout the planning and execution of the sediment investigation and Exponent Report. Staff confirmed that approximately 65 stations were sampled, including 30 triad stations, 35 non-triad stations, with sediment chemistry and benthic community profiling data collected. Barker Depo, at 80:2 – 80:22. Staff did not recall collecting 30 or more triad stations for any other sediment matter in San Diego Bay. Id. Further, Staff described the study as "detailed" and "very thorough." Id., at 82:3 – 82:4, 82:14 – 83:23.

The Site assessment approach, including the sample types, number, and density were all thoroughly vetted by Board Staff prior to implementation in 2001. The DTR analyzes data collected from 60 stations throughout the Site, distributed consistent with the manner in which most investigations are designed at sediment sites. Stations were distributed with the highest density near sources where the highest COC concentrations would be expected, and with lower densities in areas further removed from potential sources, where contaminants would be expected to be more widely dispersed by winds, waves, and tides. In fact, Mr. MacDonald described exactly this type of distribution scheme when he suggested that "to address concerns regarding spatial variability in sediment chemistry, investigators frequently design sediment sampling programs to provide a high density of samples in the vicinity of point sources discharges." March 2011 MacDonald Report, at 10. Given the extensive and unparalleled scope of the sediment investigation, including the number of stations sampled, the contention that an insufficient number of stations were analyzed is unsupportable.

[NASSCO Comment No. 305, TCAO, at ¶¶ 13, 32, DTR, at §§ 13, 32, Appendix 32]

Comment ID: 332 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:

EHC/Coastkeeper Comment No. 45: Ranking the polygons from most- to least-contaminated using the Composite Surface Weighted Average Concentration (SWAC) Value fails to consider the potential adverse effects on human health or the environment.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 31-32.

EHC/Coastkeeper states, without explanation, that ranking polygons from most to least contaminated using the composite SWAC value fails to consider the potential adverse effects on human health or the environment, citing to MacDonald who reiterates the same unsupported conclusion. EHC/Coastkeeper has provided no credible evidence that the proposed TCAO is not protective of human health or the environment.

[NASSCO Comment No. 306, TCAO, at ¶¶ 32, 33, DTR, at §§ 32, 33, Appendices 32, 33]

Comment ID: 333 **Organization:** NASSCO
DTR Section: 33, Appendix 33
Comment:
EHC/Coastkeeper Comment No. 46: The Proposed Remedial Footprint arbitrarily excludes 15 polygons that are more contaminated - from a sediment chemistry standpoint - than the least-contaminated polygon in the Proposed Remedial Footprint.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 43, 57.

[NASSCO Comment No. 307, TCAO, at ¶ 33, DTR, at § 33, Appendix 33]

Comment ID: 334 **Organization:** NASSCO
DTR Section: 32, Appendix 32
Comment:
EHC/Coastkeeper Comment No. 47: The thresholds the DTR uses to determining [sic] whether polygons that are "Likely" impacted are problematic.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 64-65, 68.

[NASSCO Comment No. 308, TCAO, at ¶ 32, DTR, at § 32, Appendix 32]

Comment ID: 335 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:
EHC/Coastkeeper Comment No. 48: The Proposed Remedial Footprint excludes eight polygons that, under the DTR's own methodology, should have been included.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 54-55.

[NASSCO Comment No. 309, TCAO, at ¶¶ 32, 33, Attachment 2; DTR, at §§ 32, 33, Appendices 32, 33]

Comment ID: 336 **Organization:** NASSCO
DTR Section: 33, Appendix 33

Comment:
EHC/Coastkeeper Comment No. 49: The Proposed Remedial Footprint improperly excludes NA22.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 55.

EHC/Coastkeeper states that the inclusion of NA22 within the area being evaluated as part of the TMDLs for Toxic Pollutants in Sediment at the Mouth of Chollas Creek is an insufficient basis for excluding it from the instant cleanup. NASSCO incorporates by reference the comments previously submitted by BAE on this issue. BAE Initial Comments, at 42:23 – 43:13. The TCAO and DTR are clear that the Regional Board made an informed administrative decision to exclude NA22 from consideration as part of the Shipyard Sediment Site for purposes of the TCAO. TCAO, at ¶ 33; DTR, at 33-3.

Although the triad weight-of-the-evidence analysis categorized NA22 as "Likely" impaired, this designation was based upon "Moderate" chemistry, toxicity, and benthic community results for each of the three legs of the triad. DTR, at 33-4 (citing Table 18-1). However, NA22 is an area where propeller testing occurs routinely, suggesting that the observed benthic condition may be the result of physical impacts, rather than site contaminants. DTR, at 33-4. Additional sampling in connection with the TMDL proceeding may clarify the cause of the potential impairment, and permit the Regional Board to make a more fully informed decision concerning what, if any, remediation is required. Because there is expected to be substantially more data available to evaluate the cause of observed impacts to NA22 following the completion of the TMDL proceedings than is presently available, the Regional Board's decision to exclude NA22 from the current cleanup is reasonable.

[NASSCO Comment No. 310, TCAO, at ¶ 33, Attachment 2; DTR, at § 33, Appendix 33]

Comment ID: 337 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:
EHC/Coastkeeper Comment No. 50: The Proposed Remedial Footprint excludes - NA01, NA04, NA07, NA16, SW06, SW18 and SW29 - which pose unacceptable risks to fish and the benthic community.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 54, 57.

[NASSCO Comment No. 311, TCAO, at ¶¶ 32, 33, Attachment 2; DTR, at §§ 32, 33, Appendices 32, 33]

Comment ID: 338 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 51: The Remediation Monitoring is insufficient to assess remedial activities' impacts on water quality, to evaluate the effectiveness of remedial measures, or to identify the need for further dredging to achieve clean-up goals at the Shipyard Sediment Site.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 62-63.

[NASSCO Comment No. 312, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 339 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 52: The water quality component of the Remediation Monitoring program fails to provide safeguards to ensure data collected reveals actual water quality conditions.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 62, 64-65.

[NASSCO Comment No. 313, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 340 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 53: The Remediation Monitoring program allows the Dischargers to measure compliance with ambiguous water quality monitoring goals through modeling, which will not provide data of actual conditions sufficient to determine whether dredging is violating water quality standards.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 66.

[NASSCO Comment No. 314, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 341 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 54: The Remediation Monitoring allows Dischargers to abandon daily water quality monitoring if no samples exceed water quality targets for three days in a row. Abandoning daily monitoring is problematic because it [sic] the variability in turbidity or dissolved oxygen levels is not associated primarily with operation of the dredge.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 315, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 342 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 55: The Remediation Monitoring fails to specify the numeric "water quality standards" that must be complied with during remediation.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 62.

[NASSCO Comment No. 316, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 343 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 56: The Remediation Monitoring fails to require dischargers to take all the samples from down-current locations.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 64..

[NASSCO Comment No. 317, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 344 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 57: The Remediation Monitoring fails to define the "construction area."

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 64.

[NASSCO Comment No. 318, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 345 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:

EHC/Coastkeeper Comment No. 58: The Remediation Monitoring mandates that samples be collected 10 feet deep instead of the depth with the highest level of monitored variables.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 319, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 346 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 59: The Remediation Monitoring fails to require that water samples need to be collected long enough after dredging commences for the day to give the plume time to reach the sampling location.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 320, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 347 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 60: The Remediation Monitoring fails to specify which best management practices should be employed to reduce or eliminate resuspended sediments from being [sic] traveling to other areas, harming water quality or recontaminating adjacent areas.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 321, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 348 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 61: The sediment component of the Remediation Monitoring program fails to require data collection to confirm Cleanup Levels are achieved.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 322, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 349 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 62: The Order and DTR provide inconsistent sampling requirements; the Order requires that samples be collected deeper than the upper 5cm, while the DTR requires that samples be collected deeper than the upper 10cm.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 66.

[NASSCO Comment No. 323, TCAO, at ¶ 34, Directive A.2.a, DTR, at § 34, Appendix 34]

Comment ID: 350 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 63: Vagueness in the monitoring requirements permits Discharges to collect only one sample from each polygon, which is insufficient given the sediment chemistry variability within polygons.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 324, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 351 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 64: Vagueness in the monitoring requirements allows sediment sampling to target the historic sampling locations, leaving other locations within the remedial footprint unsampled and ignoring elevated contaminant levels that may occur in those unsampled areas.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 65.

[NASSCO Comment No. 325, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 352 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 65: The DTR explains a sampling protocol that requires the sampling team to visually examine each sediment sample and try to identify "undisturbed

sediments." These sampling procedures are inappropriate and will be nearly impossible for sampling teams to follow consistently.

The final sampling procedures will be proposed and reviewed for technical adequacy as part of the Remediation Monitoring Plan.

[NASSCO Comment No. 326, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 353 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 66: The DTR explains that a sand cap would be necessary at times, but the Remediation Monitoring fails to explain what those criteria are and who would make such determination.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 66.

[NASSCO Comment No. 327, TCAO, at ¶ 34, Directive B.1.1, DTR, at § 34, Appendix 34]

Comment ID: 354 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 67: The Post Remedial Monitoring program is poorly designed and will not require data collection to accurately evaluate post-remediation conditions.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 67-73.

[NASSCO Comment No. 328, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 355 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 68: Post Remedial Monitoring excludes NA22 wholesale from the Post Remedial Monitoring plan, even though NA22 is part of the Site. NA22 must be included in any Post Remedial Monitoring because it is a part of the Shipyard Sediment Site.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 42, 55, 57. NASSCO also incorporates its response to EHC/Coastkeeper Comment No. 49, concerning the bases for excluding NA22 from the Site for purposes of the TCAO.

[NASSCO Comment No. 329, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 356 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 69: The approach to evaluating post-remedial conditions is likely to underestimate sediment toxicity because the DTR relied on inappropriate thresholds.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 34-36.

[NASSCO Comment No. 330, TCAO, at ¶ 34, Directive D.1.c, DTR, at § 34, Appendix 34]

Comment ID: 357 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 70: Requiring sediment samples to be collected at only five sampling stations to evaluate benthic community conditions is inadequate because it will provide data on only about eight percent of the polygons at the Sediment Shipyard Site.

As stated in the DTR, "The purpose of assessing benthic community conditions as part of post-remedy monitoring is to demonstrate the remediation will successfully create conditions that would be expected to promote re-colonization of a healthy benthic community" DTR, at 34-8. There is no intention nor need to re-evaluate the benthic community at the entire Site. Attachment A, Exponent Critique, at 9. The DTR further states "The intent of these benthic community measurements is to track the degree to which the benthic community re-colonizes the area and will not be used to evaluate the success of the remedy" DTR, at 34-11.

[NASSCO Comment No. 331, TCAO, at ¶ 34, Directive D.1.c, DTR, at § 34, Appendix 34]

Comment ID: 358 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 71: The Post Remedial Monitoring plan should be expanded to provide a more robust basis for evaluating exposure of benthic invertebrates to contaminants at the site and for assessing sediment toxicity, and include testing from appropriate reference sites.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 73.

[NASSCO Comment No. 332, TCAO, at ¶ 34, Directive D.1.c, DTR, at § 34, Appendix 34]

Comment ID: 359 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 72: The Post Remedial Monitoring program's bioaccumulation requirements are insufficient.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 69-70, 72.

[NASSCO Comment No. 333, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 360 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 73: Because the bioaccumulation criteria are not effects-based, they will not be useful for determining if conditions at the Shipyard Sediment Site will be unreasonably affecting San Diego Bay beneficial uses two years, five years, or ten years after the completion of remedial actions.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 70.

Additionally, EHC/Coastkeeper mischaracterizes the intent of the bioaccumulation testing. As stated in the DTR, "The goals of bioaccumulation testing are to show decreasing bioaccumulation over time such that at two years post-remediation, the average of stations sampled shows bioaccumulation levels below what was measured in the Shipyard Report (Exponent, 2003) and that this decreasing trend continues at year five post-remediation and, if determined necessary, at year ten post-remediation" DTR, at 34-6. This is not an effects-based assessment, but a bioavailability assessment.

[NASSCO Comment No. 334, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 361 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 74: Reducing bioaccumulation levels below the pre-remedial levels would not ensure that aquatic organisms utilizing habitats at the site would have tissue concentrations of contaminants of concern low enough to support beneficial uses.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 6, 70, 72.

[NASSCO Comment No. 335, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 362 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 75: The Order fails to include rules specifying what actions the Dischargers must take if sediment chemistry results for the post-remediation sediment samples exceed the thresholds included in the Order.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 73-76.

[NASSCO Comment No. 336, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 363 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 76: The Order fails to include rules specifying what actions the Dischargers must take if toxicity to one or more species is observed during the Post Remedial sampling and testing.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 71, 73.

[NASSCO Comment No. 337, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 364 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 77: The Order does not list the triggers that will be used for evaluating sediment chemistry for benthic exposure.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 74.

[NASSCO Comment No. 338, TCAO, at ¶ 34, Directive D.1, DTR, at § 34, Appendix 34]

Comment ID: 365 **Organization:** NASSCO
DTR Section: 18, 33, Appendices 18, 33
Comment:
EHC/Coastkeeper Comment No. 78: The DTR incorrectly claims that the Proposed Remedial Footprint "captures 100 percent of triad 'Likely' ... impacted stations."

EHC/Coastkeeper claims that the DTR incorrectly claims that the proposed remedial footprint "captures 100 percent of Triad "Likely" . . . impacted stations" because the proposed remedial footprint excludes NA22. As discussed above in NASSCO's Response to EHC/Coastkeeper Comment No. 49, the Regional Board made a rational decision to address NA22 as part of the TMDL process, so that additional information concerning the cause of impairment at NA22 could be gathered. This decision was explained thoroughly in the DTR, which clearly states that NA22 "is not considered part of the Shipyard Sediment Site for purposes of the CAO." DTR, at 18-2, 18-11, 18-16, 18-19, 18-23, 18-24, 32-32, § 33.1.1. The decision to exclude NA22 is well within the Regional Board's discretion, and does not render untrue the statement that the proposed remedial footprint "captures 100 percent of Triad "Likely" . . . impacted stations" since for purposes of the TCAO, NA22 was expressly not included in the definition of the Site.

[NASSCO Comment No. 339, TCAO, at ¶¶ 18, 33, DTR, at §§ 18, 33, Appendices 18, 33]

Comment ID: 366 **Organization:** NASSCO
DTR Section: 31, 33, Appendices 31, 33
Comment:

EHC/Coastkeeper Comment No. 79: The DTR claims that the ranking process "used Triad data and site-specific median effects quotient (SS-MEQ)," but the Excel file used to create the worst-to-least contaminated ranking only includes the SS-MEQ and not Triad data.

The economic feasibility analysis relied on the composite SWAC ranking to determine remedial order, not the Triad data or SS-MEQ values.

[NASSCO Comment No. 340, TCAO, at ¶¶ 31, 33, DTR, at §§ 31, 33, Appendices 31, 33]

Comment ID: 367 **Organization:** NASSCO
DTR Section: 32, 36
Comment:

EHC/Coastkeeper Comment No. 80: The Order incorrectly concludes that "clean-up of the remedial footprint will restore any injury, destruction, or loss of natural resources." The San Diego Regional Board does not have authority to conduct natural resource damage assessments because only the Natural Resources Trustees have authority to conduct natural resource damage assessments and to draw conclusions regarding injury to natural resources and the effectiveness of remedial actions in terms of restoring natural resource values.

The Regional Board is empowered to "coordinate with the state board and other regional boards, as well as other state agencies with responsibility for water quality, with respect to water quality control matters, including the prevention and abatement of water pollution and nuisance." Cal. Wat. Code § 13225(a). Additionally, as EHC/Coastkeeper has pointed out, under Resolution 92-49, the Regional Board must ensure that constituents at concentrations below the alternative cleanup levels "will not pose a substantial present or potential hazard to human health or the environment," and must also weigh factors including "the current and potential uses of surface waters in the area" and "the potential damage to wildlife [and] vegetation . . . caused by exposure to waste constituents."

The Regional Board has extensively evaluated many of the types of effects that could constitute injury to natural resources at the Site, including exceedances of sediment quality guidelines, sediment toxicity, bioaccumulation, fish histopathology, and risks to wildlife from contaminated prey. Moreover, many of these analyses were developed cooperatively with input from designated Natural Resource Trustees, including U.S. Fish and Wildlife Service, California Department of Game, and the National Oceanographic and Atmospheric Administration. The Regional Board's statement simply articulates that the cleanup of the remedial footprint at the Site will improve environmental conditions such that natural resources, including those evaluated in detail in connection with the Site investigation and cleanup (i.e., benthic macroinvertebrates, fish, and aquatic-dependent wildlife) will benefit from cleanup. Accordingly, it is appropriate and reasonable for the Regional Board to consider whether the cleanup will be protective of natural resources, including whether it will restore any injury, destruction, or loss of natural resources.

[NASSCO Comment No. 341, TCAO, at ¶¶ 32, 36, DTR, at §§ 32, 36]

Comment ID: 368 **Organization:** NASSCO
DTR Section: 31-34
Comment:

EHC/Coastkeeper Comment No. 81: The DTR repeatedly refers to "65" polygons, even though there are a total of 66 polygons in the Shipyard Sediment Site.

As noted above, station NA22 was specifically excluded from consideration for cleanup because it is being addressed as part of the Mouth of Chollas Creek TMDL determination, currently being undertaken by the Regional Board. Thus the total number of stations was reduced from 66 to 65 for purposes of determining the need for remediation.

[NASSCO Comment No. 342, TCAO, at ¶¶ 31-34, DTR, at §§ 31-34]

Comment ID: 369 **Organization:** NASSCO
DTR Section: 34
Comment:

EHC/Coastkeeper Comment No. 82: The Order and DTR must require that the remediation achieve the Alternative Clean-up Levels.

EHC/Coastkeeper agree that the proposed Site-Wide Alternative Cleanup Levels are reasonable, but argue that the alternative cleanup levels are not maximum pollutant concentrations because the "120% of background" second-dredging pass and the "Trigger Concentrations" allow the pollutant levels at the Site to exceed the Alternative Cleanup Levels following remediation.

As discussed in NASSCO's Response to EHC/Coastkeeper Comment No. 1, EHC/Coastkeeper misstate the standards for cleanup under Resolution 92-49. Further, as discussed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 19 and 20, the 120% trigger simply recognizes natural variability in sediment chemical concentrations, which does not represent a true difference from expected values. Accordingly, the 120% trigger serves to prevent unnecessary dredging due to natural variability, and is not a mechanism for allowing the remediated areas to be remain more polluted than background.

[NASSCO Comment No. 343, TCAO, at ¶ 34, Directives B.1, D, DTR, at § 34]

Comment ID: 370 **Organization:** NASSCO
DTR Section: 31, 32, Appendices 31, 32
Comment:
EHC/Coastkeeper Comment No. 83: The Regional Board should make an independent finding of what level of cleanup is economically feasible based on all the evidence in the record regarding economic feasibility.

EHC/Coastkeeper argue that the economic feasibility analysis presented in the DTR is flawed, and suggests that the Regional Board should "independently evaluate the economic feasibility analysis and determine at what point, if any, benefits of additional remediation become 'negligible' and above which no further remediation should be required." As discussed in NASSCO's Response to EHC/Coastkeeper Comment Nos. 5 through 18, the economic feasibility analysis in the DTR is overly conservative. Thus the Regional Board has already "independently evaluate[d] the economic feasibility analysis and determine[d] at what point, if any, benefits of additional remediation become 'negligible' and above which no further remediation should be required."

Further, EHC/Coastkeeper, without any credible basis or economic feasibility analysis of its own, "urge[s] the Regional Board to set this level well above the $33 million level set in DTR § 31." The Regional Board should decline to replace the present analysis, based on the unsupported urgings of EHC/Coastkeeper. To the extent that the Regional Board does revise its economic feasibility analysis, applying Resolution 92-49, the Regional Board should reach the conclusion that only monitored natural attenuation is feasible, in light of the minimal benefits of active remediation as discussed in the Exponent Report, and the Cleanup Team's admissions that, under Resolution 92-49, the Regional Board could decide that no further cleanup is required if there is no benefit to an incremental cleanup measure. Moreover, one member of the Cleanup Team has admitted that, based on his 20-plus years of experience doing cost estimates and then going out and implementing remediation, the actual cost of remediation often exceeds pre-remediation estimates by as much as an order of magnitude, providing further evidence that the true point at which the incremental benefit is no longer justified by the incremental cost has already been exceeded under the DTR's economic feasibility analysis in the DTR. See Deposition of Craig Carlisle ("Carlisle Depo"), at 190:16 – 191:5. Thus, the TCAO and DTR analyses are already overly conservative, both in terms of protection of beneficial uses and the feasibility analyses; accordingly, no further cleanup is warranted.

[NASSCO Comment No. 344, TCAO, at ¶¶ 31, 32, DTR, at §§ 31, 32, Appendices 31, 32]

Comment ID: 371 **Organization:** NASSCO
DTR Section: 31-33, Appendices 31-33

Comment:
EHC/Coastkeeper Comment No. 84: The Proposed Remedial Footprint should be enlarged by eight polygons.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 54-57.

[NASSCO Comment No. 345, TCAO, at ¶¶ 31-33, Attachment 2, DTR, at §§ 31-33, Appendices 31-33]

Comment ID: 372 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 85: The monitoring requirements should be strengthened to ensure the best water quality reasonable.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 63-65.

[NASSCO Comment No. 346, TCAO, at ¶ 34, Directives B, D, DTR, at § 34, Appendix 34]

Comment ID: 373 **Organization:** NASSCO
DTR Section: 34, Appendix 34
Comment:
EHC/Coastkeeper Comment No. 86: Additional trigger concentrations and triggers for Benthic invertebrates should be added to ensure the best water quality reasonable.

NASSCO agrees with BAE's comments on this topic, and incorporates those comments herein. See BAE Initial Comments, at 63-65.

[NASSCO Comment No. 347, TCAO, at ¶ 34, Directive D.6, DTR, at § 34, Appendix 34]

Comment ID: 374 **Organization:** NASSCO
DTR Section: 10
Comment:
U.S. Navy Comment No. 1: The RWQCB's allegation that significant contaminants from Naval Base San Diego migrated to the Shipyard Sediment Site, either through discharges to Chollas Creek, resuspension of sediments through propeller wash, or via tidal currents is unfounded.

In its comments on the TCAO and DTR, the Navy attempts to downplay its responsibility for sediment contamination that arises from storm water discharges from Naval Base San Diego ("NBSD"), both into Chollas Creek and directly into the San Diego Bay. U.S. Navy's

Comments and Evidentiary Submission (May 26, 2011) ("Navy Comments"). The Navy asserts that:

[T]he Navy's contribution to contaminant loading in Chollas Creek is negligible as demonstrated by the small relative portion of the Chollas Creek contaminant loading in the Bay that can be attributed to the Navy stormwater discharges, the portion of the solids loading from the Creek that is likely deposited at the shipyard sediment site, the observed spatial gradients of contamination in the area, and the relative chemical signatures of bottom sediments in the area.

Id. at Comment No. 1. The Navy bases its statement on an Apportionment Report, presented as Appendix B to its comments, which estimates that the "potential release to the CAO site from this source is likely to be smaller than 0.08% and is considered to be negligible for all practical purposes." Navy Comments, Appendix B, Apportionment Report at 22.

This Apportionment Report, along with a number of other attachments to the Navy Comments, should be excluded because they constitute untimely expert reports. See NASSCO's Joinder In BAE's Motions to Exclude Untimely Expert Evidence Submitted By the San Diego Unified Port District and San Diego Gas & Electric, and Motion to Exclude the Untimely Expert Evidence Submitted by the United States Navy.

In addition to being untimely, the Navy's estimate of negligible liability is flawed in a number of respects. First, although the Navy does not specifically acknowledge this point, it essentially agrees with the DTR's accounting of the Navy's contribution to copper, zinc, and lead loading to the mouth of Chollas Creek from storm water discharges, copper leaching from Navy ship hulls, and zinc leaching from cathodic protection. For example, the Navy relies on storm water monitoring results for COCs from 2001 that show that the Navy is responsible for a higher percentage of copper and zinc discharges to Chollas Creek than was presented in the DTR. Compare Navy Comments, Appendix B at 17, Fig. 8 (Navy contribution of 7.5% copper, 6.5% zinc, and ~2% lead) with DTR at 10-90 (Navy contribution 5% copper, 4% zinc, and 2% lead). Furthermore, while the DTR also notes that copper leaching from Navy ship hull coatings and zinc leaching from cathodic protection, in addition to storm water contributions, brings the Navy's pollutant contributions to the mouth of Chollas Creek significantly to "approximately 40% of the copper load, 2% of the lead load, and 18% of the zinc load" (DTR at 10-90), the Apportionment Report concludes that "information needed to calculate a total mass loading of copper and zinc from Navy vessels in the Chollas Creek Channel is not available." Navy Comments, Appendix B, Apportionment Report at 22.

Second, the Navy underestimates its own storm water contamination sources to the Site by completely omitting any analysis of Outfalls 161 through 171, which are located immediately adjacent to the area where Chollas Creek discharges to the Bay. DTR, 10-27. The DTR states, "[a]vailable U.S. Navy studies (Katz et al., 2003; Chadwick et al., 1999) indicate that pollutants from Chollas Creek outflows, and from NBSD in general (including resuspended sediment), can be conveyed to the Shipyard Sediment Site via storm water flows, tidal currents, and ship movements." Id.

Third, the Navy Apportionment Report relies heavily on the concept of trapping efficiency, which attempts to describe the amount of sediment and particulate contaminants that are retained near the mouth of Chollas Creek compared to what is exported into the Bay. To estimate trapping efficiency, the Navy relied on model-predicted trapping efficiencies based on two storm events in February and March 2006, respectively. Navy Comments, Appendix B, Apportionment Report at 19, Table 2.

The critical problem with this argument is that the solids in the Navy's storm water runoff are exactly the finer-grained (silt and clay) solids that are largely not retained in the mouth of Chollas Creek. Roger et al. (1998) as cited in Pitt et al. (2004){Pitt, R., D. Williamson, J. Voorhees and S. Clark. 2004. Review of historical street dust and dirt accumulation and washoff data. In Effective Modeling of Urban Water Systems, Monograph 13. W. James, K.N. Irvine, E.A. McBean and R.E. Pitt, eds.} showed that the majority of sediment transported by stormwater runoff from a roadway was less than 50 □m in diameter. Li et al. (2005){Li, Y., S.-L. Lau, M.Kayhanian, and M.K. Stenstrom. 2005. Particle size distribution in highway runoff. Journal of Environmental Engineering, September 2005: 1267-1276.} also report that particle sizes from paved roadways were generally in the 10-50 □m diameter range. Although these studies are for roadways, they provide some indication as to expected particle sizes of stormwater-transported sediment that might be expected from paved or impervious surfaces and that these sediments are usually fine grained. Additionally, because the Navy's property is relatively flat lying (i.e., low slope) and therefore runoff would be lower-energy the runoff would be expected to suspend and transport predominantly fine particles.{Land in the Navy's property slopes between 0-1 degree based on information in Weston Solutions, 2006. Chollas Creek TMDL Source Loading, Best Management Practices and Monitoring Strategy Assessment. Final Report for City of San Diego, San Diego, CA. (Weston Solutions 2006; p. 47).} Alternatively, the steeper slopes (see Weston 2006; p. 47) in the upland portions of the Chollas Creek Watershed would tend to supply a larger and more significant proportion of any coarse grained sediments to Chollas Creek. It is also important to note that of the three Navy storm water outfalls in Chollas Creek, two are near the mouth of the creek, but one is located in the outer portion of Chollas Channel, well beyond (bayward of) the area of Chollas Creek where sediment trapping occurs.

While most sand-sized particles and some silt does settle out before reaching the Bay and the Site, the finer-grained particles, which carry most of the adsorbed COC load, do not. It is important to consider that most of the particles in the runoff from the Navy property are likely finer-grained than the storm water arriving from the Chollas Creek watershed. Furthermore, one of the three Navy storm water outfalls is located closer to the Bay and Site in the outer portion of the Chollas Channel. Because little trapping of the smaller particles that carry the adsorbed contaminants in storm water actually takes place in Chollas Creek, a reduction of the Navy's allocation is not appropriate. Attachment B, Exponent, Critique of the U.S. Navy's Apportionment Report (June 23, 2011) ("Apportionment Critique"), at 5.

In addition, the Navy relies on two storm events late in the rainy season, and not on early fall "first flush" rainfall events when the highest amount of accumulated contaminants from the dry season would flush into the Bay. It does not account for the intensity of the storm event, despite the fact that more powerful storms with higher rainfall rates can be expected to carry more contaminant-loaded particles from Chollas Creek further into the Bay, and to volatilize previously deposited contaminants from the mouth of Chollas Creek and push them further into the Bay.

From this flawed basis, the Navy calculates that its contribution to contaminant loadings at the Site would be less than 0.08%, "assuming that contaminants are distributed equally among the different particle sizes." Navy Comments, Appendix B, Apportionment Report at 19. Yet the assumption that contaminants are distributed equally among different particle sizes directly contradicts the Navy's finding that because "smaller particles contain proportionally higher contaminant loads . . . contaminant loading from the creek to the [Site] is affected by dispersion and fate of the smaller suspended particles." Id. (emphasis added). Even before taking into account the flaws in Table 2 identified above, the Navy admits that 1% to 2.2% of the smallest particles (silt) are deposited at the Site during storm events. Id. In fact, this percentage should be higher.

Finally, the Navy's calculation that its contribution to contaminant loadings would be less than 0.08% can only be replicated with fuzzy math. To reach that calculation, the Navy assumes 8% responsibility for COC loading to Chollas Creek times 1% deposition rate of contaminated particles to the Site (0.08 * 0.01 = 0.0008, or 0.8%). Yet as described above, the Apportionment Report does not disturb the DTR's conclusion that the Navy's pollutant contributions to the mouth of Chollas Creek are "approximately 40% of the copper load, 2% of the lead load, and 18% of the zinc load" because the Navy relies on essentially the same COC estimate from Chollas Creek and has no competing data for hull and cathodic protection leaching. DTR at 10-90. So multiplying by 8% for all COCs dramatically understates the Navy's responsibility for copper and zinc, and, as also stated above, the 1% deposition rate for contaminated particles at the Site is skewed low due to the Navy's use of flawed data and unreasonable assumption that contaminants are distributed equally among the different particle sizes.

Furthermore, the Navy argues that that modeled patterns of contaminant transport show that concentration gradients decrease with distance away from the mouth of Chollas Creek and thus do not support the assertion that contamination from Chollas Creek is impacting sediment at the Site. This may be true for the sand-sized sediments that are deposited near the mouth and in the channel. However, Figure 11 of the Navy's report clearly shows transport and deposition of silt and clay, the most important size fractions with respect to COC transport, in the Site. For the same reasons noted above, a reduction of the Navy's allocation is not appropriate.

Spatial Gradients (Figure 12)

The Navy presents Figure 12 showing cadmium concentrations plotted against zinc concentrations, in other words the concentration ratios, for sediments from the Chollas Creek area and the Site. They argue that the ratios should be similar if the Chollas Creek sediments are a significant source of contaminants to the Site. The Navy's Figure 12 indeed shows that the plotted points for the Chollas Creek sediment and the Site sediment fall on different trend lines.

The Navy does not report exactly which data points were used in their analysis, or if they were analyses of surface or subsurface samples, except to say that the data are from SCCWRP and SPAWAR 2005{Southern California Coastal Water Research Project (SCCWRP) and Space and Naval Warfare Systems Center, San Diego, U.S. Navy (SPAWAR). 2005. Sediment assessment study for the mouths of Chollas and Paleta Creek, San Diego. Phase 1 final report. May 2005.} and Exponent 2001{The source of the Navy's data from "Exponent (2001)" is not clear. We do not have a record of this document as it is cited in the Navy's references. Additionally, this document (as cited by the Navy) is not found as a reference in the DTR. The closest document we have is Exponent. 2001. Technical Memorandum 1 Phase 1 sediment chemistry data for the NASSCO and Southwest Marine detailed sediment investigation. Prepared for NASSCO and Southwest Marine, October 2001.}. Similar plots are presented below from contemporaneous surface sediment samples.

Chollas Creek sediment samples{Stations C01–C14.} are from the top 2 cm, taken in July/Aug 2001 (SCCWRP and SPAWAR 2005). Site stations{Stations NA13, NA14, NA22, NA25, NA30, and NA31.} data are from Exponent collected in 2001 and 2002. Figure 1 is a plot of cadmium and zinc concentrations similar to the Navy's Figure 12. However, these samples of surface sediment collected within a year of each other do not show a clear difference. The data points for Chollas and Site (NASSCO) samples show significant overlap in cadmium – zinc ratios, which indicates that Chollas Creek is indeed a source of COCs to the Site.

Figure 1 Metals ratios (cadmium and zinc) for sediments from Chollas Creek and Site.

A more relevant comparison is a comparison of copper and zinc ratios because they are both significant COCs in the Chollas Creek and the Site area, whereas cadmium is not as significant a COC. The ratios of copper and zinc are shown in Figure 2. In this case, copper – zinc ratios for Chollas Creek show a wide spread distribution. There is also significant overlap with the copper – zinc ratios for Site sediments which indicate, contrary to the Navy's argument, that Chollas Creek sediments are a source of copper and zinc to the Site.

Figure 2. Metals ratios (copper and zinc) for sediments from Chollas Creek and Site.

The Navy also notes that concentrations of copper and zinc are higher in Site sediments than in the Chollas Creek sediments. It states that this suggests that leachate from Navy vessels in the Chollas Creek region is not a significant source of copper and zinc in the Site sediments. This conclusion is misleading because even though the concentrations are higher in Site sediments this should not detract from the fact that there is a gradient of copper and zinc from the Chollas Creek sediments in the direction of the Site. Sources in the Chollas Creek area may not be the largest sources of copper and zinc to the Site sediment, but they are still a significant source.

Given the above, the Navy's contributions from the Navy 28th Street Landing Station ("28th Street") and storm water discharges to Chollas Creek are not "negligible," as the Navy argues. The Navy's apportionment determined in the TCAO should not be reduced. Attachment B, Apportionment Critique, at 9.

[NASSCO Comment No. 348, TCAO, at ¶ 10, DTR, at § 10]

Comment ID: 375 **Organization:** NASSCO
DTR Section: 10
Comment:

U.S. Navy Comment No. 2: The RWQCB's allegation that historical Navy operations at the 28th Street Mole Pier contributed to the contamination at the Shipyard Sediment Site is unfounded, and the Navy's 2004 comment submission on this subject incorrectly assumed that shipyard operations were part of the Navy leasehold.

The Historical Document Review submitted by the Navy does not provide any evidence that the Navy's activities at the NASSCO leasehold did not result in discharges of contaminants of concern to the Site. Accordingly, it does not serve as a basis for rebutting DTR Findings 10.4.2, 10.6, and 10.10.

The principle finding in the Historical Document Review is that "[t]he 2004 Navy Technical Report (Navy 2004) had previously associated many of the activities in the shipbuilding area with the Navy operated 28th Street Shore Boat Landing facility. However, this review indicates that these facilities were operated by the Lynch Shipbuilding Company and later by National Marine Terminal Incorporated." Navy Comments, Appendix A, Navy Historical Document Review, at 5-1.

Yet this conclusion does not contradict the findings in the DTR, which states that the "U.S. Navy concluded that the industrial activities it conducted on NASSCO's present day leasehold were limited to maintenance of small boat launches," and that the "U.S. Navy acknowledged the possibility that discharges from their boat launch maintenance operations on the north side of 28th Street Pier to the Shipyard Sediment Site may have occurred." DTR at 10-12. This is so because the Navy does not dispute that it operated a small boat launch facility at 28th Street, and the Historical Document Review does not present any evidence that contradicts the DTR's finding that discharges from those operations to the Shipyard Sediment Site may have occurred.

The Navy Apportionment Report also includes an analysis of the contribution of the Navy's facilities at 28th Street. The Navy presents historical evidence to clarify the extent of Navy facilities at that time. However, faced with a general lack of data, the Navy falls back to estimating its contribution from 28th Street based on the surface areas and periods of operation of the BAE, NASSCO, and 28th Street. The surface areas and periods of operation were multiplied by the Navy to obtain acre-years for each facility and then calculate the percentage of the total acre-years for each facility, which becomes the allocation that each facility.

This approach is completely irrelevant to contaminants in sediments near 28th Street because it presumes that all storm water-related COCs, derived from surface runoff, from the entire surfaces of the BAE and NASSCO facilities contributed to the small area near 28th Street (near the two sediment core locations), which they did not. Even if this were appropriate, the Navy biases the result further by limiting its area of contribution to just 28th Street (one acre) and disregarding the area of the rest of the NBSD. Finally, consideration of storm water runoff only from surfaces ignores inputs from historical point sources that were likely much more significant before implementation of both federal and state clean water point source permitting programs under the Clean Water Act and Porter-Cologne Act. Accordingly, the Navy's conclusion regarding its historical contribution from 28th Street is not credible and should not be considered. Attachment B, Apportionment Critique, at 3.

[NASSCO Comment No. 349, TCAO, at ¶ 10, DTR, at § 10]

Comment ID: 376 **Organization:** NASSCO
DTR Section: 4
Comment:

City Comment No. 1.0: Studies cited in DTR Section 4.3.1 do not support the DTR's statements regarding Chollas Creek's influence on the chemicals of concern in shipyard sediments.

The City alleges that the Schiff, 2003{Schiff, K., S. Bay and D. Diehl, 2003. Stormwater Toxicity in Chollas Creek and San Diego Bay, California. Environmental Monitoring and Assessment 81: 119-132, 2003. 2003 Kluwer Academic Publishers. Printed in the Netherlands.} , Chadwick, 1999{Chadwick B., J. Leather, K. Richter, S. Apitz, D. Lapota, D. Duckworth, C.

Katz, V. Kirtay, B. Davidson, A., Patterson, P. Wang, S. Curtis, G. Key, S. Steinert, G. Rosen, M. Caballero, J. Groves, G. Koon, A Valkirs, K., Meyers-Schulte, M. Stallard, S. Clawson, R. Streib Montee, D. Sutton, L. Skinner, J. Germano, and R. Cheng. 1999. Sediment Quality Characterization - Naval Station San Diego Final Summary Report. U.S. Navy Technical Report 1777.} , and Katz, 2003 [sic]{The resource the City is commenting on was actually generated in 2004. See Katz, C.N., Carlson-Blake, A. and Chadwick, D.B. 2004. Poster: Spatial and Temporal Evolution of Stormwater Plumes Impacting San Diego Bay. U.S. Navy, Marine Environmental Quality Branch, SPAWAR, San Diego, CA.} studies provide insufficient support for the allegations in the DTR § 4.3.1 that Chollas Creek impacts COCs at the Site because the studies did not provide their underlying data. City Comments, Comment No. 1.0 at 1. Yet the City has claimed no attempt to contact the authors of the studies to obtain the data they needed, despite the fact that the April 2008 DTR cited the same studies. See DTR (April 4, 2008), at 4-3. The City also speculates, without basis, that the Katz, 2003 study, which was prepared by a Navy entity, could be biased because the Navy is a party. City Comments, Comment No. 1.0 at 2. This type of speculation ignores that it is extremely common for potentially liable parties to prepare scientific and engineering studies for use by regulatory agencies in making determinations about remediation, and if given credence, would call into question virtually the entire body of environmental science. Furthermore, the City's comments implicitly recognize that those three studies cited support the conclusion that Chollas Creek impacts the NASSCO site.

[NASSCO Comment No. 350, TCAO, at ¶ 4, DTR, at § 4]

Comment ID: 377 **Organization:** NASSCO
DTR Section: 4.7
Comment:

City Comment No. 1.1: Purple sea urchin fertilization tests (Schiff 2003) cited at DTR Section 4.7.1.3 do not support the conclusion that Chollas Creek has contributed toxic effects or constituents of concerns to the site sediments.

Comment No. 1.1 argues that Schiff, 2003 does not stand for the proposition that COCs are transported on storm water plumes from Chollas Creek to the Site. City Comments, Comment No. 1.1 at 4. First, it is important to note that storm water plumes from Chollas Creek are known to reach well into the inner shipyard at NASSCO, including polygons slated for remediation. Attachment C, Declaration of T. Michael Chee In Support of NASSCO's Response to Comments on Tentative Cleanup and Abatement Order No. R9-2011-0001 ("Chee Dec.") Second, It is true that Schiff, 2003 notes that observed storm water plumes "formed relatively thin lenses 1 to 3 m, floating on top of the more dense bay water." Id., quoting Schiff, 2003. However, the City's logical jump from this observation to a conclusion that Schiff, 2003 cannot stand as evidence that COCs are transported to the sediment of the Site has no merit because how the thick the storm water plume was does not say anything about whether contaminated sediment in the plume settled out of the plume and down into the Site sediments.

[NASSCO Comment No. 351, TCAO, at ¶ 4, DTR, at § 4.7]

Comment ID: 378 **Organization:** NASSCO
DTR Section: 4.7
Comment:

City Comment No. 1.2: The DTR's reliance on Schiff (2003) is misplaced, as the Schiff (2003) plume studies are not supported by adequate data, do not take into account the hydrodynamic processes that affect the fate and transport of sediments from Chollas Creek into San Dego [sic] Bay, and therefore overstate toxicity in the Chollas freshwater plume.

The same type of speculation seen in City Comment 1.0 can be seen in Comment No. 1.2 (Schiff, 2003 plume maps "are not likely based directly on any data collected" from the shoreline, although "it is impossible to review since [sampling] locations are not provided"), and Comment No. 1.3 ("Doppler meters used to calibrate the hydrodynamic model [for Chadwick, 1999] were most likely placed outside of piers and probably could not show the effects of the piers on waters between them"). City Comments, Comment No. 1.2 at 5 (emphasis added); Comment No. 1.3 at 6 (emphasis added); Without more, the City's speculative comments do not constitute substantial evidence.

[NASSCO Comment No. 352, TCAO, at ¶ 4, DTR, at § 4.7]

Comment ID: 379 **Organization:** NASSCO
DTR Section: 4.7
Comment:

City Comment No. 1.3: The hydrodynamic model reported in Chadwick (1999) lacks important information influencing fate and transport and therefore may be overstating impacts from Chollas Creek.

See NASSCO's Comment No. 352, Reply to City Comment No. 1.2. The City also complains that hydrodynamic modeling in Chadwick 1999 could have been better, principally because the study modeled Chollas Creek discharges during storm events using a half sine wave function, but creek discharges could be longer than one-half tidal cycles. City Comments, Comment No. 1.3 at 7. Even if this is true (the City provides no evidence for the point that storm events commonly last longer than one-half tidal cycles), the City provides no more sophisticated model itself, and has not shown that any potential inaccuracies would critically impair the Regional Board's reliance on Chadwick 1999.

[NASSCO Comment No. 353, TCAO, at ¶ 4, DTR, at § 4.7]

Comment ID: 380 **Organization:** NASSCO
DTR Section: 4.7, 30
Comment:

City Comment No. 1.4: Measured Chollas Creek discharge data as referenced in Katz (2003) are insufficient for drawing conclusions that Chollas discharges have significantly impacted shipyard sediments.

The City states that measured Chollas Creek discharge data as referenced in Katz, 2003 are insufficient for drawing conclusions that Chollas Creek discharges have significantly impacted shipyard sediment. To support its comment, the City points out that COC loadings were measured at two points on Chollas Creek on a flow-weighted basis, while COC loadings from the three stormwater outfalls on the Navy's property adjacent to Chollas Creek were collected on a time-proportional basis. The City concludes that because of this difference, comparisons of concentrations or mass loading should not be made.

It is important to note that the City's criticism does not affect one's ability to draw conclusions regarding the impact of Chollas Creek discharges on shipyard sediments. The poster prepared by Katz, 2003 also presents data in Figure 5 that characterize the plume emanating from Chollas Creek toward the Shipyard Site. It is this plume that potentially affects shipyard sediments. The City does not comment on this aspect of the Katz, 2003 poster. Accordingly, the City's comment has no merit with respect to conclusions of impact of Chollas Creek on the Shipyard Site. Attachment A, Exponent Critique, at 9.

[NASSCO Comment No. 354, TCAO, at ¶¶ 4, 30 DTR, at §§ 4.7, 30]

Comment ID: 381 **Organization:** NASSCO
DTR Section: 4.4, 4.7, 30
Comment:

City Comment No. 2.0: The DTR's conclusions that discharges from SW9 have contributed to elevated levels of constituents of concern observed in shipyard sediments are not supported by adequate data.

Comment Nos. 2.0 and 3.0 contend that the DTR lacks "reliable data" to assert that the City is discharging COCs through storm water outfalls SW4 and SW9. City Comments, Comment Nos. 2.0 and 3.0 at 10-14. The City bases this claim on the fact that there is no monitoring data available from either SW4 or SW9 to indicate specific quantities of COCs in the runoff. Id.

As noted in the DTR, urban runoff itself is classified as a "waste" under the California Water Code § 13050(d). DTR at 11-8; see also Cal. Water Code §§ 13392 (State and Regional Boards to coordinate with Departments of Public Health and Fish & Game to develop "new programs to reduce urban and agricultural runoff"); 13396.7(a) (commissioning a study to determine adverse health effects of urban runoff on swimmers at urban beaches). In fact, the DTR includes substantial evidence that urban runoff in San Diego contains COCs at the Site, including "total suspended solids (TSS), sediment (due to anthropogenic activities), pathogens (e.g., bacteria, viruses, protozoa), heavy metals (e.g., copper, lead, zinc, and cadmium), petroleum products and polynuclear aromatic hydrocarbons (PAHs and HPAHs), synthetic organics (e.g., pesticides, herbicides, and PCBs), nutrients (e.g., nitrogen and phosphorus fertilizers), oxygen-demanding substances (decaying vegetation, animal waste), and trash." DTR at 11-8; see also 4-10 (San Diego County Municipal Copermittees 2002-2003 Urban Runoff Monitoring Final Report submitted by the City indicating that "elevated levels of zinc, copper, and lead are present in the urban runoff outflow discharged from Chollas Creek into San Diego Bay").

Furthermore, the DTR demonstrates that samples taken in the SW4 catch basin, and laterals entering the catch basin, "indicate the presence of both PCBs and PAHs entering and exiting the municipal storm drain system catch basin . . . ." DTR at 4-16. Far from suffering from a lack of evidence, the DTR has presented substantial evidence that San Diego urban runoff contains relevant COCs, but simply did not take the extra step to quantify the amount of COCs that actually are present in storm water flows as they exit the SW4 and SW9 outfalls.

Notably, the City's comments do not allege that storm water discharges from SW4 and SW9 do not contain relevant COCs, and the City presents no affirmative evidence to show that they do not. Instead, the City attempts to skirt the issue by simply claiming that the DTR does not provide sufficient support.

Finally, as also noted in the DTR, "[i]n the absence of such direct evidence, the San Diego Water Board may consider relevant direct or circumstantial evidence in determining whether a person shall be required to clean up waste and abate the effects of a discharge or a threat of a discharge under CWC section 13304." DTR at 10-13, citing State Resolution 92-49, § I.A (directing the Regional Boards to use "any relevant evidence, whether direct or circumstantial", when determining whether a party should be required to investigate or cleanup a discharge of waste). Accordingly, even if storm water sampling data from SW4 and SW9 is unavailable, it is proper for the Regional Board to consider and rely on other direct and circumstantial evidence that leads to the conclusion that the City's storm water discharges have contaminated the NASSCO shipyard.

[NASSCO Comment No. 355, TCAO, at ¶¶ 4, 30 DTR, at §§ 4.4, 4.7, 30]

Comment ID: 382 **Organization:** NASSCO
DTR Section: 4.4, 4.7, 30
Comment:

City Comment No. 3.0: There are no data indicating that SW4 has contributed significantly to elevated levels of constituents of concern observed in shipyard sediments.

See NASSCO'S Comment No. 355, Reply to City Comment No. 2.0.

[NASSCO Comment No. 356, TCAO, at ¶¶ 4, 30 DTR, at §§ 4.4, 4.7, 30]

Comment ID: 383 **Organization:** NASSCO
DTR Section: 14-19
Comment:

SDG&E Comment No. 1.1: DTR's Benthic beneficial use impairment is critically flawed and should be replaced with a causal approach to adequately identify risk.

SDG&E advocates replacing the triad study with a putative "causal" and self-serving approach to benthic risk evaluation proposed by SDG&E's expert witness, Jason Conder. While it is true that a Triad study cannot, by itself, establish specific chemical causality of observed adverse effects on benthic organisms, a Triad study that demonstrates the absence of adverse effects as a function of exposure to sediment chemicals is clear indication that there is no causal linkage between any measured chemical contamination and benthic impacts, at the exposure levels observed. Attachment A, Exponent Critique, at 10.

The alternative aquatic life BUI analysis put forward by Dr. Conder in the subject memorandum is based on a novel method of analysis proposed in his expert report critiquing the DTR aquatic life beneficial use impairment (BUI) assessment, submitted earlier this year (Conder 2011). However, the proposal currently being reviewed goes well beyond the original application and conclusions reached by Conder (2011). Conder (2011) re-evaluated the DTR findings of impaired benthic community at the Shipyard Site, and concluded that a much smaller remedial footprint was justified than that proposed in the DTR (Conder 2011, Figure 3). In contrast, the present analysis by Conder is a de novo re-assessment of benthic BUI for the entire Shipyard Site, and concludes that a remedial footprint much larger than the one proposed in the DTR is warranted based solely on benthic BUI (see subject memorandum, Figure 3). While the scope of the current analysis is clearly different from the one contained in Conder (2011), the discrepancy between the two sets of recommendations with regard to remediation is not explained or justified in any way.

Furthermore, the theoretical approach advocated in the comment does not establish the site-specific causality that is suggested to be necessary, because it does not evaluate the presence of a site-specific exposure-response relationship or of co-occurrence of exposure with adverse effects. Id. Rather, the toxic unit approach infers causality at the Site from a theoretical equilibrium model of exposure, combined with an assumed causal relationship developed from laboratory exposure data collected to assess water column toxicity rather than sediment toxicity. Id. As a result, the proposed alternative approach would ignore available site-specific information about the presence or absence of an exposure-response relationship at the Site, and would rely instead on a theoretical causal relationship that may not be relevant under conditions or to receptors found at the Site. Id. Proper interpretation of synoptic chemistry data, sediment toxicity testing (using three different organisms), and benthic community analysis are a far better basis from which to infer causality than a simple comparison of Site chemistry data to literature benchmarks for aqueous toxicity. Id. Furthermore, the comment ignores the fact that a site-specific causal assessment metric, the apparent effects threshold (AET), was developed from the Triad study data and incorporated into the DTR approach for non-Triad stations (see response to comment no. 3 below). Id.

In summary, the proposed alternative approach would do nothing to improve understanding of causality in the assessment of benthic impacts at the Shipyard Site, and would in fact be misleading and inferior to the DTR approach in this regard. Id. The alternative approach advocated would, at most, be appropriate only as a screening tool for potential BUI if Site-specific biological information was unavailable. Id. Any characterization of aquatic life BUI based on the proposed alternative approach would be seriously flawed, and unnecessary, since extensive site-specific biological information exists for the Site. Id.

[NASSCO Comment No. 357, TCAO, at ¶ 14-19, DTR, at §§ 14-19]

Comment ID: 384 **Organization:** NASSCO
DTR Section: 16, 18, Appendix 18
Comment:

SDG&E Comment No. 1.2: Triad approach flawed as it lacks scientifically valid consideration of COCs.

This comment is erroneous and invalid. SDG&E claims that the toxic unit approach is scientifically superior to the SQGQ1 chemistry evaluation solely because it includes TBT. However, SDG&E blatantly ignores existing site specific information and previous analyses showing that there is no exposure-response relationship between TBT in sediments or pore water and adverse effects. Id. The comment mischaracterizes the significance of TBT as a risk driver at the Shipyard Site, and fails to mention the extensive consideration and evaluation of TBT that has taken place during the last decade of assessment of sediment chemicals at the Shipyard Site. In fact, the possibility of an exposure-response relationship for TBT in both sediment and pore water was specifically investigated and addressed during the Detailed Sediment Investigation, and the lack of such a relationship for TBT is well-documented in the public record. Across the range of TBT concentrations measured in sediments at the 30 Sitewide Triad stations (38 - 3,250 µg/kg), there are no significant correlations between sediment concentration and toxicity from any of the three tests performed, or total abundance or species richness. Exponent Report, at Table 9-1. Furthermore, the relationship between sediment TBT levels and pore water TBT levels, while significant, is non-linear, a finding that contradicts the fundamental assumptions of the equilibrium partitioning model upon which the proposed toxic unit assessment approach for pore water is based. Exponent Report, at 5-4. In addition, the regressions of pore water and sediment concentrations for most other primary COCs (copper, mercury, and PCBs) were found to have positive y-intercepts, indicating that those substances would be expected to be found in pore water, even if absent in sediment. Attachment A, Exponent Critique, at 11.This finding also contradicts the assumption of thermodynamic equilibrium, indicating that an equilibrium partitioning approach to estimate concentrations of these substances in pore water is inappropriate at the Shipyard Site, and will yield incorrect results. Id.

Other fundamental assumptions of SDG&E's toxic units approach are contradicted and revealed to be false by Site-specific empirical data. This is readily apparent in the poor predictive performance of the toxic unit calculations themselves. The SDG&E alternative chemistry analysis, as summarized in Table 19, predicts toxicity to benthic organisms at nine Triad stations (of 30 total) where sediments were tested and found to be non-toxic in all three of the standard bioassays performed: NA04, NA05, NA06, NA15, NA17, SW08, SW09, SW18, SW21. Furthermore, no evidence of benthic community disturbance was found at any of these nine stations. With a false positive rate of 30 percent, it is difficult to defend the relevance of the toxicity unit thresholds to the Site, let alone justify claims that the method is a rigorously causal approach. Id.

An examination of the toxicological basis of the putative risk-driving benchmarks in the alternative assessment further reveals the lack of relevance and poor scientific justification for selection of these thresholds as sediment toxicity benchmarks. The threshold values for copper and TBT, the two substances that drive the toxic unit method's erroneous predictions of widespread toxicity in Shipyard sediments, are both ambient water quality final chronic values (FCV), developed by U.S. EPA for assessment of toxicity to aquatic organisms living in the water column. Ambient water quality values in general have no direct relevance to pore water concentrations, only surface water concentrations. Attachment A, Exponent Critique at 12. Even most burrowing benthic infauna actively irrigate their burrows with overlying surface water, and are not continually immersed in pore water. Id. The very reliance on toxicity data from aquatic immersion exposures presumes that exposure is primarily driven by passive diffusion from sediment to pore water to organisms, a poor assumption for sediment exposure. Id. Given that the sediments and pore water at the Shipyard Site are generally not in equilibrium (see discussion above), active pathways such as dietary exposure and direct contact are likely to be more important than passive diffusion, and these pathways are heavily dependent on bioavailability of sediment constituents (a consideration the toxic units approach completely ignores). Id.

Finally, the data upon which saltwater FCV criteria are based are primarily from acute toxicity tests of water column species (adjusted downward to estimate chronic values), and may not have high relevance to benthic invertebrate species. Id. For example, the three most sensitive species driving the TBT FCV calculation are mysid shrimp, copepods, and Chinook salmon, all water column species that poorly represent the benthic community at the Shipyards (see USEPA 2003, Table 3). Id. For all of these reasons, the use of a generic water column exposure benchmark is inferior to the use of thresholds derived from Site-specific sediment exposure bioassays that more accurately reflect Site exposure conditions and pathways (i.e., AETs). Id.

In summary, SDG&E's proposed alternative assessment method is scientifically flawed and clearly inferior to the DTR approach, notwithstanding the repeated claims to the contrary made in SDG&E's comments. Under SDG&E's proposal, tenuous, theoretical relationships are misrepresented as factual, even though readily available Site-specific data prove that key basic assumptions upon which they are based are scientifically invalid. Id. These erroneous assumptions include:

•Exposure-response relationships exist for primary COCs in sediments and sediment toxicity at the Shipyard Site
•Sediments are at equilibrium with pore water at the Shipyard Site
•Equilibrium partitioning accurately predicts pore water concentrations at the Shipyard Site
•Exposure to pore water is continuous and is the most important pathway of exposure for benthic organisms
•Selected literature benchmarks of aquatic toxicity accurately predict benthic toxicity of Shipyard sediments when compared to estimated or measured pore water concentrations

Id.

[NASSCO Comment No. 358, TCAO, at ¶ 16, 18, DTR, at §§ 16, 18, Appendix 18]

Comment ID: 385 **Organization:** NASSCO
DTR Section: 32, Appendix 32
Comment:

SDG&E Comment No. 1.3: Non-triad approach fails to address causal connection between COCs and Benthic risk and 60% is arbitrary and without scientific support.

This comment is erroneous and invalid. The metrics comprising the non-triad approach provide valuable causal information, and are scientifically supported. Attachment A, Exponent Critique at 13.

The AET is a direct causal metric that relates individual sediment contaminant exposure to statistically meaningful adverse effects. Id. Under the DTR approach, causal relationships were developed between COC exposure and seven separate empirical measures of adverse effects on benthic macroinvertebrates: amphipod survival, echinoderm fertilization, bivalve larval development, total abundance, number of taxa present, benthic response index (BRI), and Shannon-Weiner diversity index. As a highly protective, site-specific benchmark of exposure, the lowest adverse effect threshold (LAET) was selected from this suite of seven effects, and a 40 percent safety factor was added to result in the 60% LAET value. Although the AET does not, by itself, prove causality, it provides valuable site-specific causal information on individual substances. Id. The AET is both chemical-specific, and entirely reliant on site-specific empirical data. Accordingly, use of the AET provides unequivocal evidence that exposure for that specific substance at that sediment concentration does not cause adverse effects. Id.

Furthermore, the SS-MEQ is an integrated index of multiple chemical exposure that quantitatively relates exposure at any non-Triad station to the exposure level at which evidence of impairment was observed in the Triad stations. Id. While chemical causality can only be inferred from the SS-MEQ analysis rather than measured directly, the same is true of the toxic unit method's reliance on literature effect thresholds, and the SS-MEQ has the advantage of being based on Site-specific data, for multiple lines of evidence. Id. The proposed alternative approach would substitute a generic, theoretical causal assessment approach for an empirical, site-specific causal assessment approach, resulting in an inferior aquatic life BUI assessment. Id.

With regard to the proposed toxic unit assessment approach, SDG&E claims to incorporate a causal analysis, and concludes erroneously that there is a causal relationship of theoretical benthic effects with TBT. However, SDG&E's analysis does not follow any identifiable causal analysis framework, and instead relies on a purely theoretical analysis of causal relationships based on water quality criteria and theoretical sediment pore water concentrations. Id. SDG&E's analysis therefore erroneously prioritizes tenuous theoretical relationships over both site-specific empirical data on measured concentrations of substances, and multiple lines of evidence of effects that use actual biological data for the site. Id.

Given the above, SDG&E appears to be unaware of criteria for determining causation, and the use of these criteria in causal analysis frameworks that are available in the scientific literature. Authors from EPA have recently summarized available information on causal analyses and recommended a framework to ensure that the Agency's approach is appropriate and defensible (Suter et al., 2010){Suter, G.W., Norton, S.B., and S.M. Cormier. 2010. The Science and Philosophy of a Method for Assessing Environmental Causes. Human and Ecol. Risk Assess. 16: 19–34} . Key steps in the process include a clear identification of alternative causes, and an identification of the strength of evidence for each of the alternative causes. Important causal evidence for a site study includes:

•Spatial/temporal co-occurrence of measured biological effects with candidate stressors
•Stressor response relationships that document an increasing level of effect with increasing exposure to the candidate substance
•Field and Laboratory experiments that increase or decrease exposure and measure biological response

The authors stress the importance of including all potential applicable methods for causal analysis into a consistent framework. See also, Attachment A, Exponent Critique, at 13-14.

All of the aforementioned evidence for causality was available as part of the shipyard sediment studies using a Triad approach. Notwithstanding this evidence, SDG&E embarked on a independent assessment of causation using a novel theoretical approach that ignores all of the other available data. This represents a scientifically flawed assessment that is inconsistent with the current standards of practice in environmental investigations and frameworks established by the U.S. EPA and published in the available scientific literature.

[NASSCO Comment No. 359, TCAO, at ¶ 32, DTR, at § 32, Appendix 32]

Comment ID: 386 **Organization:** NASSCO
DTR Section: 32, Appendix 32
Comment:

SDG&E Comment No. 1.4: The Toxic Unit approach used to derive the proposed footprint shown in Figure 1 is superior to the SQG-based evaluation used in part to identify polygons for remediation by MacDonald (2009, 2011) because the latter approach relies on empirical SQGs that suffer from the same weaknesses as the SQGQ1, SS-MEQ, and 60% LAET approaches (lack of chemical causality between concentrations and effects). The Toxic Unit approach is also a more scientifically-rigorous chemical line of evidence than the approach Spadaro et al. (2011) used to derive an alternate footprint to address Aquatic Life BUI in the BAE portion of the Site.

This comment is invalid, as described in NASSCO's Response to SDG&E Comment No. 3. A standard tenet of environmental Site assessment is that Site-specific empirical data are more reliable and preferred for remedial decision-making purposes than use of generic benchmarks, and should be preferentially used for site characterization. Attachment A, Exponent Critique, at 14 (citing USEPA 1989, USEPA1997). The toxic unit approach is not Site-specific, and is therefore far less scientifically valid than the DTR approach, which relies on both direct causal analysis and inferences drawn from empirical Site-specific observation to establish the presence or absence of biological impacts and causality with regard to aquatic life BUI. Id. The toxic units approach relies completely on theoretical exposure estimates and generic benchmarks, and is little more than a screening approach. Id.

[NASSCO Comment No. 360, TCAO, at ¶ 32, DTR, at § 32, Appendix 32]

Comment ID: 387 **Organization:** NASSCO
DTR Section: 18, 32, 33, Appendices 18, 32, 33
Comment:

SDG&E Comment No. 1.5: [T]he Toxic Unit approach detailed in Conder (2011a) is considered to be a more scientifically defensible sediment chemistry-only approach compared to the SS-MEQ and 60% LAET evaluation. It also includes all five relevant primary Site COCs, in contrast to the Triad sediment chemistry line of evidence, which omits TBT. The Toxic Unit approach should be adopted for use in sediment chemistry line of evidence approaches for the CRWQCB (2010) Triad and Non-Triad Data approaches, and thus should be used for deriving a remedial footprint in conjunction with other considerations regarding technical and economic feasibility in a manner consistent with the approaches discussed in CRWQCB (2010).

Whereas the toxic unit approach is, in fact, a chemistry-only assessment approach, the same is not true of the DTR non-Triad station assessment. The LAET is a direct function of the empirical exposure-response relationship for individual COCs, and the SS-MEQ is correlated with a state of apparent impairment determined by a multiple line of evidence assessment of aquatic life BUI. Attachment A, Exponent Critique at 14-15. Unlike the toxic unit approach, both DTR metrics incorporate site-specific measurements of sediment toxicity and benthic community disturbance, and therefore incorporate critical Site-specific elements of exposure, such as bioavailability of COCs in sediments. Attachment A, Exponent Critique at 15.

Furthermore, the toxic unit approach relies on an implicit assumption that SDG&E does not acknowledge or test, even though it is readily testable. The approach presumes that there is a measureable exposure-response relationship between sediment or pore water contaminant levels and adverse effects on benthic organisms under Site conditions. Such a presumption may be reasonable for screening chemistry data in the absence of Site-specific biological data, but not at a Site where a Triad study has been performed. Id. At this Site, whether or not an exposure-response relationship exists for any sediment chemical can actually be determined. As Table 9-1 from the Exponent Report shows, none of the primary COC concentrations in sediments, are significantly correlated with any adverse effect. Note that this kind of analysis is one of the key criteria used in the EPA analysis of causation (Suter et al., 2010), which was ignored by SDG&E.

While the alternative remedial proposal put forward by SDG&E includes elimination of some polygons from the remedial footprint on the basis of a lack of BUI for humans and aquatic dependent wildlife receptors, seven additional polygons are added to the DTR footprint, due to alleged benthic BUI. A station-by-station review of the Site-specific data available for these polygons illustrates the lack of scientific validity in the SDG&E aquatic life BUI assessment. Id.

Station NA10:

Based on relatively low chemistry, and a lack of evidence for benthic impacts, NA10 was properly excluded from the proposed remedial footprint in the DTR.

•Primary COCs are relatively low:
-Composite SWAC ranking = 54 of 66 polygons
-Copper (160 mg/kg) ranking = 48 of 66 polygons
-Mercury (0.58 mg/kg) ranking = 51 of 66 polygons
-HPAH (1,800 µg/kg) ranking = 54 of 66 polygons
-PCB (160 µg/kg) ranking = 54 of 66 polygons
-TBT (91 µg/kg) ranking = 44 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs
-SS-MEQ = 0.35

•No direct evidence of impacts to benthic community:
-Non-Triad Station
-SPI data indicate Stage III successional stage present.

Attachment A, Exponent Critique at 15

Station NA11:

There are no highly elevated COPC levels at this station. There are no clear impacts to the benthic community. None of the four benthic community indicators evaluated is significantly different from reference conditions. Only one of the three toxicity tests (amphipod survival) was slightly lower than reference. Due to a lack of high chemistry and no clear indication of benthic impacts, NA11 was properly excluded from the proposed remedial footprint in the DTR.

•Primary COCs are relatively low:
-Composite SWAC ranking = 49 of 66 polygons
-Copper (180 mg/kg) ranking = 43 of 66 polygons
-Mercury (0.85 mg/kg) ranking = 34 of 66 polygons
-HPAH (2,800 µg/kg) ranking = 44 of 66 polygons
-PCB (190 µg/kg) ranking = 45 of 66 polygons
-TBT (38 µg/kg) ranking = 56 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs
-SS-MEQ = 0.42

•No clear indication of impacts to benthic community:
-Triad Station: "Possible" benthic impacts

-DTR chemistry score = moderate
SQGQ1 is less than 1.0. Only 1 chemical exceeds both DTR SQG and UPL.

-DTR toxicity score = moderate
Amphipod test scored slightly below reference LPL. Bivalve and urchin tests scored above reference LPLs.

-DTR benthic disturbance score = low
No evidence of disturbance. BRI is below reference UPL. Abundance, # taxa, and diversity index are all above reference LPL.

-SPI data indicate Stage I and III successional stages present.

Attachment A, Exponent Critique at 15-16.

Station NA18:
Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA18 was properly excluded from the proposed remedial footprint in the DTR.

•Primary COCs are relatively low:
-Composite SWAC ranking = 39 of 66 polygons
-Copper (230 mg/kg) ranking = 31 of 66 polygons
-Mercury (0.79 mg/kg) ranking = 37 of 66 polygons
-HPAH (2,400 µg/kg) ranking = 49 of 66 polygons
-PCB (350 µg/kg) ranking = 32 of 66 polygons
-TBT (210 µg/kg) ranking = 19 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs
-SS-MEQ = 0.56

•No direct evidence of impacts to benthic community:
-Non-Triad station
-No SPI data

Attachment A, Exponent Critique at 16.

Station NA21:
Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA21 was properly excluded from the proposed remedial footprint in the DTR.

•Only TBT is relatively high:
-Composite SWAC ranking = 41 of 66 polygons
-Copper (150 mg/kg) ranking = 50 of 66 polygons
-Mercury (0.51 mg/kg) ranking = 58 of 66 polygons
-HPAH (2,100 µg/kg) ranking = 50 of 66 polygons
-PCB (177 µg/kg) ranking = 51 of 66 polygons
-TBT (410 µg/kg) ranking = 12 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs (including TBT)
-SS-MEQ = 0.50

•No direct evidence of impacts to benthic community:
-Non-Triad Station
-No SPI data

Attachment A, Exponent Critique at 17.

Station NA27:
Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA27 was properly excluded from the proposed remedial footprint in the DTR.

•Primary COCs are relatively low:
-Composite SWAC ranking = 36 of 66 polygons
-Copper (390 mg/kg) ranking = 10 of 66 polygons
-Mercury (1.20 mg/kg) ranking = 10 of 66 polygons
-HPAH (2,800 µg/kg) ranking = 44 of 66 polygons
-PCB (210 µg/kg) ranking = 40 of 66 polygons
-TBT (100 µg/kg) ranking = 42 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs

-SS-MEQ = 0.69

•No direct evidence of impacts to benthic community:
-Non-Triad Station
-No SPI data

Attachment A, Exponent Critique at 17.

Station NA28:
Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA28 was properly excluded from the proposed remedial footprint in the DTR.

•Primary COCs are relatively low:
-Composite SWAC ranking = 42 of 66 polygons
-Copper (290 mg/kg) ranking = 14 of 66 polygons
-Mercury (0.89 mg/kg) ranking = 31 of 66 polygons
-HPAH (3,400 µg/kg) ranking = 36 of 66 polygons
-PCB (180 µg/kg) ranking = 47 of 66 polygons
-TBT (90 µg/kg) ranking = 45 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs
-SS-MEQ = 0.55

•No direct evidence of impacts to benthic community:
-Non-Triad Station
-No SPI data

Attachment A, Exponent Critique at 17-18.

Station SW34:
Based on relatively low chemistry, and the lack of evidence of benthic impacts, NA28 was properly excluded from the proposed remedial footprint in the DTR.

•Only copper is relatively high:
-Composite SWAC ranking = 48 of 66 polygons
-Copper (320 mg/kg) ranking = 12 of 66 polygons
-Mercury (0.75 mg/kg) ranking = 40 of 66 polygons
-HPAH (1,400 µg/kg) ranking = 57 of 66 polygons
-PCB (130 µg/kg) ranking = 58 of 66 polygons
-TBT (38 µg/kg) ranking = 56 of 66 polygons

•Chemistry is below conservative biological benchmarks:
-No exceedances of 60% LAETs (including copper)
-SS-MEQ = 0.55

•No direct evidence of impacts to benthic community:
  -Non-Triad Station
  -No SPI data

Attachment A, Exponent Critique at 18.

In summary, the Site-specific data do not support the allegation that any of the seven additional polygons proposed for remediation by SDG&E exhibit aquatic life BUI or should be remediated. Id.

[NASSCO Comment No. 361, TCAO, at ¶¶ 18, 32, 33, DTR, at §§ 18, 32, 33, Appendices 18, 32, 33]

Comment ID: 388 **Organization:** NASSCO
DTR Section: 31, Appendix 31
Comment:

SDG&E Comment No. 2.0: DTR's Section 31 economic feasibility analysis fails to consider costs to reduction in Benthic risk exposure and should be revised.

The comment correctly notes that the DTR economic feasibility analysis measured benefit based on exposure reduction for receptors that average exposure over the entire site. However, it must be noted that benefits to the benthic community must be assessed on a point by point basis, and cannot be represented by an area weighted average concentration metric. Attachment A, Exponent Critique, at 18. The remedy proposed in the DTR directly addressed all areas identified as likely to impact aquatic life due to sediment contamination. No areas of likely benthic impacts were omitted from the DTR remediation footprint due to economic feasibility concerns.

[NASSCO Comment No. 362, TCAO, at ¶ 31, DTR, at § 31, Appendix 31]

Comment ID: 389 **Organization:** NASSCO
DTR Section: 18, 31, 32, Appendix 31
Comment:

SDG&E Comment No. 2.2, 2.3 : A revised economic feasibility analysis is shown in Figure 2, based on calculations shown in Tables 20 and 21. In this revised economic feasibility analysis, the percent exposure reduction for all three BUIs is considered via calculation of a composite percent exposure reduction based on SWACs for aquatic-dependent wildlife and human health (as in CRWQCB (2011)) and the area exhibiting aquatic life BUI, as based on a Toxic Unit approach for the sediment chemistry line of evidence (Figure 3; Conder, 2011a). The Toxic Unit approach is a causal chemical exposure modeling to account for bioavailability of chemicals to benthic invertebrates and predict potential chemical risk. It was used as a replacement approach for the flawed SQGQ1 approach used in the CRWQCB (2010) Triad sediment chemistry line of evidence in order to re-classify Triad stations. It was also used as a replacement approach for the flawed SS-MEQ and 60% of the LAET calculations used in the Non-Triad Data Approach. Both the revised Triad and Non-Triad Data approaches were used to identify polygons for Aquatic Life BUI (Figure 3). Economic feasibility was also calculated using a footprint designated to address Aquatic Life BUI only (Figure 4). The approach ranked polygons exhibiting Aquatic Life BUI by the highest Toxic Unit result multiplied by the area of the polygon (Table 22). Remedial cost was estimated for five increments according to approximate cost rates suggested by Table A31-1 (Table 23). This approach is more technically-defensible because Aquatic Life BUI is the most likely BUI exhibited at the Site and modeling of human health and ecological risk to aquatic-dependent wildlife is flawed. A revised economic feasibility approach should be adopted by CRWQCB to enable a complete and accurate evaluation of economic feasibility for any propose remedial footprint for the protection of BUIs at the Site.

As noted in NASSCO's reply to the preceding comment, the toxic unit approach does not represent an improvement over the DTR approach to assessment of aquatic life BUI. It is flawed and inappropriate for use in characterizing BUI at the Site. In fact, the SDG&E approach represents a large step backward in that it reverts to a preliminary screening analysis based on an unsubstantiated theoretical relationship in lieu of using the rich, site-specific, empirical database for the shipyard site. Any economic feasibility analysis based on this assessment approach will be similarly flawed. Furthermore, the use of reduction in Sitewide SWAC as the metric of benefit for benthic invertebrate species is inappropriate. Attachment A, Exponent Critique, at 19. Unlike mobile human and wildlife receptors, which spatially average exposure over relatively large areas, benthic invertebrate communities are largely sessile, and must be assessed on a station-by-station basis. Id. Sitewide average sediment conditions are not meaningful in measuring aquatic life BUI or BUI mitigation, and the alternative economic feasibility analysis presented is therefore invalid. Id.

[NASSCO Comment No. 363, TCAO, at ¶ 18, 31, 32, DTR, at §§ 18, 31, 32, Appendix 31]

Comment ID: 390 **Organization:** NASSCO
DTR Section: 1.2, 1.4.2.1, 1.5.2, 33, Appendix 33
Comment:

Port Comment No. 1: Dr. Johns agrees with the process used to identify the polygons for the remedial footprint and has concluded that the factors used to select "worst first" polygons are consistent with the findings.

The Declaration of Expert D. Michael Johns In Support of the San Diego Unified Port District's Submission of Comments, Evidence, and Legal Argument ("Johns Dec") (Port Comments, Exhibit 3) constitutes untimely expert evidence that should have been submitted to the record on or before March 11, 2011. Accordingly, it must be excluded from the record. See NASSCO's Joinder In BAE's Motions to Exclude Untimely Expert Evidence Submitted By the San Diego Unified Port District and San Diego Gas & Electric, and Motion to Exclude the Untimely Expert Evidence Submitted by the United States Navy.

Furthermore, even if Dr. John's Declaration is accepted into the record, his conclusions should be given no weight for the reasons set forth in NASSCO's Comment Nos. 380-384, Replying to Port Comment Nos. 17 - 21. Attachment A, Exponent Critique, at 20-25.

[NASSCO Comment No. 364, TCAO, at ¶ 33, Attachment 2, DTR, at §§ 1.2, 1.4.2.1, 1.5.2, 33, Appendix 33]

Comment ID: 391 **Organization:** NASSCO
DTR Section: 1.2, 1.4.2.1, 1.5.2
Comment:

Port Comment No. 2: Dr. Johns also agrees that the Shipyard sediment contamination has contributed to the impairment of beneficial uses in San Diego Bay and likely continues to harm human health and environmental resources. (Exhibit "3" [Dr. Johns Declaration], ¶5(a)-(d).)

See NASSCO's Comment No. 364, Replying to Port Comment No. 1.

[NASSCO Comment No. 365, TCAO, at ¶ 1, DTR, at §§ 1.2, 1.4.2.1, 1.5.2]

Comment ID: 392 **Organization:** NASSCO
DTR Section: 15, 19, 25-28, Appendices 15, 19, 27, 28
Comment:

Port Comment No. 3: Dr. Johns has concluded that the contaminants are bioaccumulating in biota relevant to human health and that exposed fish and shellfish can migrate offsite, spreading the reach of the contamination throughout the San Diego Bay and potentially to those who consume the exposed fish and shellfish. (Exhibit "3" [Dr. Johns Declaration], ¶6(a)-(d).)

See NASSCO's Comment No. 364, Replying to Port Comment No. 1.

[NASSCO Comment No. 366, TCAO, at ¶ 15, 19, 25-28, DTR, at §§ 15, 19, 25-28, Appendices 15, 19, 27, 28]

Comment ID: 393 **Organization:** NASSCO
DTR Section: 2.3, 3.3, 5.4, 6.4, 10.4, 10.5
Comment:

Port Comment No. 4: Likewise, the shipyard activities are likely exposing and/or redistributing legacy contaminants that create an ongoing source of San Diego Bay contamination. (Exhibit "3" [Dr. Johns Declaration], ¶ 7(a)-(d).)

See NASSCO's Comment No. 364, Replying to Port Comment No. 1.

[NASSCO Comment No. 367, TCAO, at ¶ 2, 3, 5, 6, 10, DTR, at §§ 2.3, 3.3, 5.4, 6.4, 10.4, 10.5]

Comment ID: 394 **Organization:** NASSCO
DTR Section: 30, 33, Appendix 33
Comment:

Port Comment No. 5: While some parties may claim that the remediation cannot go forward unless the Chollas Creek outfall area is included within the remedial footprint or otherwise addressed because of recontamination concerns, the Port's designated fate and transport expert has concluded that any interim resedimentation from Chollas Creek discharges will not adversely impact the remediation efforts at the Shipyards. (Exhibit "2" [Port Expert Designation]; Exhibit "4" [Dr. Poon Declaration], ¶¶ 13-15.)

The Declaration of Expert Ying Poon, D.Sc. In Support of the San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument ("Poon Dec") (Port Comments, Exhibit 4) constitutes untimely expert evidence that should have been submitted to the record on or before March 11, 2011. Accordingly, it must be excluded from the record. See NASSCO's Joinder In BAE's Motions to Exclude Untimely Expert Evidence Submitted By the San Diego Unified Port District and San Diego Gas & Electric, and Motion to Exclude the Untimely Expert Evidence Submitted by the United States Navy.

Furthermore, even if Dr. Poon's Declaration is accepted into the record, his conclusions should be given no weight because the model upon which they are based has not been submitted to the record or provided to the Designated Parties. Accordingly, his conclusions must be viewed as unsupported. See NASSCO's Comment Nos. 385-389, Replying to Port Comment No. 22 - 26. See Attachment A, Exponent Critique, at 26-29.

Finally, it is a basic concept of site cleanup that implementing measures to control the source of contaminants and to verify that control has been accomplished should proceed actual remediation. See Deposition of Steven Bay ("Bay Depo.") at 209:1-9 (September 27, 2010); Bay Depo, Ex. 106, Sediment Assessment Study for the Mouths of Chollas and Paleta Creek, San Diego (May 2005), at 6, Figure 2-2 (indicating that "Cleanup Implementation" should occur after "TMDL Implementation," which includes "Implement Source Control" and "Verify Source Reduction"). Accordingly, even if Dr. Poon's Declaration is accepted into the record and his testimony considered by the Regional Board, his assertion that remediation can proceed prior to controlling storm water contaminant discharge to the Site contradicts basic tenets of site cleanup procedure.

[NASSCO Comment No. 368, TCAO, at ¶ 30, 33, DTR, at § 30, 33, Appendix 33]

Comment ID: 395 **Organization:** NASSCO
DTR Section: 11
Comment:

Port Comment No. 6: To the extent the CUT would designate the Port as a primary discharger because of perceived non-cooperation grounded in the Port's withdrawal from a voluntary mediation process that it suggested, such a position would be an inappropriate basis for Port primary liability as a matter of law. On the contrary, the Port's commitment to the above principles is reflected its long history of cooperating with the Regional Board in efforts to remediate sites at which the Port is a landlord . . . .

The DTR does not suggest that the Port was named as a primary discharger "because of perceived non-cooperation grounded in the Port's withdrawal from a voluntary mediation . . .", however, the Port provides no legal authority why a failure to cooperate would not be a relevant factor in naming the Port to the TCAO. DTR at 11-1 – 11-5.

[NASSCO Comment No. 369, TCAO, at ¶ 11, DTR, at § 11]

Comment ID: 396 **Organization:** NASSCO
DTR Section: 11.1, 11.2
Comment:

Port Comment No. 7: The DTR acknowledges that "[i]n the event the Port District's tenants, past and present, have sufficient financial resources to clean up the Shipyard Sediment Site and comply with the Order, then the San Diego Water Board may modify its status to secondarily responsible party in the future." (DTR §11.2, at pp. 11-4 to 11-5.) This anticipated modification is appropriate and should be implemented because there is substantial evidence of the Port District's tenants' abilities to fund the Order. . . . the CUT bears an initial burden of establishing through evidence the facts necessary to conclude that the Port's tenants do not have adequate assets to fund the cleanup efforts. Yet, no such evidence has ever been presented.

It is premature for the Regional Board to determine whether the Port's tenants, past and present, have sufficient financial resources to cleanup the Site, since those costs have not yet been determined with specificity and work has not yet begun. Until work progresses on the cleanup, it is reasonable for the Regional Board not to distinguish between primarily and secondarily liable parties. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 3 n.2.

[NASSCO Comment No. 370, TCAO, at ¶ 11, DTR, at §§ 11.1, 11.2]

Comment ID: 397 **Organization:** NASSCO
DTR Section: 11.1, 11.2
Comment:

Port Comment No. 8: In fact, the evidence establishes beyond question that the Port's tenants have adequate assets to fund the cleanup efforts. . . . Additionally, the Port's tenants have lease and permit terms obligating the tenants to defend and indemnify the Port against this type of liability. (See, e.g., SAR 159273, 159289 at ¶21 [NASSCO Lease]; . . . .)

Whether a landlord's lease includes an indemnity clause is not determinative as to whether the landlord should be named primarily or secondarily liable. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 7-9 (whether lease includes indemnity clause not included as a factor in determining landlord liability).

Accordingly, it is irrelevant to the Regional Board's decision to name the Port as primarily liable at this time whether the lease agreement includes indemnity language. Finally, it bears mention that the Port only cites to NASSCO's lease for the period from January 1, 1995 to December 31, 2040, and not to any prior leases with NASSCO, which contain materially different language with respect to NASSCO's and the Port's obligations to one another.

[NASSCO Comment No. 371, TCAO, at ¶ 11, DTR, at §§ 11.1, 11.2]

Comment ID: 398 **Organization:** NASSCO
DTR Section: 11.1, 11.2
Comment:
Port Comment No. 9: Additionally, based on its review of relevant documents, the Port believes that NASSCO has hundreds of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts. (Exhibit "12" [Summary of NASSCO Historic Liability Insurance].)

The information in Port Comments, Exhibit 12 (Summary of NASSCO Historic Liability Insurance) was submitted by the Port in breach of a Protective Order entered in Case No. 09 CV 2275-AJB (BGS) in the United States District Court, Southern District of California, regarding the allocation of costs for the cleanup of the Shipyard Sediment Site. The Protective Order prohibited the Port from publicly disclosing any information, including insurance policies, that was designated as "protected" information by NASSCO, or from using "protected" information for any purpose other than prosecuting or defending the federal court lawsuit. NASSCO is presently contesting the Port's publication of NASSCO's insurance information in a motion pending before Mr. Timothy Gallagher, the Discovery Referee. For these reasons, NASSCO believes that the insurance information in Port Comments, Exhibit 12 is not properly before the Regional Board, and NASSCO may seek the withdrawal or removal of Exhibit 12 from the administrative record following Mr. Gallagher's ruling on NASSCO's motion.

[NASSCO Comment No. 372, TCAO, at ¶ 11, DTR, at §§ 11.1, 11.2]

Comment ID: 399 **Organization:** NASSCO
DTR Section: 11.1, 11.2
Comment:
Port Comment No. 10: The Port's tenants are currently cooperating with the Regional Board. Although the tenants have been proposing a remedial approach that differs in some respects from the remedial approach proposed by the CUT, the process is "proceeding cooperatively." (Exhibit "5" [Barker Deposition], Vol. III, 489:20-490:14.)

It is premature for the Regional Board to determine whether the Port's tenants, past and present, are cooperating with the Regional Board as work has not yet begun. Until work progresses on the cleanup, it is reasonable for the Regional Board not to distinguish between primarily and secondarily liable parties. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 3 n.2.

Furthermore, as presented in NASSCO's Initial Comments, NASSCO maintains that monitored natural attenuation is the proper remedy for the Site. This position differs materially from the TCAO and DTR under consideration by the Regional Board.

[NASSCO Comment No. 373, TCAO, at ¶ 11, DTR, at §§ 11.1, 11.2]

Comment ID: 400 **Organization:** NASSCO
DTR Section: 11.1, 11.2
Comment:

Port Comment No. 11: There is no evidence of Port non-cooperation.

See NASSCO's Comment No. 369, Replying to Port Comment No. 6.

[NASSCO Comment No. 374, TCAO, at ¶ 11, DTR, at §§ 11.1, 11.2]

Comment ID: 401 **Organization:** NASSCO
DTR Section: 11.3.1, 11.4
Comment:

Port Comment No. 12: The Port does not own or operate SW4 or SW9 outfall or the MS4 facilities leading to these outfalls. . . . Rather, the contention is that the Port is "responsible for controlling pollutants into and from its own MS4 system" and that "the Port District cannot passively allow pollutants to be discharged through its MS4 and into another Copermittees' MS4s, like the City of San Diego." (Exhibit "17" [CUT Discovery Response Excerpts], Responses to Special Interrogatories Nos. 28, 30. [emphasis in the original].) Yet, neither the DTR nor the administrative discovery responses identify what part of the MS4 owned or operated by the Port would ultimately lead to SW4 or SW9, much less how such MS4 facilities have discharged pollutants to SW4 or SW9.

The Port's comments do not allege that storm water discharges from SW4 and SW9 do not contain relevant COCs, and the Port presents no affirmative evidence to show that they do not. Instead, like the City, the Port attempts to skirt the issue by simply claiming that the DTR does not provide sufficient support.

In fact, the Port's own most recent Jurisdictional Urban Runoff Management Program ("JURMP") document admits that the Port MS4 facilities have the potential to generate pollutants, including bacteria, gross pollutants, metals, nutrients, oil and grease, organics, pesticides, sediment, and trash. Attachment D, San Diego Unified Port District, Jurisdictional Urban Runoff Management Program (May 2008) ("2008 Port JURMP") Table 6-2 at 6-4. The JURMP goes on to state that the "MS4 receives pollutants generated by motor vehicles, namely, heavy metals, oil and grease, and other toxic pollutants from engine exhaust, brake linings, and leaking fluids. Waste liquids, such as oil and paint, can also be illegally dumped into conveyance system structures. Illegal connections can be made to the MS4 and potentially introduce a wide variety of pollutants to the system. Street curbs and gutters, stormwater inlets, culverts and channels typically collect litter discarded in urban areas. As such, all of these pollutants can reach the MS4 with each rainfall event, and in turn, be carried to receiving water bodies." Id. at 6-7. It also admits that "[u]rban runoff also appears to be a significant contributor to the creation and persistence of Toxic Hot Spots in San Diego Bay," including "the mouth of Chollas Creek . . . ." Id. at 1-6 – 1-7. This evidence substantiates the Regional Board's conclusion that the Port is a discharger based on its historical storm water discharges to the Site.

Furthermore, the Port's JURMP indicates that the Port has a sophisticated GIS map of its storm drains, which is not publicly available but could easily have been used by the Port to generate the necessary information to demonstrate whether the Port's MS4s connect to SW4 and/or SW9. See Attachment D, 2008 Port JURMP Table 6-2 at 6-4; Attachment E, Karen Richardson, GIS Gives Port a Common Operating Picture, ArcUser (Winter 2010) at 33 ("PortGIS Utilities is the central clearinghouse for the port's utilities data, including . . . storm drain . . . lines"). Accordingly, it is unfair for the Port to assert that the DTR and TCAO are insufficient because they do not specify what part of the Port's MS4 system connects to SW4 and/or SW9 when that information is uniquely in the possession of the Port itself.

[NASSCO Comment No. 375, TCAO, at ¶ 11, DTR, at §§ 11.3.1, 11.4]

Comment ID: 402 **Organization:** NASSCO
DTR Section: 11.3 – 11.6
Comment:

Port Comment No. 13: The DTR contains no evidence that Port discharges from its MS4 are contributing to the Shipyard Sediment Site contamination.

See NASSCO's Comment No. 375, 377, Replying to Port Comment No. 12 and 14.

[NASSCO Comment No. 376, TCAO, at ¶ 11, DTR, at §§ 11.3 – 11.6]

Comment ID: 403 **Organization:** NASSCO
DTR Section: 11.6.4, 11.6.5
Comment:

Port Comment No. 14: The TCAO and DTR fail to provide evidentiary support for the conclusion that SW4 and SW9 have discharged contaminants to San Diego Bay and the Shipyard Sediment Site. In fact, the DTR acknowledges that "no monitoring data is available" for either SW4 or SW9. (DTR §§11.6.4, at p. 11-13 [SW4]; 11.6.5, at p. 11-15 [SW9].)

The Port contends that there is "no [e]vidence" that storm water outfalls SW4 and SW9 are discharging contaminants to the Site. The Port bases this claim on the fact that there is no monitoring data available from either SW4 and SW9 to indicate specific quantities of COCs in the runoff.

The Port's claim that there is "no [e]vidence" goes too far because, as noted in the DTR, urban runoff itself is classified as a "waste" under the California Water Code § 13050(d). DTR at 11-8; see also Cal. Water Code §§ 13392 (State and Regional Boards to coordinate with Departments of Public Health and Fish & Game to develop "new programs to reduce urban and agricultural runoff"); 13396.7(a) (commissioning a study to determine adverse health effects of urban runoff on swimmers at urban beaches). In fact, the DTR includes substantial evidence that urban runoff in San Diego contains COCs at the Site, including "total suspended solids (TSS), sediment (due to anthropogenic activities), pathogens (e.g., bacteria, viruses, protozoa), heavy metals (e.g., copper, lead, zinc, and cadmium), petroleum products and polynuclear aromatic hydrocarbons (PAHs and HPAHs), synthetic organics (e.g., pesticides, herbicides, and PCBs), nutrients (e.g., nitrogen and phosphorus fertilizers), oxygen-demanding substances (decaying vegetation, animal waste), and trash." DTR at 11-8; see also 4-10 (San Diego County Municipal

Copermittees 2002-2003 Urban Runoff Monitoring Final Report submitted by the City indicating that "elevated levels of zinc, copper, and lead are present in the urban runoff outflow discharged from Chollas Creek into San Diego Bay").

Furthermore, the DTR demonstrates that samples taken in the SW4 catch basin, and laterals entering the catch basin, "indicate the presence of both PCBs and PAHs entering and exiting the municipal storm drain system catch basin . . . ." DTR at 4-16. Far from suffering from a lack of evidence, the DTR has presented substantial evidence that San Diego urban runoff contains relevant COCs, but simply did not take the extra step to quantify the amount of COCs that actually are present in storm water flows as they exit the SW4 and SW9 outfalls.

Notably, the Port's comments do not allege that storm water discharges from SW4 and SW9 do not contain relevant COCs, and the Port presents no affirmative evidence to show that they do not. Instead, like the City, the Port attempts to skirt the issue by simply claiming that the DTR does not provide sufficient support.

Furthermore, the Port's citation to Natural Resources Defense Council v. County of Los Angeles, 636 F.3d 1235 (9th Cir. 2011) ("NRDC"), is unavailing with respect to allocating responsibility for storm water contamination to sediment to the Port. This is so because NRDC is a case under the Clean Water Act concerning whether a NPDES permittee was guilty of violating NPDES permit limits. Here, the issue is not whether the Port violated NPDES permit limits, but rather, whether the Port discharged COCs to the Site that have contaminated sediment. In fact, the DTR does not allege that the Port has violated its NPDES permit, but rather, that the Port has discharged storm water containing contaminants to San Diego Bay, and that the "urban storm water containing waste that has discharged from the on-site and off-site MS4 has contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediment Site to levels, that cause, and threaten to cause, conditions of pollution, contamination, and nuisance by exceeding applicable water quality objectives for toxic pollutants in San Diego Bay." DTR at 11-1 – 11-2. As noted above, the Port fails to allege that storm water discharges from SW4 and SW9 do not contain relevant COCs.

Finally, as also noted in the DTR, "[i]n the absence of such direct evidence, the San Diego Water Board may consider relevant direct or circumstantial evidence in determining whether a person shall be required to clean up waste and abate the effects of a discharge or a threat of a discharge under CWC section 13304." DTR at 10-13, citing State Water Resources Control Board Resolution 92-49, Policies and Procedures for the Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304, § I.A (directing the Regional Boards to use "any relevant evidence, whether direct or circumstantial", when determining whether a party should be required to investigate or cleanup a discharge of waste). Accordingly, even if storm water sampling data from SW4 and SW9 is unavailable, it is proper for the Regional Board to consider and rely on other direct and circumstantial evidence that leads to the conclusion that the Port's storm water discharges have contaminated the NASSCO shipyard.

[NASSCO Comment No. 377, TCAO at ¶ 11, DTR, at §§ 11.6.4, 11.6.5]

Comment ID: 404 **Organization:** NASSCO
DTR Section: 11.3 – 11.6

Comment:

Port Comment No. 15: Even if there was adequate evidence that SW4 and SW9 are discharging pollutants, there are no monitoring or test results establishing that there have been discharges from the Port's MS4 facilities into the City MS4 facilities that lead to the outfalls at SW4 and SW9. . . . In fact, the Port has only very limited MS4 facilities that lead to SW4 and no MS4 facilities leading to SW9.

See NASSCO's Comment No. 377, Replying to Port Comment No. 14.

[NASSCO Comment No. 378, TCAO, at ¶ 11, DTR, at §§ 11.3 – 11.6]

Comment ID: 405 **Organization:** NASSCO
DTR Section: 11.6.5
Comment:

Port Comment No. 16: Finally, even if SW9 was discharging some contaminants, this would not be a proper basis for liability. . . . The Port's designated expert, Dr. Ying Poon, has done extensive fate and transport modeling analysis and confirmed that any discharges from Chollas Creek would not result in any significant deposit, accumulation or resedimentation of the Shipyard Sediment Site. (Exhibit "2" [Port Expert Designation]; Exhibit "4" [Dr. Poon Declaration], ¶¶13-15.) This extensive modeling contradicts the assumption in the TCAO that, based on the erroneous Exponent Report approach, Chollas Creek flows result in the settling of contaminated sediment at the Shipyard Sediment Site. In the absence of any substantial evidence that SW9 discharges are transporting contaminants to the Shipyard Sediment Site, the Port cannot be liable based upon these alleged discharges.

See NASSCO's Comment No. 377, Replying to Port Comment No. 14. In addition, the Port overstates the results of its expert, Dr. Ying Poon, with respect to SW9. (NASSCO notes that the Port has not yet provided the Regional Board or the Designated Parties with Dr. Poon's hydrodynamic and water quality numerical model (the Bay Model), the result of which Dr. Poon summarizes in his declaration. See Port Comments, Exhibit 4, Poon Dec. at ¶ 7.). In its comments, the Port claims that Dr. Poon's analysis shows that discharges "from Chollas Creek would not result in any significant deposit, accumulation or resedimentation of the [Site]." Port Comments at 19, citing Port Comments, Exhibit 4, Poon Dec, ¶¶ 13-15. Yet the Poon Dec states that "it is unlikely that Chollas Creek would be a major source of contaminants . . .", but in fact, confirmed that Chollas Creek would be a source of sedimentation at the Site. Id.

[NASSCO Comment No. 379, TCAO, at ¶ 11, DTR, at § 11.6.5]

Comment ID: 406 **Organization:** NASSCO
DTR Section: 2.3, 3.3, 5.4, 6.4, 10.4, 10.5, 19, 25-28
Comment:

Port Comment No. 17 (Exhibit No. 3, Declaration of Expert Michael Johns, ¶ 5): It is my opinion that there is sufficient evidence that the Shipyard Site sediment contamination has contributed to the impairment of beneficial uses in San Diego Bay and likely continues to harm human health and environmental resources for the following reasons:

a.Sediment contaminants in Site sediments are present, bioavailable, and, for a number of the contaminants, bioaccumulative.
b.Fish and shellfish collected at the Site have accumulated contaminants at concentrations predicted to harm seafood consumers (i.e., recreational and subsistence fishers).
c.Although fishing and shellfish harvesting do not occur on the Site because of security restrictions, there are nearby public access points and the fish and shellfish that have accumulated contaminants are mobile.
d.Shipyard activities at the Site periodically disturb contaminated sediments, creating an ongoing source of legacy contaminants and impacting beneficial uses in the Bay.

None of Dr. Johns' four assertions regarding human wildlife exposure and risk constitute scientifically valid evidence of existing or likely future beneficial use impairment from Site sediment contamination for the following reasons:

¶ 5.a."Sediment contaminants are present, bioavailable, and bioaccumulative." Although this statement is supported by available data in the DTR in a qualitative sense, the presence, bioavailability, and bioaccumulative potential of chemicals do not, in and of themselves, constitute a human health risk or beneficial use impairment. Impairment cannot be assessed without a quantitative assessment of exposure and toxicity, which Dr. Johns does not provide.

¶ 5.b."Fish and shellfish at the site contain harmful levels of contaminants to human anglers." This conclusion requires an exposure and toxicity assessment. Because Dr. Johns does not provide any such assessment, it appears he is relying solely on the Tier II human health risk assessment contained in the DTR, which is critically flawed. See Exponent, Evaluation of Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 for the NASSCO Shipyard Sediment Site, Expert Report of Thomas C. Ginn, Ph.D. (March 11, 2011) ("Ginn 2011"); Chemrisk, Brent Finley, Ph.D., Expert Opinion Letter Regarding the Draft Technical Report for Tentative Cleanup and Abatement Order No. R9-2011-0001 (March 11, 2011) ("Finley 2011"). The DTR Tier II human health risk assessment for both recreational and subsistence anglers assumes a highly unrealistic fractional intake from the Site of 100 percent. A quantitative assessment with more realistic assumptions concerning fractional intake, conducted in a manner consistent with regulatory guidance and precedents, would conclude that no unacceptable risk for human anglers exists. Ginn 2011 at 92-98; Finley 2011 at 23-28, 36-51.

¶ 5.c."The mobility of fish and lobsters indicates a risk to anglers who fish outside the Site boundaries." No quantitative exposure analysis is presented to substantiate this claim, and no analysis of off-site angler exposure is contained in the DTR. Site-related contaminants carried by motile fish and lobsters to areas frequented by anglers can only pose a risk to human consumers if they are caught and consumed in sufficient quantity and frequency to exceed chemical-specific toxicity thresholds. Without data to support this claim, it is purely speculative, and without scientific basis. Furthermore, the Ginn and Finley expert reports document that there is no risk to recreational or subsistence anglers. Ginn 2011 at 76-100; Finley 2011 at 7-51.

¶ 5.d."Shipyard activities disturb sediments, creating beneficial use impairment throughout the Bay." While it is likely, and Site-specific data support the notion that a certain degree of vertical mixing and resuspension of buried sediments takes place within the Shipyard leasehold in areas where vessel movements and engine testing take place, there is no analysis of any kind presented to support Dr. Johns' assertion of Bay-wide impacts. The DTR does not contain any quantitative analysis of sediment transport beyond the site boundaries, and Dr. Johns does not claim to have performed any such analysis or present any evidence that would support his allegation of beneficial use impairment beyond the Shipyard Site boundaries.

Attachment A, Exponent Critique, at 20-21.

[NASSCO Comment No. 380, TCAO, at ¶ 2, 3, 5, 6, 10, 19, 25-28, DTR, at §§ 2.3, 3.3, 5.4, 6.4, 10.4, 10.5, 19, 25-28, Appendices 19, 27, 28]

Comment ID: 407 **Organization:** NASSCO
DTR Section: 19, 25-28, Appendices 19, 27, 28
Comment:

Port Comment No. 18 (Exhibit No. 3, Declaration of Expert Michael Johns, ¶ 6): It is my opinion that COCs are bioaccumulating in biota for the following reasons:

a.Laboratory exposures to site-collected sediments established that statistically significant accumulations of selected contaminants (arsenic, copper, lead, mercury, zinc, TBT, total PCBs, and high molecular weight PAHs) occur in clams that are in direct contact with and ingest contaminated sediments, providing evidence that Site sediments contribute to the contaminant residues in the tissues of benthic organisms.
b.Benthic organisms are an important component of marine food webs and are a major component of the diet for both the sand bass and spiny lobster as well as many other fish, invertebrate and bird species.
c.Many of the fish and shellfish that prey upon contaminated benthic organisms within the Site can be consumed by people, are highly mobile and can migrate off the Site throughout large portions of San Diego Bay. These mechanisms contribute to the transfer of contaminants from the sediment to higher order receptors (including those relevant to human exposure) outside of the Site. The life histories of sand bass and spiny lobster, the two species targeted for human health evaluation at the Site, involve migration over large portions of San Diego Bay?
d.PCBs are bioaccumulative, and cleanup is necessary for incremental improvement in the beneficial use of San Diego Bay by recreational and subsistence fishers.

Dr. Johns enumerates four reasons to believe that Shipyard Site sediment contaminants are bioaccumulating in biota. While the Site-specific data and the analyses contained in the DTR do support the generic conclusion that some bioaccumulation of COCs occurs, nothing put forward in this comment supports his assertion that bioaccumulation results directly in beneficial use impairment. Such a conclusion could only be supported by a quantitative exposure and toxicity assessment for higher trophic order consumer species, and Dr. Johns apparently relies solely on the food web associated risk assessments presented in the DTR. The flaws inherent in the DTR Tier II human health assessment are described in Ginn 2011. See Ginn 2011 at 79-94. The DTR Tier II aquatic dependent wildlife risk assessment is similarly flawed. This is so because all wildlife exposure calculations in the DTR were based on a highly unrealistic assumption of 100 percent area use for all receptors and exposure scenarios, and included inappropriate toxicity reference values for lead. See Ginn 2011 at 59-64, 71-73.

A quantitative risk assessment using realistic exposure and toxicity assumptions, performed and interpreted in accordance with regulatory guidance and precedent would conclude that no unacceptable risk for wildlife exists. See Ginn 2011 at 59-78. Accordingly, there is no justification for remediation to protect human or wildlife receptors on the basis of food web mediated exposure.

Attachment A, Exponent Critique, at 21-22.

[NASSCO Comment No. 381, TCAO, at ¶ 19, 25-28, DTR, at §§ 19, 25-28, Appendices 19, 27, 28]

Comment ID: 408 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:

Port Comment No. 20 (Exhibit No. 3, Declaration of Expert Michael Johns, ¶ 8): In my opinion, the process used by the Water Board to identify areas requiring remedial actions (e.g., use of polygons to define the remedial footprint) was appropriate. In using the polygons, the Water Board recognized that species such as fish and spiny lobster are mobile and that exposure to Site contaminants can occur site-wide rather than only at a single location. In developing the proposed remedial footprint, the Water Board correctly addressed impairment to more sedentary species, such as the organisms that form the benthic community. The factors used by the Water Board to select "worst first" polygons are consistent with my findings.

No response necessary. Dr. Johns' views on the appropriateness of the Regional Board's methodology has no bearing on whether the proper outcome was reached. Attachment A, Exponent Critique, at 23.

[NASSCO Comment No. 383, TCAO, at ¶ 32, 33, DTR, at 32, 33, Appendices 32, 33]

Comment ID: 409 **Organization:** NASSCO
DTR Section: 32, 33, Appendices 32, 33
Comment:

Port Comment No. 21 (Exhibit No. 3, Declaration of Expert Michael Johns, ¶ 9): It is my opinion that the remedial footprint contemplated by the DTR will adequately address risks posed by contaminated sediments within the Site in accordance with the Water Board's responsibility to protect the beneficial uses of waters of the state pursuant to California Water Code section 13304, with the following caveats:

a.Polygon SW29 - Only a portion of this polygon was included in the proposed remedial action footprint; the remaining area will be the subject subsequent action by the Water Board. Having reviewed additional data collected from within the boundaries of the SW29 polygon (i.e., split sample data from the samples collected by SDG&E under Order No. R9-2004-0026), I found that total PCB concentrations measured in samples represent some of the highest found within the Site. In addition polygon SW29 is at the edge of the study area and represents an unbounded area of higher concentrations of total PCBs. Because ofthese factors (i.e., high PCB concentrations not bounded by sediment data showing lower concentrations), the portion of polygon SW29 not currently included in the remedial footprint warrants subsequent action.

b.Polygon NA23 -The DTR acknowledges the high ranking of this polygon using the "worst first" analysis but concludes that it is technically infeasible to dredge because doing so would adversely affect Pier 12, the tug boat pier, and the riprap shoreline, as well as undermine the sediment slope for the floating dry dock sump. However, other areas in which dredging is not feasible are currently included in the remedial action footprint. Alternative remedial technologies proposed in these latter areas include capping and backfill. The constraints that precluded dredging in polygon NA23 (e.g., inaccessibility of sediment under piers) appear to have been overcome for these other areas. Therefore, the decision not to include polygon NA23 in the remedial action footprint on the basis of technical feasibility should be re-evaluated.

Dr. Johns' comment with respect to polygon SW29 suggests that remedial action should occur at all areas of polygon SW29 not included in the DTR remedial footprint due to PCB concentrations that are "…some of the highest found within the Site" and because the polygon is near the edge of the study area. However, he presents no analysis that suggests the proposed remedial footprint is insufficient to protect beneficial uses, nor does he explicitly assert that PCBs (or any other COC) concentrations at polygon SW29 pose an unacceptable risk or beneficial use impairment that requires remediation to mitigate. He apparently is suggesting that the remedial footprint be expanded solely on the basis of relative chemistry – only one leg of the triad analysis – and not on the basis of biological effects or receptor exposure. The spatially-weighted average exposure approach for assessing food web risks, and the weight of evidence approach for assessing risk to aquatic life, both of which Dr. Johns apparently agrees with, support the protectiveness of the DTR proposed remedial footprint, even given the extreme assumptions of the DTR exposure analyses for humans and wildlife.

Furthermore, Dr. Johns' comment with respect to polygon NA23 appears to be premised on the notion that "inaccessibility of sediment under piers" is the primary reason why dredging is infeasible at polygon NA23.

In fact, remediation of polygon NA23 is significantly more problematic than the remediation of other polygons, including those where sediment is inaccessible due to the presence of an overwater pier, due to the unique combination of conditions at NA23.

Specifically, NA23 is comprised largely of steep and lengthy slopes, which are located immediately adjacent to the pile-supported structure of Pier 12 and the armored shoreline, and which leave little to no room in which to establish a stabilizing offset distance. NASSCO's Initial Comments, Attachment D, Anchor QEA Technical Memorandum at 2 (May 26, 2011). These sloping areas are inclined at up to approximately 3H:1V (close to the sediment's natural angle of repose) and encompass 30 to 40 feet of vertical relief, making them among the steepest and highest in relief of any slopes at the shipyard site. Id. In such situations, dredging on any part of the slope must be accompanied by dredging to a similar extent all the way up the slope in order to maintain overall slope stability; otherwise, undredged areas higher up would quickly collapse into dredged areas below. Id. at 2-3.

However, since the upper portions of the slopes at NA23 are adjacent to Pier 12 and the armored shoreline slope, removal of material would lessen the stability of these features, and necessitate significant structural improvements to prevent catastrophic collapse of these features. Id. at 2-3. Elsewhere on the project site, such a scenario can be mitigated by installing a rock buttress alongside the structure of slope, so that it will be less likely to be undermined or weakened. Id. at 3. At polygon NA23, however, there is limited to no room in which to add such a feature, and in any event, situating one at the top of a dredged slope would be inherently unstable due to the fact that there is insufficient room to maintain a stabilizing offset distance. Id.

Thus, the unique set of conditions found at NA23, including the (1) steep slopes, (2) presence of adjoining features, and (3) limited ability to counteract the destabilizing influence of dredging along those features, renders remediation of NA23 technically infeasible.

Finally, Dr. Johns provides no biological or risk basis for concluding that NA23 should be added to the remediation footprint. The available data for Station NA23 suggest the opposite in fact (see summary below). Based on relatively low chemistry, and the lack of toxicity, benthic impacts from sediment contamination at NA23 are not considered likely. This area is known to be periodically disturbed by raising and lowering of the large floating dry dock, and it is likely that the single benthic community indicator that was outside reference conditions (total abundance) is due to physical disturbance. Accordingly, NA23 was properly excluded from the proposed remedial footprint in the DTR.

Station NA23
Primary COCs are relatively low:
•Composite SWAC ranking = 31 of 66 polygons
•Copper ranking = 11 of 66 polygons
•Mercury ranking = 13 of 66 polygons
•HPAH ranking = 36 of 66 polygons
•PCB ranking = 20 of 66 polygons
•TBT ranking = 36 of 66 polygons

Chemistry is below conservative biological benchmarks:
•No exceedances of 60% LAETs
•SS-MEQ = 0.72 (less than 0.90 benchmark)

No direct evidence of impacts to benthic community:
•Non-Triad Station in Phase 2
•Triad Station in 2009: “Possible” benthic impacts
•DTR chemistry score = moderate
SQGQ1 is less than 1.0. Only one chemical exceeds both DTR SQG and UPL.
•DTR toxicity score = low
Amphipod, and urchin tests both scored above reference LPL.
•DTR benthic disturbance score = moderate
The total abundance is below that found in the reference condition. However, the other three indicators show no sign of disturbance. BRI is below the reference UPL. Number of taxa and diversity index are above reference LPL. The relatively low abundance is likely the result of physical disturbance in this area, due to dry dock operations.

•No SPI data

Attachment A, Exponent Critique, at 23-25; Attachment F, Exponent, Summary of Need to Remediate NASSCO Stations, REVISED (June 23, 2011).

[NASSCO Comment No. 384, TCAO, at ¶ 32, 33, DTR, at 32, 33, Appendices 32, 33]

Comment ID: 410 **Organization:** NASSCO
DTR Section: 30, 32, 33, Appendices 32, 33
Comment:
Port Comment No. 22 (Exhibit No. 4, Declaration of Expert Ying Poon, ¶ 6): I evaluated the assertions made in the Exponent Report that Chollas Creek is a source of toxic discharges to the Shipyard Sediment Site (the "Site"). The Exponent Report assertion is based on the Schiff Report which showed the spreading of fresh water and suspended sediment plumes over the Site during two monitored rain events. The Exponent Report assertion assumes that suspended sediments traveling with the fresh water plume will deposit to the shipyard beds even though the Schiff Report did not show any measurement of where the suspended sediments would have been settled during the two rain events.

The Port has not yet provided the Regional Board or the Designated Parties with Dr. Poon's hydrodynamic and water quality numerical model (the Bay Model), summarized in his declaration. While he has applied a well known hydrodynamic and water quality model, he provides no description of the model grid and the limited description of the data used to set up the model and the data used to calibrate and verify the model is well below standard modeling practice. Accordingly, it is impossible to verify his conclusions. A model cannot be properly evaluated unless there is a demonstration that the model input data were representative and that the model calibration and validation results were a reasonable representation of actual field data.

It is notable, however, that Dr. Poon concludes that sediment is transported by Chollas Creek storm water flows to the Site. Attachment A, Exponent Critique, at 26.

[NASSCO Comment No. 385, TCAO, at ¶ 30, 32, 33, DTR, at 30, 32, 33, Appendices 32, 33]

Comment ID: 411 **Organization:** NASSCO
DTR Section: 30, 32, 33
Comment:
Port Comment No. 23 (Exhibit No. 4, Declaration of Expert Ying Poon, ¶ 12): The Bay Model shows that, during a 1-year flood event and a 100-year flood, the clay and silt deposition patterns differ from the transport patterns of salinity and suspended sediment. The fresh water plume extends throughout the Site, showing a northward transport. The suspended sediment plume is visible in the Site, but the clay deposition pattern shows that most of the clays will settle elsewhere in the bay. The silt mainly deposited near the creek mouth, with some deposited in the shipyard areas and further north. The clay and silt deposition patterns determined from the Bay Model were consistent with the other sediment transport studies conducted by the U.S. Navy for Chollas Creek.

Dr. Poon's conclusions are not credible. As stated above, while he has applied a well known hydrodynamic and water quality model, he provides no description of important data used to set up the model and the data used to calibrate and verify the model. For example, there is no mention in Dr. Poon affidavit of the distribution of particle sizes that he assumed for Chollas Creek runoff. This is a critical issue, because if the distribution is too coarse, the particles settle out too soon and if too fine, the particles settle out too slowly or not at all.

Another critical problem with Dr. Poon's declaration is that he relies on the model's portrayal of the deposition of clay and silt size particles based on his characterization of inflow from Chollas Creek and ignores sediment data which indicates where clay and silt size particles derived from Chollas Creek actually do settle out. For example, Figures A-3 through A-5 of SCWRP, 2005, Sediment Assessment Study for the Mouths of Chollas and Paleta Creek, San Diego Phase I Report (SCCWRP and U.S. Navy, 2005): Appendix A – F, clearly shows deposition of not only silt, but also clay even within the mouth of Chollas Creek, as shown in Figure 2 below. For this reason, Dr. Poon's statement that fine-grained particles settle out in the mouth of Chollas Creek and that clay-size particle are dispersed throughout the Bay with very minimal deposition in the SY should not be considered.

Figure 2. Shown is Figure A-4 from SCCWRP (2005) depicting the distribution of clay a Chollas Creek.

Attachment A, Exponent Critique, at 26-28.

[NASSCO Comment No. 386, TCAO, at ¶ 30, 32, 33, DTR, at 30, 32, 33]

Comment ID: 412 **Organization:** NASSCO
DTR Section: 30, 32, 33, Appendices 32, 33
Comment:

Port Comment No. 24 (Exhibit No. 4, Declaration of Expert Ying Poon, ¶ 13): Based on the Bay Model simulation results, the Exponent Report overestimates Chollas Creek as a source of toxics to the Site based on the results shown in the Schiff Report. This is because:

a.Transport of the fresh water flows from Chollas Creek moves northward during ebb tides and southward during flood tides;
b.A snapshot of the fresh water plume does not necessarily reflect the corresponding sediment deposition patterns;
c.Clay-sized particles from Chollas Creek are predominantly transported throughout the entire San Diego Bay; and
d.Silt-sized particles from Chollas Creek tend to deposit shortly after entering the bay near the creek mouth.

Dr. Poon's conclusions are not credible for the reasons set forth NASSCO's Comment Nos. 385 - 386, Replying to Port Comment No. 22-23.

[NASSCO Comment No. 387, TCAO, at ¶ 30, 32, 33, DTR, at 30, 32, 33, Appendices 32, 33]

Comment ID: 413 **Organization:** NASSCO
DTR Section: 30, 32, 33, Appendices 32, 33
Comment:

Port Comment No. 25 (Exhibit No. 4, Declaration of Expert Ying Poon, ¶ 14): Consequently, for a 100-year rain event, the predicted clay deposition thicknesses at the Site are less than .04 mm and the predicted silt deposition thickness is less than 1 mm. For the more typical 1-year rain event, the predicted clay deposition thickness at the Site is .002 mm and the predicted silt deposition thicknesses are less than .05 mm.

Dr. Poon's conclusions are not credible for the reasons set forth NASSCO's Comment Nos. 385 - 386, Replying to Port Comment No. 22-23.

[NASSCO Comment No. 388, TCAO, at ¶ 30, 32, 33, DTR, at 30, 32, 33, Appendices 32, 33]

Comment ID: 414 **Organization:** NASSCO
DTR Section: 30, 32, 33, Appendices 32, 33
Comment:

Port Comment No. 26 (Exhibit No. 4, Declaration of Expert Ying Poon, ¶ 15): Given these results, it is unlikely that Chollas Creek would be a major source of contaminants that bind with fine sediments to the NASSCO and BAE shipyards. Even under are 100-year event, sediment deposition at the Site was predicted to be insignificant compared to the proposed remedial dredge depths. Based on the remedial footprints and dredged volumes specified in Tentative Cleanup and Abatement Order No. R9-2011-0001, the remedial dredge depths for BAE and NASSCO were estimated to be approximately 1.4 m and 1.9 m, respectively. The Bay Model results show that it would take thousands of 100-year rain events for sediment discharging from Chollas Creek to have accumulated to similar thicknesses at the remedial dredge depths.

Dr. Poon's conclusions are not credible for the reasons set forth NASSCO's Comment Nos. 385 - 386, Replying to Port Comment No. 22-23.

[NASSCO Comment No. 389, TCAO, at ¶ 30, 32, 33, DTR, at 30, 32, 33, Appendices 32, 33]

Comment ID: 416 **Organization:** BAE Systems
DTR Section: 1.3.2
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to City of San Diego's COMMENT 3.0

II.REGIONAL BOARDS SHOULD REVIEW EVIDENCE WITH A VIEW TOWARDS LIABILITY

To be named as a discharger, all that is required is "sufficient evidence" of responsibility. See The State Board Water Quality Enforcement Policy, No. 2002-0040, (Feb. 19, 2002). To this end, “a regional water board shall “[u]se any relevant evidence, whether direct or circumstantial” in order to establish the source of a discharge. State Water Board Resolution No. 92-49, at § II(A) (emphasis added). The resolution provides a number of potential sources of evidence, including site characteristics and location in relation to other potential sources of a discharge; hydrologic and hydrogeologic information, such as differences in upgradient and downgradient water quality; industry-wide operational practices that have led to discharges, such as conveyance systems; and physical evidence, such as analytical data. (Id.)

In light of the Clean Water Act’s declared objective and the broad discretion granted to regional water boards by the Act and its implementing regulations, State Water Board decisions suggest that a regional water board should look at evidence with a view toward finding liability. According to the State Water Board, “[g]enerally speaking it is appropriate and responsible for a Regional Board to name all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility.” See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 11 (SWRCB 1985) (noting further that “substantial evidence” means “credible and reasonable evidence which indicates the named party has responsibility”); Stinnes-Western Checmical Corp., Order No. 86-16, at 12 (SWRCB 1986) (same

Comment ID: 417 **Organization:** BAE Systems
DTR Section: 4.7.2,Table 4-4,4.4,4.72
Comment:

BAE Systems San Diego Ship Repair, Inc.’s reply to City of San Diego's COMMENT 3.0

III.SUBSTANTIAL AND REASONABLE EVIDENCE SUPPORTS THE DTR'S ASSERTION THAT THE CITY'S SW4 OUTFALL HAS
CONTRIBUTED TO ELEVATED LEVELS OF POLLUTION AT THE BAE LEASEHOLD.

A.2009 SW4 Sampling Data Detects PCBs, Copper, TBT and Mercury

On December 7, 2009, water quality data from SW4 were collected from a manhole on the BAE leasehold. (Calscience Environmental Laboratories, 2009). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. Laboratory analyses included a congener-level analysis of PCBs. Multiple congeners were detected, and the highest concentrations were of penta- and hexa-chlorinated biphenyls, similar to the profile of Aroclor 1254. (Id.) Copper, mercury, and TBT were also measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of 2009 there was an ongoing source of PCBs, copper, mercury and TBT from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2009 have dissipated, nor have upland source control measures been established, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain ongoing sources of these COCs to the Site.

B.2005 SW4 Sampling Data from City Investigation Detects PCBs and PAHs

Further evidence of discharges from the City's storm drain SW4 into the Shipyard sediment site is provided by the results of a sampling investigation conducted by the City itself. As described in the DTR (section 4.7.2), on October 3, 2005, the City conducted an investigation and observed evidence of an illegal discharge into the SW4 catch basin on the north side of

Sampson Street between Belt Street and Harbor Drive, approximately 10 feet east of the railroad line that runs parallel with Belt Street. Specifically, the catch basin is located immediately to the east of the BAE Systems' parking lot and the SDG&E Silver Gate Power Plant, which is adjacent to the parking lot. During the City's investigation, three sediment samples were collected and analyzed for PCBs and polycyclic aromatic hydrocarbons (PAHs). The first sample was collected from inside and at the base of a six-inch lateral entering the catch basin from the east. The second sample was collected from inside and at the base of the 12-inch lateral entering the catch basin from the north. The third sample was collected from the 18-inch pipe exiting the catch basin. The results of these three samples, presented in DTR Table 4-4, indicate the presence of PCBs and PAHs entering and exiting the municipal storm drain system catch basin. The results of this sampling show significant concentrations of Aroclor 1254 and 1260. (DTR Table 4-4.)

The City's Comment 3.0 does not dispute any of the foregoing facts or findings. Instead, the City refers to alleged facts regarding SDG&E cleaning out the catch basin following the investigation. Those alleged facts are irrelevant under Water Code section 13304 for the reasons stated in Section I infra.

C.2001 SW4 Sampling Data Detects TBT, Copper and Mercury

On November 29, 2001, water quality data from SW4 were collected from a manhole on the BAE leasehold. (AMEC, 2001). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. TBT, copper, and mercury were all measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of late 2001 there was an ongoing source of TBT, copper, and mercury from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2001 have dissipated, nor have upland source control measures been established, and moreover the 2009 SW4 data again detects these same COCs in addition to PCBs, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain ongoing sources of these COCs to the Site.

D.Historical Discharges by the City through SW4 have Significantly Contributed to Contamination at the Site.

In 1974 the Southern California Coastal Water Research Project ("SCCWRP") published the results of an EPA-funded study entitled "Marine Inputs from Polychlorinated Biphenyls and Copper from Vessel Antifouling Paints." (Young et al., 1974.) The project surveyed the usage of PCB-containing hull paint on recreational, commercial, and Navy vessels in San Diego Bay and other southern California bays, and as collected data on PCB releases in municipal wastewater and storm runoff. (Id.)

Contrasting the PCB mass release rates for different sources (Table 12 in Young et al. 1974) shows that municipal wastewater was a major source of Aroclor 1254 to San Diego Bay, contributing more than 99.9 percent of total PCBs. Thus, as of 1974, municipal wastewater carried by the City's MS4 system and discharged via SW4 was a major source of PCB contamination at the BAE Leasehold. (Id.) The City identifies no study or data indicating that the sources of PCBs to the San Diego Bay was by any means other than those identified by Young, et al. Absent findings to the contrary, it is reasonable to conclude that the City was a major contributor of PCBs to the San Diego Bay for decades.

E.EPA Guidance Confirms that Waste Water Discharged by the City through SW4 has Significantly Contributed to Contamination at the Site

Relevant EPA guidance supports the DTR's findings with respect to waste in urban storm water discharged through the City's SW4 outfall at the BAE Leasehold. In 1983 the EPA published "Results of the Nationwide Urban Runoff Program." The Executive Summary states that among the many objectives of the National Urban Runoff Program ("NURP") was to develop analytical methodologies to examine "the quality characteristics of urban runoff, and similarities or differences at different urban locations" and "the extent to which urban runoff is a significant contributor to water quality problems across the nation." (EPA, Results of the Nationwide Urban Runoff Program, Executive Summary at p. 1.) "The NURP studies have greatly increased our knowledge of the characteristics of urban runoff, its effects upon designated uses, and of the performance efficiencies of selected control measures." (Id. at p. 2.) The NURP Final Report reached several relevant conclusions, including:

•"Heavy metals (especially copper, lead and zinc) are by far the most prevalent priority pollutant constituents found in urban runoff. End-of-pipe concentrations exceed EPA ambient water quality criteria and drinking water standards in many instances. Some of the metals are present often enough and in high enough concentrations to be potential threats to beneficial uses." (Id. at p. 5.)

•"Total suspended solids concentrations in urban runoff are fairly high in comparison with treatment plant discharges. Urban runoff control is strongly indicated where water quality problems associated with TSS, including build-up of contaminated sediments, exist." "[T]he problem of contaminated sediment build-up due to urban runoff…undeniable exists." (Id. at p. 6.)

•"A summary characterization of urban runoff has been developed and is believed to be appropriate for use in estimating urban runoff pollutant discharges from sites where monitoring data are scant or lacking, at least for planning level purposes." (Id. at p. 7.)

With respect to this last conclusion regarding the development of a summary characterization, the NURP Report states that "[a]lthough there tend to be exceptions to any generalization, the suggested summary urban runoff characteristics given in Table 6-17 of the report are recommended for planning level purposes as the best estimates, lacking local information to the contrary." (Id. at p. 7.) "[I]n the absence of better information the data given in Table 6-17 are recommended for planning level purposes as the best description of the characteristics of urban runoff." (EPA, Results of the Nationwide Urban Runoff Program, Volume I – Final Report, at p. 6-43.) Those characteristics of urban runoff include the presence of significant levels of pollutants including total suspended solids, heavy metals, inorganics, and pesticides. (Id., at Tables 6-17 through 6-21.) The NURP data supports and confirms the DTR's assertion that:

"The City of San Diego has caused or permitted the discharge of urban storm water pollutants directly to San Diego Bay at the Shipyard Sediment Site. The pollutants include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), TSS, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes."
(DTR, § 4.4.)

The NURP data also supports and confirms the DTR's assertion that "it is highly probable that historical and current discharges from [SW4] outfall have discharged heavy metals and organics to San Diego Bay at the Shipyard Sediment Site." (DTR § 4.7.2.)

Comment ID: 418 **Organization:** BAE Systems
DTR Section: 32.1
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

I.INTRODUCTION

In their May 26, 2011 comments regarding the TCAO and accompanying DTR, SDC and EHC argue that the Regional Board applied the improper legal standard in determining the appropriate cleanup level at the Shipyard Site, improperly reached the conclusion that cleanup to background is not economically feasible, improperly formulated the DTR-recommended cleanup levels, and failed to ensure that the DTR-recommended cleanup levels achieve the best water quality reasonable. Their position, however, reflects a fundamental misunderstanding of the applicable legal standards, site data, and the technical approaches used by the Regional Board in the DTR. As set forth more fully below, the Regional Board applied the correct legal standard, based its finding that cleanup to background is not economically feasible on a well-reasoned analysis of cost effectiveness, and set appropriate cleanup levels that do not unreasonably impair the beneficial uses of the water. For these reasons, which are more fully addressed below, SDC and EHC's comments lack credence and should be rejected.

Comment ID: 419 **Organization:** BAE Systems
DTR Section: 32.1
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

II.REPLY TO SECTION I. THE LAW REQUIRES CLEANUP TO BACKGROUND EXCEPT WHERE EVIDENCE IN THE RECORD DEMONSTRATES THAT ALTERNATIVE CLEANUP LEVELS GREATER THAN BACKGROUND WATER QUALITY ARE APPROPRIATE.

A.Reply to Comment I.A. Cleanup to a Pollutant Level Greater than Background Conditions is Only Allowed if the Regional Board Makes Two Findings.

SDC and EHC contend there is a rebuttable presumption of cleanup to background or the most economically feasible cleanup alternative. The Act and implementing regulations, however, do not support their position. Rather, where background is not technologically or economically feasible, the Regional Board is only required to set an alternative cleanup level where the beneficial uses of the water are not unreasonably impaired.

First, SDC and EHC's position fails to recognize that if the alternative cleanup level does not unreasonably affect the beneficial uses, it is not considered "a condition of pollution or nuisance," which is a prerequisite to the Regional Board's exercise of authority under the Act. See Cal. Water Code § 13304(a). The California Water Code, as well as the Federal Clean Water Act, recognize that industrial discharges are acceptable as long as they do not unreasonably impair other beneficial uses. See, e.g., S. Fl. Water Mgmt. Dist. v. Miccosukee Tribe of Indians, 541 U.S. 95, 102 (2004) (noting that "the [Federal Clean Water] Act prohibits 'the discharge of any pollutant by any person' unless done in compliance with some provision of the Act"). As more fully explained below and in BAE Systems' May 23, 2011 Comments, Site sediments do not pose any unacceptable risk to aquatic life, aquatic-dependent wildlife, or human health, and do not unreasonably affect the beneficial uses of the water. Because the alternative cleanup levels set forth in the DTR do not unreasonably affect the beneficial uses of the water, they are acceptable.

Second, the Regional Board is not required to determine the appropriate cleanup level irrespective of the associated costs with cleanup. In fact, the Regional Board is required to balance the impact on the environment against the technological and economical costs associated with a cleanup to determine a level of remediation that is reasonable and cost-effective. For example, California Water Code § 13304 requires dischargers to either "clean up the waste or abate the effects of the waste . . . ." Cal. Water Code § 13304(a) (emphasis added). This makes it clear that abatement of the effects of waste, rather than remediation to background, can accomplish the goals of the Porter-Cologne Water Quality Control Act in the same manner as remediation to background. The State Water Board's guidance is no different. Specifically, State Water Board Resolution No. 92-49 does not require cleanup to background unless it is both technologically and economically feasible: the Regional Board "shall . . . ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality or the best water quality which is reasonable if background levels of water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible . . . ." State Water Board Resolution No. 92-49, § III(G) (emphasis added).

Similarly, the Act requires that the State Water Board develop guidelines and procedures for regional boards that "include . . . [p]rocedures for identifying and utilizing the most cost-effective methods . . . for cleaning up or abating the effects of contamination or pollution." Cal. Water Code § 13307(a)(3). This makes clear that abating the effects of contamination must be tempered by cost considerations. Thus, contrary to SDC and EHC's position, the DTR correctly states that the Water Code permits "an alternative cleanup level less stringent than background sediment chemistry concentrations if attainment of background concentrations is technologically or economically infeasible – as long as the less stringent cleanup level is protective of beneficial uses." (DTR § 32.1.) As set forth more fully below, there is substantial evidence that (1) cleanup to background is not technologically or economically feasible, (2) the alternative cleanup level is protective of the beneficial uses at the site, and (3) monitored natural attenuation is the most cost-effective method for achieving the cleanup goals articulated in the TCAO.

Comment ID: 420 **Organization:** BAE Systems
DTR Section: 32.1

Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION I. THE LAW REQUIRES CLEANUP TO BACKGROUND EXCEPT WHERE EVIDENCE IN THE RECORD DEMONSTRATES THAT ALTERNATIVE CLEANUP LEVELS GREATER THAN BACKGROUND WATER QUALITY ARE APPROPRIATE.

B.Reply to Comment I.B. Alternative Cleanup Levels Must Be a Concentration Limit Set on a Constituent-by-Constituent Basis and Must Meet Requirements in State Water Board Resolution No. 92-49.

SDC and EHC argue that the Regional Board is required to set a concentration limit, and that this must be done on a constituent-by-constituent basis. In support of their position, SDC and EHC rely on § 2550.4 of Title 23 of the California Code of Regulations. While it is true that State Board Resolution No. 92-49, in part, incorporates the provisions of Chapter 15, the State Water Board advises implementation of those provisions only if the cleanup and abatement "involves corrective action at a waste management unit regulated by waste discharge requirements issued under Chapter 15." State Water Board Resolution No. 92-49, § III(F)(2) (emphasis added). Furthermore, Chapter 15, which is titled "Discharges of Hazardous Waste to Land," states in pertinent part:

The regulations in this article apply to owners or operators of facilities that treat, store, or dispose of hazardous waste at Class I waste management units. . . . Furthermore, § 2550.4 of this article also applies to all determinations of alternative cleanup levels for unpermitted discharges to land of hazardous waste, pursuant to ¶ III.G. of SWRCB Resolution No. 92-49 . . . .

Calif. Code Regs. tit. 23 § 2550.0. The designated parties in the instant proceedings are not considered Class I waste management units, nor do the determinations at issue here relate to unpermitted discharges to land. Furthermore, the provisions contained within Chapter 15 were clearly designed to be instructive guidelines for waste treatment, storage, and disposal facilities, not for sediment remediations. Technical elements for establishing water quality protection standards, monitoring programs, and corrective action programs for releases from waste management units, like those set forth in Chapter 15, are simply not useful in the context of sediment remediation. Thus, to the extent Section 2550.4 addresses concentration limits or constituent-specific cleanup, it is limited to the context of waste discharge and monitoring requirements, and does not apply here.

To the extent that Section 2550.4 does apply, it does so only to reinforce the guidance contained in Resolution No. 92-49, and the general requirement that alternative cleanup levels set above background levels adequately protect the beneficial uses of the water. As already explained, the Regional Board is required only to ensure that the cleanup levels ultimately ordered are economically feasible and adequately protective of the beneficial uses. See, e.g., State Water Resources Control Board Memorandum From Craig Wilson To John Robertus (February 22, 2002), at SAR097571- 81 ("Wilson Memo") (noting that Resolution 92-49 is flexible and making no mention of any requirement to set alternative cleanup levels or analyze economic or technological feasibility on a constituent-by-constituent basis) Contrary to SDC and EHC's position, meeting the standard of Resolution No. 92-49 does not require that cleanup levels be set or economical feasibility be assessed on a constituent-by-constituent basis. Tellingly, SDC and EHC fail to point to any decisions or other CAOs where the Regional Board, or another tribunal, construed Resolution No. 92-49 in such a way.

Finally, and perhaps most importantly, requiring remediation on a constituent-by-constituent basis irrespective of economic feasibility, as urged by SDC and EHC, would likely result in remediation at a level more stringent than background. Not only is this not required under the Act, Resolution 92-49 specifically forbids it: "under no circumstances shall these provisions be interpreted to require cleanup and abatement which achieves water quality conditions that are better than background conditions." (Section III(F)(1) (emphasis added).)

As discussed more fully below, the DTR sets alternative levels on a constituent-by-constituent basis for both primary COCs and secondary COCs, and does so after a careful weighing of the objectives of the Act against the economic feasibility of remediating to background. Accordingly, SDC and EHC's position that the DTR is inadequate in this regard should be rejected.

Comment ID: 421 **Organization:** BAE Systems
DTR Section: 31
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION I. THE LAW REQUIRES CLEANUP TO BACKGROUND EXCEPT WHERE EVIDENCE IN THE RECORD DEMONSTRATES THAT ALTERNATIVE CLEANUP LEVELS GREATER THAN BACKGROUND WATER QUALITY ARE APPROPRIATE.

C.Reply to Comment I.C. The Regional Board's Findings Must be Supported By Evidence in the Record.

SDC and EHC correctly note that the Regional Board's findings must be supported by the weight of the evidence in the record. Their position, however, that the Regional Board's alternative cleanup levels are insufficiently protective, and the corresponding implication that cleanup to background on a constituent-by-constituent basis is technologically and economically feasible, are without merit. As set forth more fully below, the Regional Board has complied with the State Water Board Resolution No. 92-49 in setting alternative cleanup levels that do not unreasonably interfere with the beneficial uses of the water and are economically feasible.

See BAE Rebuttal Comment ID 422, 423, 424

Comment ID: 422 **Organization:** BAE Systems
DTR Section: 31
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

III.REPLY TO SECTION II. THE ORDER'S CONCLUSION THAT CLEANUP TO BACKGROUND WATER QUALITY LEVELS IS ECONOMICALLY INFEASIBLE IS ARBITRARY AND CAPRICIOUS AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE IN THE RECORD.

Contrary to SDC and EHC's position, the Regional Board and the other Designated Parties have complied with the State Water Board Resolution No. 92-49. As already noted, the law allows designated parties to remediate a site based on alternative cleanup levels, rather than to background, if the parties can demonstrate that it is economically infeasible to remediate a site to background. Not only do the TCAO and accompanying DTR demonstrate that it is economically infeasible to remediate the site to background, but two other experts, Arcadis, Inc. ("Arcadis") and Integral Consulting, Inc. ("Integral"), have also so opined. Arcadia and Integral used different methodologies to assess cost-effectiveness than did the Regional Board but nonetheless each derived the same conclusion. Cleanup to background was not only substantially more expensive to achieve than cleaning to the DTR's established cleanup levels, but also cleaning to background is substantially less cost-effective than cleaning to the DTR-established cleanup levels.

SDC and EHC argue that the alternative cleanup levels set forth in the TCAO and the DTR are not appropriately protective of the Bay's beneficial uses. SDC and EHC submit an analysis that primarily focuses on the efficacy of the alternative cleanup standards as opposed to analyzing whether achieving background sediment quality is economically feasible. It is only the latter question, whether cleanup to background is economically feasible, that must be answered in assessing whether the Designated Parties have appropriately met the terms of State Water Board Resolution No. 92-49.

Comment ID: 423 **Organization:** BAE Systems
DTR Section: 31 Figure 31.1
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS
REPLY TO SECTION II. THE ORDER'S CONCLUSION THAT CLEANUP TO BACKGROUND WATER QUALITY LEVELS IS ECONOMICALLY INFEASIBLE IS ARBITRARY AND CAPRICIOUS AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE IN THE RECORD.

A.The DTR's Economic Feasibility Analysis.

Section 31 of the DTR sets forth the Regional Board's analysis of the economic feasibility of cleaning the site to background. On May 20, 2011, the Regional Board made clear in its answers to questions posed by SDC and EHC that "[t]he objective of section 31 [of the DTR] is to determine whether achieving background sediment quality is economically feasible – not what the cleanup levels will be." See May 20, 2011 Response to San Diego Coastkeeper and Environmental Health Coalition Economic Feasibility Questions. The Regional Board evaluated a number of criteria to determine risks, costs, and benefits associated with no action, cleanups to background sediment chemistry levels, and alternative cleanup levels greater than background concentrations. (See DTR Finding 31.) The criteria included factors such as total cost, volume of sediment dredged, the exposure pathway of receptors to contaminants, short- and long-term effects on beneficial uses (as they fall into the broader categories of aquatic life, aquatic-dependent wildlife and human health), effects on shipyards and associated economic activities, effects on local businesses and neighborhood quality of life, and effects on recreational, commercial, or industrial uses of aquatic resources. The Regional Board then compared these cost criteria against the benefits gained by diminishing exposure to the primary COCs to estimate the incremental benefit gained from reducing exposure based on the incremental cost of doing so. (DTR Finding 31.) This comparison revealed that the incremental benefit of cleanup diminishes significantly with additional costs beyond a certain cleanup level, and asymptotically approaches zero as remediation approaches background. (Finding 31 of the DTR.) Based on those considerations, the DTR concludes that cleaning up to background chemistry sediment levels is not economically feasible.

The Regional Board assessed economic feasibility by ranking the 65 shipyard sediment stations according to the contaminant levels found in surficial sediment samples. This process used Triad data and site-specific median effects quotient (SS-MEQ). (DTR Finding 31.) The Regional Board then evaluated a series of cumulative cost scenarios by starting with the six most contaminated stations, then adding the six next-most contaminated stations, progressing sequentially down the list until the entire Shipyard Sediment Site was included in the scenario. (See appendix for DTR Finding 31.)

The following chart measures the incremental benefit from cleaning up various polygons, cleaning 66 polygons on a worst basis first. The benefit of remediating polygons is in exposure reduction per $10 million of cost. The chart further measures the likely cost, per million dollars, to clean up the various polygons.

Table 1

The Regional Board concluded that initial expenditures returned a relatively high exposure reduction benefit, but additional expenditures yield progressively lower returns per dollar spent on remediation. Figure 1, which is an accurate reflection of Figure 31-1 in the DTR, graphically demonstrates the percent exposure reduction versus remediation dollars spent.

Figure 1 Percent Exposure Reduction versus Remediation Dollars Spent

The highest net benefit per remedial dollar spent occurs for the first $33,000,000 (18 polygons remediated), based on the fact that initial exposure reduction is above 12% per $10,000,000 spent. Beyond $33,000,000, however, the exposure reduction per dollar spent drops consistently as the cost of remediation increases. For cleanup to background, overall exposure reduction is only 3.5% per $10,0000,000 spent, and there is effectively no net exposure reduction for the last sets of polygons that would be included in such a remediation. Figure 2 illustrates the increasing costs and diminishing benefits associated with cleanup to background. Data shown in this figure are from Table 1.

Figure 2

The data table above shows the incremental and cumulative benefits and costs of conducting a sequential, "worst-first" cleanup of shipyard sediments. Remediation of the polygons with the highest chemical concentrations—those in the upper left of the figure—would yield not only the greatest exposure reduction (more than 12% for each set of polygons), but also the most cost-effective cleanup. Remediation of the polygons in the lower right of the figure, which would be the last addressed in a cleanup to background, would produce little or no exposure reduction, yet would be among the most costly to clean up. The marginal benefit of cleaning up to background is small or zero, whereas the marginal costs are the highest.

Further expenditures eventually reach a point where exposures reduction benefits become negligible. SDC and EHC assert that the Regional Board needs to identify the exact point where exposure reductions become negligible. The Regional Board is not so required. The objective of Finding 31 is merely to determine whether achieving background sediment quantity is economically feasible. It is sufficient to point where the incremental cost of achieving further reductions and contaminant concentrations exceed the incremental benefit of so doing.

In several of their comments, SDC and EHC claim that cleanup scenarios costing more than the remedial footprint identified in the DTR are, or may be, economically feasible. Included in these comments is the criticism that the grouping scenarios in Figure 31-1 of the DTR (Figure 1 above) have obscured the relationship between costs and benefits. These comments are based on a desire to analyze individual alternative cleanup levels rather than to address the essential question before the Regional Board, whether achieving background sediment quality is economically feasible.

The Regional Board therefore correctly concluded that, based on the incremental costs versus incremental benefits, cleanup to background sediment quality levels is not economically feasible. In addition to evaluating incremental cost effectiveness, as illustrated in the preceding figure and discussion, the data in Table 1 can also be used to calculate the overall cost effectiveness of each scenario. Overall cost effectiveness refers to the total exposure reduction per million dollars spent for an entire cleanup scenario rather than for incremental areas of a cleanup. This measure of cost effectiveness can then be contrasted with the total cost of each different scenario as shown in the following figure.

Figure 3

Cost effectiveness, expressed as the fractional reduction in exposure per million dollars spent, is shown in the Y axis of Figure 3. Cost is shown on the X axis. The data points are those tabulated in the May 20, 2011 Response to San Diego Coastkeeper and Environmental Health Coalition's Economic Feasibility Questions.

In this figure, the polygons at the upper left have the highest chemical concentrations, and thus are the most cost-effective to remediate. Cost effectiveness decreases steeply for more extensive remedial scenarios. Moving from left to right across this figure (i.e., to successively larger cleanup areas), a consistent drop in cost effectiveness is seen. This occurs even though the larger scenarios include the areas that are most cost-effective to remediate. As with the evaluation of incremental cost effectiveness, overall cost effectiveness drops most rapidly after the first three groups of polygons have been remediated. The decreasing cost-effectiveness with increasing costs is the basis of the Regional Board's determination that cleanup to background is not cost effective. This is summarized in Section 32.7.1 of the DTR as follows: "The highest net benefit per remedial dollar spent occurs for the first $33,000,000." After this point, the cost effectiveness of further dredging actions drops steeply. Cleanup scenarios costing more than approximately $33,000,000 (which corresponds to the proposed remedy) are considerably less cost effective. Cleanup to background is only about one third as cost effective as the proposed remedy, at a cost that is almost ten times higher. The Regional Board's determination that cleanup to background is not economically feasible relative to the proposed remedial footprint is well supported by the analysis of cost effectiveness.

Comment ID: 424 **Organization:** BAE Systems
DTR Section: 31
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS REPLY TO SECTION II. THE ORDER'S CONCLUSION THAT CLEANUP TO BACKGROUND WATER QUALITY LEVELS IS ECONOMICALLY INFEASIBLE IS ARBITRARY AND CAPRICIOUS AND NOT SUPPORTED BY SUBSTANTIAL EVIDENCE IN THE RECORD.

B.Additional Economic Feasibility Analysis Confirm Cleaning to Background Is Not Economically Feasible

Arcadis and Integral undertook two additional economic feasibility analyses, and while they used slightly different methodologies, both concluded that a cleanup based on the DTR's alternative cleanup standards was far more cost effective than cleaning to background.

1.Arcadis Evaluation.

Arcadis, in its March 11, 2011 Expert Report on Economic Feasibility Shipyard Settlement Site ("Arcadis Report"), presented cost and benefit information for three alternative cleanup scenarios: the DTR-recommended Option, cleanup to background ("Background Remedial Option"), and cleanup to a third alternative ("Alternative Remedial Option"). The Alternative remedial Option establishes alternative cleanup standards that are protective of designated beneficial uses by eliminating the shipyards as designated impaired waterways under the Clean Water Act. Arcadis applied an Office of Management and Budget cost-effectiveness guidance analysis in evaluating its three options. Arcadis' analysis of the first two options is similar in approach to those used by the Regional Board in the DTR. The approach for implementing the Alternative Remedial Option is similar to the approach provided for the other two options, with the exception of exhibiting a reduced remedial footprint. Under the Alternative Remedial

Option, 12 polygons will be targeted for remediation as compared to 23 polygons for the DTR-recommended Option and 66 for the Background Remedial Option.

As is allowed under State Water Board Resolution No. 92-49, Arcadis' analysis included consideration of social costs, habitat impacts and business costs associated with the different cleanup options. Arcadis' analysis of non-dredge related costs was premised on an assumption that a remediation project of this magnitude would necessarily generate social costs that the Regional Board did not factor into its economic feasibility analysis. Such costs include impacts on the community, habitat, and businesses. The magnitude and duration of these impacts is directly related to the size and duration of the selected remedial option. (Arcadis 2011.) Potential community impacts associated with remedial implementation include noise, increased traffic, air quality, and the potential for release of contaminants into the bay. The Alternative Remedial Option would have a little less than half of the trucks and mileage required for the DTR-recommended option and approximately 6% of the trucks and mileage required for the Background Remedial Option. The DTR-recommended option will require 12% of the trucks and mileage required for the Background Remedial Option. In short, the Background Remedial Option would have a significantly larger impact on traffic than the other two options, leading to significantly greater risks of accidents and accident-related injuries. (Arcadis 2011.)

Dredging will resuspend contaminated sediment which will act to elevate the suspended solids and the concentration of contaminants in the water column. While remedial design will include measures to reduce the potential for suspension, resuspension cannot be eliminated completely. The potential for resuspension is a function of remedial method and quantity and will therefore be far greater for the Background Remedial Option than the other two remedial options. Furthermore, the Background Remedial Option would have the greatest potential for air emissions over the impact period of time.

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The three remedial options would have varying degrees of impact on the habitat. The Background Remedial Option may impact as much as 25% to 30% more eelgrass beds than the DTR-recommended Option. (Arcadis (2011) at 26.) Furthermore, dredging may have other habitat effects. For example, the increase in water depth may reduce the food available to diving ducks, such as the surf scoter.

Arcadis identifies many of the ways in which the Background Remedial Option, due to the length and breath of remedial activity, will affect the shipyards. Because the shipyards at the Site are the only shipyards in California that are capable of providing both dry docking and pier-side berthing, interruptions and delays in ship construction/maintenance activities could affect the shipyard's ability to fulfill many contracts. Inabilities to fully utilize shipyard assets could have significant financial implications to the shipyards themselves, their employees, and the community's tax base. (See Arcadis (2011) at 27-28.)

Benefits were expressed in terms of proportional reduction in the surface area-weighted average concentration ("SWAC") relative to background—i.e., the same general approach as the DTR. Arcadis found that costs relative to benefits increased disproportionately for a cleanup to background when comparted to the cleanup recommended in the DTR.

Figure 4 below, which is an accurate replication of Figure 5 in the Arcadis report, demonstrates the incremental costs and incremental reduction in exposure relative to background levels, measured in percent of the five primary COCs for the increasingly larger remedial footprints. The cost per exposure reduction (measured relative to background levels) increased from about $900,000 under the Alternative Remedial Option (smallest remedial footprint) to

about $2,300,000 under the DTR-recommended Option. The incremental cost per exposure reduction under the Background Remedial Option increased to almost $4,400,000 (using a 3% discount rate). The incremental cost per exposure reduction increases in cost by almost 100%, if a cleanup to background is commenced. The differential in cost per exposure reduction increases even more when social, habitat and business impacts are factored into the analysis.
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/////
Figure 4

2.Integral Evaluation.

Integral, in its March 11, 2011 Evaluation of Alternative Cost Effectiveness Calculation Approaches for the Remedial Alternatives of the San Diego Shipyard Site, presented further analysis of these alternatives, including three different methods of assessing chemical-specific cost effectiveness. Integral calculated (in three different ways) the chemical-specific cost effectiveness for each of the primary COCs identified in the DTR. The fractional reduction in the SWAC per million dollars spent was used as the measure of effectiveness. Chemical specific cost-effectiveness for the three alternatives evaluated is illustrated in Figure 5 below, which is a replication of Table 3 in the Integral report. Three data points are shown in this figure for every chemical. These data points correspond to the three different remedial options evaluated: Arcadis' Alternative Remedial Option, the DTR-recommended Option, and cleanup to background, in order by increasing cost. In this figure the Y axis represents the cost effectiveness of each remedial alternative, expressed as the fractional reduction in SWAC per million dollars spent. The X axis is the cost for the three different remedial options. For each of the five COCs, the highest cost effectiveness is achieved with Arcadis' Alternative Remedial Option, moderate cost effectiveness is achieved with the DTR-recommended alternative, and the lowest cost effectiveness is associated with the cleanup to background.

Figure 5

These results of chemical-specific cost effectiveness calculations show that the DTR-recommended Option is less cost-effective than Arcadis' Alternative Remedial Option, but is more cost effective than cleanup to background for all chemicals. This conclusion is consistent across all methods of interpreting cost effectiveness. Further, it is important to note that none of these methods of interpreting cost effectiveness account for the social costs, such as the impact to the community, habitat, and businesses, that will be generated as a result of the cleanup level ultimately adopted by the Regional Board. Therefore, it is likely that the actual costs associated with each of the available options are understated, and the lack of cost effectiveness of cleaning to background is that much greater when all remediation costs, social and actual, are fully taken into account. Nevertheless, consistent with the determination in the DTR that cleanup to the proposed footprint is more economically feasible than cleanup to background, cleanup to the proposed footprint is more cost effective for each of the primary COCs at the Shipyard Site.

Comment ID: 425 **Organization:** BAE Systems
DTR Section: 34

Comment:
BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

IV.REPLY TO SECTION III. THE ORDER FAILS TO MEET LEGAL REQUIREMENTS FOR CLEANUP TO POLLUTANT LEVELS GREATER THAN BACKGROUND.

•SDC and EHC assert that "the monitoring plans—both during and post-remediation—do not actually require that the alternative cleanup levels be met."

The statement is false, because the monitoring plans require the Alternative Cleanup Levels to be met within the constraints imposed by the natural variability typically encountered when making measurements of sediment chemical concentrations in environmental samples.

Comment ID: 426 **Organization:** BAE Systems
DTR Section: 34
Comment:
BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION III. THE ORDER FAILS TO MEET LEGAL REQUIREMENTS FOR CLEANUP TO POLLUTANT LEVELS GREATER THAN BACKGROUND.

A.Reply to Comment III.A. The Site-Wide Alternative Cleanup Levels Were Calculated Based on Remediating to Background Pollutant Levels.

•SDC and EHC assert that "the cleanup must ensure that remediated areas are cleaned to background conditions or cleaner."

The TCAO does specify that the remediated areas be cleaned to background conditions within the constraints imposed by the natural variability typically encountered when making measurements of sediment chemical concentrations in environmental samples.

Comment ID: 427 **Organization:** BAE Systems
DTR Section: 34
Comment:
BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION III. THE ORDER FAILS TO MEET LEGAL REQUIREMENTS FOR CLEANUP TO POLLUTANT LEVELS GREATER THAN BACKGROUND.

B.Reply to Comment III.B. The Remediation Monitoring Fails to Require Remedial Areas to Achieve Background Levels.

•SDC and EHC assert that “the Order and DTR set out a process that allows the remediated areas to be 20% more polluted than background pollutant levels.”

As explained in the DTR, the rationale for the 120% background rule is to address the natural variability typically encountered when making measurements of sediment chemical concentrations in environmental samples. This rationale is appropriate, given the technical constraints imposed by environmental sampling and analysis.

1.Reply to Comment III.B.1. The “120% of background” could lead to site-wide pollutant concentrations above the Alternative Clean-up Levels.

•SDC and EHC assert that “the DTR and record present no evidence demonstrating that site-wide remediation goals will be met if the concentrations of pollutants in all of the remediated areas are at 120% of background levels.” SDC and EHC note that the Site-wide SWACs for all five COCs would exceed their Alternative Cleanup Levels. SDC and EHC then state that the 120% background rule is “arbitrary and capricious and fails to ensure that alternative cleanup levels are achieved.”

The DTR clearly states that the rationale for the 120% background rule is to address the natural variability in sediment chemical concentrations found in the environment. As stated in Section 34 of the DTR, “Environmental data has natural variability which does not represent a true difference from expected values. Therefore, if remedial monitoring results are within an acceptable range of the expected outcome, the remedial actions will be considered successful.” The 120% background rule is therefore an appropriate recognition of the realities of environmental sampling and analysis.

The SDC and EHC analysis presented in Table 2 of the comments is flawed because it is based on the highly improbable scenario that concentrations of all five primary COCs would be found at 120% of their background levels throughout the entire remedial footprint. A much more likely scenario is that only a subset of the COCs would be found at 120% of their background levels, and that this would occur only in a portion of the footprint rather than throughout the entire area. Even if the highly unlikely scenario presented in Table 2 of the SDC and EHC comments is found, the magnitude of the exceedance of the Alternative Screening Cleanup Level for each COC is very small, ranging from 0.6 to 1.5 %. To illustrate this fact, the Alternative Cleanup Level for each COC and the Site-wide post-remediation SWAC calculated by SDC and EHC are presented below in that order:

•Copper: 159 vs. 161 mg/kg;
•Mercury: 0.68 vs. 0.69 mg/kg;
•HPAHs: 2,451 vs. 2,466 ug/kg;
•Total PCBs: 194 vs. 196 ug/kg; and
•TBT: 110 vs. 111ug/kg.

These differences are not only within the range of natural variability, they are within the range of measurement (laboratory) variability for these chemicals. Therefore, exceedances of the Alternative Cleanup Levels under the most extreme conditions possible at the Site would not substantially increase risks to aquatic receptors.

2.Reply to Comment III.B.2. The Regional Board cannot approve the Order and DTR with the 120% of background second-pass rule because it fails to ensure that Alternative Cleanup Levels will not be exceeded.
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•SDC and EHC (2011) state that "To make the alternative cleanup levels concentration limits, the Order must ensure that remediated areas are remediated to background pollutant concentrations."

This assertion is invalid. The TCAO does specify that the remediated areas be cleaned to background conditions within the constraints imposed by the natural variability typically encountered when making measurements of sediment chemical concentrations in environmental samples.

3.Reply to Comment III.B.3. The "120% of background" decision rule violates the Order's corrective action directive.

•SDC and EHC state that attainment of the Alternative Cleanup Levels "can only be guaranteed if the remedial areas achieve background pollutant levels, the 120% background redredging trigger violates the Order's remediation directive."

As discussed previously, the 120% background rule appropriately addresses the reality of natural variability of sediment chemical concentrations in the environment. The assertion by SDC and EHC is therefore incorrect.

4.Reply to Comment III.B.4. The "120% of background" decision rule for a second dredging pass is ambiguous.

•SDC and EHC state that "the language in the Order setting the 120% background level allowance leaves open the possibility that every Contaminant of Concern had to exceed 120% of background in order to warrant a second dredging pass."

The assertion is incorrect since the TCAO clearly states in Section A.2.a that "the dredging shall remediate the sediment in the dredge remedial area to the concentrations in the table below for primary COCs." The table referred to in the TCAO statement presents the Post-Remediation Dredge Area Concentration for each of the five primary COCs. It, therefore, is clear that if any one of the five COCs exceeds its Post-Remediation Dredge Area Concentration, corrective action will be evaluated. The SDC and EHC assertion is incorrect.

Comment ID: 428 **Organization:** BAE Systems
DTR Section: 34
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION III. THE ORDER FAILS TO MEET LEGAL REQUIREMENTS FOR CLEANUP TO POLLUTANT LEVELS GREATER THAN BACKGROUND.

C.Reply to Comment III.C. The Post Remedial Monitoring Fails to Evaluate Whether Alternative Cleanup Levels are Achieved.

This comment is invalid for the reasons provided below.

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1. Reply to Comment III.C.1. The Order sets the "Remedial Goals" as compliance with "Trigger Concentrations" above the Alternative Cleanup Levels—and in some cases ABOVE existing pollutant levels.

•SDC and EHC state that "because the Order sets the remediation goals as compliance with the "Trigger Concentration" instead of the alternative cleanup levels, the Order is actually setting the "Trigger Concentration" as the concentration limit for each pollutant."

SDC/EHC statement is erroneous. It fails to recognize the natural variability encountered when measuring sediment chemical concentrations in the environment. As stated in Section 34 of the DTR, "Environmental data has natural variability which does not represent a true difference from expected values." Therefore, the Trigger Concentrations were appropriately designed to address the degree of natural variability expected to be found associated with measurements of the Alternative Cleanup Levels at the Shipyard Site, based on the area-weighted variability of the measured COC concentrations in the non-remediated areas. If the Trigger Concentrations were actually the concentration limits for each COC, as SDC and EHC assert, then higher Trigger Concentrations would be necessary to accommodate the degree of natural variation expected to be found associated with the chemical measurements.

2Reply to Comment III.C.2. The Post Remedial Monitoring program will mask ongoing pollutant problems.

•SDC and EHC state that "Given the current design of the program, the Regional Board will not be able to assess whether the alternative cleanup levels were achieved and the remediation was successful."

SDC and EHC's statement is incorrect. The TCAO and DTR specify a robust post-remediation monitoring program comprised of multiple lines of evidence that address sediment chemical concentrations and potential biological effects. For example, sediment chemistry samples will be collected from all 65 polygons at the Shipyard Site, and composited into six groups to evaluate SWACs for the five primary COCs. The stratification scheme for sediment compositing will provide valuable interpretive information on the spatial distribution of COC concentrations throughout the site that would not be available if only a single site-wide SWAC was evaluated.

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In addition, the five stations selected for the combined evaluations of sediment chemistry and sediment toxicity were the only five stations in the remedial footprint found to have likely impairment based on the Triad analyses described in the DTR. (See DTR Finding 18.). Therefore, they represent the highest priority areas for remediation, and are appropriately identified for monitoring of sediment chemistry and toxicity to evaluate benthic exposure. Finally, bioaccumulation will be evaluated at nine stations distributed along the entire length of the remedial footprint, and will provide a relatively complete assessment of potential bioaccumulation throughout the site. In addition, the specified bioaccumulation test (i.e., the 28-day test with Macoma nasuta) has been proven to be an effective tool for evaluating bioaccumulation from sediment in other studies.

a.Reply to Comment III.C.2.a. The Post Remedial Monitoring program fails to require samples from each polygon at the site.

•SDC and EHC state that "the sediment sampling requirements described in the Order will provide data on the average levels of five pollutants in the top 2 cm of sediment contained within only six polygon groups. This means that the Order fails to require the Dischargers to collect data needed to evaluate whether the clean-up goals have been met for the whole site."

This statement is incorrect. Because the stratification scheme described in Section 32.2.1 of the DTR will subdivide the overall Shipyard Site into six polygon groups, it will allow SWACs to be calculated for those different subsections of the site, as well as for the overall site. This stratification scheme will provide valuable interpretive information on the spatial distribution of COC concentrations throughout the site, which would not be available if only a single site-wide SWAC was evaluated. The six polygon groups include three polygons in each of the northern and southern halves of the overall site, and the three polygons within each half of the overall site represent the remedial footprint, the polygons adjacent to or proximal to the remedial footprint, and the polygons distant from the footprint. Therefore, contrary to SDC and EHC's assertion, the stratification and compositing scheme specified in the DTR will document the true spatial extent of COC concentrations throughout the Shipyard Site, rather than mask that distribution.
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b.Reply to Comment III.C.2.b. Compositing surface sediment into six polygon groups will mask the true extent of contamination remaining at the Shipyard Sediment Site.

•SDC and EHC state that "the Post Remedial Monitoring plan will not provide the data to verify whether the remediation has been effective in protecting human health and aquatic-dependent wildlife."

As described in the response to Comment III.C.2.a above, the stratification scheme that will be used at the Shipyards Site will provide valuable interpretive information on the spatial distribution of COC concentrations throughout the site that would not be available if only a single site-wide SWAC was evaluated.

3.Reply to Comment III.C.3. Failure to assure that the Alternative Cleanup Levels are met through the remediation process renders the cleanup illegal.

•SDC and EHC state that "the Order allows the cleanup to achieve a less-stringent "Trigger Concentration" level of pollutant that effectively sets the cleanup levels significantly higher than background pollutant levels."

As described in the response to Comment III.C.1, the Trigger Concentrations were appropriately designed to address the degree of natural variability expected to be found associated with measurements of the Alternative Cleanup Levels at the Shipyard Site. If the Trigger Concentrations were actually the cleanup levels, as SDC and EHC assert, higher Trigger Concentrations would be necessary to accommodate the degree of natural variation expected to be found associated with the chemical measurements. SDC and EHC's assertion is therefore invalid.

•SDC and EHC also state that "exceeding the "Trigger Concentrations" does not actually trigger any additional remediation."

SDC and EHC's statement is incorrect. As stated in Section D of the TCAO, the purpose of the Trigger Exceedance Investigation and Characterization is "to determine the cause(s) of the exceedance" and to recommend "an approach, or combination of approaches, for addressing the exceedance(s)." The TCAO therefore lays out a rational approach with numerous details to evaluate the underlying cause of any exceedance of a Trigger Concentration, so that it can be addressed in the present, and prevented in the future. The Regional Board will review all of this information and determine the best path forward. SDC and EHC's implication that the process is flawed is therefore invalid.

Comment ID: 429 **Organization:** BAE Systems
DTR Section: 32
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

V.REPLY TO SECTION IV. THE PROPOSED CLEANUP FAILS TO REQUIRE THE BEST WATER QUALITY REASONABLE.

This comment is invalid for the reasons provided below.

A.Reply to Comment IV.A. Narrative Alternative Cleanup Levels for Aquatic Life Cannot Ensure that These Beneficial Uses will not be Unreasonably Affected at the Shipyard Sediment Site.

•SDC and EHC state that "without appropriate numeric limits for fish and benthic invertebrates, there will be no way to quantitatively measure compliance with measures to protect fish and benthic invertebrates."

The statement implies that sufficient information will not be collected in the post-remediation monitoring program to protect benthic macroinvertebrates and fish. As discussed previously, the monitoring program is comprised of multiple lines of evidence that address sediment chemical concentrations and potential biological effects. The evaluations of biological effects will include direct measurements of sediment toxicity (i.e., using the 10-day amphipod survival test with Eohaustorius estuarius, and the 48-hour bivalve larvae development test using the mussel Mytilus galloprovincialis) and bioaccumulation (i.e., using the 28-d test with the clam Macoma nasuta). In addition, sediment chemical concentrations will be compared with site-specific sediment quality values designed to be protective of benthic macroinvertebrate communities (i.e., the SS-MEQ and the 60% LAET values). The concerns for fish are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on extensive site-specific evaluations using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003).

Comment ID: 430 **Organization:** BAE Systems
DTR Section: 33

Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION IV. THE PROPOSED CLEANUP FAILS TO REQUIRE THE BEST WATER QUALITY REASONABLE.

This comment is invalid for the reasons provided below.

B.Reply to Comment IV.B. The Proposed Remedial Footprint is Too Small to Ensure that the Remaining Pollutant Levels will not Unreasonably Affect Present and Anticipated Beneficial Uses of San Diego Bay.

This comment is invalid for the reasons provided below.

1.Reply to Comment IV.B.1. Problems with the development of the Proposed Remedial Footprint results in a cleanup that achieves less than the best water quality reasonable.

SDC and EHC make numerous statements under this comment. Responses to each of those statements are presented below.

•SDC and EHC (2011) state that "an insufficient number of samples were collected to accurately determine the nature and extent of contamination at the 148-acre Shipyard Site, given the variability of contaminants at the site."

This assertion is incorrect. The station distribution scheme was consistent with the manner in which most schemes are designed at contaminated sediment sites. That is, stations are distributed with the highest density near sources where the highest COC concentrations are expected (especially in depositional environments), and with lower densities in areas removed from the sources, where contaminants are expected to be more widely dispersed by waves and currents. At the Shipyard Site, it was expected that most contaminant sources would be located near the shoreline, and that the piers would create depositional environments that would facilitate deposition of contaminants near the sources, resulting in patchy distributions with elevated concentrations. In contrast, contaminant sources were not expected to be found outside the pier lines, and in those locations, contaminants would be dispersed by waves and currents in San Diego Bay, and their concentrations in sediments would be lower and more evenly distributed. Therefore, most of the 65 stations (i.e., 43) at the Shipyard Site were located within the pier line of the site, and the station distribution scheme was consistent with the scheme commonly used at contaminated sediment sites.

Moreover, the sediment chemistry results of the 2001/2002 sampling at the Shipyard Site confirmed the assumptions used to design the station distribution scheme. That is, the chemical concentrations presented in Table A33-3 of the DTR and the concentration contours presented in Figures 4-3 to 4-21 of Exponent (2003) show that the highest concentrations were generally found within the pier line and lower, more evenly distributed concentrations were found outside the pier line. Therefore, the station distribution scheme used at the Shipyard site is considered adequate to characterize the nature and extent of sediment contamination.

Because there are no firm rules or agency guidance on the number of stations that should be sampled at a contaminated sediment site (i.e., because each site is different), the number used to characterize a particular site is usually determined using the best professional judgment of the scientists, regulatory staff, and responsible parties involved with site. These decisions take into account the site-specific nature of sources and transport mechanisms, and the effort and costs involved in both the site investigation and potential cleanup actions. Because this was the process used to develop the station distribution scheme for the Shipyard Site, the station densities are considered adequate to characterize the nature and extent of sediment contamination, and to develop a remedial footprint.

•SDC and EHC state that "ranking the polygons from most- to least-contaminated using the Composite Surface Weighted Average Concentration (SWAC) Value fails to consider the potential adverse effects on human health or the environment," and that "the method also ignores concentrations of other contaminants—such as lead, zinc, and low molecular weight PAHs."

The first assertion is invalid because, as described in Section 33.1.2 of the DTR, the composite SWACs were based on all five primary COCs at each station. The composite values therefore provided quantitative estimates of the degree of chemical contamination at all Shipyard stations, which allowed the stations to be ranked with respect to the magnitude of risks that they posed to human health and the environment on the basis of chemical contamination. The second assertion made by SDC and EHC is invalid because, as described in Section 29.3 of the DTR, the secondary COCs at the Shipyard site generally exhibited strong positive correlations with one or more of the primary COCs, indicating that they would be addressed in a common remedial footprint. Therefore, the co-occurrence evaluation conducted in the DTR ensured that the secondary COCs were accounted for in the remedial footprint.

•SDC and EHC state that "the Proposed Remedial Footprint arbitrarily excludes 15 polygons that are more contaminated—from a sediment chemistry standpoint—than the least-contaminated polygon in the Proposed Remedial Footprint."

Although SDC and EHC (2011) did not identify the 15 polygons referred to in the statement, they refer to MacDonald (2011), in which the 15 polygons were those with Composite SWAC Ranking Values greater than 5.5. SDC and EHC's assertion is invalid, however, because the DTR clearly states on Page 33-1 that, "The polygons were ranked based on a number of factors including likely impaired stations, composite surface-area weighted average concentrations for the five primary COCs, site-specific median effects quotient (SS-MEQ) for non-Triad stations, and highest concentration of individual primary COCs". Therefore, the selection of the polygons to include in the remedial footprint was based on multiple lines of evidence, as opposed to a single line of evidence such as the Composite SWAC Ranking Values. As shown in Table 33-1 of the DTR, the 23 polygons with the highest Composite SWAC Ranking Values were included in the remedial footprint (see third column of the table), and all of those polygons had values of 7.6 or greater. Polygon NA09 was added to this group primarily because it had the 10th highest concentration of mercury (i.e., a primary COC) of all the polygons (see Table 33-4 of the DTR). Therefore, the SWAC Value of 5.5 was not the primary line of evidence used to include Polygon NA09 in the remedial footprint, and a SWAC Value of 5.5 was not used as a standalone justification for including any polygon in the remedial footprint, as MacDonald (2011) implied. SDC and EHC's assertion is therefore invalid.

•SDC and EHC state that "the DTR fails to explain why the Site Specific Median Effects Quotient (SS-MEQ) is used to evaluate sediment chemistry in the non-Triad sediment samples, when the metric used for the Triad sediment samples (SQGQ1) is reliable."

The SS-MEQ was specifically developed to be an environmentally protective site-specific predictor of both non-likely and likely impairment at the Shipyard Site. The switch from the SQG1 to the SS-MEQ was therefore justified because the SQG1 values are generic guidelines that do not explicitly consider the site-specific conditions at the Shipyard Site. By contrast, the SS-MEQ was based exclusively on chemical and biological data collected at the site and therefore is a more appropriate site-specific sediment assessment tool than the SQG1.

•SDC and EHC state that "the DTR and record provide no evidence demonstrating how or why 0.9 was chosen as the "optimal threshold."

The methods used to develop and evaluate the SS-MEQ are clearly described in the text of Section 32.5.2 of the DTR, and all of the related underlying data are presented in Table A32-11 of the DTR. As noted in the DTR, a threshold value of 0.9 had an overall reliability of 70 percent. In addition, the other measures of predictive reliability of the SS-MEQ threshold of 0.9 presented in Tables 32-21 and A32-11 of the DTR show that the threshold is biased toward being environmentally protective. That is, its ability to accurately predict locations that are not likely impaired (referred to as non-likely efficiency in Table A32-11 of the DTR) was 94 percent (i.e., 16 of 17 predictions). The only polygon erroneously predicted to not be likely impaired was NA22, which had a SS-MEQ of only 0.35. As stated in Section 32.5.2 of the DTR, however, there is substantial evidence of non-COC related impairment from physical disturbance in that polygon. The ability of the threshold SS-MEQ of 0.9 to accurately predict likely impairment (referred to as likely efficiency in Table A32-11 of the DTR) was only 38 percent (i.e., 5 of 13 predictions). That is, the SS-MEQ threshold of 0.9 predicted impairment at a substantial number of locations without impairment, as well as stations with impairment. These results indicate that there is a very high degree of confidence that polygons with SS-MEQ values less than 0.9 are not likely to be impaired. Therefore, the decision to include all polygons with SS-MEQ less than 0.9 in the remedial footprint is environmentally protective. In contrast, there is much less confidence that polygons with SS-MEQ values greater than 0.9 are likely to be impaired. Therefore, the conservative decision to include all polygons with SS-MEQ values greater than 0.9 in the remedial footprint is also environmentally protective, because over half of those polygons may not be impaired. Contrary to the SDC and EHC (2011) assertion, the information presented above indicates that the threshold SS-MEQ of 0.9 is an environmentally protective predictor of both the presence and absence of impairment at the Shipyard Site.

•SDC and EHC state that "the 60% Lowest Apparent Effects Threshold for classifying sediment samples as "Likely" impacted is too high."

The apparent basis for this assertion is the evaluation conducted by MacDonald (2011), in which he showed that the 60% LAET values were greater than the ERM values of Long et al.

(1995). That comparison is flawed, however, because the LAET values were derived as site-specific values that reflect the mixtures of chemicals at the Shipyard Site, in addition to other important factors such as the site-specific bioavailability and bioaccessibility of those chemicals. By contrast, the ERM values were derived from sediment chemistry and toxicity data collected throughout the U.S., without any consideration of bioavailability or bioaccessibility. They are therefore only suitable as initial screening values for a site, rather than values that can reliably predict the presence or absence of sediment toxicity on a site-specific basis. In fact, Long et al. (1995) recognized the limited usefulness of the ERM values when they concluded that the values "should be used as informal screening tools in environmental assessments," and "they are not intended to preclude the use of toxicity tests or other measures of biological effects." Because the ERM values are generic screening values that do not consider bioavailability, it is not surprising that the 60%LAET values are greater than the ERM values, as the former values reflect the site-specific conditions that occur at the Shipyard Site. Therefore, SDC and EHC's assertion has no bearing on the usefulness of the site-specific 60% LAETs for identifying stations that are likely impaired at the site.

•SDC and EHC state that "the DTR failed to explicitly consider the potential effects exposure to contaminated sediments would have on fish with small home ranges."

This assertion is inaccurate. The species selected for detailed evaluation at the Shipyard Site was the spotted sand bass (Paralabrax maculatofasciatus) because, as stated in Exponent (2003), this species preys primarily on benthic macroinvertebrates, exhibits limited spatial movements, and is abundant in numerous kinds of habitats within San Diego Bay, including the Shipyard Site, as documented during the fish sampling effort prior to the 2001/2001 sampling events. These characteristics of the spotted sand bass make it an appropriate species for assessing contaminant exposure at the Shipyard Site. This determination is reinforced by the results of tissue chemistry analyses. Spotted sand bass were collected at four locations, inside and outside the leaseholds of both shipyards, and the results showed that chemical concentrations in fish tissue from inside the leaseholds were greater than concentrations in fish collected immediately outside the leaseholds (Exponent 2003). The data therefore clearly indicate that spotted sand bass are sensitive to spatial differences in sediment chemistry concentrations at the Shipyard Site. Although gobies were identified as a possible alternative species for use at the Shipyard Site, they were not found at the site during an extensive sampling effort prior to the 2001/2002 sampling event. As stated on Page 2-7 of the Exponent (2003) report, "attempts were also made to collect gobies, without success at either site." Representatives from the California Department of Fish and Game observed the fish collection effort and agreed that gobies were absent or rare at the Shipyard Site.
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2.Reply to Comment IV.B.2. The Proposed Remedial Footprint excludes eight polygons that, under the DTR's own methodology, should have been included.

•SDC and EHC state that "Polygons NA22, NA01, NA04, NA07, NA16, SW06, SW18, and SW29 should have been included in the Proposed Remedial Footprint and should be added to the final remedial footprint."
This statement is invalid for the reasons provided below.

a. Reply to Comment IV.B.2.a. The Proposed Remedial Footprint improperly excludes NA22.

•SDC and EHC state that "NA22 has improperly been excluded from the Proposed Remedial Footprint."

Section 33 of the TCAO states that NA22 is being evaluated in the Mouth of Chollas Creek TMDL, and therefore is not considered part of the Shipyards Site for the purposes of the TCAO. Thus, NA22 was properly removed from the remedial footprint.

b.Reply to Comment IV.B.2.b. The Proposed Remedial Footprint excludes—NA01, NA04, NA07, NA16, SW06, SW18 and SW29—which pose unacceptable risks to fish and the benthic community.

•SDC and EHC state that "the DTR arbitrarily excluded at least a dozen polygons from the Proposed Remedial Footprint without explanation," and that the seven polygons identified in the comment should be added to the remedial footprint.

Multiple site-specific indicators of sediment quality indicated that these polygons do not warrant inclusion in the remedial footprint, as follows:

•NA01: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.69) was less than the threshold of 0.9.
•NA04: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.69) was less than the threshold of 0.9.
•NA07: Not likely impaired based on Triad analysis.
•NA16: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.69) was less than the threshold of 0.9.
•SW06: Not likely impaired based on the supplemental Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.63) was less than the threshold of 0.9.
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•SW18: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.62) was less than the threshold of 0.9.
•SW29: No primary COCs exceeded their 60%LAET values, the SS-MEQ (0.71) was less than the threshold of 0.9.

Based on the information presented above, SDC and EHC's assertion that the seven polygons should be included in the remedial footprint is invalid with respect to risks to benthic macroinvertebrate communities.

With respect to fish, the concerns are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on the results of extensive site-specific evaluations using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003). MacDonald (2009) conducted a hypothetical risk analysis based on gobies, which were not found at the Shipyard Site during the extensive fish collection efforts that were conducted prior to the 2001/2002 sampling events at the site (Exponent 2003). That analysis was flawed for numerous reasons, however, and has no relevance for determining which polygons warrant inclusion in the remedial footprint. Some of the major methodological flaws in the hypothetical analysis conducted by MacDonald (2009) are as follows:

•Indicators Species: As discussed above, the selection of gobies as the indicator species was inappropriate because they are not found at the Shipyard Site.
•Toxicity Reference Value (TRV): MacDonald (2009) used a study by Orn et al. (1998) to develop the TRV for PCBs in fish. However, that study was based on zebrafish (Danio rerio) which, as a tropical freshwater species, are not found in San Diego Bay, and thus has questionable relevance to the marine fish species that reside in the Bay.
•Toxicity Endpoint: MacDonald (2009) selected reproduction as the endpoint for developing the TRV for PCBs, and developed the TRV based on ovary weight and the gonad somatic index (GSI). However, he ignored the fact that other reproductive endpoints (i.e., percentage of spawning females, mean number of eggs per female, and median hatching time), as well as early mortality showed no significant reductions in response to exposure to PCBs.
•Biota Sediment Accumulation Factor (BSAF): MacDonald (2009) used a BSAF determined for spotted sand bass in an unpublished memo by Zeeman (2004).
•Lipid Content: MacDonald (2009) assumed the lipid content of the gobies was 4 percent, based on the naked goby (Gobiosona bosc) and presented in an unpublished presentation by Lederhouse et al. (2007).
•Moisture Content: MacDonald (2009) assumed a whole-body moisture content of 80 percent for fish to convert the wet weight PCB concentrations presented in Orn et al. (1998) to dry weight.

In summary, MacDonald (2009) conducted a hypothetical analysis that predicted PCB concentrations in gobies, a species that does not occur at the Shipyard Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, an unpublished lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above items has uncertainties attached to it, which MacDonald (2009) did not attempt to quantify or even acknowledge. Given each of the uncertainties in MacDonald's hypothetical analysis, as well as the cumulative nature of them all, it is clear that the results of the hypothetical analysis conducted by MacDonald (2009) cannot be used to assess risk to fish at the Shipyard Site in a meaningful manner. In addition, such a hypothetical analysis is irrelevant because the extensive amount of site-specific information on the barred sand bass showed that risks to fish were not an issue at the Shipyard Site under baseline conditions.

Comment ID: 431 **Organization:** BAE Systems
DTR Section: 34
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION IV. THE PROPOSED CLEANUP FAILS TO REQUIRE THE BEST WATER QUALITY REASONABLE.

This comment is invalid for the reasons provided below.

C.Reply to Comment IV.C. The Remediation Monitoring is Insufficient to Assess Remedial Activities' Impacts on Water Quality, to Evaluate the Effectiveness of Remedial Measures, or to Identify the Need for Further Dredging to Achieve Clean-up Goals at the Shipyard Sediment Site.

This comment is invalid for the reasons provided below.

1.Reply to Comment IV.C.1. The water quality component of the Remediation Monitoring program fails to provide safeguards to ensure data collected reveals actual water quality conditions.

•SDC and EHC state that "the water quality component of the Remediation Monitoring Program falls short in two ways: (1) some of the requirements are specific but are not designed to collect data to accurately reflect water quality impacts during remediation and (2) some requirements are vague, allowing Dischargers to collect data in a way that masks the true water quality impacts during dredging."

As described in the TCAO, the detailed specifications of the water quality monitoring program will be specified in the Remediation Monitoring Plan, as part of the Remedial Action Plan, which will be prepared within 90 days from adoption of the CAO. The specifications presented in the Remediation Monitoring Plan will then be reviewed for technical adequacy. As stated in the TCAO, "the water quality monitoring must be sufficient to demonstrate that implementation of the selected remedial activities do not result in violations of water quality standards outside the construction area." The final specifications of the water quality monitoring program will therefore be designed to meet that stated objective.

2.Reply to Comment IV.C.2. The sediment component of the Remediation Monitoring program fails to require data collection to confirm Cleanup Levels are achieved.

•SDC and EHC state that "the sediment portion of the Remediation Monitoring program fails to require Dischargers to collect data in an amount and through methods sufficient to competently measure compliance with the alternative clean-up levels."

As described for the water quality monitoring program above, the detailed specifications of the sediment monitoring program will be specified in the Remediation Monitoring Plan, and will then be reviewed for technical adequacy. As stated in the TCAO, "the sediment monitoring must be sufficient to confirm that the selected remedial activities have achieved target cleanup levels within the remedial footprint." The final specifications of the sediment monitoring program will therefore be designed to meet that stated objective.

Comment ID: 432 **Organization:** BAE Systems
DTR Section: 34
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SECTION IV. THE PROPOSED CLEANUP FAILS TO REQUIRE THE BEST WATER QUALITY REASONABLE.

This comment is invalid for the reasons provided below.

D. Reply to Comment IV.D. The Post Remedial Monitoring Program is Poorly Designed and Will not Require Data Collection to Accurately Evaluate Post-Remediation Conditions.

SDC and EHC make numerous statements in this comment. Responses to each of those statements are presented below.

•SDC and EHC state that "NA22 must be included in any Remedial Monitoring because it is a part of the Shipyard Sediment Site."

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This statement is erroneous because, as discussed previously, Section 33 of the TCAO states that NA22 is being evaluated in the Mouth of Chollas Creek TMDL, and therefore is not considered part of the Shipyards Site for the purposes of the TCAO.

•SDC and EHC also state that "the approach to evaluating post-remedial conditions is likely to underestimate sediment toxicity because the DTR relied on inappropriate thresholds."

The specifications described in Section D of the TCAO on how the monitoring results for sediment chemistry, sediment toxicity, and bioaccumulation will be evaluated are objective, quantitative, and environmentally protective. They will therefore ensure that beneficial uses in San Diego Bay will be protected in the future.

•SDC and EHC state that "requiring sediment samples to be collected at only five sampling stations to evaluate benthic community conditions is inadequate," and that "the Post Remedial Monitoring plan should be expanded to provide a more robust basis for evaluating exposure of benthic invertebrates to contaminants at the site and for assessing sediment toxicity."

The five stations selected for evaluations of benthic exposure were the only five stations in the remedial footprint found to have likely impairment based on the Triad analyses described in the DTR (see Section 18 of the DTR). Therefore they represent the highest priority areas for remediation and are appropriately identified for monitoring of sediment chemistry and toxicity to evaluate benthic exposure. It should also be recognized that subsamples of sediment from all 65 polygons will be archived as part of the sediment compositing analysis, and will therefore be available for future chemical analysis if necessary.

•SDC and EHC state that "the Post Remedial Monitoring program's bioaccumulation requirements are insufficient," and that "because the bioaccumulation criteria are not effects-based, they will not be useful for determining if conditions at the Shipyard Sediment Site will be unreasonably affecting San Diego Bay beneficial uses."

Attachments 3 and 4 to the TCAO show that the nine stations selected for bioaccumulation analysis are distributed along the entire length of the remedial footprint, and thereby will provide a relatively complete assessment of potential bioaccumulation throughout the site. In addition, the bioaccumulation criteria specified in Section D of the TCAO were designed to document that bioaccumulation levels are responding to the sediment remediation and are showing a decreasing trend in Year 2, relative to post-remediation levels, and decreasing or continuous trends in Years 5 and 10. The bioaccumulation evaluations were therefore designed appropriately for their intended use.

•SDC and EHC state that “the Order fails to include rules specifying what actions the Dischargers must take in several situations, including (1) if sediment chemistry results for the post-remediation sediment samples exceed the thresholds included in the Order and (2) if toxicity to one or more species is observed during the Post Remedial sampling and testing.”

In Section D of the TCAO, the decision rule for sediment chemistry is identified as “sediment chemistry below SS-MEQ and the 60% LAET thresholds.” If these criteria are not achieved, the Regional Board will then evaluate whether further actions at the site are warranted. In addition, in Section D of the TCAO, the rule for sediment toxicity is identified as “toxicity not significantly different from conditions at the reference stations described in Finding 17.” If this criterion is not achieved, the Regional Board will then evaluate whether further actions at the site are warranted.

•SDC and EHC state that “the Order does not list the triggers that will be used for evaluating sediment chemistry for benthic exposure.”

In Section D of the TCAO, the decision rule for sediment chemistry is identified as “sediment chemistry below SS-MEQ and the 60% LAET thresholds.” If these criteria are not achieved, the Regional Board will then evaluate whether further actions at the site are warranted.

Comment ID: 433 **Organization:** BAE Systems
DTR Section: 33
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.’S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION’S COMMENTS

REPLY TO SECTION IV. THE PROPOSED CLEANUP FAILS TO REQUIRE THE BEST WATER QUALITY REASONABLE.

This comment is invalid for the reasons provided below.

E.Reply to Comment IV.E. The DTR Contains Incorrect Statements.

•SDC and EHC state that “the DTR incorrectly claims that the Proposed Remedial Footprint ‘captures 100 percent of triad “Likely” . . . impacted stations,’” and that “this claim is incorrect because the Proposed Remedial Footprint excludes NA22.”

As discussed previously, Section 33 of the TCAO states that NA22 is being evaluated in the Mouth of Chollas Creek TMDL, and therefore is not considered part of the Shipyards Site for the purposes of the TCAO.

Comment ID: 434 **Organization:** BAE Systems
DTR Section: 34
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

VI.REPLY TO SDC AND EHC'S CONCLUSIONS

SDC and EHC draw numerous conclusions in this section that are invalid. Each of those conclusions statements are addressed in turn.

A. Reply to SDC and EHC's Conclusion 1. The Order and DTR Must Require that the Remediation Achieve the Alternative Clean-up Levels.

•SDC and EHC state that "the '120% of background' second-dredging pass trigger and the 'Trigger Concentrations' work together to allow the pollutant levels at the Site to exceed Alternative Cleanup Levels at the Site following remediation."

As discussed previously, the DTR clearly and appropriately states that the rationale for the 120% background rule is to address the natural variability encountered when making measurements of sediment chemistry in environmental samples. SDC and EHC's analysis presented in Table 2 of the comments is flawed because it is based on the highly improbable scenario that concentrations of all five primary COCs would be found at 120% of their background levels throughout the entire remedial footprint. A much more likely scenario is that only a subset of the COCs would be found at 120% of their background levels, and that this would occur only in apportion of the footprint rather than throughout the entire areas. Even if the highly unlikely scenario presented in Table 2 of SDC and EH's comments is found, the magnitude of the exceedance of the Alternative Screening Cleanup Level for each COC is very small, ranging from 0.6 to 1.5 %. Therefore, SDC and EHC's proposed conclusion is incorrect.

Furthermore, SDC and EHC's conclusion is also invalid with respect to the Trigger Concentrations because they were appropriately designed to address the degree of natural variability expected to be found associated with measurements of the Alternative Cleanup Levels at the Shipyard Site, based on the area-weighted variability of the measured COC concentrations in the non-remediated areas.

Comment ID: 435 **Organization:** BAE Systems
DTR Section: 31
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SDC AND EHC'S CONCLUSIONS

SDC and EHC draw numerous conclusions in this section that are invalid. Each of those conclusions statements are addressed in turn.

B.Reply to SDC and EHC's Conclusion 2. The Regional Board Should Make an Independent Finding of What Level of Cleanup is Economically Feasible Based on all the Evidence in the Record Regarding Economic Feasibility.

The purpose of the economic feasibility analysis, as stated by the Regional Board's Cleanup Team (Carrigan 2011) is solely to determine whether cleanup to background is economically feasible. The Cleanup Team has determined that cleanup to background is not economically feasible, and that the proposed footprint is economically feasible, based on the cost-effectiveness of different cleanup scenarios. The stated purpose of the economic feasibility analysis does not include or imply any requirement to evaluate the economic feasibility of all, or any, other cleanup scenarios that may be favored by SDC/EHC.

Comment ID: 436 **Organization:** BAE Systems
DTR Section: 32.1.1 at 32-40
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SDC AND EHC'S CONCLUSIONS

SDC and EHC draw numerous conclusions in this section that are invalid. Each of those conclusions statements are addressed in turn.

C.Reply to SDC and EHC's Conclusion 3. The Proposed Remedial Footprint Should Be Enlarged by Eight Polygons.

•SDC and EHC state that "Polygon NA22 should be added to the Remedial Footprint to address the real risks pollution in this polygon poses to current beneficial uses," and that "NA01, NA04, NA07, NA16, SW06, SW18 and SW29 pose unacceptable risks to fish and the benthic community and should be added to the remedial footprint to address these risks."

As discussed previously, Section 33 of the TCAO states that NA22 is being evaluated in the Mouth of Chollas Creek TMDL, and therefore is not considered part of the Shipyard Site for the purposes of the TCAO. The other seven polygons should not be included in the remedial footprint, as discussed previously, multiple site-specific indicators of sediment quality indicated that those polygons do not warrant inclusion in the remedial footprint. The site-specific indicators are as follows:

•NA01: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.69) was less than the threshold of 0.9.
•NA04: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.69) was less than the threshold of 0.9.
•NA07: Not likely impaired based on Triad analysis.
•NA16: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.69) was less than the threshold of 0.9.
•SW06: Not likely impaired based on the supplemental Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.63) was less than the threshold of 0.9.
•SW18: Not likely impaired based on Triad analysis, no primary COCs exceeded their 60%LAET values, the SS-MEQ (0.62) was less than the threshold of 0.9.
•SW29: No primary COCs exceeded their 60%LAET values, the SS-MEQ (0.71) was less than the threshold of 0.9.

Based on the information presented above, SDC and EHC's assertion that the seven polygons should be included in the remedial footprint is invalid with respect to risks to benthic macroinvertebrate communities.

With respect to fish, the concerns are unwarranted because risks to fish were not found to be an issue at the Shipyard Site under baseline conditions, based on the results of extensive site-specific evaluations using the abundant and benthic-feeding spotted sand bass as the key indicator species (Exponent 2003). As discussed previously, MacDonald (2009) conducted a hypothetical risk analysis based on gobies, which was flawed for numerous reasons and therefore has no bearing on determining which polygons warrant inclusion in the remedial footprint at the Shipyard Site. Briefly, MacDonald (2009) conducted a hypothetical analysis that predicted PCB concentrations in gobies, a species that does not occur at the Shipyard Site, using a TRV developed from a freshwater zebrafish, an unpublished BSAF based on sand bass, an unpublished lipid content based on the naked goby, and an assumed 80 percent moisture content in whole bodies of fish. Each one of the above items has uncertainties attached to it, which MacDonald (2009) did not attempt to quantify or even acknowledge. Given each of the uncertainties in MacDonald's hypothetical analysis, as well as the cumulative nature of them all, it is clear that the results of the hypothetical analysis conducted by MacDonald (2009) cannot be used to assess risk to fish at the Shipyard Site in a meaningful manner. In addition, such a hypothetical analysis is irrelevant because the extensive amount of site-specific information on the barred sand bass showed that risks to fish were not an issue at the Shipyard Site under baseline conditions.
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1.Cost of Remediating Eight Additional Polygons.

SDC and EHC also claim that remediating eight additional polygons will require dredging an additional 120,000 cubic yards of sediment. They "estimate" total additional dredging costs would be approximately $1.5 million, or only 2% (2.58%) of the current cleanup cost. SDC and EHC's estimate included only the cost for the dredge to remove the sediment from the bay bottom. It is unclear what SDC and EHC intended regarding all of the other costs associated with the remedial action, but there are additional substantial costs associated with any dredging, especially in a remedial action.

The June 22, 2011 declaration of Shaun Halvax, attaching a spreadsheet of cost assumptions, estimates that the cost for remediating the additional polygons is many times SDC and EHC's estimate. Mr. Halvax's declaration states he is in charge of BAE Systems' dredge activities in San Diego and other west coast locations and just completed dredging in BAE Systems' shipyard in January 2011. Mr. Halvax states that total dredging, disposal, and underpier remediation (inclusive of environmental protection measures and monitoring) will cost an estimated $23,900,000. Costs associated with remedial dredging not considered by SDC and EHC include debris management, additional dredging/cleanup pass, protection of structures, return water management, disposal, clean sand cover, and sediment sampling/water quality monitoring. Details of these additional, but necessary, costs, including unit costs and assumptions may be found in the Halvax spreadsheet.

Instead of an incremental cost of approximately $1,500,000, the more accurate cost associated with the additional 120,000 cubic yards of sediment is $23,900,000. Even then, this estimate does not include any provision for uncertainty, permitting, long-term monitoring, design, construction management, and other potential costs that may incrementally increase the total cost of the remedial effort. Rather than an incremental increase of 2.58% to the cost of the proposed remedial action, the addition of SDC and EHC's suggested polygons will increase the estimated cost by 41% over the current estimate of $58,100,000. (DTR § 32.1.1 at 32-40.) If additional polygons are dredged, as SDC and EHC urge, the likely cost of remediating the site will increase to at least $82,000,000.

Comment ID: 437 **Organization:** BAE Systems
DTR Section: 34
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

REPLY TO SDC AND EHC'S CONCLUSIONS

SDC and EHC draw numerous conclusions in this section that are invalid. Each of those conclusions statements are addressed in turn.

E.Reply to SDC and EHC's Conclusion 5. Additional Trigger Concentrations and Triggers for Benthic Invertebrates Should Be Added to Ensure the Best Water Quality Reasonable

•SDC and EHC state that "additional 'trigger concentrations' for the secondary Contaminants of Concern should be added to the Post-Remedial Monitoring requirements," and that "triggers addressing benthic invertebrates should be added to the Post- Remedial Monitoring requirements."

As discussed previously, the secondary COCs are already accounted for in the remedial footprint due to their positive correlations with one or more of the primary COCs. In addition, the methods of analyzing the post-monitoring sediment chemistry, sediment toxicity, and bioaccumulation results are clearly identified in the TCAO and are considered both appropriate and sufficient.

Comment ID: 438 **Organization:** BAE Systems
DTR Section: 32
Comment:
BAE SYSTEMS SAN DIEGO SHIP REPAIR, INC.'S REPLY TO SAN DIEGO COASTKEEPER AND ENVIRONMENTAL HEALTH COALITION'S COMMENTS

VII.CONCLUSION

As set forth above, the Regional Board applied the correct legal standard, based its finding that cleanup to background is not economically feasible on a well-reasoned analysis of cost effectiveness, and set appropriate cleanup levels that do not unreasonably impair the beneficial uses of the water. Accordingly, SDC and EHC's comments lack credence and should be rejected.

Comment ID: 439 **Organization:** BAE Systems
DTR Section: 11.1
Comment:
BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

I.INTRODUCTION AND FACTUAL BACKGROUND

A.Port District as Lessor

From the early 1900s until 1962, the City owned and leased what is now the BAE Systems Leasehold to a host of industrial tenants. The Port District, which was created by statute in 1962, now holds and manages the BAE Systems Leasehold as trust property on behalf of the People of the State of California. The Port District likewise leased the BAE Systems Leasehold to industrial tenants unrelated to BAE Systems from 1962 to 1979 (1985 for the South end of the yard).

The lease agreement between BAE Systems and the Port District requires that BAE Systems use the leasehold exclusively for shipbuilding and repair and related marine activities, authorizes the Port District to suspend operations under certain circumstances, prohibits BAE Systems from assigning or subleasing the site without the Port District's permission, permits the Port District to inspect the leasehold, permits the Port District to approve or deny termination of the lease by BAE Systems, and permits the Port District to terminate the lease for violations of the lease's terms and conditions. (See SAR 057580-057608 [1979 Southwest Marine Lease]; SAR 057609-057640 [Southwest Marine Agreement for Amendment of Lease No. 1].) The lease further acknowledges that BAE Systems' tenancy provides to the community water front employment, tax revenue, as well as lease income. (Id.)

A number of industrial tenants unrelated to BAE Systems previously leased the premises under lease terms similar to the Port District's lease with BAE Systems. Certain of those entities are defunct, recalcitrant and/or not participating in these proceedings.

In addition to its management of the land currently identified as the BAE Systems Leasehold, the Port District also manages land currently occupied by NASSCO, as well as the cooling water tunnels for SDG&E's former Silver Gate Power Plant. (TCAO Finding 11; DTR § 11.1.)

Comment ID: 440 **Organization:** BAE Systems
DTR Section: 11.1, 11.3, 11.4
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments
INTRODUCTION AND FACTUAL BACKGROUND

B.Port District's Primary Liability as Owner and Operator

Because the Port District (1) was responsible for the use and maintenance of the land currently leased by NASSCO, BAE Systems, and SDG&E and the land formerly leased by San Diego Marine Construction Co., Star & Crescent and Campbell; (2) had knowledge of the potential for discharges from the leased properties to materially contribute to accumulations of pollutants in the San Diego Bay; and (3) had the requisite degree of control over its tenants' activities, the DTR correctly concludes that the "the Port District caused or permitted waste to be discharged into San Diego Bay, creating a condition of pollution and/or nuisance in the Bay at the Shipyard Sediment Site . . . ." (TCAO Finding 11; DTR § 11.1.) As such, the DTR names the Port District as a "discharger, . . . consistent with its responsibility for the actions, omissions and operations of its tenants." (Id.)

As a separate and independent basis for primary liability, the Port District also owns and operates a municipal storm sewer system (MS4). (TCAO Finding 11; DTR § 11.3.) The Port District is a co-permittee of current and prior NPDES Storm Water Permits that regulate the MS4 drains which outfall on the BAE Systems Leasehold (SW4) and the NASSCO Leasehold (SW9). (Id.) The DTR concludes that the Port District, through its MS4 conveyances, has discharged urban storm water containing waste directly to San Diego Bay at the Shipyard Sediment Site. (TCAO Finding 11; DTR § 11.4.) The Port District admits the same. (Port District comments, at 17.)

Comment ID: 441 **Organization:** BAE Systems
DTR Section: 11
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

II.LEGAL STANDARD FOR NAMING DISCHARGERS

In 1969, the California legislature enacted the Porter-Cologne Water Quality Control Act, Cal. Water Code §§ 13000-14958 (hereinafter, the "Act"), with the declared objective of ensuring "that the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state." Cal. Water Code § 13000. With this objective in mind, the Act grants the Regional Board broad latitude to issue Cleanup and Abatement Orders ("CAOs") when necessary to protect California's valuable and limited water resources from contamination.

Cal. Water Code § 13304(a). Specifically, the Act provides that the Regional Board may order cleanup and abatement by the following: (1) "any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board;" or (2) any person "who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance." Id.

The regulations governing the investigation and issuance of CAOs further require that the Regional Board name other dischargers to the maximum extent permitted by law. See 23 Cal. Code Regs. § 2907; See also State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304," at § II(A)(4).

The Regional Board is granted this broad authority precisely because of situations, such as the one here, where contamination is discovered many years after the events causing the contamination. As stated by a leading treatise on California environmental law: "Due to the passage of time and the difficulty of interpreting hydrogeologic evidence, it often is impossible to establish who is responsible for the contamination with a great degree of certainty." Kenneth A. Manaster and Daniel P. Selmi, California Environmental Law and Land Use Practice, § 32.32(1)(a), at p. 32-42.

Comment ID: 442 **Organization:** BAE Systems
DTR Section: 11.2.
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

III.THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

The DTR properly concludes that the Port District "should not bear merely secondary responsible at this time." The DTR finds that the Port District should be held responsible "to the extent the Port's tenants, past and present, have insufficient financial resources to cleanup the Shipyard Sediment Site and/or fail to comply with the order." (TCAO Finding 11; DTR § 11.2.)

The Port District does not appear to dispute that it should be named as a discharger due to its capacity as a landlord of tenants identified in the TCAO as dischargers. (Port District Comments at 7.) Nevertheless, the Port District contends that it is entitled to status as a secondarily responsible party because "[t]he Port's tenants have more than sufficient assets to conduct the cleanup." (Id. at 8.) There are a number of issues with the Port District's position that render it incorrect.

Comment ID: 443 **Organization:** BAE Systems
DTR Section: 11
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

A. The Port District Bears the Burden of Demonstrating That its Current and Former Tenants Have Sufficient Assets to Conduct the Cleanup

As an initial matter, the Port District's comments reflect a fundamental misunderstanding of the allocation of burdens in a secondary liability inquiry. The Port District asserts that the prior iterations of the TCAO did not name the Port District as a primary discharger "because of its determination that the Port's tenants had adequate assets to conduct the cleanup and were cooperating." (Port District Comments at 8.) To the contrary, the prior iterations of the TCAO noted only that there was "no evidence at this time indicating that [the Port's tenants] have insufficient financial resources to cleanup the Shipyard Sediment Site." (SAR 375780, at 372818-375819.) These prior iterations improperly placed the burden of demonstrating the Port District's entitlement to secondary liability status on the Port District's tenants. The Presiding Officer, however, has correctly ruled that as the party seeking status as a secondarily responsible party, it is the Port District's burden to demonstrate that its current and former tenants have sufficient assets to cover the cleanup. (October 27, 2010 Order Reopening Disc. Period, at § III.)

Comment ID: 444 **Organization:** BAE Systems
DTR Section: 11
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

B.The Port District has Failed to Meet its Burden

The DTR's conclusion that the Port District should be named primarily responsible is correct because the Port District has failed to meet its burden of establishing that equitable reasons justify imposing secondary liability. Secondary liability is appropriate, if at all, in cases where there are equitable reasons that justify imposing different liability on the relevant parties. See, e.g., In the Matter of the Petitions of Arthur Spitzer et al., Order No. 89-8, at p. 25 (holding that it would be inappropriate to name a successor entity as "secondarily" liable when its predecessor entity released contaminants which polluted the waters of the State).

1.BAE Systems has No Liability for Any Pre-1979 Discharges Including "Orphan Shares"

BAE Systems does not dispute, and in fact has stipulated, that it has the financial assets to cover amounts of the cleanup and remedial monitoring under the TCAO which are based on BAE Systems' post 1979 tenancy at the Leasehold and which are ultimately allocated to BAE

Systems. The Port District erroneously asserts that it believes BAE Systems should also have to fund cleanup and remedial monitoring costs that are attributable to former tenants of the BAE Systems Leasehold who are unable or unwilling to pay for their own share of the cleanup effort. That position is factually and legally incorrect.

Here, BAE Systems is not the successor entity to any of the entities that operated on the BAE Systems Leasehold prior to 1979. BAE Systems had no connection to the BAE Systems Leasehold prior to 1979 when it entered into its lease with the Port District. Accordingly, BAE Systems is not a "discharger" under section 13304 of the Act for any pre-1979 discharges. The Port District, on the other hand, remains primarily liable for any pre-1979 discharges to the extent its tenants for any applicable time period are unable or unwilling to fund the cleanup of discharges attributable to such time period.

Where the operator responsible for the discharge is no longer in existence or not cleaning up the site, thus creating a so called "orphan share," the landowner is considered the "discharger" and is primarily liable for remediating the site. In the Matter of the Petitions of Aluminum Company of America et al., Order No. 93-9, at pp. 16-18. "The Board has cited several factors which are appropriate for the Regional Water Boards to consider in determining whether a party should be held secondarily liable. These include: (1) whether or not the party initiated or contributed to the discharge; and (2) whether those parties who created or contributed to the discharge are proceeding with cleanup." Id. at p. 16 (citations omitted). As the DTR properly concludes, both factors cut against finding the Port District merely secondarily liable. As discussed above, the lease provisions gave the Port District significant control over the activities of the former tenants of the BAE Systems Leasehold. By permitting these entities to discharge, unabated, for a number of years, the Port District contributed to the discharge. As to the second factor, the ability of all of the parties to pay for their respective shares of the cleanup is far from clear at this time. Even the Port District concedes as much, noting that "the Star & Crescent entity that is currently named in the TCAO and DTR disputes its successor liability for the other predecessor entities that operated at the Shipyard Sediment Site." (Port District's comments at 11.) Indeed, the successor liability analysis utilized in the DTR to find Star & Crescent to be the successor to San Diego Marine Construction Company's liability is debatable, and is the subject of a pending motion for summary judgment by Star & Crescent in the federal action. Thus, to the extent these entities are not and cannot comply with the CAO, which certainly appears likely at least with respect to San Diego Marine Construction Company (1962-1972), and potentially Campbell (1972-1979), the Port District is responsible. Accordingly, it is appropriate for the Port District to be considered primarily liable for compliance with the TCAO unless and until those parties fully comply with the final order.

Although it appears to concede liability for any "orphan shares," the Port District attempts to escape liability by claiming that its tenants, including BAE Systems, "have lease and permit terms obligating the tenants to defend and indemnify the Port against this type of liability." (Port District's comments at 9.) With respect to BAE Systems, this is patently false. The Hold Harmless provision in the Southwest Marine lease upon which the Port District relies, was superseded and replaced entirely with a different Hold Harmless provision that precludes the Port District's argument. The Second Amendment to the lease expressly amends the First Amendment by "deleting therefrom Paragraphs…21…in [its] entirety and substituting in lieu thereof Paragraphs…21…as follows." (See Second Amendment to Southwest Marine Lease, at ¶ 21.) It then states:

21. HOLD HARMLESS: Lessor, and its agent, officers, and employees shall, to the full extent allowed by law, be held by Lessee free and harmless from and indemnified against any liability pertaining to or arising out of the use and operation of the premises by Lessee and any costs of expenses incurred on account of any claim or claims therefore, including reasonable attorney's fees. Nothing herein is intended to exculpate Lessor from its sole active negligence or willful misconduct.

(Id. (emphasis added).) This Hold Harmless provision requires only that BAE Systems indemnify and hold harmless the Port District for liability arising out of BAE Systems' use and operation of the premises, not prior lessees' use and operation of premises. A written modification of the terms of a contract "supersedes those terms to which it relates." Thiele v. Merrill Lynch, Pierce, Fenner & Smith, 59 F. Supp. 2d 1060, 1064 (S.D. Cal. 1999). Because the Hold Harmless Provision in the Second Amendment completely superseded all prior Hold Harmless Provisions, BAE Systems has no obligation to defend and indemnify the Port District for any liability arising out of any "orphan shares."

2.Mere Reference to Historical Insurance Policy Limits Fails to Demonstrate Applicability or Availability of Any Assets

The Port District asserts, without support, that it "believes BAE has tens of millions of dollars of historic liability coverage that would be potentially applicable to the remediation and monitoring efforts." (Port District's comments at 9 (emphasis added).) As support for its "belief," the Port District relies exclusively on a summary of "BAE Historic Liability Insurance" that it includes in its comments to the Regional Board. The same reliance is made with respect to historical insurance summaries for other parties, also prepared by the Port District.

However, the Port District merely cites to what it says are policy limits for historical policies. The Port District makes no showing whatsoever (1) whether the policy provides actual coverage for the claims and anticipated obligations at issue here, (2) whether the insurer is defunct or insolvent, (3) whether any policy amounts have been sold back or are otherwise unavailable, and (4) most importantly, whether any insurer for any party has actually accepted coverage for indemnity obligations. This lack of evidence is unsurprising, as courts have consistently held that the obligation to indemnify does not arise until the insured's underlying liability is established. See, e.g., Montrose Chemical Corp. v. Admiral Ins. Co., 10 Cal. 4th 645, 659 n.9 (1995). Without any such evidence or showing, the Port District's "belief" as to BAE Systems' and other dischargers' "potential" insurance assets is unsupported, insufficient, and certainly is not evidence upon which the Regional Board can or should change the Port District's status to that of a secondarily responsible party.

The Regional Board has a broad duty to name all dischargers in CAOs to the maximum extent permitted by the Water Code. Because the Port District has failed to demonstrate that its tenants, including BAE Systems, are obligated to conduct the cleanup attributable to any orphan shares or have sufficient assets to do so, the DTR's conclusion that the Port be named a primarily responsible party is correct.

Comment ID: 445 **Organization:** BAE Systems
DTR Section: 11.2.

Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT SHOULD BEAR PRIMARY RESPONSIBILITY

C.Any Change in the Port District's Liability Status Would be Premature

It is premature for the Regional Board to determine whether the Port District's current and historical tenants have sufficient financial resources to remediate the Site because the remediation costs have not yet been finally or specifically determined. Until the remediation is underway, it is inappropriate for the Regional Board to alter the primarily versus secondarily liability of designated parties. See In re Wenwest, Inc., State Water Resources Control Board Order No. WQ 92-13, at 3 n.2. Moreover, it cannot be determined whether any designated party "fails to comply with the order" unless and until the final CAO has been issued and a party fails to comply with those directives. (DTR § 11.2.) It is the Port District's burden to establish it is not primarily liable. See § III-A, infra. The Port District has failed to meet its burden.

Comment ID: 446 **Organization:** BAE Systems
DTR Section: 11
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

IV.THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

The Port District contends that it cannot be named as a discharger as a result of its ownership of its MS4 facilities because "[t]he DTR contains no evidence that Port discharges from its MS4 are contributing to the Shipyard Sediment Site contamination." (Port District's comments at 15.) "There is no evidence that SW4 or SW9 discharged any pollutants," the Port District claims. (Id. at 17.) The Port District's positions, however, are incorrect. There is substantial and reasonable evidence to support the DTR's assertion that the Port District's discharges into and through the SW4 storm drain outfall have contributed to elevated levels of pollution at the BAE Systems Leasehold.

Comment ID: 447 **Organization:** BAE Systems
DTR Section: 11.3
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

A.Regional Boards Should Review Evidence with a View Towards Liability

To be named as a discharger, all that is required is "sufficient evidence" of responsibility. See The State Board Water Quality Enforcement Policy, No. 2002-0040, (Feb. 19, 2002). To this end, "a regional water board shall "[u]se any relevant evidence, whether direct or circumstantial" in order to establish the source of a discharge. State Water Board Resolution No. 92-49, at § II(A) (emphasis added). The resolution provides a number of potential sources of evidence, including site characteristics and location in relation to other potential sources of a discharge; hydrologic and hydrogeologic information, such as differences in upgradient and downgradient water quality; industry-wide operational practices that have led to discharges, such as conveyance systems; and physical evidence, such as analytical data. (Id.)

In light of the Act's declared objective and the broad discretion granted to regional water boards by the Act and its implementing regulations, State Water Board decisions suggest that a regional water board should look at evidence with a view toward finding liability. According to the State Water Board, "[g]enerally speaking it is appropriate and responsible for a Regional Board to name all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility." See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 11 (SWRCB 1985) (noting further that "substantial evidence" means "credible and reasonable evidence which indicates the named party has responsibility"); Stinnes-Western Checmical Corp., Order No. 86-16, at 12 (SWRCB 1986) (same).

Comment ID: 448 **Organization:** BAE Systems
DTR Section: 11.3
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

B.NRDC is Inapposite and Does Not Apply the Evidentiary Standard Applicable in Administrative CAO Proceedings

The Port District heavily relies on Natural Res. Def. Council, Inc. v. County of Los Angeles, 636 F.3d 1235 (9th Cir. 2011) (hereafter "NRDC") to argue that the evidence upon which the DTR relies is inadequate. This case is of no relevance here. In NRDC, the plaintiffs sought to impose liability on municipal defendants for violations of the Federal Clean Water Act for what the plaintiffs contended were exceedances of the water-quality standards contained in the defendants' respective NPDES permits. (Id.) The evidence required to demonstrate an unlawful exceedance is different from the evidence required to be named as a discharger in a cleanup and abatement order. As noted, the Regional Board has broad discretion to name dischargers in a cleanup and abatement order, and all that is required to exercise that discretion is "credible and reasonable evidence which indicates the named party has responsibility." See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 12 (SWRCB 1985). It is for this reason that courts review agency decisions under an abuse of discretion standard. See Topanga Association for a Scenic Community v. County of Los Angeles, 11 Cal. 3d 506, 515 (1974) (noting that the agency which renders the challenged decision is only required to "set forth findings to bridge the analytic gap between the raw evidence and ultimate decision or order"). Thus, the Ninth Circuit's assessment of the degree of proof necessary to hold an entity liable for a NPDES Permit exceedance has no bearing on the evidence required to name the Port District as a discharger in the TCAO, and consequently Natural Res. Def. Council is fundamentally distinguishable and should be disregarded.

Moreover, Natural Res. Def. Council is inapposite because it is an action brought under the Clean Water Act centered on whether a NPDES permittee had violated the NPDES permit limits. Conversely, in the instant action, the issue is whether the Port District discharged contaminants to the Site that have contributed to the contamination. The DTR makes clear that urban runoff from the Port's MS4 facilities has been discharged to the Site, contributing to the contamination by exceeding applicable water quality objectives for the Bay. (DTR, Finding 11.) The DTR does not allege the Port District violated its NPDES permit.

Even if the Natural Res. Def. Council case has any applicability to these proceedings, the Ninth Circuit's ruling does not relieve the Port District of liability for contaminants it conveyed to the San Diego Bay. The Ninth Circuit made clear that the Clean Water Act "does not distinguish between those who add and those who convey what is added by others—the Act is indifferent to the originator of water pollution." NRDC, 636 F.3d 1235, 1252-53. In fact, according to the Ninth Circuit, the Clean Water Act bans "the discharge of any pollutant by any person" regardless of whether that "person" was the root cause or merely the current superintendent of the discharge." Id. at 1253 (internal quotations and citation omitted). Thus, as the Fifth Circuit has held, so long as the MS4 is "the means by which the pollutants are ultimately deposited into a
navigable body of water," the party can be held liable for those discharges, regardless of any permit. Sierra Club v. Abston Constr. Co., 620 F.2d 41, 45-46 (5th Cir. 1980).

Accordingly, so long as there is sufficient evidence, either direct or circumstantial, to find that the Port District's SW4 outfall has contributed to elevated levels of pollution at the Site, the DTR's conclusion is correct.

Comment ID: 449 **Organization:** BAE Systems
DTR Section: 11.4, 11.6.4, Table 4-4, p. 11-6
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the san diego unified port district's comments

THE DTR PROPERLY CONCLUDES THAT THE PORT DISTRICT'S MS4 FACILITIES HAVE AND ARE DISCHARGING WASTE TO SAN DIEGO BAY CREATING POLLUTION, CONTAMINATION AND NUISANCE CONDITIONS

C.Substantial and Reasonable Evidence Supports the DTR's Assertion That the Port District's SW4 Outfall has Contributed to Elevated Levels of Pollution at the Site

The DTR properly concludes that the Port District's SW4 outfall has contributed to elevated levels of pollution at the BAE Systems Leasehold. The Port District does not dispute that it has MS4 facilities that lead to SW4. (Port District's comments at 17.) In fact, the Port District's (untimely) proffered expert opinion of Mr. Collacott admits that the "portion of the Port District that is not leased to tenants and is tributary to outfall SW4 is limited to portions of Belt Street (approx. 1 acre) consisting of an estimated one-half mile (1/2 mile street) of curb and gutter, four storm drain inlets, and an estimated 770 feet of underground storm drains 24-inches in diameter and smaller." (Declaration of Robert Collacott In Support of the San Diego Unified Port District's Submission of Comments, Evidence and Legal Argument, at 4:9-14.) Presumably the Port District has owned and operated this tributary system to outfall SW4 since 1962.

SW4 has historically received runoff from Belt Street (among other areas). (DTR, p. 11-6.) That fact, coupled with the Port District's own statements regarding the scope of portions of its MS4 facilities, reflects an admission by the Port District that municipal wastewater from its own MS4 facilities is discharged into SW4 where it is discharged to the Site at the BAE Leasehold. As reflected below, substantial and reasonable evidence exists that supports the DTR's MS4 allegations and findings against the Port District. Importantly, "a regional water board shall "[u]se any relevant evidence, whether direct or circumstantial" in order to establish the source of a discharge. State Water Board Resolution No. 92-49, at § II(A) (emphasis added).

1.2009 SW4 Sampling Data Detects PCBs, Copper, TBT and Mercury

On December 7, 2009, water quality data from SW4 were collected from a manhole on the BAE leasehold. (Calscience Environmental Laboratories, 2009). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. Laboratory analyses included a congener-level analysis of PCBs. Multiple congeners were detected, and the highest concentrations were of penta- and hexa-chlorinated biphenyls, similar to the profile of Aroclor 1254. (Id.) Copper, mercury, and TBT were also measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of 2009 there was an ongoing source of PCBs, copper, mercury and TBT from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2009 have dissipated, nor have upland source control measures been established, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain an ongoing source of these COCs to the Site.

2.2005 SW4 Sampling Data from City Investigation Detects PCBs and PAHs

Further evidence of discharges from storm drain SW4 into the Shipyard sediment site is provided by the results of a sampling investigation conducted by the City of San Diego. As described in the DTR (section 4.7.2), on October 3, 2005, the City conducted an investigation and observed evidence of an illegal discharge into the SW4 catch basin on the north side of Sampson Street between Belt Street and Harbor Drive, approximately 10 feet east of the railroad line that runs parallel with Belt Street. Specifically, the catch basin is located immediately to the east of the BAE Systems' parking lot and the SDG&E Silver Gate Power Plant, which is adjacent to the parking lot. As noted above, the Port District admits that its own MS4 facilities drain the Belt Street area and discharge to the Bay via SW4.

During the City's investigation, three sediment samples were collected and analyzed for PCBs and polycyclic aromatic hydrocarbons (PAHs). The first sample was collected from inside and at the base of a six-inch lateral entering the catch basin from the east. The second sample was collected from inside and at the base of the 12-inch lateral entering the catch basin from the north. The third sample was collected from the 18-inch pipe exiting the catch basin. The results of these three samples, presented in DTR Table 4-4, indicate the presence of PCBs and PAHs entering and exiting the municipal storm drain system catch basin. The results of this sampling show significant concentrations of Aroclor 1254 and 1260. (DTR Table 4-4.) The Port District has cited no evidence or even argument to the contrary. Thus this data is further evidence of the Port District's illicit discharges of contaminants through its MS4 facilities that discharged directly to the Site.

3.2001 SW4 Sampling Data Detects TBT, Copper and Mercury

On November 29, 2001, water quality data from SW4 were collected from a manhole on the BAE leasehold. (AMEC, 2001). This sample was collected from the first manhole inside the BAE Systems leasehold, prior to any possible input from the site. TBT, copper, and mercury were all measured and detected in the urban stormwater conveyed by SW4. (Id.) These data indicate that as of late 2001 there was an ongoing source of TBT, copper, and mercury from urban runoff that discharged to the Site at SW4. No data suggests that contaminants found in late 2001 have dissipated, nor have upland source control measures been established, and moreover the 2009 SW4 data again detects these same COCs in addition to PCBs, and therefore it is reasonable to conclude that MS4 and outfall SW4 remain ongoing sources of these COCs to the Site.

4.Historical Discharges by the Port District into SW4 have Significantly Contributed to Contamination at the Site

In 1974 the Southern California Coastal Water Research Project ("SCCWRP") published the results of an EPA-funded study entitled "Marine Inputs from Polychlorinated Biphenyls and Copper from Vessel Antifouling Paints." (Young et al., 1974.) The project surveyed the usage of PCB-containing hull paint on recreational, commercial, and Navy vessels in San Diego Bay and other southern California bays, and also collected data on PCB releases in municipal wastewater and storm runoff. (Id.)

Contrasting the PCB mass release rates for different sources (Table 12 in Young et al. 1974) shows that municipal wastewater was a major source of Aroclor 1254 to San Diego Bay, contributing more than 99.9 percent of total PCBs. Thus, as of 1974, municipal wastewater carried by the Port District's MS4 system and discharged via SW4 was a significant source of PCB contamination at the BAE Leasehold. (Id.) The Port District identifies no study or data indicating that the sources of PCBs to the San Diego Bay was by any means other than those identified by Young, et al. Absent findings to the contrary, it is reasonable to conclude that the Port District was a significant contributor of PCBs to the San Diego Bay at least from its creation in 1962 through the 1974 date of the SCCWRP study, and likely longer.

5.EPA Guidance Confirms that Waste Water Discharged by the Port District into SW4 has Significantly Contributed to Contamination at the Site

Relevant EPA guidance supports the DTR's findings with respect to waste in urban storm water discharged by the Port District into the SW4 outfall at the BAE Leasehold. In 1983 the EPA published "Results of the Nationwide Urban Runoff Program." The Executive Summary states that among the many objectives of the National Urban Runoff Program ("NURP") was to develop analytical methodologies to examine "the quality characteristics of urban runoff, and similarities or differences at different urban locations" and "the extent to which urban runoff is a significant contributor to water quality problems across the nation." (EPA, Results of the Nationwide Urban Runoff Program, Executive Summary at p. 1.) "The NURP studies have greatly increased our knowledge of the characteristics of urban runoff, its effects upon designated uses, and of the performance efficiencies of selected control measures." (Id. at p. 2.) The NURP Final Report reached several relevant conclusions, including:

•"Heavy metals (especially copper, lead and zinc) are by far the most prevalent priority pollutant constituents found in urban runoff. End-of-pipe concentrations exceed EPA ambient water quality criteria and drinking water standards in many instances. Some of the metals are present often enough and in high enough concentrations to be potential threats to beneficial uses." (Id. at p. 5.)

•"Total suspended solids concentrations in urban runoff are fairly high in comparison with treatment plant discharges. Urban runoff control is strongly indicated where water quality problems associated with TSS, including build-up of contaminated sediments, exist." "[T]he problem of contaminated sediment build-up due to urban runoff…undeniable exists." (Id. at p. 6.)

•"A summary characterization of urban runoff has been developed and is believed to be appropriate for use in estimating urban runoff pollutant discharges from sites where monitoring data are scant or lacking, at least for planning level purposes." (Id. at p. 7.)

With respect to this last conclusion regarding the development of a summary characterization, the NURP Report states that "[a]lthough there tend to be exceptions to any generalization, the suggested summary urban runoff characteristics given in Table 6-17 of the report are recommended for planning level purposes as the best estimates, lacking local information to the contrary." (Id. at p. 7.) "[I]n the absence of better information the data given in Table 6-17 are recommended for planning level purposes as the best description of the characteristics of urban runoff." (EPA, Results of the Nationwide Urban Runoff Program, Volume I – Final Report, at p. 6-43.) Those characteristics of urban runoff include the presence of significant levels of pollutants including total suspended solids, heavy metals, inorganics, and pesticides. (Id., at Tables 6-17 through 6-21.) The NURP data supports and confirms the DTR's assertion that:

"The Port District has caused or permitted the discharge of urban storm water pollutants directly to San Diego Bay at the Shipyard Sediment Site. The pollutants include metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc), TSS, sediment (due to anthropogenic activities), petroleum products, and synthetic organics (pesticides, herbicides, and PCBs) through its SW4 (located on the BAE Systems leasehold) and SW9 (located on the NASSCO leasehold) MS4 conduit pipes."
(DTR, § 11.4.)

The NURP data also supports and confirms the DTR's assertion that "it is highly probable that historical and current discharges from [SW4] outfall have discharged heavy metals and organics to San Diego Bay at the Shipyard Sediment Site." (DTR § 11.6.4.)

Comment ID: 450 **Organization:** BAE Systems
DTR Section: 11
Comment:

BAE Systems San Diego Ship Repair, Inc.'s reply to the San Diego Unified Port District's comments

V.PORT DISTRICT'S UNTIMELY AND IMPERMISSIBLE EXPERT DECLARATIONS

As set forth in BAE Systems' concurrently filed Motion to Exclude Declarations of the Port District's Experts Michael Johns, Ph.D., Ying Poon, D.SC., and Robert Collacott, MBA M.S., the Regional Board should exclude and strike those untimely and impermissible expert opinion, and should disregard those portions of the Port District's May 26, 2011 comments that rely upon and discuss that expert opinion.

In the event the Regional Board declines to grant BAE Systems' motion to exclude, BAE Systems joins in NASSCO's Reply to Comments by the San Diego Unified Port District filed on June 23, 2011 with respect to the substance of those three expert declarations.

Comment ID: 451 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS

I.INTRODUCTION

The California Regional Water Quality Control Board, San Diego Region ("Regional Board") Cleanup Team currently identifies SDG&E as a "discharger" and "person responsible," in the TCAO based on substantial, reasonable and credible evidence that discharges from the Silver Gate Power Plant contributed to the accumulation of pollutants in marine sediments at the Shipyard Sediment Site.

SDG&E's Rescindment Request is based on two central arguments, neither of which have any merit. First, SDG&E claims that the Cleanup Team relied on "speculative" allegations in reaching its conclusion. There is nothing "speculative" about the evidence. The Silver Gate Power Plant was constructed in the 1940s and 1950s. It was a steam turbine power plant that operated at peak capacity for over thirty years. There were many sources of polychlorinated biphenyls ("PCBs"), copper, and mercury within equipment located throughout the plant. This equipment leaked and, along with other waste water, was discharged to the San Diego Bay ("Bay") via the cooling water tunnels, storm water run-off, and SDG&E's tidelands disposal ponds and oil/water separators. This is confirmed by the Administrative Record, deposition testimony of members of the Cleanup Team, data and documents prepared by SDG&E and its own consultants, and additional documents either produced by SDG&E and other parties in the pending United States District Court case or otherwise publicly available (which are filed herewith, augmenting the Administrative Record).

Second, SDG&E argues that the Cleanup Team "ignored the obvious." That is, "BAE" is solely responsible for the contamination found on the Northern portion of the Shipyard Sediment Site. In making this argument, SDG&E fails to distinguish between BAE Systems and previous, distinct, shipyard entities that operated at the Northern portion of the Shipyard Sediment Site since 1914. BAE Systems only operated at the Shipyard Sediment Site since 1979 and has no responsibility for the discharges which occurred during the prior 65 years by other owners and operators that have no relationship to BAE Systems. Further, it is not appropriate for the Regional Board to allocate liability through these proceedings{SDG&E uses the Rescindment Request to argue that the Regional Board should allocate liability to BAE Systems by conflating it with prior owners and operators and by identifying evidence that it believes supports its position. As noted above, rather than refute every instance in the Rescindment Request, BAE Systems generally objects to the singular definition of "BAE" to include prior owners and operators. Further, BAE Systems generally, and in connection with the pending litigation, reserves its rights relative to the allegations and evidence cited in the Rescindment Request. The focus of this Response is on SDG&E's status as a discharger, rather than on BAE Systems' status as a discharger}. Finally, SDG&E relies on an expert opinion from ENVIRON that TBT should be a cleanup "driver." This opinion, however, is wrong and untimely under the relevant discovery order and should be excluded{ BAE has filed herewith a Motion to Exclude ENVIRON'S Technical Comments submitted by SDG&E.}.

The Regional Board was correct to designate SDG&E as a discharger and, for the foregoing reasons, and the reasons set forth in more detail below, the Regional Board should deny the Rescindment Request.

Comment ID: 452 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS

II.THE REGIONAL BOARD APPLIED THE PROPER LEGAL STANDARD IN DESIGNATING SDG&E AS A DISCHARGER

The Regional Board properly designated SDG&E as a discharger and responsible party under the TCAO. The Regional Board has broad latitude to issue Cleanup and Abatement Orders ("CAOs") when necessary to protect California's water resources from contamination. (Cal. Water Code §13304(a).) Specifically, the Regional Board may issue CAOs to the following: (1) "any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board;" or (2) any person "who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance." (Id.)

To name SDG&E as a discharger, all the Regional Board needs is "sufficient evidence" that SDG&E caused any amount of waste to be discharged to the Shipyard Sediment Site. (See The State Board Water Quality Enforcement Policy, No. 2002-0040 (February 19, 2002).) And, the Regional Board shall "[u]se any relevant evidence, whether direct or circumstantial" to establish SDG&E's status as a discharger. (State Water Board Resolution No. 92-49 at §IIA (emphasis added).) According to the State Water Board, "[g]enerally speaking it is appropriate and responsible for a Regional Board to name all parties for which there is reasonable evidence of responsibility, even in cases of disputed responsibility." (See, e.g., Exxon Company U.S.A. et al., Order No. 85-7, at 11 (SWRCB 1985)(emphasis added); Stinnes-Western Chemical Corp., Order No. 86-16, at 12 (SWRCB 1986).) "[R]easonable evidence" means "credible and reasonable evidence which indicates the named party has responsibility." (Id.)

The Regional Board conducted years of investigation, and considered a vast amount of evidence before designating SDG&E as a discharger{Additional evidence, both direct and circumstantial, has been generated since the TCAO was issued. Some of this evidence has been added to the Administrative Record, and is discussed further below. Other evidence, including documents subsequently produced by SDG&E and other documents from industry sources and technical studies are submitted herewith to supplement the Administrative Record. This evidence further supports the Regional Board's designation of SDG&E as a discharger in the TCAO and DTR, and readily surpasses the applicable evidentiary standard that must be applied here.}. Its investigation and the evidence revealed that SDG&E had caused waste to be discharged to the Bay where it created a condition of pollution. As a result, the Regional Board applied the legal standard properly when it designated SDG&E as a discharger under the TCAO.

Comment ID: 453 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS

III.THE REGIONAL BOARD'S DESIGNATION OF SDG&E AS A DISCHARGER IS SUPPORTED BY SUBSTANTIAL, REASONABLE AND CREDIBLE EVIDENCE

SDG&E contends that the findings in Section 9 of the DTR are "speculative," and not based upon substantial, reasonable and credible evidence. SDG&E is wrong. The Regional Board not only has sufficient evidence, but also substantial, reasonable and credible evidence supporting its decision to designate SDG&E as a discharger -- SDG&E caused waste to be discharged to the Bay via its cooling water tunnels, the storm drainage system, and its tidelands waste ponds and oil/water separators. And, contrary to SDG&E's claim, the Cleanup Team's designation of SDG&E as a discharger was not based upon the Cleanup Team's acquiescence to other parties' demands to "get more people on board." (Rescindment Request at 1:14-16.) Instead, it was based upon there being "a lot of good reason to suspect that a major power plant [that] was in operation for 50 years, plus or minus, might have had some discharges" into the Shipyard Sediment Site, and evidence that demonstrated that it did. (Deposition of Craig Carlisle ("Carlisle Depo."), Vol. II at 216:19-218:1.)

SDG&E's Silver Gate Power Plant formerly located at 1348 Sampson Street, San Diego, California, operated for forty-one years from approximately 1943 until 1984 as a steam turbine power generation plant. (ENV America, Site Assessment (July 14, 2004)(SAR193330-193348).) The facility consisted of the main power plant, which held four generating units and the equipment associated with those units, the switchyard and substation ("switchyard"), which contained seventy-five oil circuit breaker tanks and four transformers above three underground storage tanks, the cooling water deck, the cooling water tunnels, which ran from the power house beneath Belt Street and SDG&E's tidelands parcel and into the San Diego Bay ("Bay"), and the tidelands parcel. (Id.; Exponent Comments on 13267 Responses (September 29, 2004)(SAR193272-193329).)

1.The Silver Gate Main Power Plant

The main power plant contained four steam turbines, eight turbine lubricating tanks with a capacity of 2,500 to 3,000 gallons each, two transformers located beneath two of the generating units, and six boilers. (Id.) The transformers contained dielectric fluid, which contained PCBs. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972); EPA, Polychlorinated Biphenyl Inspection Manual (August 2004); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).) Transformers containing PCBs were used from the 1950s until 1979 when PCBs were banned. (Id.) This overlaps the peak years of operation for the Silver Gate Power Plant. And, after 1979, the transformers at the Silver Gate Power Plant still contained PCBs. (EnecoTech Southwest, Inc., Phase II Investigation Services, PCB Investigation (April 29, 1997).)

Dielectric fluids typically contain from sixty to seventy percent PCBs by weight. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987).) The PCB Aroclors found in transformer dielectric fluid include Aroclors 1254 and 1260. (Id.; Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972).) According to the United States Environmental Protection Agency, leaks of dielectric fluids from valves and seals on transformers were common, and leaks and spills vary in size from half a pound to sixty-four pounds of dielectric fluid. (Id.; EPA, Polychlorinated Biphenyl Inspection Manual (August 2004); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).)

PCBs also were commonly used in coolant oil, turbine lubricating oil, and hydraulic fluids at steam generation power plants from the 1950s until the late 1970s because of the fire resistant properties of PCBs. (W. David Phillips, The Use of a Fire-Resistant Lubricant: Europe Looks to the Future in Turbine Lubrication in the 21st Century (2001); A.C. M. Wilson, Fire-Resistant Fluids for General Hydraulic and Steam Turbine Systems (February 1967); see also EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972); EPA, Polychlorinated Biphenyl Inspection Manual (August 2004); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).) The use of PCBs in various oil products typically used in steam generation power plants also overlaps the primary years that the Silver Gate Power Plant operated. According to industry documents and United States Environmental Protection Agency documents, leaks and disposal of these types of fluids were common as the systems were only partially closed, and these fluids are rarely re-used. (Id.) Typically, coolant, turbine lubrication and hydraulic oils contain PCB Aroclors 1248, 1254 an 1260. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972).)

All leaks from the transformers, turbines, turbine lubricating tanks and any hydraulic equipment collected in the trenches of the turbine side of the power plant, and were discharged via the discharge cooling water tunnel to the Bay from 1943 until 1977. (Exponent Comments on 13267 Responses (September 29, 2004)(SAR156879-156889); ENV America, Technical Report for RWQCB Investigation Order No. R9-2004-0026 (July 14, 2004) (SAR193272-193329).) And, before 1977 when SDG&E commenced operation of a wastewater treatment facility, liquid wastes were not treated before being discharged through the discharge cooling water tunnel. (Id.)

Further, maintenance required the boilers to be cleaned using certain chemicals. (Dowell Vertan 675 Chemical Cleaning Instructions and Schedule for Boilers 5 and 6.) The resultant waste contained dissolved metals such as iron, copper (one of the primary constituents of concern ("COCs") in the TCAO), chromium, and nickel. (Id.) Boiler blowdown, bilge water from the boiler side of the plant and wastes from boiler cleaning collected in the trenches on the boiler side of the plant, and were pumped or disposed of in unlined ponds or oil/water separators located on the tidelands. (ENV America, Technical Report for RWQCB Investigation Order No. R9-2004-0026 (July 14, 2004) (SAR193272-193329).)

2.The Silver Gate Power Plant Switchyard

The switchyard's seventy-five oil circuit breaker tanks and four transformers also contained dielectric fluid, which contained PCBs. (SDG&E Daily PCB Inspection Reports; SDG&E Internal Correspondence PCB Cleanup (May 14, 1981); SDG&E Letter to Fire Marshall (November 27, 1985); EPA Region 9 Toxics and Waste Management Division Inspection Report (April 27, 1987).) It is well documented from the United States Environmental Protection Agency and other industry reference sources that transformers and circuit breakers contained PCBs from as early as the 1940s. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972); EPA, Polychlorinated Biphenyl Inspection Manual (August 2004); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).)

Like the transformers in the main power plant, the transformers and oil circuit breakers in the Silver Gate Power Plant switchyard commonly leaked, releasing PCBs to the surrounding soil. (SDG&E Daily PCB Inspection Reports; SDG&E Internal Correspondence PCB Cleanup (May 14, 1981); SDG&E Letter to Fire Marshall (November 27, 1985); EPA Region 9 Toxics and Waste Management Division Inspection Report (April 27, 1987); see also EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972); EPA, Polychlorinated Biphenyl Inspection Manual (August 2004); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).)

For example, many of the transformers in the switchyard contained Inerteen, which was Westinghouse's trade name for a dielectric fluid containing approximately sixty percent PCB Aroclor 1260. (List of Substation Equipment (November 3, 2004); EPA Superfund, Explanation of Significant Differences: Westinghouse Electric Corp. (February 14, 1997).) And, transformer and circuit breaker fluid commonly contained PCB Aroclors 1254 and 1260. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T.

Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972).) As noted below, both Aroclors 1254 and 1260 were found in areas of the Shipyard Sediment Site and in upland areas at the former Silver Gate Power Plant Site.

The Silver Gate Power Plant switchyard had inadequate containment surrounding the transformers and circuit breakers, allowing PCBs to contaminate switchyard soil. (EPA Region 9 Toxics and Waste Management Division Inspection Report (April 27, 1987).) The switchyard also housed underground storage tanks ("USTs") that stored over 75,000 gallons of oil. (Woodward-Clyde Consultants, Underground Tank Assessment SDG&E Silver Gate Station (November 18, 1986).) There were leaks of oil from the USTs and piping associated with the USTs. (Id.; TN & Associates, Underground Storage Tank Closure Report (November 13, 2006)(SAR373807-374069).)

3.The SDG&E Silver Gate Power Plant Tidelands

Finally, SDG&E used the land it leased on the tidelands to store untreated liquid wastes in unlined ponds and oil/water separators from 1950 until 1977. (ENV America, Site Assessment (July 14, 2004)(SAR193330-193348).) The ponds and oil/water separators were located in close proximity to the Bay, and often overflowed. (Id.) In addition to these unlined liquid waste disposal ponds, in the early 1950s, a trench existed that ran from a pond to the edge of the tidelands, enabling wastes from the ponds to be discharged directly to the Bay. (Letter from Walter Zitlau to M. Hjalmarson (May 1, 1950); SAR193371.) As will be discussed further below, the untreated liquid wastes SDG&E discharged to the ponds and oil/water separators located on the tidelands contained PCB Aroclors 1254, 1260 and 5460, copper, and mercury, and the PCBs, copper and mercury were discharged to the Bay via the trench, overflows of the ponds and oil/water separators, and storm water run-off. Thus, there is substantial, reasonable and credible evidence that the SDG&E Silver Gate Power Plant contributed to the contamination of sediments at the Shipyard Sediment Site.

Comment ID: 454 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS

THE REGIONAL BOARD'S DESIGNATION OF SDG&E AS A DISCHARGER IS SUPPORTED BY SUBSTANTIAL, REASONABLE AND CREDIBLE EVIDENCE

A.DTR Sections 9.6 and 9.7 are Supported by Substantial, Reasonable and Credible Evidence.

DTR Sections 9.6 and 9.7 describe waste discharges from the Silver Gate Power Plant cooling water tunnels to the Bay, and contrary to SDG&E's assertion, set forth substantial, reasonable and credible evidence sufficient to support SDG&E's discharger status in the TCAO.

The Silver Gate Power Plant began operating in 1943, with the completion of construction of Unit 1 in 1943, (ENV America, Site Assessment (July 14, 2004)(SAR193330-193348), more than 30 years before SDG&E constructed its wastewater treatment system and became subject to an NPDES permit regulating its wastewater discharges to the Bay. SDG&E's wastewater treatment system was not completed until 1977. (Id.) SDG&E constructed the wastewater treatment system to bring its discharges from the cooling water tunnels into compliance with the Regional Board's rules and regulations. (SDG&E Power Plant Wastewater Treatment Facilities Project Design Guide (March 26, 1976).)

From 1943 until 1976, SDG&E did not treat any of the liquid wastes generated at the Silver Gate Power Plant before those wastes were discharged to the Bay. Diagrams of the Silver Gate Power Plant show that bilge water from the turbine side of the power plant was piped to the discharge cooling water tunnels. (ENV America, Technical Report for RWQCB Investigation Order No. R9-2004-0026 (July 14, 2004) (SAR193272-193329).) Basement bilge water from the turbine side of the power plant accumulated in the trenches of the basement of the turbine side of the power plant where two transformers were housed below the Unit 3 and 4 turbines. (Id.; November 27, 1985 Letter from SDG&E to the Fire Marshall.) As discussed above, leaks of dielectric fluids from valves and seals on transformers were common, and leaks and spills could vary in size from half a pound to sixty-four pounds of dielectric fluid. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972); EPA, Polychlorinated Biphenyl Inspection Manual (August 2004); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).) The grades of Aroclors used in transformers were Aroclors 1254 and 1260. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls, Table 7 (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972).)

In addition, the turbine side of the power plant had eight turbine lubricating oil tanks with a capacity of 2,500 to 3,000 gallons each. (Exponent Comments on Parties 13267 Responses (September 29, 2004) (SAR156879-156889).) Coolant oil and turbine lubricating oil contained PCBs from at least the 1940s until the 1970s, and both the coolant oil and turbine lubricating oil leaked from the transformers and turbines into the bilge water in the trenches of the turbine side of the power plant. (Id.; See A.C.M. Wilson, Fire-Resistant Fluids For General Hydraulic And Steam Turbine Systems (1967) (documenting that the leakage of lubricants from turbine hydraulic and lubrication systems was common, and that PCBs were used in those lubricants as a fire resistant fluid); W. David Phillips, The Use of a Fire-Resistant Turbine Lubricant: Europe Looks to the Future in Turbine Lubrication in the 21st Century (2001)(Due to the occurrence of steam turbine fires associated with hydraulic and lubricating oil leaks in steam turbines, fire-resistant fluids containing PCBs were used from the 1940s to 1970s.); EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987) ("PCBs were employed in … hydraulic and lubricant applications because they exhibited good heat and fire resistance ….").) Hydraulic fluids and lubricants used in equipment at Silver Gate likely contained PCB Aroclors 1254 and 1260. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls, Table 7 (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972).)

Environmental investigations at the Silver Gate Power Plant further demonstrate that SDG&E discharged PCBs, copper and mercury via the cooling water discharge tunnel. In March 2005, SDG&E hired RBF Consulting to conduct a Phase I Environmental Site Assessment of the Silver Gate Power Plant. (RBF Consulting, Phase I Environmental Site Assessment (March 2005).) In preparing the assessment, RBF reviewed and summarized a prior Phase I and Phase II conducted by IT Corporation in 2000 and 2001 respectively. The recognized environmental conditions identified by IT Corporation, and summarized by RBF, concluded that the plant trench system, sumps, voids and cooling water tunnels contained metals, and PCBs. (Id.)

Sampling by TN & Associates and Ninyo and Moore later confirmed the recognized environmental condition identified by IT Corporation. TN & Associates sampled the sediment in the basement trench system from the turbine side of the power plant, and issued a report of the results of its samples in December 2006. (TN & Associates, Silver Gate Power Plant Basement Trench System Sediment Sampling (December 21, 2006).) All samples showed levels of PCB Aroclors 1254 and 1260, and copper above reporting limits, and three of the four areas sampled showed levels of mercury above reporting limits. (Id.) Ninyo & Moore collected four samples from the cooling water tunnels in December 2010. (Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (May 24, 2011).) Two of the three samples collected from the discharge tunnels contained PCB Aroclors 1254 and 1260 above the method detection limit, and copper and mercury above the reporting limits. (Id.) PCB Aroclors 1254 and 1260 are the same Aroclors found in the SDG&E tidelands soil in the location of the former wastewater ponds and oil/water separators (ENV America, Site Assessment (July 14, 2004); Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (May 24, 2011), in soil in the switchyard (TN & Associates, Underground Storage Tank Closure Report (November 13, 2006) (SAR373807-374069), in transformer dielectric fluids in the transformers at the Silver Gate Power Plant, and in hydraulic, coolant and lubricating oils used in the plant (Environmental Protection Agency, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls, Table 7 (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972)).

In addition, Aroclors 1254 and 1260 tend to co-occur in approximately the same concentrations in four out of the five sediment samples collected from the cooling water tunnels. (Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (May 24, 2011).) The approximate 1254 to 1260 ratio had a range of 0.9 to 1.1 of 1254 to 1 of 1260. (See id.) Sediment samples from locations in front of the discharge cooling water tunnel and covering an area extending at least 600 feet offshore and 400 feet along the shoreline had an approximate 1254 to 1260 ratio range of 0.7 to 1.3 of 1254 to 1 of 1260, which is nearly identical to that of the sediments sampled in the cooling water tunnels. (Exponent, 2003 (SAR105417-105996); Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (May 24, 2011).) The nearly identical ratio of co-occurrence of Aroclors 1254 and 1260 in the cooling water tunnel sediment samples and the Bay sediments indicates that the PCBs in the sediments had a common source -- the SDG&E discharge cooling water tunnel.

In addition, the spatial distribution of PCBs in sediment North of Pier 1 also indicates that SDG&E's discharge cooling water tunnel is the source of PCBs, copper and mercury. A volume of 223 million gallons of water per day was discharged through the discharge cooling water tunnel. (ENV America, Technical Report for RWQCB Investigation Order No. R9-2004-026 (July 14, 2004)(SAR193272-193329).) The discharge cooling water tunnel was an eight foot square tunnel, making the velocity of discharge 1.6 meters per second. (Id.) Fine particles containing SDG&E wastes, including PCBs, copper and mercury, likely would not have settled in front of the cooling water outflow, but rather would have been distributed over a large area across the Shipyard Sediment Site North of Pier 1. A 1942 drawing of the dredge plan and trajectory of discharge from the discharge cooling water tunnel also indicates that discharged wastes would have been dispersed hundreds of feet from the mouth of the outflow, and to the south of the discharge tunnel near Pier 1. (Proposed Dredging & Jetty on San Diego Bay, Application by SDG&E (April 20, 1942).) This pattern of dispersion of wastes from the discharge cooling water tunnel is exhibited by PCBs in sediment located North of Pier 1. The highest concentrations of PCBs in sediments North of Pier 1 are found in sediment samples hundreds of feet from, and to the south of the discharge tunnel near Pier 1. (Exponent, 2003 (SAR105417-105996)(Samples SW01 & SW02).)

As a result, there is substantial, reasonable and credible evidence supporting the allegations in Sections 9.6 and 9.7 of the DTR that SDG&E discharged PCBs and other COCs via the discharge cooling water tunnel. Based on the substantial, reasonable, and credible evidence in these sections of the DTR alone, SDG&E was appropriately designated a discharger by the Regional Board.

Comment ID: 455 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS
THE REGIONAL BOARD'S DESIGNATION OF SDG&E AS A DISCHARGER IS SUPPORTED BY SUBSTANTIAL, REASONABLE AND CREDIBLE EVIDENCE

B.The Findings in DTR Section 9.8 are Based Upon Substantial, Reasonable and Credible Evidence

Contrary to SDG&E's assertion, there is substantial, reasonable and credible evidence in the Administrative Record, and in SDG&E documents supporting the Regional Board's designation of SDG&E as a discharger based upon SDG&E's discharges of PCBs from the Silver Gate Power Plant switchyard to the storm drain system, which discharges to the Bay. DTR Section 9.8 addresses allegations by the Regional Board stemming from SDG&E's unauthorized discharge of toxic pollutants at the Silver Gate switchyard in connection with the closure in place of three 220,000 gallon concrete USTs in 2006. SDG&E's consultant, TN & Associates, collected eighteen surface soil samples above the location of the USTs, and only 900 feet from the San Diego Bay. All of these samples were reported to contain PCBs, and eleven of the eighteen samples had PCB concentrations greater than 1,000 ug/kg. DTR Section 9.8 alleges that storm water run-off carried PCBs from soil at the Silver Gate substation to the northeast into the storm drain system that drains to the Bay at MS4 based upon the following three facts: (1) Aroclor 1260 was the only PCB reported in the 18 surface soil samples; (2) Aroclor 1260 was the highest PCB concentration reported in sediment samples collected from the MS4 catch basin, and (3) Aroclor 1260 was the highest PCB concentration reported in the Shipyard Sediment Site samples SW20 through SW25, which are in the vicinity of the MS4 outfall.

Despite this, SDG&E argues that the allegations in Section 9.8 are "speculative" because (1) the Silver Gate switchyard's containment structure would have prevented the PCBs from being carried to the storm drain system in storm water run-off, (2) there is no support for the transport pathway alleged by the Regional Board to the storm drain system, and (3) the concentration of PCBs in the substation soil could not be a source of PCBs to the Bay because they were many times less than those found in the sediments in the Bay{Section III.E addresses SDG&E's arguments in the Rescindment Request that lower concentrations of contaminants in upland soils could not be a source of the higher concentrations of contamination in sediments at the Shipyard Sediment Site.}. SDG&E's arguments ignore the substantial, reasonable and credible evidence supporting the allegations in Section 9.8 of the DTR.

1.The Substantial Leaks and Spills of PCBs from the Switchyard Were Not Adequately Contained.

SDG&E's Spill Prevention Control and Countermeasure Plan ("SPCC Plan") for the Silver Gate Power Plant from 1981 reveals that there were seventy-five oil circuit breaker tanks, and four transformers located in the switchyard. (SDG&E SPCC Plan (1981)(SAR193543-193544).) The transformers could hold up to 6,000 gallons of PCB-containing coolant oil, and the circuit breakers could hold up to 600 gallons of PCB-containing coolant oil. (Solid Waste Management Unit Information Data for Transformers and Circuit Breakers at Silver Gate Power Plant.) TN & Associates' November 13, 2006 Underground Storage Tank Closure Report demonstrates that there were releases of PCB Aroclor 1260 from past leaks of transformers and circuit breakers, and copper from painting operations in the switchyard area. Numerous SDG&E documents demonstrate that the transformers and circuit breakers in the switchyard continuously leaked since installation. For example, SDG&E inspections from 1981 to 1983 indicate there were leaks of coolant oil from the transformers and circuit breakers, and that SDG&E took no action to cleanup the leaks or repair the leaking transformers or circuit breakers. (SDG&E Daily PCB Inspection Reports.) And, despite the removal of 150 cubic yards of soil in 1986 in response to a leak of total extracted hydrocarbons from piping to the USTs, observation of the soil in the switchyard in 1987 and 1997 revealed PCB soil contamination from transformer and circuit breaker leaks. (Crosby & Overton, Site Assessment and Hydrocarbon Mitigation at the Silver Gate Power Plant (November 10, 1987); EPA Region 9 Toxics and Waste Management Division Inspection Report (April 27, 1987); EnecoTech Southwest, Inc., Phase II Environmental Investigation Services, PCB Investigation (April 29, 1997).)

In 1997, EnecoTech Southwest, Inc. conducted a Phase II PCB Investigation in the switchyard, and found Aroclors 1260 and 1254 in 32 soil samples collected near the transformers and circuit breakers. (EnecoTech Southwest, Inc., Phase II Environmental Investigation Services, PCB Investigation, (April 29, 1997).) Leaks from transformers and circuit breakers of the types found in the Silver Gate Power Plant switchyard occurred frequently, and industry research confirms that the average spill or leak ranged in size from one half pound to sixty four pounds, and that approximately ten percent of transformer fluid sales was to replace fluid that was leaked during the lifetime of these types of equipment. (EPA, Locating and Estimating Air Emissions from Sources of Polychlorinated Biphenyls (May 1987); Ian C.T. Nisbet et al., Rates and Routes of Transport of PCBs in the Environment in Environmental Health Perspectives (April 1972).)

Further, the inspection report from a February 5, 1987 inspection by EPA Region 9 Toxics and Waste Management Division indicated all of the following regarding the switchyard at the Silver Gate Power Plant: (1) inadequate roof and walls to prevent rain water from reaching stored PCBs; (2) inadequate floor with a minimum six inch high curb to provide containment of a volume at least twice the internal volume of the largest stored container; (3) there are floor openings that would permit liquids to flow from the curbed area; (4) floors and curbing that are not constructed of smooth and impervious materials; and (5) spilled or leaked materials are not immediately cleaned up. (EPA Region 9 Toxics and Waste Management Division TSCA §6 PCB Investigation Inspection Report (April 27, 1987).) This inspection report confirms that leaked and spilled PCBs in the switchyard were not adequately contained to prevent storm water run-off from carrying the PCBs to the storm drain system and then to the MS4 storm drain outfall. In addition, this inspection report contradicts SDG&E's claim that the switchyard containment system was a "sophisticated, multifaceted containment structure." (Rescindment Request at 13:16-18.)

Finally, SDG&E misstates the Cleanup Team's testimony related to the findings in Section 9.8 of the DTR. For example, SDG&E claims that Craig Carlisle ("Carlisle") stated that "it might be useful to know" whether or not releases from the SDG&E facility were contained "at the time the release occurred." (Rescindment Request at 13:23-24.) However, what Carlisle actually stated was that information regarding whether a release was contained at the time the release occurred "might be useful depending upon your definition of containment and the integrity of such containment." (Carlisle Depo., Vol. II at 351:22-23.) And, Carlisle continued that in making the findings in Section 9.8, he "relied on the reports submitted on behalf of SDG&E. ENV America and TN & Associates," and that he did not think the two reports show that the releases were selected within a containment area. (Id. at 352:3-4, 9-16.) Contrary to SDG&E's assertions, there were continuous leaks of PCBs from equipment in the switchyard, and inadequate containment, such that it was certainly reasonable for the Regional Board to conclude that those PCBs were carried in storm water run-off to the Bay.

2.Storm Water Run-off Carried PCBs from the Switchyard to the Bay.

SDG&E argues that because storm water run-off from the switchyard does not flow through catch basin 1 ("CB-1"), a catch basin located at the northeastern corner of the Silver Gate Power Plant, the Regional Board has failed to show that PCBs in soils at the switchyard could flow to the Bay via storm water run-off. However, SDG&E ignores the ample evidence that switchyard storm water run-off enters the storm drain system at the gutter on the northwest side of Sampson Street and is transported to the Bay at the MS4 outfall.

SDG&E admits that storm water run-off from the switchyard "would have flowed … to the gutter on the northwest side of Sampson Street," but discounts this pathway because the Regional Board has not sampled the gutter. (Rescindment Request at 14:18-21.) But, sampling of the gutter is not necessary to show that switchyard storm water run-off contributed to a condition of pollution in the Bay. SDG&E's Onsite Hydrology/Drainage Study indicates that storm water from the switchyard drains to Sampson Street and into the 30-inch storm drain. (See SDG&E Onsite Hydrology/Drainage Study (March 14, 2006.) The 30-inch storm drain connects with another storm drain that discharges to the Bay at the MS4 outfall. (City of San Diego Map of Sampson Street Storm Drain from Belt Street to Harbor Street (February 27, 1985); City of San Diego Map of Portion of Sampson Street (June 22, 1988).)

The PCB Aroclors 1254 and 1260 were detected in the soil of the switchyard through sampling by TN & Associates and EnecoTech Southwest, Inc. Sediment sampling at the Shipyard Sediment Site in the vicinity of the MS4 outfall reported the highest concentrations of PCB Aroclors 1254 and 1260. The correlation between the PCB Aroclors found in soils at the Silver Gate Power Plant switchyard and in the vicinity of the MS4 outfall, where storm water run-off from the switchyard is discharged to the Bay, indicates that SDG&E's Silver Gate Power

Plant switchyard is a source of PCB Aroclors 1254 and 1260 to the Shipyard Sediment Site{While SDG&E relies on the report by TN & Associates entitled, "SDG&E Response to Silver Gate Power Plant Storm Water Discharge NOV No. 5408" to refute the Regional Boards finding, it does not appear to be in the Administrative Record, and SDG&E did not include it with their submission of evidence supplementing the Administrative Record. If the report is not part of the Administrative Record, it cannot be considered by the Regional Board as evidence, and any arguments based upon it must be disregarded.}. As discussed further in Section III.F below, the fact that concentrations in upland soils are lower than concentrations in sediments does not mean that those upland soils are not a source of contamination. As a result, there is substantial, reasonable and credible evidence that the SDG&E Silver Gate Power Plant switchyard was a source of PCB contamination in the vicinity of the MS4 outfall because PCBs from the switchyard were carried by storm water run-off into the 30-inch storm drain running beneath Sampson Street and into the Bay at MS4. The Regional Board's findings in Section 9.8 of the DTR are, therefore, not "speculative," and SDG&E's Rescindment Request should be denied.

Comment ID: 456 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS
THE REGIONAL BOARD'S DESIGNATION OF SDG&E AS A DISCHARGER IS SUPPORTED BY SUBSTANTIAL, REASONABLE AND CREDIBLE EVIDENCE

C.The Findings in DTR Section 9.9 are Based Upon Substantial, Reasonable and Credible Evidence

DTR Section 9.9 contains findings by the Regional Board that discharges from the SDG&E Silver Gate Power Plant contributed to pollution in the Shipyard Sediment Site in the area of the MS4 outfall. The Regional Board's findings are based upon a notice of violation issued by the City of San Diego ("City") to SDG&E after a City investigation revealed the presence of PCBs entering the storm water system at CB-1 from SDG&E's former Silver Gate Power Plant and exiting the storm water system to the Bay.

Initially, SDG&E's attack on Section 9.9 is misguided because it focuses on the fact that there are other potential sources of contamination to the Bay at the MS4 outfall. However, that fact is irrelevant to whether SDG&E should be designated a discharger by the Regional Board. As long as there is sufficient evidence demonstrating that SDG&E discharged some amount of waste to the Bay at the MS4 outfall, SDG&E should be designated a discharger. (See Cal. Water Code §13304; State Water Board Resolution No. 92-49.) Further, in arguing that DTR Section 9.9 is "speculative," SDG&E mischaracterizes the Cleanup Team's testimony on this subject. For example, SDG&E cites to Benjamin Tobler's ("Tobler") testimony, claiming that Tobler confirmed that the City's allegations against SDG&E were accepted at "face value" with no independent inquiry. (Rescindment Request at 17:5-6.) But, the Tobler testimony cited by SDG&E does not even discuss Section 9.9 of the DTR. (Deposition of Tobler ("Tobler Depo.")

57:7-59:10.) Instead, it discusses a section of the DTR containing findings related to BAE Systems. (Id.) SDG&E also cites to Craig Carlisle's testimony, claiming Carlisle "admitted that he made no effort to do such a comparison between sediments in CB-1 and sediments in the catch basins or stormwater drains on BAE Systems' property, and agreed it 'may' have been important to him." (Rescindment Request at 17:26-28.) Carlisle actually testified that a comparison "may or may have not had bearing on" Section 9.9, and called the comparison a "hypothetical." (Carlisle Depo., Vol. II at 311:17-312:3.)

Moreover, other evidence shows that SDG&E discharged wastes to CB-1 that were carried in the storm drain system to the Bay at the MS4 outfall. The City's sampling of CB-1 contained PCB Aroclors 1260 and 1254. SDG&E conducted an investigation to determine whether the Silver Gate Power Plant was a source of contaminants to CB-1. (Letter from SDG&E to the City of San Diego (October 25, 2005).) SDG&E researched the sources of the two laterals carrying storm water into CB-1, and found that the 6-inch lateral entering CB-1 drained the turbine roof of Generating Unit 1 of the Silver Gate Power Plant. (Letter from SDG&E to the City of San Diego (December 1, 2005).) SDG&E sampled the roof of Generating Unit 1, as well as other areas around the Silver Gate Power Plant, and found PCBs{It is not surprising that PCBs were found on the roof of the Silver Gate Power Plant given the ubiquitous use of PCBs in various building materials and equipment used during the peak operating years of the plant. The United States Environmental Protection Agency reports that PCBs were used in various building materials, including paints, sealing and caulking compositions to seal joints against water, additives in cement and plaster, sealing liquids, and fire retardants. (EPA, Locating and Estimating Air Emissions From Sources of Polychlorinated Biphenyls (May 1987); EPA, An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the United States for the Years 1987, 1995, and 2000 (November 2006).) These applications were considered "open systems" due to the ease with which the PCBs may enter the atmosphere during use. (Id.)}. (Letters from SDG&E to the City of San Diego (January 10, 2006 & March 16, 2006).) SDG&E's findings of PCBs in samples taken from various locations at the Silver Gate Power Plant is consistent with other sampling throughout the Silver Gate Power Plant, including sampling in the switchyard, which indicates that both Aroclors 1254 and 1260 were present at the plant, and were a source of PCBs to CB-1. (See, e.g., EnecoTech Southwest, Inc., Final Report for Phase II Environmental Investigation Services, PCB Investigation (April 29, 1997).)

Storm water entering CB-1 from the Silver Gate Power Plant is carried by an 18-inch lateral to a 30-inch storm drain culvert beneath Sampson Street, which then drains to the storm water outfall at MS4. (City of San Diego Map of Storm Drains.) The sediment samples in the area of the MS4 outfall contain PCB Aroclors 1254 and 1260, the same Aroclors found in CB-1, and found throughout the Silver Gate Power Plant, indicating that the Silver Gate Power Plant is a source of PCB Aroclors 1254 and 1260 to the Bay in the area of MS4. (Exponent, 2003 (SAR105417-105996).) The City notice of violation, SDG&E investigation, and Exponent sediment sampling provide substantial, reasonable and credible evidence supporting the Regional Board's findings in Section 9.9 of the DTR. As a result, SDG&E's Rescindment Request should be denied.

Comment ID: 457 **Organization:** BAE Systems
DTR Section: 9

Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS
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D.The Findings in DTR Section 9.10 are Based Upon Substantial, Reasonable and Credible Evidence

SDG&E's claims about the findings in DTR Section 9.10 are also contrary to SDG&E's own records and consultants' reports demonstrating that SDG&E disposed of COC-containing wastes to ponds and oil/water separators immediately adjacent to the Bay, and that those wastes were released to the Bay. The Regional Board bases it findings in Section 9.10 of the DTR on two reports submitted by SDG&E's consultant, ENV America. In those reports, ENV America documents SDG&E's history of use of ponds located immediately adjacent to the Bay to dispose of wastewater composed of bilge water collected from the boiler side of the Silver Gate Power Plant. (ENV America, Site Assessment (July 14, 2004)(SAR193330-193523).) The Regional Board relies on ENV America's investigation in the areas of the former wastewater ponds, and finds that the proximity of soil contamination from the ponds to the Bay indicates the potential for discharges from the pond to contribute to pollution at the Shipyard Sediment Site. In addition, the Regional Board relies on a statement in SDG&E's July 14, 2004 response to the 13267 investigative order that stated that some water from a pond was discharged to the Bay. SDG&E's consultant's reports, in conjunction with other SDG&E documents, provide substantial, reasonable and credible evidence supporting the Regional Board's findings in Section 9.10.

1.Wastes Disposed of to the Wastewater Ponds Contained PCBs and Other COCs.

While SDG&E claims it "allegedly utilized" ponds at the Silver Gate Power Plant (Rescindment Request at 18:17), the evidence shows that SDG&E in fact disposed of liquid wastes to at least four separate unlined ponds and/or oil-water separators located on the SDG&E tidelands easement at different times from 1950 until 1974. (ENV America, Site Assessment (July 14, 2004)(SAR193330-193523).) In addition, SDG&E uses Cleanup Team testimony to claim that "BAE" operations on the SDG&E tidelands are responsible for the contamination of tidelands soil. (Rescindment Request at 24:17-26:5.) But, the Cleanup Team testimony cited does not support SDG&E's claim.

SDG&E alleges that Barker testified that he was unaware of aerial photographs depicting shipyard operations on the SDG&E tidelands, and that he agreed that the photos showed suspicious features that might be inconsistent with the allegations against SDG&E in Section 9.10. (Rescindment Request at 25:6-9.) Barker never testified that he was unaware of the aerial photographs. (Barker Depo., Vol IV at 715:6-742:9.) In addition, Barker never characterized anything in the aerial photos as "suspicious." (Id.) SDG&E also alleges that Carlisle "admitted that DTR Table 9-7 attributes the listed soil contaminants to former operations of SDG&E, and that he was unaware of SWM's operations on the parcel…." (Rescindment Request at 25:14-17.) Carlisle's cited testimony actually reveals that Carlisle knew that the SDG&E tidelands were used by the shipyards, but did not know the timing of that use. (Carlisle Depo., Vol. II at 335:12-17.) SDG&E misstates the Cleanup Team's testimony to distract the Regional Board from the ample evidence that SDG&E is responsible for contaminating the tidelands soils, and the adjacent sediments through its disposal of untreated liquid wastes to ponds and oil/water separators.

Not only did SDG&E use multiple ponds from the 1940s to 1974, but it also consistently disposed of wastes containing PCBs and other COCs to those ponds and oil/water separators. Aerial photographs of the area leased by SDG&E on the tidelands demonstrate that SDG&E began disposing of wastes in ponds and oil/water separators in 1950 and continued this practice until at least 1974. (ENV America, Site Assessment (July 14, 2004) (SAR193330-193523).) SDG&E disposed of low volume wastes, which contained basement bilge water and water from the floor drain system at the Silver Gate Power Plant to the ponds and oil/water separators on the tidelands. (Exponent, Comments on Parties 13267 Responses (September 29, 2004)(SAR156880-156889).) The floor drains at the Silver Gate Power Plant were located in areas where large amounts of oil could be spilled. (Id.) Sampling by TN & Associates of sediments from the basement trench system, where low volume wastes were stored before being discharged to a pond or oil/water separator showed levels of PCB Aroclors 1254 and 1260, copper and mercury above reporting limits. (TN & Associates, Silver Gate Power Plant Basement Trench System Sediment Sampling (December 21, 2006).) The same PCB Aroclors, copper and mercury were found in soil samples in the areas of the former ponds and oil/water separators on the SDG&E tidelands.

The former location of SDG&E's ponds and oil/water separators were sampled by ENV America and Ninyo and Moore. In 2004, ENV America collected seven samples directly below or adjacent to the footprint of two of the former ponds. (ENV America, Site Assessment (July 14, 2004)(SAR193341).) Six of the samples were analyzed for PCBs, and two of those detected PCB Aroclors 1254 and 1260. (Id. (SAR193345).) In 2010, Ninyo and Moore collected 28 soil samples on the SDG&E tidelands. (Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (February 28, 2011).) Ninyo and Moore submitted a revised report dated May 24, 2011 to reflect amendments to its analytical laboratory results. (Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (May 24, 2011).) Ninyo and Moore's revised results showed that PCBs were detected as Aroclor 1254 in six soil samples and as Aroclor 1260 in eight soil samples. (Id.) In addition, Ninyo and Moore's results showed that PCTs were detected as Aroclor 5460 in eight soil samples. (Id.) Ninyo and Moore also found copper and mercury above reporting limits in many of the samples. All of the samples that were located in the area where a former pond, "Pond B," was located contained PCB Aroclors 1254 and 1260, consistent with ENV America's sampling. In addition, the two Aroclors tend to co-occur in approximately the same concentrations in six out of the eight samples where both were detected. (See id.) The approximate ratio range of 1254 to 1260 is 0.9 to 1.1:1. (See id.) These two sets of sampling, along with the historical aerial photographs provide substantial, reasonable and credible evidence that SDG&E disposed of wastes containing PCBs, and other COCs from the Silver Gate Power Plant to the ponds and oil/water separators located immediately adjacent to the Bay{SDG&E claims that because "BAE" subleased the tidelands, it is the source of contamination to the sediments at and around Pier 1. (Rescindment Request at 24:17-28.) BAE Systems subleased a portion of the tidelands area from SDG&E for use as a parking lot. This area was never used for anything but employee parking. In addition, BAE Systems subleased an area south of the SDG&E wastewater ponds and oil-water separators. This area was used for laydown and storage of materials, but like the parking lot, was paved.}.

2.SDG&E's Wastewater Ponds Discharged Waste Directly to the Bay.

SDG&E claims that its consultant's response to the Regional Board's 13267 investigative order that "[s]ome water from the pond was discharged to the Bay" was "misplaced." SDG&E's revisionist claim ignores the ample evidence from the Administrative Record and SDG&E's own documents supporting SDG&E consultant's statement and showing there were multiple releases from the ponds and oil/water separators to the Bay covering a period of almost 25 years.

ENV America's July 14, 2004 Site Assessment Report includes internal SDG&E correspondence dated September 10, 1974 as an attachment. (ENV America, Site Assessment (July 14, 2004)(SAR193330-193523).) The correspondence discusses "Nobles Lake," an oil/water settling pond located on the tidelands that received waste from the turbine room and boiler room sump pumps. (Id.) The correspondence notes that Nobles Lake "is filled to the brim and is at least 11 feet deep with a mixture of oil and earth," and in its overflowing condition, "discharge from Silver Gate will eventually find a path to the San Diego Bay." (Id. (emphasis added).) Photographs of the SDG&E tidelands easement from the Silver Gate Power Plant to the Bay are evidence that Nobles Lake had been a liquid waste dumping ground for SDG&E since at least 1955, also 20 years before the September 1974 correspondence. It is also reasonable to conclude that September 10, 1974 was not the first time that SDG&E's use of Nobles Lake created an overflowing condition and eventual discharge path to the Bay. In fact, photographs of Nobles Lake from 1955, also included as attachments to the ENV America July 14, 2004 Site Assessment Report, show that Nobles Lake had become filled to the brim in the past, and that SDG&E's solution was to remove water and sludge and dump it onto the ground adjacent to Nobles Lake where it likely ran into the Bay or was washed into the Bay by storm water run off. (Id. (SAR193383).) Based upon these documents, it is SDG&E's characterization of its consultant's statements that seems misplaced.

Further, a May 1, 1950 letter from Walter Zitlau, an engineer at the Silver Gate Power Plant who later became President of SDG&E, states that the "water disposal lake on the tidelands has been overflowing, and a ditch has been cut to the water's edge," which would permit "oil [to] be admitted to the bay." (Letter from Walter Zitlau to M. Hjalmarson (May 1, 1950)(emphasis added).) The disposal pond referred to by Mr. Zitlau was located on SDG&E's tidelands easement, and was a different pond than Nobles Lake. Aerial photographs from 1950 clearly show the trench that Mr. Zitlau refers to in his letter extending from the pond all the way to the edge of the tidelands and into the Bay. (SAR193371.) Wastes were discharged from the pond to the trench and into the Bay likely from at least 1950 until 1952. (Aerial Photographs, SAR193338, SAR193375.) These documents provide substantial, reasonable and credible evidence that SDG&E discharged wastes containing PCBs and other COCs directly to the Bay.
/ / /

3.The Aroclor Signature in the Tidelands Soils is the Same as the Aroclor Signature Found in the Sediments North of Pier 1.

SDG&E claims that the PCB Aroclor signature found in the tidelands soils is substantially different than that of the sediment North of Pier 1. (Rescindment Request at 20:23-21:10.) In making this argument, SDG&E selectively relies on sediment sampling conducted by its consultant, ENV America in 2004{ENV America's sediment sampling report does not appear to be part of the Administrative Record. If it is not part of the Administrative Record, the Regional Board should disregard SDG&E's arguments that rely on it.}. (Id.) By doing so, SDG&E ignores the sediment sampling conducted by Exponent in 2001 and 2002, making their analysis incomplete. (Exponent, 2003 (SAR105417-105996).) The data from Exponent provides a true picture of the Aroclor signature North of Pier 1 because it captures a large number of samples over a large spatial area. (SAR105417-105996.)

The Exponent data set reveals higher concentrations of PCB Aroclors 1254, 1260, and PCT Aroclor 5460 in the sediment samples collected nearest to the shore of the tidelands leased by SDG&E. (Id.) This data strongly indicates a common source of the PCBs and PCT found North of Pier 1. The same Aroclors found in the sediments also were found in samples taken from the locations of SDG&E's former ponds on the tidelands by ENV America and, more recently by Ninyo and Moore. The Aroclors in samples from the cooling water tunnels and trenches of the Silver Gate Power Plant taken by TN & Associates and Ninyo and Moore also are consistent with the Aroclors found in the sediment samples North of Pier 1. (SAR193330-193464; Ninyo & Moore, Subsurface Investigation San Diego Gas & Electric Tidelands Area (May 24, 2011); TN & Associates, Silver Gate Power Plant Basement Trench System Sediment Sampling (December 21, 2006).) In addition, multiple sediment samples had ratios of Aroclor 1254 to 1260 in the same range as those found by Ninyo and Moore in the tidelands soils. (Exponent, 2003 (SAR105417-105996).) For example, the ratio of Aroclor 1254 to Aroclor 1260 for sediment samples SW01, SW02, SW03, SW05, and SW30, which are located approximately in front of the discharge cooling water tunnel, and cover an area extending at least 600 feet offshore and 400 feet along the SDG&E tidelands shoreline, varied from 0.7 to 1.3:1, which is substantially similar to the ratio range between 1254 and 1260 in upland soils of 0.9 to 1.1:1. (See id.) The Aroclor signature of the tidelands soil and adjacent sediment indicates that SDG&E's tidelands ponds and oil/water separators are a source of PCBs to Shipyard Sediment Site. Therefore, there is substantial, reasonable and credible evidence that SDG&E is the source of the PCBs and PCT found in sediments North of Pier 1.

Comment ID: 458 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS
THE REGIONAL BOARD'S DESIGNATION OF SDG&E AS A DISCHARGER IS SUPPORTED BY SUBSTANTIAL, REASONABLE AND CREDIBLE EVIDENCE

E.The Lower Concentrations of PCBs Found at the Silver Gate Power Plant and in Tidelands Soils are a Source of the Concentrations of PCBs in Bay Sediments.

SDG&E relies heavily throughout the Rescindment Request on its contention that the concentrations of PCBs and other COCs found in upland areas related to the Silver Gate Power Plant would need to be greater than the concentrations found in the sediments for SDG&E's Silver Gate Power Plant and operations to be a source of contamination to sediments in the

Shipyard Sediment Site. (Rescindment Request at 10:8-11, 12:4-12, 19:13-20:9.) SDG&E supports this contention with only its own speculation that lower concentrations in the soils cannot be the source of higher concentrations in the sediments. But, SDG&E does not consider credible, technical evidence that shows the differences in Aroclor concentrations and proportions between soils in the upland area and cooling water sediments and the Shipyard Sediment Site sediments are not inconsistent.

In fact, it is not reasonable to expect the two concentrations to be the same or to expect higher concentrations in upland sources. This is for the following two reasons: (1) the manner in which PCBs sorb to materials in sediments versus materials in upland sources; and, (2) the differences in times when PCBs were released compared with when those releases were measured.

First, the differences in PCB concentrations can be explained by the character of the sediment solids versus the upland solids where the PCBs are found. PCBs preferentially sorb to organic carbon in sediment. (Schorer, M., Pollutant and organic matter content in sediment particle size fractions, Freshwater Contamination. IAHS Pub. No. 243 (1997); Estes, T. J., Fractionation Study of Natural Sediments For Determining PAH and PCB Distribution in PAH and PCB Distribution in Sediment Fractions and Sorptive Phases (May 2005); Brannon, J.M., et al., Organic matter quality and partitioning of polychlorinated biphenyls (1997); Delle Site, A., Factors affecting sorption of organic compounds in natural sorbent/water systems and sorption coefficients for selected pollutants; a review, J. Phys. Chem. Ref. Data 30:187-439 (2001).) The sediments near the shipyards and the SDG&E tidelands are rich in organic carbon. (Exponent, 2003 (SAR105417-105996).) In addition, PCBs sorb to fine-grained particles, and the sediments in the Northern portion of the Shipyard Sediment Site have a high proportion of fine particles. (Schorer, M., Pollutant and organic matter content in sediment particle size fractions, Freshwater Contamination. IAHS Pub. No. 243 (1997); Exponent, 2003 (SAR105417-105996).) The particle size and composition of the tidelands soils and soils in the switchyard is likely to have a high proportion of coarser grained materials as a result of surface run-off, which carries finer particles with it. (Schorer, M., Pollutant and organic matter content in sediment particle size fractions, Freshwater Contamination. IAHS Pub. No. 243 (1997).) Because PCBs do not sorb to coarser grained soils found in upland areas as much as they do to fine particles found in sediment, one would expect to see lower concentrations of PCBs in the SDG&E upland sources of contamination, such as the tidelands and switchyard soil, than in the Shipyard Sediment Site sediments.

Moreover, PCBs may have been released at different times to the tidelands and switchyard soil than they were released from the sources to the sediments, and were measured at different times. The Silver Gate Power Plant operated for several decades, and releases to tidelands and switchyard soils likely occurred from approximately 1943 until the late 1990s. Most of the sediment data was collected by Exponent in 2001, 2002. (Exponent, 2003 (SAR105417-105996).) The soil data was collected in 2004 and 2010. This difference in measurement dates may impact the results of sampling as a result of PCB degradation. PCB degradation in soil is most likely to have occurred via volatilization, and PCB degradation in sediment is most likely to have occurred via reductive dechlorination. (Chiarenzelli et al., Volatile Loss of PCB Aroclors from Subaqueous Sand in Environmental Science Technology (1997); Van Dort et al., Reductive Ortho and Meta Dechlorination of a Polychlorinated Biphenyl Cogener by Anaerobic Microorganisms in Applied Environmental Microbiology (1991); T.S. Hurme and J.A. Puhakka, Characterization and Fate of Polychlorinated Biphenyl Contaminants in Kernaalanjarvi Sediments in Boreal Environmental Resources (1999).) These processes are likely to occur at different rates. For example, the warm climate of San Diego likely would cause volatilization from soil to occur at the high end of the expected range.

As a result of these differences between the consistency of SDG&E tidelands and switchyard soils and the sediments, and of degradation rates in each medium, it is likely that there would be lower concentrations of PCBs in the SDG&E soils that are a source of contamination, and higher concentration of PCBs in the sediments that have been contaminated by SDG&E's releases.

Comment ID: 459 **Organization:** BAE Systems
DTR Section: 9
Comment:

BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS

THE REGIONAL BOARD'S DESIGNATION OF SDG&E AS A DISCHARGER IS SUPPORTED BY SUBSTANTIAL, REASONABLE AND CREDIBLE EVIDENCE

F.SDG&E Inappropriately Contends That "BAE" is the Sole Cause of Impacts in the Northern Area of the Shipyard Sediment Site

SDG&E contends that "BAE" is the sole cause of impacts in the Northern area of the Shipyard Sediment Site, argues that the Regional Board should allocate 100 percent of the liability for the Northern portion of the Shipyard Sediment Site to "BAE," and asserts through its expert's technical comments that TBT should be a cleanup driver at the Shipyard Sediment Site. SDG&E uses Cleanup Team testimony to support these contentions, but misstates and mischaracterizes that testimony.

1.SDG&E's Assertions That "BAE" Was the Sole Source of Contamination to the Northern Portion of the Shipyard Sediment Site are Flawed and Not Supported by the Evidence

SDG&E mistakenly uses the term "BAE" to refer to multiple different shipyards that operated on the Northern portion of the Shipyard Sediment Site from 1914 until the present, and attributes sole responsibility for contamination to "BAE," rather than distinguishing between the various shipyard entities. This is a critical conflation as BAE Systems only operated a shipyard on the Northern portion of the Shipyard Sediment Site from 1979 to the present{EPA banned the manufacture of PCBs in 1979. (EPA Press Release, EPA Bans PCB Manufacture; Phases Out Uses (April 19, 1979).)}. Many of the examples SDG&E relies on to argue that "BAE" contributed to contamination at the Northern portion of the Shipyard Sediment Site are examples of equipment used or activities of the historical shipyards unrelated to BAE Systems that operated before 1979. For example, SDG&E points to Sanborn maps from 1954 to 1959 that indicate the presence of a shipyard electric transformer approximately 20 feet from the San Diego Bay. (Rescindment Request at 12:18-20.) That transformer belonged to a prior shipyard operator. In addition, SDG&E claims "BAE" engaged in extensive shipyard maintenance, retrofitting, sandblasting and other activities on the tidelands leased by SDG&E from the 1950s until the early 1970s. (Rescindment Request at 24:17-28.) Again, SDG&E attributes to BAE

Systems operations that were conducted by prior shipyards that have no relationship to BAE Systems.

SDG&E declares that "BAE's" operations are the sole source of contamination at the Northern portion of the Shipyard Sediment Site. But, BAE's operations could not be the sole source of contamination to the Northern portion of the Shipyard Sediment Site. BAE Systems never used products containing PCBs, or released any PCBs to the Shipyard Sediment Site. BAE Systems has tested all oil containing devices at the shipyard for PCBs. And, contrary to SDG&E's characterizations, BAE Systems has only one transformer containing 12 parts per million PCBs located at the southern end of the BAE Systems leasehold. And, there is no evidence that this transformer ever leaked. In addition, BAE Systems has continually improved its environmental systems since it began operating in 1979, and has eliminated storm water discharges since 2000. Any discharge of PCBs from the BAE Systems leasehold would have been from historical shipyard operations, or as a result of urban run-off. And, in overreaching to support its conclusion SDG&E ignores the substantial, reasonable and credible evidence of its own discharges of PCBs and other COCs to the Bay. Despite SDG&E's assertions, it would be impossible for BAE Systems to have been the sole source of contamination at the Northern portion of the Shipyard Sediment Site.

2.SDG&E's Argument That the Regional Board Should Allocate 100 Percent of Liability to "BAE" is Legally Improper

SDG&E errs in its Rescindment Request by arguing that the Regional Board should allocate 100 percent of the liability for the contamination in the Northern portion of the Shipyard Sediment Site to "BAE." As the Regional Board is aware, BAE Systems, SDG&E, and others are parties to a pending CERCLA action known as City of San Diego v. National Steel and Shipbuilding Company, et al. United States District Court, Southern District, Case number 09-02275-DMS (BGS) (the "District Court Action"). "It is not appropriate for the Regional Board or State Board to involve itself in deciding issues of allocation of responsibility between different parties to a cleanup." (In re San Diego Unified Port District, Water Quality Order No. 89-12.) SDG&E's Rescindment Request should be denied because it is improper for the Regional Board to allocate responsibility between the parties to the TCAO.

3.SDG&E Grossly Misstates the Cleanup Team's Testimony in Arguing That "BAE" Should be Solely Liable

Throughout SDG&E's Rescindment Request, SDG&E relies on testimony from the Regional Board Cleanup Team to support its arguments that "BAE" is the sole cause of contamination to the Northern portion of the Shipyard Sediment Site. However, in many instances, SDG&E misstates and mischaracterizes the Cleanup Team's testimony. And, SDG&E's misstatements are likely to be misleading to the Regional Board, and, thus, should be disregarded{SDG&E also ignores the numerous objections made by counsel in excerpting selected portions of deposition testimony. The Regional Board should review the actual transcript in evaluating the evidence supporting its findings. Further, while there are numerous instances in which SDG&E misstates or mischaracterizes Cleanup Team deposition testimony, BAE only provides two such examples herein.}.

For example, SDG&E cites Craig Carlisle's ("Carlisle") testimony in arguing that the "Regional Board staff ignored sediment investigations … which reported … data establishing the co-occurrence or co-location of contaminant impacts that the shipyards are known to be the sole source of – such as tributyltin ("TBT") – with other COCs." (Rescindment Request at 28:9-11, 23-25.) But, Carlisle's testimony actually states that co-location "has a lot of pitfalls associated with it," and is used "to draw certain conclusions about … allocation …." (Carlisle Depo., Vol. II at 325:19-25.) Carlisle concludes that co-location "wasn't a line of investigation that we thought was necessary to support the allegations." (Id.)

In addition, SDG&E cites David Barker's ("Barker") testimony in claiming that "Regional Board staff ignored decades of sediment monitoring reports establishing the extent of SWM's impacts to the Shipyard Sediment Site sediments, including multiple investigations in and near Pier 1 marine railways, as well as numerous investigations in San Diego Bay sediment." (Rescindment Request at 27:14-17.) In fact, Barker testified that two decades worth of sediment monitoring reports were "the primary source of information that the [Regional Board] relied upon … as the basis for the [Regional Board's] conclusion that there were elevated contaminant levels offshore of NASSCO and Southwest." (Barker Depo., Vol. III at 655:17-656:5.) And, Barker only acknowledged that the Regional Board did not contact Ogden personnel regarding their direct observations of the condition of the sediments at the marine railways. (Barker Depo., Vol. III at 644:24-645:8.) Nowhere did Barker state that the Regional Board staff ignored decades of sediment monitoring reports, as SDG&E claims. SDG&E's mischaracterization of the Cleanup Team's testimony provides another reason for denying SDG&E's Rescindment Request.

4.SDG&E's Argument That TBT Should be a Cleanup Driver is Baseless

SDG&E, through its expert, ENVIRON, submitted technical comments to the TCAO ("Technical Comments"). These Technical Comments should be excluded, and any arguments made by SDG&E that rely on them should be disregarded{BAE has filed herewith a separate Motion to Exclude the Technical Comments.}. In the Technical Comments, SDG&E asserts that tributyltin ("TBT") should be a cleanup driver under the TCAO. But, there is no evidence to support this argument, and neither SDG&E nor ENVIRON offer anything other than their improper opinions. And, a determination by the Regional Board that TBT is or is not a cleanup driver is neither necessary nor proper to a determination that SDG&E is a discharger at the Shipyard Sediment Site and properly named in the TCAO.

Further, the TCAO acknowledges that different COCs present different risks depending upon the receptors. For example, Paragraph 30 of the TCAO identifies PCBs, copper, and mercury as presenting a human health risk. And, Paragraph 26 of the TCAO identifies PCBs, copper, mercury and high molecular weight polynuclear aromatic hydrocarbons as presenting a risk to aquatic-dependent wildlife. Nowhere does the TCAO identify TBT as a risk driver for human health risk, aquatic-dependent wildlife risk or aquatic life. As a result, SDG&E's assertion in the Technical Comments that TBT should be a cleanup driver is incorrect and otherwise irrelevant to a finding that SDG&E is a discharger.

Comment ID: 460 **Organization:** BAE Systems
DTR Section: 9

Comment:
BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S RESPONSE TO SAN DIEGO GAS & ELECTRIC COMPANY'S REQUEST FOR RESCINDMENT OF DISCHARGER DESIGNATION AND COMMENTS

IV.CONCLUSION

The Regional Board's designation of SDG&E as a discharger in the TCAO, and its findings in Section 9 of the DTR are supported by substantial, reasonable and credible evidence from the Administrative Record, deposition testimony of the Cleanup Team, data and by documents prepared by SDG&E and its own consultants. Additional documents submitted with BAE System's Response to SDG&E Rescindment Request bolster the evidence supporting the Regional Board's finding that SDG&E is a discharger to the Shipyard Sediment Site. These include additional documents either produced by SDG&E in the District Court Action, power plant industry documents and technical reference documents from the United States Environmental Protection Agency, and other scientific journals or documents otherwise publicly available. As a result, SDG&E was properly designated a discharger under California Water Code section 13304.

For all of the foregoing reasons set forth in this Response, BAE Systems requests that the Regional Board deny SDG&E's Rescindment Request.

Comment ID: 461 **Organization:** Coastkeeper and EHC
DTR Section: 18, 19
Comment:
I.The DTR Sufficiently Addressed Bioavailability of Pollutants at the Shipyard Sediment Site.

A.The DTR's approach to assessing aquatic life impairment is sufficient, despite to BAE's complaints to the contrary.

The DTR's approach to assessing aquatic-life impairment at the Site is sufficient. See Expert Report of Donald MacDonald, prepared March 11, 2011, §C.3.2 at 15 ("Evaluating risks to human health and aquatic-dependent wildlife using SWACs of contaminants in sediment is a scientifically valid approach that has been used in other sediment remediation projects."). The DTR's approach is similar to and in line with the approach used for the State of California's Sediment Quality Objectives (SQO's). See Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1. Sediment Quality, State Water Resources Control Board, 2009. In fact, as part of the DTR, twenty seven of the Triad stations were re-analyzed using the sediment quality objective framework and little difference in outcomes was found. See DTR Volume 2, Table 32-17 and App. 32. This demonstrates that while the DTR may have relied on a modified Weight-of-Evidence approach, its outcomes are in line with state approved guidance.

Some Designated Parties criticize the DTR for not relying on the bioavailability of chemicals at the site to assess aquatic life impairment. Bioavailability is often assessed via modeling of the ratio of the acid-volatile sulfide content of sediment versus the simultaneously extracted metal concentration (AVS-SEM). While the Exponent Report does contain AVS-SEM data, other external experts in sediment chemistry and assessment have determined that this data is "largely unusable." See Letter from Russell Fairey to San Diego Regional Water Quality Control Board dated June 17, 2002 SAR 065523. While bioavailability is one of many possible and useful tools used to ascertain risk to aquatic organisms, it is not the only tool. In fact, the state-approved guidelines for assessing sediments do not rely on determining bioavailability with modeling approaches like the AVS-SEM approach. See Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1. Sediment Quality, State Water Resources Control Board, 2009.

More importantly, Regional Board staff elected to rely on evidence of bioaccumulation in Macoma nasuta, a standard test organism used to evaluate whether chemicals in sediments can be taken up by organisms. In other words, staff chose a direct measurement of bioavailability – the extent to which a living organism accumulates chemicals in their tissues – as opposed to a model (AVS-SEM) to evaluate bioavailability. Dr. Allen, in his expert report for NASSCO, notes that in the Tentative Clean Up and Abatement Order "it is correctly noted that concentrations of arsenic, copper, lead, mercury, zinc, TBT, total PCBs, and high molecular weight PAHs in the Macoma nasuta [sic] tissues increase with respect to their concentrations in the sediment." Expert Report of Herbert Allen, prepared for NASSCO, dated March 11, 2011 at 19 (emphasis added). Expert Donald MacDonald also affirms that "the results for the Shipyard Sediment Site confirm that the COCs are biologically available because they accumulated in the tissues of the clam, Macoma nasuta." See Declaration of Donald MacDonald at ¶ 14. Thus, two sediment assessment experts agree that chemicals in sediments at the Shipyard Site can accumulate in tissues of organisms.

Comment ID: 462 **Organization:** Coastkeeper and EHC
DTR Section: 19
Comment:

The DTR Sufficiently Addressed Bioavailability of Pollutants at the Shipyard Sediment Site.

B.The DTR correctly interpreted the bioaccumulation data.

Both BAE and NASSCO criticize the DTR's use of the Macoma bioaccumulation data as "contrary" to San Diego Bay's narrative water quality objective for toxicity. This argument is unconvincing, irrelevant, and weak for several reasons. See Declaration of Donald MacDonald at ¶ 15. First, the DTR and Order address the narrative water quality objective through the evaluation of multiple lines of evidence. The Macoma data demonstrates that potentially harmful chemicals in the sediments at the Shipyard Site are in a form that can accumulate in tissues of organisms. See DTR Finding 19. This critical information supplements the assessments done to measure compliance with the narrative toxicity water quality standard—it is not "contrary" to it. Further, a sediment quality assessment need not be limited to collecting the information that is required to support evaluation of attainment of the water quality objectives. See Declaration of Donald MacDonald at ¶ 15.

Comment ID: 463 **Organization:** Coastkeeper and EHC
DTR Section: 18, 19
Comment:

The DTR Sufficiently Addressed Bioavailability of Pollutants at the Shipyard Sediment Site.

C.Dr. Allen's opinions on bioaccumulation and bioavailability are weak and contain numerous flaws.

BAE relies on Dr. Allen's opinions with respect to bioaccumulation and bioavailability to criticize the DTR's approach. See BAE Comments dated May 26, 2011 at 7. However, the evaluation provided by Dr. Allen is weak and contains numerous flaws, as outlined by Donald MacDonald in his June 23, 2011 declaration. See Declaration of Donald MacDonald at ¶ 9.

For example, Dr. Allen has reached incorrect conclusions regarding the interpretation of AVS-SEM data. Using EPA guidance for AVS-SEM criteria as a his basis, Mr. MacDonald notes that "21 of 24 samples from the NASSCO site and 21 of 29 samples from the Southwest Marine Site would be classified as possibly having adverse biological effects due to divalent metals." See Declaration of Donald MacDonald at ¶ 9.

Similarly, Dr. Allen inappropriately applied the Biotic Ligand Model. The EPA has not developed and approved a Biotic Ligand Model for the assessment of sediments. See Declaration of Donald MacDonald at ¶ 9. Currently, the EPA only recommends that the Biotic Ligand Model be used to develop copper criteria for freshwater systems. See Declaration of Donald MacDonald at ¶ 9. Although Dr. Allen referred to a paper published by Di Toro et al. (2005) for the methods that he used to predict sediment metal toxicity using a sediment Biotic Ligand Model, the method has never been endorsed by EPA and the Di Toro et al. (2005) Biotic Ligand Model did not include mercury. See Declaration of Donald MacDonald at ¶ 9.

Comment ID: 464 **Organization:** Coastkeeper and EHC
DTR Section: 30.1.1
Comment:

II.Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

A.The contaminants at the Site are not readily degraded and, hence, are likely to persist in sediments well into the future.

The contaminants of concern at the Site are not readily amenable to natural attenuation processes. See Declaration of Donald MacDonald at ¶ 6. The U.S. Environmental Protection Agency indicates that the contaminants that are most appropriate for monitored natural attenuation include petroleum-related contaminants (i.e., benzene, toluene, ethylbenzene, and xylene), chlorinated solvents (e.g., trichloroethane), or inorganics that undergo sorption or oxidation-reduction reactions (e.g., certain metals and radionuclides). See EPA, "Use of monitored natural attenuation at Superfund, RCRA corrective action, and underground storage tank sites." (1999) Directive 9200.4-17P. Office of Solid Waste and Emergency Response. Washington, D.C. 32 pp (hereafter "EPA (1999)") See also Declaration of Donald MacDonald at ¶ 5.

By comparison, the contaminants of concern at the Site include organic contaminants that are not readily degraded, such as PAHs, PCBs, and TBT. See Tentative Cleanup and Abatement Order 2011-001 ¶ 29, Table 1, page 13. Furthermore, the metals at the Site are not degradable, have already been subject to sorption processes, and are known to bioavailable under current conditions. See Declaration of Donald MacDonald at ¶ 6. Passage of time is unlikely to render these contaminants less biologically available. See Declaration of Donald MacDonald at ¶ 6. Therefore, monitored natural attenuation is unlikely to be effective on these contaminants of concern.

Comment ID: 465 **Organization:** Coastkeeper and EHC
DTR Section: 30.1.1
Comment:

Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

B.The pollutants at the Site have the potential to migrate off site due to the nature of the activities at the Site.

Monitored natural attenuation is not appropriate for use at sites where contaminants have the potential to migrate to other areas. See EPA (1999); See Declaration of Donald MacDonald at ¶ 5. Neither NASSCO nor BAE have provided evidence to demonstrate that contaminants of concern at the Site are stable under the range of conditions that occur at the site. On the contrary, activities at the site, such as ship maintenance and repair (and associated prop wash), have the potential to remobilize sediment-associated pollutants and result in off-site transport. See Declaration of Donald MacDonald at ¶ 6. Likewise, storms and tidal current could exacerbate off-site contaminant transport at the Site. See Declaration of Donald MacDonald at ¶ 6.

Comment ID: 466 **Organization:** Coastkeeper and EHC
DTR Section: 30.1.1
Comment:

Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

C.No reliable data have been presented in the public record that demonstrate that natural attenuation is occurring at the Site.

There is no evidence in the public record that pollutant concentrations are decreasing at the site. See Declaration of Donald MacDonald at ¶ 6. Sediment chemistry data collected in 2001 and 2002 demonstrate that elevated concentrations of contaminants of concern occur throughout much of the site and that these contaminants pose unacceptable risks to human health and the environment. See DTR Volume 2.

NASSCO and BAE argue that sediment chemistry data collected at five locations in 2009 provide the necessary and sufficient evidence to demonstrate that contaminant concentrations are decreasing at the site. See NASSCO Comments submitted May 26, 2011 at 40; BAE Comments submitted May 26, 2011 at 26. However, five samples do not provide a data set that is sufficiently robust to characterize current contaminant concentrations at the Site. See Declaration of Donald MacDonald at ¶ 6.

In addition, neither NASSCO nor BAE presented evidence demonstrating that variability in contaminant concentrations is not due to sampling issues such as sampling location, sampling depth, analytical methods, or other factors. See Declaration of Donald MacDonald at ¶ 6. References to data collected by AMEC in 2010 are not relevant because that data is not yet a part of the administrative record. See BAE Comments at 26, fn 8. The Regional Board may not consider this data because San Diego Coastkeeper and Environmental Health Coalition were not provided with this data and given a full and fair opportunity to review and vet that data prior to the close of the comment and rebuttal period.

Comment ID: 467 **Organization:** Coastkeeper and EHC
DTR Section: 30.1.1
Comment:

Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

D.No evidence demonstrates that monitored natural attenuation would reduce pollutant concentrations to levels that would protect human health and the environment within a reasonable time frame.

Sediment chemistry data alone do not provide a basis for demonstrating that risks to benthic invertebrates or fish would be adequately reduced by natural attenuation. See Declaration of Donald MacDonald at ¶ 6. This means that even if valid sediment chemistry data existed showing reduced pollutant concentrations since 2001, such data would not be sufficient to demonstrate that monitored natural attenuation would be appropriately protective of human health and the environment. See Declaration of Donald MacDonald at ¶ 6. Pore-water chemistry, whole-sediment toxicity, invertebrate-tissue chemistry, and fish-tissue chemistry would also be required to demonstrate that natural attenuation is reducing exposure of ecological receptors to contaminants at the Site See Declaration of Donald MacDonald at ¶ 6. Neither NASSCO nor BAE has submitted data to support their claim that monitored natural attenuation would be protective of human health and the environment. See Declaration of Donald MacDonald at ¶ 6.

Evaluation of the available data and information indicates that conditions at the Site are sufficient to injure surface water resources (i.e., sediments) and biological resources (i.e., benthic invertebrate, fish, and wildlife communities). See Declaration of Donald MacDonald at ¶ 6; See generally DTR Volume 2. Neither NASSCO nor BAE presented evidence to demonstrate that such natural resource injuries would abate within a reasonable time frame if monitored natural attenuation was selected as the preferred remedy. On the contrary, selecting monitored natural attenuation as the preferred sediment management option will likely result in such natural resource injuries continuing well into the future. See Declaration of Donald MacDonald at ¶ 6. Any such impacts on natural resources would likely result in continuing beneficial use impairments in San Diego Bay. See Declaration of Donald MacDonald at ¶ 6.

Comment ID: 468 **Organization:** Coastkeeper and EHC
DTR Section: 33
Comment:

Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

E.Site security will not prevent benthic invertebrates, fish, or wildlife from being exposed to contaminants remaining at the Site.

Even if the Site will remain as a secured shipyard until at least 2040, security measures will not prevent humans and wildlife from being exposed to pollutants from the Site. While security measures may limit human exposure to the pollutants at the Site, they will not prevent wildlife exposure to the contaminants that occur at the Site. See Declaration of Donald MacDonald at ¶ 6. Securing the Site does not prevent fish or other aquatic life from swimming in and out of the site, nor does it prevent people or wildlife from catching and consuming wildlife exposed to contaminants at the Site. Therefore, people are still at risk of being exposed to pollutants remaining at the Site despite security measures at the Site.

Comment ID: 469 **Organization:** Coastkeeper and EHC
DTR Section: 30.1.1
Comment:

Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

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Evaluation of the available data and information indicates that conditions at the Site are sufficient to injure surface water resources (i.e., sediments) and biological resources (i.e., benthic invertebrate, fish, and wildlife communities). See Declaration of Donald MacDonald at ¶ 6; See generally DTR Volume 2. Neither NASSCO nor BAE presented evidence to demonstrate that such natural resource injuries would abate within a reasonable time frame if monitored natural attenuation was selected as the preferred remedy. On the contrary, selecting monitored natural attenuation as the preferred sediment management option will likely result in such natural resource injuries continuing well into the future. See Declaration of Donald MacDonald at ¶ 6. Any such impacts on natural resources would likely result in continuing beneficial use impairments in San Diego Bay. See Declaration of Donald MacDonald at ¶ 6.

Comment ID: 470 **Organization:** Coastkeeper and EHC
DTR Section: 30.1.1
Comment:

Natural Attenuation is Not a Viable Remedy for Addressing Issues Related to Sediment Contamination at the Site.

NASSCO and BAE have both identified "Monitored Natural Attenuation" as their preferred remedy for the Shipyard Sediment Site in San Diego Bay. However, natural attenuation is not a viable option to address contaminated sediment issues at the Shipyard Sediment Site for several reasons.

G.Monitored natural attenuation cannot be considered the preferred remedial option because NASSCO and BAE have failed to prove that monitored natural attenuation would protect human health and the environmental and achieve remedial objectives within a reasonable time frame.

EPA's guidance regarding appropriate use of monitored natural attenuation as a remediation strategy emphasizes that the proponent must present convincing site-specific technical evidence that monitored natural attenuation will effectively protect human health and the environment, and that the remedial objectives will be achieved within a reasonable time frame. See EPA (1999); See Declaration of Donald MacDonald at ¶ 5. This presumption against monitored natural attenuation means that the burden of proof that monitored natural attenuation will be effective is on NASSCO and BAE. But neither NASSCO nor BAE has proven, with evidence in the record provided to all Designated Parties, that monitored natural attenuation will protect human health and the environment and achieve the remedial objectives within a reasonable time frame. For this reason, the Regional Board cannot select monitored natural attenuation as the preferred remedial alternative. See Declaration of Donald MacDonald at ¶ 6.

Comment ID: 471 **Organization:** Coastkeeper and EHC
DTR Section: 33
Comment:

III.BAE's Criticisms of Don MacDonald's Expert Report Are Not Based on Expert Testimony and are Without Merit.

BAE's lawyers found fault with every point Don MacDonald made in his expert report, dated March 11, 2011 and deemed each expert opinion "incorrect," "invalid," "unsupported" or "premature." However, BAE's criticisms are solely argument, as they rely on unsupported assertions made by lawyers, not on measured points provided by an equally-qualified expert. After examining the particular criticisms, it is clear that they are without merit and provided merely in an attempt to confuse the Regional Board. For these reasons, BAE's criticisms of Donald MacDonald's expert opinions carry little weight and should be ignored.
All of BAE's arguments attacking Mr. MacDonald's opinions and conclusions are without merit. Below are three examples of the meritless, unsupported, and nonsensical arguments raised by BAE's lawyers.

1.BAE's lawyers claim that Mr. MacDonald's expert opinion that "the sampling density is insufficient to accurately characterize the nature and extent of contamination at the site" is "incorrect." They base this claim on an unsupported and un-cited assertion that sampling was "consistent with the manner in which most schemes are designed at contaminated sites." BAE Comments at 30. But BAE's lawyers provide no citations or examples to demonstrate that "most schemes" are designed with such a paltry sampling density, nor can they explain how an opinion about a subjective matter like "sufficiency" can be "incorrect."

2.BAE's lawyers characterize Mr. MacDonald's conclusion that the proposed remedial footprint "excludes polygons with composite SWAC ranking values greater than 5.5" as "invalid." See BAE Comments dated May 26, 2011 at 54. But the record clearly shows that the lowest SWAC ranking value included in the footprint was 5.5 and that 15 polygons with SWAC ranking values greater than 5.5 were not included in the footprint. See DTR Tables A33-1 and A33-2. That BAE's lawyers characterize an accurate factual summary as an "invalid" conclusion reveals their argument as nonsensical and unconvincing.

3. BAE's lawyers claim that Mr. MacDonald provided "no technical basis" for his assertion that the proposed remedial footprint "excludes polygons, like NA07, with concentrations of contaminants in sediment that likely pose higher risks to human health and aquatic-dependent wildlife than some of the polygons included in the proposed remedial footprint." See BAE Comments dated May 26, 2011 at 54. BAE either ignores or fails to understand that Table 1 of Mr. MacDonald's expert report sets forth the technical basis for his conclusion that the proposed remedial footprint exclude polygons that pose higher risks to human health and aquatic-dependent wildlife than some of the polygons included in the proposed remedial footprint. See Expert Report of Donald MacDonald dated March 11, 2011 at Table 1.

It is clear that BAE's lawyers' arguments attacking every single opinion and conclusion Donald MacDonald offers in his expert report is a thinly-veiled attempt to force the Environmental Parties to spend their limited resources in responding to ridiculous and meritless argument. For this reason, the Environmental Parties will only provide three examples demonstrating the nonsensical, meritless nature of BAE's arguments attacking Mr. MacDonald. However, every single one of BAE's attacks on Mr. MacDonald is without merit. BAE's lawyers unfounded and unsupported arguments attacking Mr. MacDonald's credible expert report and his opinions contained in it are meritless and should be ignored.

Comment ID: 472 **Organization:** SDG&E
DTR Section: 18.2
Comment:

1.2 Triad Approach Flawed As it Lacks Scientifically Valid Consideration of COCs

The sediment chemistry line of evidence used in the CRWQCB (2010) Triad approach is critically flawed and is not valid to characterize risk potential to aquatic life. The approach relies on the SQGQ1 metric, as shown in Figure 18-1 of CRWQCB (2010). A primary flaw in this approach is that TBT is not considered by the SQGQ1 metric, despite the fact that TBT was selected by CRWQCB (2010) as a primary Site COC. TBT, an anti-fouling agent historically

used on marine vessels and a known waste product of the shipyards industry, has been referred to as "the most toxic compound ever released into the environment" (Meador, 2010) and is a prevalent at many contaminated shipyard sediment sites undergoing investigation and remediation (USEPA, 1996; EVS, 1999; Antizar-Ladislao, 2008; Chen, 2010).
TBT is toxic to aquatic invertebrate life, with effects noted in water at concentrations of 0.07 to 0.007 micrograms per liter (μg/L) and in sediment at concentrations less than 100 micrograms per kilogram (μg/kg) (Meador et al., 2002; Meador, 2011).

A second critical flaw in the CRWQCB (2010) Triad sediment chemistry line of evidence approach concerns the nature of the sediment quality guidelines (SQGs) used in the SQGQ1 metric. The SQGs used in the SQGQ1 approach are referred to as "empirical" SQGs because they are derived from studies that have measured concentrations of chemicals and laboratory toxicity in field-collected sediments
containing a variety of chemicals and exhibiting a variety of physical properties. As these sediments contain a wide variety of unmeasured and measured physical and chemical properties that may adversely affect the laboratory toxicity test organisms, it is impossible from that approach alone to know which chemical, group of chemicals, or physical condition may be responsible for the presence of adverse effects (Batley et al., 2005). This leads to an absence of causality between concentrations of individual chemicals and adverse effects such that the SQGs are not useful in predicting toxicity from individual chemicals.

Comment ID: 473 **Organization:** SDG&E
DTR Section: 32.5.2
Comment:
1.5 Conclusion

Although it is not recommended to fully characterize risk potential and/or designate remedial action to address benthic impacts by using sediment chemistry alone (e.g., for the Non-Triad Data Approach stations), the Toxic Unit approach detailed in Conder (2011a) is considered to be a more scientifically defensible sediment chemistry-only approach compared to the SS-MEQ and 60% LAET evaluation. It also includes all five relevant primary Site COCs, in contrast to the Triad sediment chemistry line of evidence, which omits TBT. The Toxic Unit approach should be adopted for use in sediment chemistry line of evidence approaches for the CRWQCB (2010) Triad and Non-Triad Data approaches, and thus should be used for deriving a remedial footprint in conjunction with other considerations regarding technical and economic feasibility in a manner consistent with the approaches discussed in CRWQCB (2010).

Comment ID: 474 **Organization:** NASSCO
DTR Section: 17
Comment:
IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

2. There is No Significant Risk To Aquatic Life (Findings 14 – 20)

a. Shipyard Chemicals And Other Pollutants Are Present In The Sediment, But Do Not Pose Risks To Aquatic Life (Findings 15 - 19)

(1) The TCAO Overstates The Sediment Chemistry Prong Of The Triad Analysis (Findings 15-20)

The TCAO overstates the sediment chemistry prong of the triad analysis both because (1) differences in sediment grain size and total organic carbon between the reference pool and shipyard sediments, which are unrelated to shipyard discharges, skew the results in favor of finding higher sediment chemistry at NASSCO, and because (2) Staff's MLOE decision framework is driven primarily by sediment chemistry, even though most experts place greater weight on biological lines of evidence, particularly benthic community analysis. Ginn Report, at 14, 17-19. [Comment No. 39, TCAO, at 15-20, DTR, at 15-20, Appendix 15, Appendix 18, Appendix 19].

(a) The Reference Pool Does Not Accurately Reflect Chemical And Biological Conditions At NASSCO In The Absence Of Site-Related Discharges (Findings 17, 29)

Sediment chemistry results at NASSCO are overstated because the reference pool does not accurately represent the chemical and biological conditions at the shipyards in the absence of site-related discharges. See Ginn Report, at 17-18. This is because reference stations (1) contain coarser sediments, (2) more organic carbon, and (3) tend to be located far from the shoreline (and associated generalized sources of contaminants). Id. [Comment No. 40, TCAO, at 17, DTR, at 17.1-17.2].

Criteria for selecting acceptable reference stations include, among other things, "sediment total organic carbon (TOC) and grain size profiles similar to the Shipyard Sediment Site." TCAO, at ¶ 17. This is because sediment chemistry can be affected by both grain size and TOC, due to the chemical behavior of metals. For example, grain size can affect sediment chemistry because metals have a greater affinity to fine sediments than to coarse sediments. Deposition of Tom Alo ("Alo Depo"), at 183:22 – 184:6, 184:13 – 185:15. [Comment No. 41, TCAO, at 17, 29 DTR, at 29.1-29.3]. Accordingly, all else being equal, sediments with a higher proportion of fines will typically display higher concentrations of metals than sediments composed of coarse materials—purely as a result of grain size. Id. [Comment No. 42, TCAO, at 17, 29, DTR, at 29.1-29.3]. Differences in grain size can also have a similar effect on benthic community composition and toxicity results, with sediments composed largely of fine particles showing a greater likelihood of apparent toxicity based solely on the size of the particles. Id. [Comment No. 43, TCAO, at 17, 29, DTR, at 29.1-29.3]. Similarly, certain chemicals, including PCBs, have a high affinity for TOC. Id., at 193:20 – 194:2, 194:12 – 195:3, 196:14 – 196:25. [Comment No. 44, TCAO, at 17, 29, DTR, at 17, 29]. As a result, assuming there is equal PCB contamination throughout the Bay, one would expect to see higher PCB concentrations in sediments containing higher percentages of organic carbon—purely as a result of differences in TOC content. Id. [Comment No. 45, TCAO, at 17, DTR, at 17, 29]. Here, the reference pool stations selected by Staff contained higher percentages of coarse sediments and TOC than the triad stations sampled at NASSCO. [Comment No. 46, TCAO, at 17, DTR, at 17, 29]. Accordingly, some of the apparent effects detected at NASSCO likely are attributable to the fact that there are higher percentages of fine particles and organic carbon at NASSCO relative to sediments at the selected reference pool, rather than to shipyard discharges. Id. at 191:6 – 191:12, 203:23 – 204:1. [Comment No. 47, TCAO, at 17, 29, DTR, at 17, 29].

Additionally, sediment pollutant concentrations generally increase closer to shore due to the presence of point source outfalls; accordingly, one would expect the concentration of contaminants of concern to be higher in sediment near-shore than further offshore, even in the absence of shipyard discharges. Alo Depo, at 181:11 – 182:24. [Comment No. 48, TCAO, at 17, DTR, at 17.1-17.2].

For these reasons, some of the elevated chemistry and apparent effects detected in toxicity tests and benthic community analyses likely are attributable to differences between reference and shipyard sediments that are unrelated to shipyard discharges. Ginn Report, at 17. [Comment No. 49, TCAO, at 17, DTR, at 17.1-17.2]. The TCAO is therefore overly conservative in assuming that all observed differences from reference result from shipyard discharges. [Comment No. 50, TCAO, at 17, DTR, at 17.1-17.2].

Comment ID: 475 **Organization:** City of San Diego
DTR Section: 4.7.1.2
Comment:
D.THE EVIDENCE DOES NOT SUPPORT THE CONCLUSION THAT “REMEDIATION GOALS CANNOT BE MET DUE TO RE-
CONTAMINATION FROM OTHER SOURCES.”

In its comments submitted on May 26, 2011, NASSCO argues that “Remediation Goals Cannot Be Met Due to Re-Contamination From Other Sources{NASSCO's Comments, p. 38-39}.” The City is committed to complying with the Chollas Creek metals TMDL. While actions are not required prior to 2018, 80% reduction is required by 2018. The City has analyzed and evaluated different means of achieving compliance and is currently developing a plan that the City believes should achieve compliance. There are numerous technologies more effective (and not more costly) than sand filters at removing metals, including dissolve fractions, that are being considered for implementation throughout the Chollas Creek watershed.

As noted in responses to comments above, the discharges from Chollas Creek do not significantly affect inner Shipyard sediments. Predictions of mass discharges from Chollas Creek of copper, zinc, and lead as the TMDL is being implemented suggest that there will be no measureable increase in sediment concentrations of these constituents after remediation of Shipyards is complete. Accordingly, there should be no concerns that remediation goals cannot be met because of any concerns regarding recontamination from Chollas Creek.

Comment ID: 476 **Organization:** Port District
DTR Section: 1.4.2.1. and 1.5.2.
Comment:
Port Support of the Proposed Remedial Footprint

TCAO Finding 33 and Attachment 2
DTR §§1.2; 1.4.2.1, and 1.5.2

Additionally, the Port's experts agree that the remedial footprint can go forward without delay. While some parties may claim that the remediation cannot go forward unless the Chollas Creek outfall area is included within the remedial footprint or otherwise addressed because of recontamination concerns, the Port's designated fate and transport expert has concluded that any interim resedimentation from Chollas Creek discharges will not adversely impact the remediation efforts at the Shipyards. (Exhibit "2" [Port Expert Designation]; Exhibit "4" [Dr.Poon Declaration], paragraphs [13-15.) As such, the Port supports the exclusion of the mouth of Chollas Creek from the remedial footprint as well as the decision to move forward expeditiously with the remediation.

Comment ID: 477 **Organization:** NASSCO
DTR Section: 4.7.1.3
Comment:
IV.THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

B.The Tentative Cleanup and Abatement Order Is Technically Infeasible to Achieve Because Uncontrolled Sources Of Pollution Unrelated To NASSCO Are Impacting Sediment At The Shipyard (Findings 12, 30, 32, 33)

Chollas Creek is immediately adjacent to the NASSCO shipyard and discharges contaminated storm water at extraordinarily high volumes during rain events, along with dry weather run-off. See Attachment A, NASSCO Photos of Chollas Creek Stormwater Plume (2005); see also Total Maximum Daily Loads for Dissolved Copper, Lead, and Zinc in Chollas Creek, Tributary to San Diego Bay, Draft Technical Report (March 9, 2007) ("[E]ach season's major storms will effectively remove any metals accumulated in the [Chollas] Creek sediment and transport them downstream to San Diego Bay."). [Comment No. 205, TCAO, at 4, 33, DTR, at 4, 33.1-33.4]. The plume of contaminated water from Chollas Creek during rain events has been shown to extend more than a kilometer from the discharge point including the area within NASSCO's leasehold, and contributes an array of pollutants to the Site. DTR, at 4-1, 4-14 – 4-15; see also Deposition of Cynthia Gorham ("Gorham Depo"), at 74:20 – 76:18 (confirming that some fine sediment from Chollas Creek is deposited in the vicinity of NA22). The storm water contains PCBs, pyrogenic hydrocarbons, oil and grease, synthetic organics, and heavy metals, among other pollutants, with estimated average annual pollutant loads of 429 kg copper, 301 kg lead, 2906 kg zinc, 2.7 kg PAH, 20g chlordane, 0.4g PCBs, 850 g arsenic, and 80g mercury. DTR, at 4-5 – 4-6; Watershed Monitoring and Modeling in Switzer, Chollas, and Paleta Creek Watersheds (Schiff, January 30, 2007 Stakeholder Work Group Meeting). Id. Chollas Creek has also been identified as a significant, if not exclusive, source of pesticides in the sediment at the leaseholds. Exponent Report, at § 19-1, Figures 4-18, 4-20. Storm water containing similar pollutants also drains into the leaseholds both directly and indirectly, from a number of sources, including adjacent city streets, and large city storm drains. DTR, at 4-5; see also Barker Depo, at 160:16 – 161:23, 162:22 – 164:8. As discussed below, these discharges are associated with observed effects at the Site, and active remediation is therefore inappropriate unless and until these discharges are completely controlled:

Comment ID: 478 **Organization:** U.S. Navy
DTR Section: 10.3
Comment:
Navy Comment 1

The RWQCB's allegation that significant contaminants from Naval Base San Diego migrated to the Shipyard Sediment Site, either through discharges to Chollas Creek, resuspension of sediments through propeller wash, or via tidal currents is unfounded.

The TCAO alleges that the U.S. Navy "caused or permitted the discharge of waste to the Shipyard Sediment Site resulting in the accumulation of waste in the marine Sediment" due to historical activities at specific Installation Restoration Program (IRP) sites at Naval Base San Diego that may have resulted in the discharge of contaminants to San Diego Bay, and through resuspension of contaminated sediments due to propeller wash during ship movements at Naval Base San Diego (NBSD), with subsequent transport to other parts of San Diego Bay, including the Shipyard Sediment Site, by tidal currents as well as through Navy discharges to Chollas Creek.

Citations: TCAO Paragraph 10, DTR Finding 10 (including but not limited to Findings 10.1, 10.3, 10.4.1, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10.

The U.S. Navy maintains that these claims are based on the largely unsubstantiated assumptions that (1) Shipyard Sediment Site contaminants of concern (COCs) were released from specific IRP sites and transported to San Diego Bay, (2) sediments in San Diego Bay adjacent to the IRP sites were contaminated to levels sufficient to act as a potential source to the Shipyard Sediment Site, and (3) contaminated sediments in San Diego Bay adjacent to the IRP sites were subsequently resuspended by propeller wash associated with ship movements, transported by tidal currents to the Shipyard Sediment Site, and redeposited within the Shipyard Sediment Site. The analyses presented in this submission utilize the best available data and modeling capabilities to develop multiple lines of evidence to scientifically assess these claims. These lines of evidence were developed by evaluating historical information related to potential transport of COCs from the IRP sites to San Diego Bay, analyzing COC concentration data for bay sediments to determine whether chemical concentrations, PCB fingerprinting of sediments at the Shipyard Sediment Site is consistent with the presence of two distinct, localized sources of PCBs. If these PCBs were derived from activities at NBSD, the signatures would be similar. The spatial distribution of PCBs at the Shipyard Sediment Site is consistent with the presence of two different sources, with concentrations found at the north end of the site higher than those at the south end.

A modeling simulation was performed specifically to evaluate the claim that sediments adjacent to IRP sites may have been resuspended by propeller wash, transported to the Shipyard Sediment Site by tidal currents, and redeposited within the Shipyard Sediment Site. The modeling results indicate that net deposition to the Shipyard Sediment Site proposed remediation footprint due to resuspension and transport from areas adjacent to IRP sites at NBSD was between 0.17 percent and 0.37 percent of the total annual deposition, an amount that is negligible in the overall deposition of sediments at the Shipyard Sediment Site. Collectively, these lines of evidence indicate that the overall contribution of IRP sites to contamination at the Shipyard Sediment Site is negligible.

Likewise, the Navy's contribution to contaminant loading in Chollas Creek is negligible as demonstrated by the small relative portion of the Chollas Creek contaminant loading to the Bay that can be attributed to the Navy stormwater discharges, the portion of the solids loading from the Creek that is likely deposited at the shipyard sediment site, the observed spatial gradients of contamination in the area, and the relative chemical signatures of bottom sediments in the area.

Comment ID: 479 **Organization:** U.S. Navy
DTR Section: 10
Comment:
Navy Comment 2

The RWQCB's allegation that historical Navy operations at the 28th Street Mole Pier contributed to the contamination at the Shipyard Sediment Site is unfounded, and the Navy's 2004 comment submission on this subject incorrectly assumed that shipyard operations were part of the Navy leasehold.

Citations: TCAO Paragraph 10, DTR Finding 10 (including but not limited to Findings10.4.2, 10.6, 10.10).

This comment provides a chronological history of activities at the property in the area of the 28th Street Mole Pier, located on the eastern shoreline of San Diego Bay in San Diego, California. The property is currently leased by the National Steel and Shipbuilding Company (NASSCO). No documentation was found to support the allegation of Navy industrial use of the area currently leased by NASSCO. Navy use in this area appears to have been limited to temporary housing in two areas during the 1940s and operation of small landings, first on the north side of the 28th Street Mole Pier (near its western terminus) and later on the south side near the base (eastern end) of the pier. A summary of the Navy's use of the 28th Street pier is given below, with a comprehensive review provided in Appendix A to this comment submission.

TEMPORARY HOUSING EAST OF 28TH STREET MOLE PIER East of the 28th Street Mole Pier, in an area east of 28th Street and south of Belt Street, temporary officers quarters were used by the Navy on leased City of San Diego property from approximately 1941 through 1946, in the area known as Parcel 1. During approximately 1941 and 1942 a Temporary Defense Housing Camp occupied a parcel located southwest of the intersection of Belt Street and 28th Street. Industrial development in both these areas appears to have taken place after Navy use had ended.

28TH STREET SHORE BOAT LANDING FACILITY The Navy operated a 28th Street Shore Boat Landing facility on the north side of the 28th Street Mole Pier from approximately 1939 through 1956. This facility, located near the western terminus of the 28th Street Mole Pier, consisted of a storage room, a waiting room, and a finger pier and floating docks used by ship launches to ferry sailors to and from Navy ships moored in San Diego Bay (Navy 2004). Non-Navy industrial activities on 28th Street Mole Pier during this time period included a shipbuilding and maintenance facility located partly on a wooden wharf extending along the north face of the 28th Street Mole Pier and partly on the shore north of the base (eastern end) of the pier. By 1946, Lynch Shipbuilding Company was operating the facility, and by 1956, National Marine Terminal Incorporated was operating it. Industrial operations shown for this facility include machine, woodworking, pattern, electric, and welding shops; a foundry; and a mold loft.

SMALL CRAFT LANDING, SOUTHERN END OF 28TH STREET
In 1956, a permit was granted to the Navy for use of a parcel located east of the 28th Street Mole Pier, at the southern end of 28th Street, apparently as a replacement for the loss of the Shore Boat Landing facility on the north side of the 28th Street Mole Pier. A small landing can be seen in this area in aerial photos from 1964, 1974, and 1978. No other Navy activities were seen in this parcel. Industrial development of the parcel appears to have occurred after Navy use had ended.

Comment ID: 480 **Organization:** Port District
DTR Section: 33
Comment:

The Port is supportive of the proposed cleanup approach reflected in the TCAO and DTR, while reserving the right to consider any comments that may come in during the public comment period. According to Regional Board Executive Officer and CUT team head, David Gibson, this is exactly the type of support which the CUT is seeking and would expect from the Port. (Exhibit " 1 " [Gibson Deposition], 43:4-22.)

To illustrate this support, the Port's designated expert, Dr. Michael Johns, provides support for the proposed remedial footprint. (Exhibit "2" [Port Expert Designation]; Exhibit "3" [Dr. Johns Declaration], paragraphs 8-9.) In particular. Dr. Johns agrees with the process used to identify the polygons for the remedial footprint and has concluded that the factors used to select "worst first" polygons are consistent with the findings.

Comment ID: 481 **Organization:** Port District
DTR Section: 28
Comment:

Dr. Johns also agrees that the Shipyard sediment contamination has contributed to the impairment of beneficial uses in San Diego Bay and likely continues to harm human health and environmental resources. (Exhibit "3" [Dr. Johns Declaration], paragraph [5(a)-(d).) In this regard, Dr. Johns has concluded that the contaminants are bioaccumulating in biota relevant to human health and that exposed fish and shellfish can migrate offsite, spreading the reach of the contamination throughout the San Diego Bay and potentially to those who consume the exposed fish and shellfish. (Exhibit "3" [Dr. Johns Declaration], paragraph 6(a)-(d).) Likewise, the shipyard activities are likely exposing and/or redistributing legacy contaminants that create an ongoing source of San Diego Bay contamination. (Exhibit "3" [Dr. Johns Declaration], paragraph 7(a)-(d).)

Comment ID: 482 **Organization:** Coastkeeper and EHC
DTR Section: 31
Comment:

IV.E. The DTR Contains Incorrect Statements.

In performing the economic feasibility analysis, the Cleanup Team created a worst-to-least contaminated ranking of each of the 66 polygons in the Shipyard Sediment Site. See DTR Appendix 31. The DTR claims that the ranking process "used Triad data and site-specific median effects quotient (SS-MEQ)." DTR § 31.1 at 31-2. However, the Excel file used to create the worst-to-least contaminated ranking only includes the SS-MEQ and not Triad data. See Appendix 31, "2010-07-27 Economic feasibility 07-27-10.ng.xls" (SAR384569).

Comment ID: 483 **Organization:** Coastkeeper and EHC
DTR Section: 32
Comment:

IV.E. The DTR Contains Incorrect Statements.

The Order incorrectly concludes that "clean-up of the remedial footprint will restore any injury, destruction, or loss of natural resources." See Order Finding 32 at 16. The San Diego Regional Board does not have authority to conduct natural resource damage assessments because only the Natural Resources Trustees have authority to conduct natural resource damage assessments and to draw conclusions regarding injury to natural resources and the effectiveness of remedial actions in terms of restoring natural resource values. See MacDonald 2011 at 20.

Comment ID: 484 **Organization:** BAE Systems
DTR Section: 32
Comment:

•SDC and EHC also state that “the San Diego Regional Board does not have authority to conduct natural resource damage assessments.”

This statement is an unwarranted extrapolation of a single mention of “natural resources” in the TCAO, in which it is simply stated that “Cleanup of the remedial footprint will restore any injury, destruction, or loss of natural resources.” The statement in no way addresses service losses, monetary damages, or any of the other parameters unique to natural resource damage assessments. The statement simply articulates that the cleanup of the remedial footprint at the Shipyard Site will improve environmental conditions such that natural resources like those evaluated in detail at the Shipyard Site (i.e., benthic macroinvertebrates, fish, and aquatic dependent wildlife) will benefit. The SDC/EHC statement is therefore irrelevant.

Comment ID: 485 **Organization:** SDG&E
DTR Section: 28
Comment:

Given the many critical deficiencies in the CRWQCB's human health risk assessment of the Site, it is clear that a human health risk determination is not supported by the evidence at the Site. Parameters used in CRWQCB (2010) to estimate the potential exposure of anglers to Site chemicals greatly overestimate human exposure and risk at the Site (Finley, 2011). For example, CRWQCB (2010)
Site-specific human health risk assessment exposure assumptions estimate exposure for an angler deriving 100% of their fish or shellfish diet from prey items at the Site for a period of 30 years. Mr. Tom Alo, the CRWQCB's Person Most Knowledgeable (PMK) and lead CRWQCB human health risk assessor assigned to the Site, stated in his February 16, 2011 deposition that that he agreed that these
exposure assumptions were unrealistic. Using more realistic Site-specific human health exposure assumptions, Finley (2011) calculated human health hazard and risk estimates that are below thresholds of concern (Hazard Index of 1, Excess Lifetime Cancer Risk of 1 × 10-5, per OEHHA (2006, 2008)) for the NASSCO portion of the Site. Using the same approach and parameters detailed in Finley (2011), the highest risk potential for the inside BAE portion of the Site for the three human health chemicals of concern was found to be 1.7 × 10-6 for cancer risk and 0.33 for noncancer hazard, as shown in Tables 24-26. Both of these risk estimates were associated with PCBs for ingestion of spotted sand bass by the "upper bound" angler. All risk and hazard estimates for the inside BAE portion of the Site (Table 26)
are below OEHHA (2006, 2008) thresholds of concern and do not indicate human health BUI.

Comment ID: 486 **Organization:** SDG&E
DTR Section: 28
Comment:

3.2 Fractional Intake Assumptions

The CRWQCB (2010) Factional Intake assumption is technically flawed because anglers are not currently exposed to Site chemicals (Exponent, 2003; Finley, 2011). Current Site security measures prohibit fishing or collection of shellfish. The assumption that anglers derive 100% of their fish and shellfish diet from Site is untenable. CRWQCB (2010) supports their assumption at pages 27-4 to 27-5 of the DTR with the following hypotheses:

1. Shipyard workers fish at the Site;

2. Future angling opportunities may occur if the Site ceases to be used as a shipyard;

3. Chemicals may migrate to nearby public angling areas (i.e., Crosby Street Pier); and

4. CRWQCB is mandated to address Human Health BUI regardless of whether it is possible for human health exposure to chemicals to occur.

Regarding shipyard worker angling activity, there is no evidence for this occurrence, and such activity is prohibited by current Site security measures. Finley (2011), via a review of security camera footage, confirmed that no angling activity occurs at NASSCO. Because BAE has similar security measures, it can be concluded that shipyard workers are not angling at the Site. Mr. Tom Alo, the CRWQCB's Person
Most Knowledgeable (PMK) stated in his February 16, 2011 deposition that CRWQCB has no evidence regarding angling at the Site (Alo, 2011). Mr. Alo further stated that the assumption that angling was taking place was unrealistic (Alo, 2011).

Regarding future exposure scenarios, the current human health risk assessment cannot be used to predict risk for a hypothetical future scenario in which Site access to anglers is granted because concentrations of chemicals in sediment may be decreasing and may continue to decrease during the 23 or more years remaining in the current BAE and NASSCO subleases (Conder, 2011b). Assuming a quantitative relationship between chemicals in Site sediment and chemicals in Site biota, the concentrations of chemicals in fish and shellfish, as measured in 2001-2002 and used in the current CRWQCB human health risk assessment, cannot be expected to equate with values in 2034 and/or 2040 (Conder, 2011c).

Regarding the migration of chemicals to nearby public angling areas (i.e., Crosby Street Pier), it is clear from Site sediment data that chemicals are not migrating from the Site in sufficient amounts to warrant concerns of human health risk (Conder, 2011c). Available studies on the migration ecology of fish and shellfish also indicate that resident Site fish and shellfish are unlikely to migrate to Crosby Street Pier (Conder, 2011c). If migration does occur, human health exposure parameters assumed by CRWQCB (2010), such as concentrations of chemicals in fish and consumption rate, cannot be applied to evaluate risk associated with any Site fish caught at Crosby Street Pier. Evaluating Site-derived risk at Crosby Street Pier would require estimation of the proportion of Site fish consumed by Crosby Street Pier anglers, because it is unreasonable to assume that 100% of animals consumed by anglers at Crosby Street Pier would originate from the Site. Additionally, it is uncertain whether the concentration of Site chemicals in any long-distance fish and lobster migrants caught at Crosby Street Pier would be a high as individuals that restrict their movements within the boundaries of the Site, because it is possible that these long-distance fish and lobster migrants may eliminate Site-derived chemicals from tissue in the time period between the departure from contaminated areas of the Site and capture at Crosby Street Pier.

Comment ID: 487 **Organization:** SDG&E
DTR Section: 28
Comment:

3.3 CRWQCB Tier 2 Risk Assessment

As noted above and by Finley (2011), the CRWQCB (2011) Tier 2 human health risk assessment fails to follow standard USEPA (1989) guidance because it did not accurately address realistic human health exposure conditions at the Site by accurately applying Site-specific exposure parameters and considerations. The assessment comprised an unrealistic, "worst case" scenario that appears to have been driven by non-technical, policy considerations. For example, Alo (2011) stated that all chemicals of concern were included in the Tier 2 analysis regardless of earlier screening analyses (Tier 1) that demonstrated an absence of risk. Alo (2011) stated that the Tier 2 analysis was favored a matter of policy such that the CRWQCB "erred on the conservative, more protective side". Thus, the overall framework of the Tier 1 and 2 human health risk assessments, described on page 26-1 of CRWQCB (2010), appears to be needlessly complicated and contrary to applicable regulatory guidance since Tier 1 results were ignored in preference for the unrealistic and non Site-specific Tier 2 assessment.

Comment ID: 488 **Organization:** SDG&E
DTR Section: 28
Comment:

3.4 Conclusion

In conclusion, the CRWQCB (2010) determination of Human Health BUI is speculative, lacks scientific foundation, and fails to properly apply site-specific exposure parameters in accordance with applicable regulatory guidance to properly substantiate a finding of human health impairment at the Site. There is no evidence to support a conclusion that Site-derived chemicals impair Commercial and Sport
Fishing and Shellfish Harvesting Beneficial Uses in San Diego Bay. Because there is no evidence of a Human Health BUI, consideration of human health should be withdrawn from Site decision-making algorithms (e.g., SWAC-based assessments of Findings 32-33 in CRWQCB (2010)) used to identify areas for potential remedial action.

Comment ID: 489 **Organization:** NASSCO
DTR Section: 24
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

3. There Is No Significant Risk To Aquatic-Dependent Wildlife (Findings 19, 21-24, 32)

a. Regional Board Staff's Analysis Employs Assumptions That Are Overly Conservative And Unrealistic, And Bias The Results

Comment No. 135-148

In the process of conducting a Tier-II risk analysis, Staff made several assumptions that were overly conservative and biased the results of the analysis in a way that preordained the conclusion that aquatic-dependent wildlife uses were impaired by Shipyard sediment. [Comment No. 135, TCAO, at 24, DTR, at 24].

Second, it is standard practice to set a limit for acceptable dietary exposure for any chemical by picking a point between an established no-observed-adverse-effect-level ("NOAEL") (a level of exposure that is believed to have no adverse effects on receptors of concern) and the lowest-observed-adverse-effect-level ("LOAEL") (the lowest level of exposure shown to have adverse effects on receptors of concern). In fact, "[e]xposure levels between the no-effect and expected effect thresholds fall into an undefined area with regard to predicted risk, in which careful interpretation and professional judgment are required to assess risk." Ginn Report, at 66; DTR, at 24-12 ("the actual threshold of adverse effects is predicted to lie somewhere between these two thresholds"). [Comment No. 140, TCAO, at 24, DTR, at 24.2.3, 24.2.4].

Instead of carefully exercising such judgment, however, the Staff simplistically looked for any chemical that exceeded a hazard quotient of 1.0 for any effect threshold—whether it be a no-effect or expected-effect threshold—that was also higher than reference exposure. DTR, at Figure 24-1; Alo Depo, at 360:11-361:7. [Comment No. 141, TCAO, at 24, DTR, at 24.2.5]. As demonstrated in Table 24-3, the only hazard quotients that exceeded 1.0 for any receptor of concern and for any pollutant were no-effect thresholds – in fact, in no instance were any expected-effect thresholds exceeded. DTR, at 24-6, Table 24-3. Despite acknowledging that the "actual threshold of adverse effects is predicted to lie somewhere between" a no-effect and expected-effect threshold, the Staff made no attempt to calculate where that point may be for any chemical with respect to any receptor. DTR, at 24-12; Alo Depo., at 357:2-358:2. [Comment No. 142, TCAO, at 24, DTR, at 24.1, 24.2.3, 24.2.4, Appendix 24].

As with Staff's selection of an unrealistic and overly conservative area-use factor, described above, the decision to use an exceedence of a hazard quotient of 1.0 for no-effect thresholds drives the determination that aquatic-dependent wildlife beneficial uses are impaired. [Comment No. 143, TCAO, at 24, DTR, at 24.1, 24.2.5]. Furthermore, because the AUF contributes to the calculation of ingestion rates of sediment, the unrealistic assumption described above compounds the unrealistic nature of Staff's analysis and contributes to the conclusion that aquatic-dependent wildlife uses are impaired. [Comment No. 144, TCAO, at 24, DTR, at 24, Appendix 24].

Neither the DTR nor the TCAO provide any rationale for this approach, despite the fact that U.S.E.P.A. staff have recommended using the geometric mean between no-effect and expected-effect thresholds as an appropriate way to calculate hazard quotients. [Comment No. 145, TCAO, at 24, DTR, at 22, 24.2.3, 24.2.4]. Furthermore, had Staff used the geometric mean between no-effect and expected-effect thresholds to calculate hazard quotients, the result would have been no hazard quotient greater than 1.0 for any receptor for any chemical, even with the unrealistic AUF assumption of 1.0, except for lead. Ginn Report, at 67-69, Table 7. [Comment No. 146, TCAO, at 24, DTR, at 24, Appendix 24]. Furthermore, the Ginn Report notes that the only reason why a hazard quotient greater than 1.0 using the geometric mean would be reached for lead is because Staff selected an unrealistic toxic reference value for lead. Ginn Report, at 71-72. [Comment No. 147, TCAO, at 24, DTR, at 24.2.3, 24.2.4]. Regardless, the TCAO and

DTR do not select lead as a primary contaminant of concern for the Shipyard Site, and no alternative cleanup level for lead has been proposed. [Comment No. 148, TCAO, at 24, 29, 32, DTR, at 24, 29.3, 32.3].

Comment ID: 490 **Organization:** NASSCO
DTR Section: 15, 21-24, 28
Comment:

IV. THE TENTATIVE CLEANUP AND ABATEMENT ORDER IS OVERLY CONSERVATIVE AND TECHNICALLY INFEASIBLE TO ACHIEVE

A. Extensive Scientific Investigation Shows That Beneficial Uses At The Shipyard Are Not Unreasonably Impaired (Findings 13 – 28)

3. There Is No Significant Risk To Aquatic-Dependent Wildlife (Findings 19, 21-24, 32)

c. Any Potential Negative Effects From Shipyard Contaminants Are Not Observed In Fish Beyond The Leasehold (Findings 15, 21-24, 28)

Comment No. 154-161

In addition to assessing chemical concentrations in fish tissue, the DTR also analyzed fish histopathology results for fish caught (1) inside the leasehold, (2) just outside the leasehold, and (3) at reference stations. These data corroborated the results of the fish tissue analysis, and found that fish inside the leasehold were "healthy, with no elevation in significant liver lesions or other abnormalities related to chemical exposures at the site." Ginn Report, at 15. As discussed previously in Section IV.a.2.b.(4), a conservative analysis of the results showed that only four of the 70 lesions were evaluated were found to be significantly elevated in shipyard fish (compared to six of 70 in reference fish). [Comment No. 158, TCAO, at 15, 21-24, DTR, at 15, 21-25, Appendix 15]. The results also indicated that the health of spotted sand bass was not adversely affected by proximity to the shipyards, and that fish caught just outside, but adjacent to, the NASSCO leasehold were generally no different from reference fish, with respect to both microscopic and macroscopic fish lesions. Section IV.A.2.b.(4); see also DTR, App. 15, at 15-8 – 15-9, Table A15-5. [Comment No. 159, TCAO, at 15, 21-24, DTR, at 15, 21-25, Appendix 15]. In fact, only one of the 70 types of lesions evaluated was found to be significantly elevated in fish caught just outside the NASSCO leasehold, compared to reference fish. DTR, at Tables A15-4 and A15-5. [Comment No. 160, TCAO, at 15, 21-24, DTR, at 15, 21-24, Appendix 15]. Accordingly, these results suggest that, even if there are potential negative effects on fish within the leasehold, shipyard contaminants are not affecting fish beyond the leasehold and potentially contaminated fish are not migrating beyond the leasehold. [Comment No. 161, TCAO, at 15, 21-24, DTR, at 15, 21-24, Appendix 15].

Comment ID: 495 **Organization:** SDG&E
DTR Section: 9
Comment:

See the San Diego Water Board website for the full text of SDG&E's request for rescindment.

http://www.waterboards.ca.gov/sandiego/water_issues/programs/shipyards_sediment/2005_0126adt.shtml

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

IN RE TENTATIVE CLEANUP AND ABATEMENT ORDER NO. R9-2011-0001 (formerly No. R9-2010-0002)	**BAE SYSTEMS SAN DIEGO SHIP REPAIR INC.'S COMMENTS REGARDING REVISIONS TO TCAO AND DTR AND DRAFT EIR RELEASED BY CLEANUP TEAM ON SEPTEMBER 15, 2011** Presiding Officer: Grant Destache

Pursuant to the September 19, 2001 Notice of Public Hearing, and the Third Amended Order of Proceedings, dated June 8, 2011, and related procedural orders, with respect to Tentative Cleanup and Abatement Order No. R9-2011-0001 ("TCAO") and its associated Draft Technical Report ("DTR") for the San Diego Bay Shipyard Sediment Site, San Diego County ("Shipyard Sediment Site" or "Site"), Designated Party BAE Systems San Diego Ship Repair Inc. ("BAE Systems") respectfully submits these written comments regarding (1) Revisions to the TCAO and DTR made by the Cleanup Team and released on September 15, 2011; and (2) Revisions to and/or responses to comments on the draft EIR made by the Cleanup Team and released on-September 15, 2011.

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I. COMMENTS REGARDING REVISIONS TO THE TCAO AND DTR MADE BY THE CLEANUP TEAM AND RELEASED ON SEPTEMBER 15, 2011

BAE Systems appreciates and recognizes the significant task recently completed by the Cleanup Team of reviewing, analyzing and responding to a mountain of written comments by Designated Parties, and subsequently revising the TCAO and DTR as they deemed appropriate. BAE Systems provides certain comments regarding those revisions, which are set forth below.

BAE Systems expressly preserves, and does not waive, any and all objections to those technical issues, evidence or legal argument to which BAE Systems does not address herein, and further reserves the right to supplement, modify or withdraw its comments on any issue identified herein.

A. Revised DTR Pages 18-4 and 18-5

As noted in the revised DTR text, there are no tributyltin ("TBT") values that can be used in the SQGQ1 calculation. However, a site-specific toxicity-based threshold for TBT is available for the Shipyard Sediment Site, and can be applied to evaluate stations with only chemistry data. This threshold value is the Lowest Apparent Effects Threshold ("LAET"). The only two Site stations that exceed the LAET for TBT (*see* Table 12-3 of the shipyard sediment report [Exponent 2003]) are included within the cleanup footprint. An acknowledgement of the relevance of the LAET could be included in the revised DTR text as additional support for the approach that was taken by the Cleanup Team.

Furthermore, TBT was not related to any measure of toxicity or benthic community condition at the site (Table 9-8 of the shipyard sediment report), and also was not a risk driver for either the ecological risk assessment or the human health risk assessment. There is therefore ample site-specific data with which to draw conclusions about the possible impact of TBT, even without including it in the SQGQ1 calculation.

In addition, the appropriateness of the use of other chemicals as a surrogate for TBT can be further supported by reference to the chemical correlations presented in Table 9-2 of the shipyard sediment report. These correlation coefficients demonstrate that chemicals used in the SQGQ1 calculation are strongly correlated with TBT concentrations. In particular, the correlation coefficients for TBT and copper, HPAH, and total PCB are 0.89, 0.80, and 0.80, respectively, which are among the highest correlations observed. Consequently, cleanup decisions based on SQGQ1 values will address areas with elevated TBT values.

B. <u>Revised DTR Page 32-12</u>

In the modified paragraph, the text "all wildlife receptors (excluding the sea lion)" puts an important piece of information into a parenthetical statement. An abbreviated quote from this sentence, that omits the parenthetical phrase, would be misleading. An alternative phrase that eliminates this potential problem is "wildlife receptors other than the sea lion."

C. <u>Revised DTR Page 34-3</u>

In the revised text, the phrase "post-remedial dredge area concentrations" is ambiguous. It could be taken to mean any of the following:

- The alternative cleanup level; or
- The estimated post-remedial SWAC; or
- The mean post-remedial concentration in all dredged areas.

This phrase should be clarified or replaced. By analogy with the previous version of this text, which referred to background concentrations, the revised text is assumed to refer to alternative cleanup levels. The second of the alternatives listed above is not appropriate because it would consist of comparing a point concentration with a SWAC. The third alternative listed above is not appropriate because 20% variation is within the range of variability of duplicate laboratory analyses of organic chemicals, and the criterion would therefore be likely to flag samples that are not meaningfully different from the overall mean concentration. Consistent with this interpretation, the phrase “post-remedial dredge area concentrations” should therefore be replaced with the phrase “alternative cleanup levels.”

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II. COMMENTS REGARDING REVISIONS TO AND/OR RESPONSES TO COMMENTS ON THE "PROPOSED FINAL" EIR MADE BY THE CLEANUP TEAM AND RELEASED ON SEPTEMBER 15, 2011

BAE Systems submits the following comments regarding the proposed Final Environmental Impact Report ("FEIR") released September 15, 2011. Specifically, BAE Systems' comments relate to the Mitigation Monitoring and Reporting Program ("MMRP"), set forth in Section 7 of the FEIR.

BAE Systems expressly preserves, and does not waive, any and all objections to those technical issues, evidence or legal argument to which BAE Systems does not address herein, and further reserves the right to supplement, modify or withdraw its comments on any issue identified herein

A. Mitigation That is Legally Infeasible May Not be Adopted.

CEQA mitigation may not be adopted unless it is "feasible," or "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." CEQA Guidelines § 15364. Legal infeasibility arises where the mitigation being considered is beyond the powers conferred by law on the agency, or prohibited by statutes governing the agency. *Kenneth Mebane Ranches v. Superior Court*, 10 Cal. App. 4th 276, 291 (1992); *Sequoyah Hills Homeowners Ass'n v. City of Oakland*, 23 Cal. App. 4th 704, 715-16 (1993).

1. Regional Board May Not Impose Mitigation Measures That Have Hot Been Subjected to Economic Feasibility Analysis Under Resolution 92-49.

In connection with its authority to issue cleanup and abatement orders, the Regional Board must evaluate all cleanup levels for economic feasibility and cost effectiveness. *See* State Water Resources Control Board Resolution No. 92-49, at 6-8 ("The Regional Water Board shall . . . ensure that dischargers shall have the opportunity to select cost-effective methods for . . . cleaning up or abating the effects [of wastes discharged and] . . . require the discharger to consider the effectiveness, feasibility, and relative costs of applicable alternative methods for investigation, cleanup and abatement."). *See also* Water Code § 13307 (requiring that policies include procedures for identifying and utilizing "the most cost-effective methods . . . for cleaning up or abating the effects of contamination of pollution"); Water Code § 13267 (requiring that the Regional Board engaged in cost-benefit analysis in adopting any "technical or monitoring program reports").

Certain of the mitigation measures that are identified in the FEIR (which are set forth below) were not considered in the TCAO/DTR's economic feasibility analysis, and have not otherwise been subjected to the economic feasibility analysis required by Resolution 92-49. As such, those measures are legally infeasible under CEQA, and they should be removed as requirements from the FEIR.

Even if the Regional Board subjected these mitigation measures to the economic feasibility analysis, such an analysis would reveal that these particular mitigation measures are not economically feasible. These requirements are unnecessarily restrictive, and, if required, would significantly increase construction costs without providing a commensurate increase in environmental protection. Based on the evaluation of NASSCO's expert Anchor QEA, these mitigation measures could add approximately $12 million to the total project costs. (*See* Anchor QEA Memorandum, attached to NASSCO's October 19, 2011 Comments on the Final EIR (hereinafter "Anchor Memorandum"), at 1.) Without a corresponding benefit to the environment, such costs are economically infeasible under CEQA and cannot be required components of the FEIR.

a. Mitigation Measure 4.2.1: Automated Turbidity Monitoring

As the FEIR currently reads, automatic systems must be used to monitor turbidity in the vicinity of the dredge operation. Setting aside the fact that automated turbidity monitoring is not the industry standard, such a requirement could actually adversely impact the project by imposing unnecessary delays and additional costs. As more fully explained in the Anchor Memorandum, automated turbidity monitoring, as opposed to manual turbidity monitoring, could lead to a high proportion of false positive readings caused by ambient conditions and statistical "noise" created by external factors, such as currents, weather, and vessel traffic. (Anchor Memo. at 2.) Manual turbidity monitoring gives the contractor the ability to make adjustments for these external factors as the project progresses in a more seamless manner, thereby preventing any unnecessary work stoppage like that which is likely to result from automated turbidity monitoring. As noted in the Anchor Memorandum, dredging effectiveness is primarily driven by production rate. (*Id.*) Accordingly, measures that may result in unnecessary work stoppages, like automated turbidity monitoring, should be avoided, especially where environmental protectiveness is unlikely to be increased by the proposed measure.

b. <u>Mitigation Measure 4.2.2: Dredging Best Management Practices</u>

The current FEIR requires the contractor to exercise dredging best management practices ("BMPs"). In addition to not comporting with standard industry practice, the particular BMPs set forth below will slow down the rate of progress on the project, thereby increasing construction costs, without any increased benefit to the environment.

For example, the FEIR requires the use of a double silt curtain enclosure. As noted by Anchor, such a requirement would slow down the rate of progression on the project, while adding approximately $250,000 to $500,000 to its total cost. Such an expense is unnecessary when a single silt curtain enclosing the point of dredging, combined with implementation of other water quality management BMPs, would sufficiently ensure water quality standards are met. (Anchor Memo. at 3.)

The FEIR also requires the contractor to use specialized bucket additions and controls (e.g. closure switches and Clam Vision™). These requirements, however, would impose unnecessary implementation costs (approximately $250,000 to $500,000), as the contractor would have to purchase, install, maintain, calibrate and otherwise manage them. Moreover, use of such equipment and controls could add additional costs to the effort, as their use could result in ambiguous or misleading data that the contractor would have to address as the project progresses. As Anchor properly points out, the contractor can ensure compliance with the Section 401 Water Quality Certification, and still remain efficient, through use of other equipment that is not specifically identified in the FEIR. (Anchor Memo. at 3.)

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c. Mitigation Measure 4.2.3: Complete Silt Curtain Enclosure

As discussed previously in 4.2.2 above, this measure repeats the overly restrictive approach by requiring redundant (inner and outer) silt curtains around the dredging area, imposing a significant, yet unnecessary additional cost. The use of an outer silt curtain is unnecessary and would have little to no resulting environmental benefit, especially considering the numerous other controls and monitoring already mandated during dredging.

d. Mitigation Measure 4.2.7: Permanent Cap under Piers

The most troubling mitigation measure set forth in the FEIR is the apparent requirement that a permanent cap be placed below the piers. As described more fully in the Anchor Memorandum, the cap design requirement is exceedingly complex, and is likely to substantially increase the costs of construction by as much as $5 to $7 million. (Anchor Memo. at 4-5.) But not only is the contemplated cap expensive and complex, it could impose undue stresses on the foundations and soils that underlie the overwater marine structures. BAE Systems agrees with Anchor's conclusion that a cover layer of sand or a sand-gravel mixture below the pier areas is a more appropriate mitigation measure. It would protect against unnecessary and unreasonable incidences of exposed contaminants, while facilitating the ongoing process of sedimentation. (*Id.*)

e. Mitigation Measure 4.2.8: Hydraulic Placement of Sand

The FEIR contemplates that sand cover will be placed hydraulically. This measure, however, could impede otherwise qualified contractors who do not have such capabilities in the bidding process, when other methods of placing sand cover beneath overwater structures are available. This in turn would deprive the parties of the benefit of a competitive bidding process, resulting in a potential increase in costs of approximately $1.5 to $2 million. (Anchor Memo. at 5.) As such, this requirement should be removed. Any means which would provide for adequate distribution of sand under piers should be allowed.

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2. The Regional Board May Not Dictate Cleanup Methods.

In addition to the fact that these mitigation measures have not been subjected to the economic feasibility analysis required by Resolution 92-49 and are not, in fact, economically feasible, these measures are also legally infeasible because they impermissibly dictate cleanup methods. The scope of the Regional Board's authority is not unfettered. Water Code Section 13360 specifically states that "[n]o waste discharge requirement or other order of a regional board . . . shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner." Put another way, the Regional Board has authority to issue orders that require particular results that it expects the cleanup to achieve (e.g., cleanup levels), but it is precluded from dictating the cleanup methods used to achieve those results. Despite the Regional Board's lack of authority in this regard, it uses the FEIR to require the parties to undertake particular mitigation measures. Because the Regional Board cannot use CEQA mitigation to dictate cleanup measures, those measures are legally infeasible under CEQA and should be removed as requirements from the FEIR.

B. Conclusion

Because the mitigation measures imposed in the FEIR have not been subjected to the economic feasibility analysis under Resolution 92-49, and are not economically feasible, they are legally infeasible and should not be required elements of the FEIR. In addition, the mitigation measures are legally infeasible and should be removed from the FEIR because the Regional Board lacks authority to require the use of particular cleanup methods. For these reasons, BAE Systems respectfully requests that the Regional Board revise the FEIR and remove these mitigation measures as requirements.

Dated: October 19, 2011 DLA PIPER LLP (US)

By /s/ Michael S. Tracy
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File No. 048876-0011

October 19, 2011

VIA EMAIL AND HAND DELIVERY

Mr. Vicente Rodriguez
California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123
vrodriguez@waterboards.ca.gov

Re: NASSCO's Comments on the proposed Final Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098)

Dear Mr. Rodriguez:

Designated Party National Steel and Shipbuilding Company ("NASSCO") submits the following comments regarding the proposed Final Environmental Impact Report ("FEIR"), including responses to comments (the "Responses"), for the Shipyard Sediment Remediation Project ("Project"), State Clearing House Number 2009111098, publicly released by the California Regional Water Quality Control Board, San Diego Region ("Regional Board") on September 15, 2011.

I. LEGALLY INFEASIBLE MITIGATION MAY NOT BE ADOPTED

A. Mitigation Measures Proposed In The FEIR Must Be Economically Feasible Under Resolution 92-49

As stated in NASSCO's initial CEQA comments, CEQA does not provide a lead agency with independent authority to mitigate environmental impacts; instead, agencies may exercise only those powers authorized by other statutes. Pub. Res. Code § 21004; *see also* CEQA Guidelines § 15040. Accordingly, mitigation is "legally infeasible" if its adoption is beyond the powers conferred by law on the agency, or prohibited by statutes governing the agency. *Kenneth Mebane Ranches v Superior Court*, 10 Cal. App. 4th 276, 291 (1992); *Sequoyah Hills Homeowners Ass'n v City of Oakland*, 23 Cal. App. 4th 704, 715-16 (1993). The Regional Board therefore may not adopt any mitigation measures for the proposed Project unless those measures are authorized by the Water Code or other applicable statutory authority beyond CEQA.

Under Resolution 92-49, cleanup levels must be evaluated for economic feasibility and cost-effectiveness before they can be adopted. Thus, as explained in NASSCO's initial comments, mitigation proposed in the DEIR cannot be adopted to the extent it was not included in the requisite economic feasibility analysis conducted for the TCAO. Any such mitigation is "legally infeasible" under CEQA.

The Responses fail to address this point, stating in conclusory fashion that the Regional Board disagrees with NASSCO's comment. Responses to Comments ("RTC"), at 78. This response is insufficient, (CEQA Guidelines § 15088(c)), and provides no justification to allow the Regional Board to adopt mitigation measures not evaluated for economic feasibility under Resolution 92-49.

This comment applies to the proposed Project and the other dredging alternatives.

B. The Regional Board May Not Use CEQA Mitigation To Dictate Cleanup Methods

NASSCO's initial comments also pointed out that, under Water Code section 13360(a), "[n]o waste discharge requirement or other order of a regional board . . . shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner." Hence, the Regional Board may not dictate cleanup methods, and any attempt to do so through CEQA mitigation is legally infeasible (and impermissible) for the above-stated reasons.

The Responses cite subdivision (b) of Water Code section 13360, which provides that, if an injunction is sought under the Water Code to restrain a discharger from discharging waste, and a court finds an injunction to be impracticable, the court may require specific measures to be taken "under the circumstances" to comply with the discharge requirements. RTC, at 78. But section 13360(b) is irrelevant here, as NASSCO's comment has no application to the context of a court ordered injunction. Instead, NASSCO simply pointed out that the Regional Board lacks authority to dictate cleanup methods under the Water Code, and, by extension, through CEQA.

The Responses also assert that mitigation proposed in the DEIR will not dictate how cleanup levels should be achieved, supposedly on the grounds that the EIR merely evaluates measures but none of the mitigation would be mandatory. RTC, at 78. This is incorrect, because mitigation measures are not "optional" under CEQA, and instead must be binding. CEQA Guidelines § 15126.4(a)(2); Pub. Res. Code § 21081.6(b).

That the FEIR seeks to dictate cleanup methods is made plain in the Responses. For example, NASSCO's initial comments (submitted by Anchor QEA, L.P.) explained that the mitigation measure requiring hydraulic placement of the sand cover in under pier areas should be deleted, because other feasible means of successfully placing the sand cover may exist. In response, the Cleanup Team stated that hydraulic placement "is feasible" and therefore required, and that the existence of other feasible means of accomplishing the task "is not a consideration factor in the selection of mitigation measures to protect water quality." RTC, at 155. In other words, the Regional Board intends to dictate cleanup methods through the CEQA process, and other feasible approaches will not be considered. The point is also made clear by reviewing the proposed Project and the dredging alternatives, each of which proposes separate, binding methods to remediate the Site.

This comment applies to the proposed Project and the other dredging alternatives.[1]

II. MITIGATION MEASURE 4.6.10 SHOULD BE REVISED TO CLARIFY THAT ALTERNATIVE FUEL CONSTRUCTION EQUIPMENT IS NOT REQUIRED UNLESS IT IS COST EFFECTIVE

The Errata included with the FEIR revises Mitigation Measure 4.6.10 to provide that alternative fuel construction equipment shall be utilized "to the extent 1) that the equipment is readily available, and 2), if such equipment is available in the San Diego Air Basin (SDAB), it is also cost effective." Appendix A, A-17. NASSCO objects to this revision to the extent that it assumes that the mere availability of alternative fuel construction equipment in the SDAB compels the conclusion that it is cost effective, as the fact that a type of equipment is available says nothing about whether or not its use is cost effective.

Accordingly, Mitigation Measure 4.6.10 should be revised to make clear that alternative fuel construction equipment is not required unless it is readily available in the SDAB *and* its use is cost effective.

III. THE FEIR FAILS TO DESCRIBE STORMWATER DISCHARGES TO THE SITE OR EVALUATE POTENTIAL RECONTAMINATION

A. The Environmental Setting Is Deficient Because It Does Not Identify Continuing Stormwater Discharges To The Site

As explained in NASSCO's initial comments, the DEIR's description of the Project's environmental setting completely ignores continuing and uncontrolled discharges of urban runoff to the Site from Chollas Creek and storm drains SW4 and SW9. The FEIR also fails to adequately address this issue, as the Responses make no attempt to justify the DEIR's decision to exclude any description of stormwater discharges to the Site. *See* RTC, at 75.

There is no excusable reason for this omission, since a complete and accurate description of a project's environmental setting is one of the most fundamental and basic of all CEQA requirements, and also is a necessary predicate for a legally adequate assessment of the environmental impacts of the project. *E.g.*, *Cadiz Land Co. v. Rail Cycle, L.P.*, 83 Cal. App. 4th 74, 87 (2000); *Galante Vineyards v. Monterey Peninsula Water Management Dist.,* 60 Cal. App. 4th 1109, 1122 (1997). This omission is particularly significant since the primary purpose of the

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[1] NASSCO's comments on the specifics of various mitigation measures proposed in the FEIR are set forth in the concurrently submitted memorandum prepared by David Templeton and Michael Whelan of Anchor QEA, L.P.

Project is to remediate sediment contamination at the Site, and stormwater discharges constitute a continuing source of contamination to Site sediments. The Responses even acknowledge that "the purpose of an EIR is to assess the project's effects on the existing environment," (RTC, at 75), which confirms the invalidity of an EIR that does not accurately identify the existing environment in the first instance.

As noted in NASSCO's comment letter on the DEIR, the TCAO and DTR state plainly that stormwater discharges have deposited contaminants to sediments at the Site, and are continuing, and Cleanup Team members have acknowledged the same. Because these points are undisputed, the failure to identify and describe stormwater discharges to the Site from Chollas Creek, SW4 and SW9 renders the EIR invalid as a matter of law. Since this omission is a procedural violation rather than a factual conclusion, the substantial evidence test is inapplicable and the Regional Board will be afforded no deference. *E.g., Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, 40 Cal. 4th 412, 435-36 (2007); *Bakersfield Citizens for Local Control v. City of Bakersfield*, 124 Cal. App. 4th 1184, 1208 (2004) (where agency omits consideration of an issue in EIR, the substantial evidence test does not apply and the "relevant question is whether the lead agency failed to proceed as required by law."). Furthermore, because the Responses do not address the decision to exclude stormwater discharges from the DEIR, they are legally inadequate under CEQA. *See* CEQA Guidelines § 15088(c) (responses to comments must include "good faith, reasoned analysis" and "[c]onclusory statements unsupported by factual information will not suffice.").

A recirculated EIR is required to adequately describe the existing environmental setting. CEQA Guidelines § 15088.5(a).

B. Recontamination From Stormwater Discharges Is A Reasonably Foreseeable Significant Environmental Impact

NASSCO's initial comments also explained that the DEIR's failure to disclose stormwater discharges to the Site resulted in the separate but related failure to consider whether or not those discharges will recontaminate the Site after the proposed dredging is underway or completed.

Attempting to address this omission, the Responses assert that "an EIR need not resolve existing environmental problems that will not be made worse by the project." RTC, at 75. This statement is not well taken. The purpose of the Project is to remediate contaminated sediment at the Site, and the Cleanup Team has proposed dredging approximately 143,000 cubic yards of sediment in furtherance of this objective. The feasibility of the remediation Project, including its likelihood of success, cannot properly be evaluated by the public and the decision-makers when the FEIR fails to describe an ongoing source of contamination to sediments at the Site, and likewise fails to evaluate whether that ongoing source could nullify the benefits of the contemplated dredging. Since the purported purpose of the Project is to "resolve existing environmental problems" at the Site, the statement that the EIR does not need to do so misses the mark. For the same reason, the statement in the Responses that "[i]t is not the purpose of a DEIR to mitigate the existing conditions" is insufficient, since the stated purpose of the Project ***is to do just that***, *i.e.*, mitigate the existing conditions in the sediments at the Site. RTC, at 75.

The Responses cite *Watsonville Pilots Ass'n v. City of Watsonville*, 183 Cal. App. 4th 1059 (2010) in support of this argument, noting that the *Watsonville* court held that an EIR for a new general plan was not required to resolve an existing groundwater overdraft problem. RTC, at 75. That case is clearly inapposite. *Watsonville* involved a general plan that called for residential construction near an airport. A challenge was made on the grounds that the EIR did not adequately address impacts from supplying water to the contemplated development under the general plan, where the groundwater basin supplying water to the city had been in overdraft for decades. The court rejected an argument that the EIR was invalid because it "fail[ed] to pinpoint a solution to the overdraft problem," which was "a feat that was far beyond its scope." 183 Cal. App. 4th at 1094. The EIR's treatment of the water supply issue was held to be adequate because it discussed the impact and concluded that water demands from contemplated new development would be offset by decreased water usage associated with the conversion of farmland to other uses under the new general plan, and water conversation measures imposed by the city. Here, by contrast, the FEIR omits any mention of continuing stormwater discharges to the Site, and fails to consider the potentially significant impact of recontamination. Moreover, recontamination of Site sediments goes to the core of the Project, which is proposed for the specific purpose of remediating sediment contamination at the Site.

The responses referenced above apparently attempt to justify the non-evaluation of recontamination on the basis that recontamination is not a "direct" effect of the Project on the environment, inasmuch as the continuing stormwater discharges are not caused by the Project. But this unduly narrow view of potential impacts is inconsistent with CEQA, which requires an EIR to evaluate both the potential "direct and indirect" impacts of a proposed action. CEQA Guidelines § 15126.2. An indirect effect is one "which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment." CEQA Guidelines § 15064(d)(2). In other words, indirect effects are those "which are caused by the project and are later in time or farther removed in distance. . . " *Id.* at § 15358(a)(2). Thus, if areas dredged pursuant to the Project are subsequently recontaminated by an ongoing source, that recontamination is an "indirect" effect of the Project.

CEQA requires an assessment of indirect impacts so long as they are "reasonably foreseeable." CEQA Guidelines §§ 15064(d)(2) and 15358(a)(2). Recontamination is reasonably foreseeable here, since there is no dispute that continuous discharges of stormwater reach the Site and impact its sediments. The Regional Board cannot argue otherwise, as the TCAO expressly recognizes the possibility of recontamination from urban runoff: "[u]pland source control measures . . . are also needed to eliminate ongoing contamination from [SW4] . . . and ensure that recontamination of cleaned up areas of the Shipyard Sediment Site from this source does not occur." TCAO, ¶ 33. Moreover, the failure to address recontamination for the proposed Project is shown to be error by virtue of the fact that recontamination is noted as a significant concern in the FEIR with regard to Alternative 3; so much so that Alternative 3 cannot be implemented until source control is achieved to the satisfaction of the State Board. *See, e.g.*, RTC at 177; *see also* FEIR Appendix D, at 32-6 ("The San Diego Water Board generally concurs with the comment that the potential for recontamination from off-site sources would affect all potential remedies…").

Responding to NASSCO's comment that Cleanup Team members have admitted that it is probable that discharges from Chollas Creek will remain uncontrolled in the future (and likely even beyond the 2028 compliance date in the Chollas Creek TMDL for metals), the Responses state that "[c]ontaminated sediment discharges from Chollas Creek will be addressed in the sediment TMDL for the mouth of Chollas Creek that is in preparation at this time." RTC, at 93. But the Regional Board may not forego analysis of a reasonably foreseeable impact from the Project now, on the grounds that the un-evaluated and un-mitigated impact allegedly will be addressed by a contemplated future administrative action at an uncertain future time. Nor is there any evidence that discharges from Chollas Creek would be confined solely to the area of the mouth of that creek.

The Responses also state that "available storm water best management practices for sediment control are capable of eliminating most, if not all sediment discharges from the Chollas Creek MS4." RTC, at 93-94. But the Responses fail to describe any of these practices or provide any analysis of how they could eliminate most or all of the sediment discharges from Chollas Creek, a dubious proposition to say the least. CEQA forbids such conclusory responses to comments. *Cleary v. County of Stanislaus*, 118 Cal. App. 3d 348, 358 (1981) ("conclusory statement, unsupported by empirical or experimental data, scientific authorities, or explanatory information . . ." is insufficient under CEQA); *see also* CEQA Guidelines § 15088(c).

Finally, without ever describing the stormwater discharges to the Site, evaluating their potential to contaminate sediments at the Site, or describing any "source control efforts" to address same, the Responses contend that "a detailed discussion on the basis for the San Diego Water Board Cleanup Team's [unstated] conclusion that cleanup pursuant to the TCAO can proceed while source control efforts are underway is contained in Response 4.1" to the Responses to Comments submitted on the TCAO ("Response 4.1"). But the referenced response only underscores why it was impermissible for the DEIR to exclude evaluating recontamination under CEQA. First, Response 4.1 (which does not purport to provide CEQA analysis) acknowledges that continuing contamination sources could make remediation "unsuccessful," an implicit concession that recontamination could cause a potentially significant impact for CEQA purposes. Response 4.1 tries to deflect this concern by stating that if increasing contaminant of concern ("COC") concentration trends are identified after the proposed remediation, the Regional Board could require "accelerated cleanup and abatement" of that source. But the means by which this would be accomplished are not described in Response 4.1, or the EIR, and no enforceable measures that would require this to be done are proposed in the EIR. Unenforceable or illusory promises are insufficient under CEQA. CEQA Guidelines § 15126.4(a)(2); Pub. Res. Code § 21081.6(b).

Second, Response 4.1 states that the risk of recontamination from Chollas Creek discharges is "low" because the time period between the proposed Project and an anticipated future cleanup of Chollas Creek "will be short (five to six years)." But no information supporting this statement is provided, and there is no assessment of the likely time period for implementing the TCAO or any cleanup of Chollas Creek (the administrative process for which has not been publicly initiated). Given the inherent regulatory uncertainty that attends to such matters, this is a significant oversight. Indeed, the current TCAO proceeding has been pending for more than a decade, and its implementation time is still uncertain based on factors presently unknown.

Third, Response 4.1 states that Chollas Creek discharges are or will be controlled by "stringent requirements" associated with various regulatory approaches, none of which are identified, relied upon or assessed in the CEQA document. The acknowledged need for measures to mitigate stormwater discharges highlights why recontamination needed to be evaluated in the EIR, under CEQA, with all feasible mitigation measures considered to address the admitted potentially significant impacts.

Fourth, Response 4.1 makes no effort to quantify the contribution of contamination to the Site caused by Chollas Creek and other stormwater sources, or the extent to which any other regulatory approaches (contemplated or approved) will address same, and thus is devoid of any reasoned explanation showing that recontamination is not likely to occur. For example, the Response states simply that TMDLs "should ensure" that Chollas Creek will not recontaminate the Site to a harmful degree. This is insufficient.

Fifth, and finally, the FEIR's failure to respond directly to NASSCO's comments regarding recontamination, following up on the omission of the issue from the DEIR, and the decision to rely entirely on Response 4.1 (buried within 734 pages of an appendix to the FEIR), fails to comply with CEQA's requirement to clearly identify and evaluate for the public and the decision-makers the potentially significant impacts of the Project. *See, e.g., Santa Clarity Org. for Planning v. County of L.A.*, 106 Cal. App. 4th 715, 722-23 (2003) (information "scattered here and there in EIR appendices," or a report "buried in an appendix," is not "a good faith reasoned analysis in response."). Given the seriousness of this issue, it merited discussion in the text of the EIR.

IV. THE MONITORED NATURAL ATTENUATION ALTERNATIVE SHOULD BE ADOPTED, BUT, AT A MINIMUM, MUST BE STUDIED IN DETAIL IN A RECIRCULATED EIR

The Responses do not dispute that Monitored Natural Attenuation ("MNA") is environmentally superior to the Project, as it will avoid all of the Project's significant and potentially significant impacts. *See* RTC, at 85-86. Instead, the Responses contend that MNA is not feasible, and therefore did not need to be mentioned in the DEIR. This contention is incorrect.

The Responses attempt to distinguish as "out of context" authority cited by NASSCO for the proposition that "an in depth discussion is required of any alternative that is at least potentially feasible." RTC, at 72 (citing *Center for Biological Diversity v. County of San Bernardino*, 185 Cal. App. 4th 866, 883 (2010) and CEQA Guidelines § 15126.6(a) (an EIR "must consider a reasonable range of potentially feasible alternatives…"). The Responses make the circular argument that these authorities apply only to alternatives that already have been selected for consideration. This argument misses the point. If an alternative is *potentially feasible* and will avoid some or all of a project's impacts, it warrants detailed review in the EIR, so that it may be considered by the public and the decision-makers. Any final determination that such an alternative is infeasible should only be made after an adequate assessment in the EIR.

NASSCO's position that MNA will feasibly attain Project Objectives while avoiding all significant and potentially significant Project impacts is detailed at length in its initial CEQA comments, and need not be reiterated here. The Responses make no earnest effort to address these contentions on the merits.

Most significantly, the statement that MNA is infeasible is made without acknowledging or responding to the fact that MNA was selected as the preferred remedy out of three alternative remedies studied in detail in the expert-prepared Detailed Sediment Investigation underlying the TCAO/DTR ("Shipyard Report"), which was developed at the direction of and with substantial oversight from Regional Board staff, along with input from stakeholders and the public. Because the Shipyard Report provides the foundation for the DTR and TCAO, and because it concludes (based on the opinion of leading experts in the field) that the MNA alternative would feasibly achieve the TCAO objectives, there is no justifiable basis for omitting this alternative from the DEIR. Nor is there any justification for failing to provide a reasoned analysis in response to comments on the DEIR, submitted by the expert authors of the Shipyard Report, urging that MNA should be studied and adopted by the Regional Board. Conclusory responses to comments that fail to address the opinions of experts casting doubt on the adequacy of the EIR are invalid. *E.g.*, *Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm'rs*, 91 Cal. App. 4th 1344, 1371 (2001).

Given the recommendation of the Shipyard Report and based on the other evidence cited in NASSCO's initial CEQA comments, there can be no dispute that there is substantial evidence within the Administrative Record showing that the MNA alternative can feasibly attain the Project Objectives. CEQA Guidelines § 15384 (b) ("substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."). As such, there is no basis for exclusion of the MNA alternative from detailed consideration in the EIR, which prevents the public from understanding clearly the basis for any ultimate decision to pass over the environmentally preferred MNA alternative and accept the significant environmental impacts and extensive mitigation requirements associated with the proposed Project (or the other dredging alternatives). Only in this manner can the EIR foster CEQA's goal of informed decision-making and public participation.

The Responses also state without analysis that MNA is insufficient because it would result in adverse impacts to beneficial uses over an extended period of time. For the reasons explained in Section V of this letter, however, this statement is dependent upon the hypothetical baseline used in the EIR, which relied upon unrealistic assumptions in the DTR—rather than existing conditions at the Site—and thus is not permitted under CEQA. Because no such risks are found when realistic assumptions are utilized (as explained in NASSCO's initial CEQA comments), this statement is unsupported and is an insufficient basis for refusing to consider the MNA alternative. For the same reason, the Responses' stated reliance on TCAO Response to

Comment numbers 1.1, 31.1 and 32.1 is unhelpful, as those responses dismiss MNA based primarily on the same erroneous conclusions regarding risk to beneficial uses at the Site.[2]

Response 32.1 concedes that sediment sampling conducted in July 2009 demonstrated lower COC concentrations than sampling conducted in 2001 and 2003. The Cleanup Team contends nonetheless that "[e]ach sediment sample is unique" so that it cannot be determined if natural attenuation is occurring based on the 2009 samples. Appendix D, at 32-5. But this concern would also apply to any post-dredge sampling, and cannot properly be used to dismiss the results of the 2009 testing, which may well be attributable to natural attenuation. Accepting the Cleanup Team's reasoning, one could never confirm that lower COC concentrations are the result of any remedial action taken.

Response 32.1 goes on to state that additional data is needed to confirm that natural attenuation is responsible for the lower COC concentrations observed in 2009. Rather than supporting rejection of MNA, however, this statement at best supports further sampling now, to better understand if natural attenuation is achieving the goals of the TCAO before accepting the significant environmental impacts and associated costs that will result from the proposed dredging. This is but one reason why the MNA alternative needs to be evaluated in the EIR, so the public and decision-makers can weigh the environmental costs and benefits of the proposed Project before it is too late.

Finally, the Responses state that NASSCO participated in working group meetings in fall 2010 where the range of alternatives to be evaluated was discussed. RTC, at 80. To the extent the Cleanup Team is of the position that working group discussions can take the place of analysis required to be included in the publicly disseminated EIR, NASSCO disagrees. Such a position finds no support in CEQA.

V. THE FEIR'S HYPOTHETICAL BASELINE VIOLATES CEQA

NASSCO's initial CEQA comments explained that the "baseline" in an EIR, against which the potential environmental impacts of a project are measured, must be premised on "existing physical conditions" and not hypothetical situations. *E.g.*, *Communities for a Better Env't v. South Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 316, 319, 321 n. 7 (2010); *Sunnyvale West Neighborhood Ass'n v. City of Sunnyvale*, 190 Cal. App. 4th 1351, 1373 (2010). Rather than adhering to this mandate, the DEIR assumes (without providing any factual or analytical support) that Site sediments present risks to aquatic life, aquatic-dependent wildlife and human health beneficial uses. These assumptions color the entire CEQA review, including the Project Objectives and the analysis of alternatives and mitigation measures, and go to the heart of the decision whether the proposed Project should be pursued notwithstanding its undisputed environmental impacts.

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[2] Moreover, the basis of any decision to exclude the MNA alternative from detailed consideration needs to be set forth in the text of the EIR, not in an appendix. *See, e.g., Santa Clarity Org. for Planning v. County of L.A.*, 106 Cal. App. 4th 715, 722-23 (2003).

In response, the FEIR states that the Water Code "demands that the San Diego Water Board make reasonably conservative and environmentally protective assumptions about exposure, consumption, and risk in determining potential effects to beneficial uses from the pollutants accumulated in the sediment." RTC, at 76. This response proves NASSCO's point: the FEIR has admittedly morphed the applicable regulatory mandate by using unrealistic assumptions from the DTR to establish the CEQA baseline. Because CEQA requires the baseline to reflect actual, existing conditions, the FEIR is invalid.

It is telling that the Responses make no attempt to argue that the baseline is compliant with CEQA, or that it reflects existing conditions. The only response is that the DTR allegedly complied with the Water Code, and therefore it was proper for the DEIR to adopt wholesale the DTR's conclusions. RTC, at 76. This is incorrect. Likewise, the Responses purport to rely on the extent and duration of the studies that underlie the DTR, while failing to muster any opposition to the point that the DTR's conclusions of harm to beneficial uses (derived from such studies) are predicated on hypothetical assumptions rather than existing conditions. RTC, at 97.

The Responses fail to address NASSCO's comment that information in the DTR and the Administrative Record shows no risk to aquatic-life, aquatic-dependent wildlife or human health beneficial uses. Instead, the Responses state that "the comment references the DTR . . . not the Draft PEIR" and thus "is not a comment on the environmental analysis contained in the Draft PEIR." RTC, at 99. But the FEIR cannot rely on the DTR as the only support for its baseline assumption that sediments at the Site present risk to beneficial uses, and then refuse to respond to comments challenging the DTR's conclusions on the grounds that the comments do not raise CEQA issues.

In other areas, the Responses refuse to acknowledge the dispositive role that hypothetical assumptions played in the DTR's conclusions of harm to beneficial uses. NASSCO's initial comments explained that the DTR's finding of risk to human health was based on the assumption that subsistence anglers fish at the Shipyard and would derive their entire daily protein source from fish caught at the shipyard every day for 70 years. NASSCO pointed out that this assumption is entirely unrealistic, since no fishing is allowed at the Shipyards, which maintain strict security requirements due to work for the U.S. Navy. Despite its prior reliance on the DTR to inform the DEIR's baseline; despite the fact that the DTR's finding of risk to human health unquestionably relies upon this assumption; and despite the fact that this assumption has no connection to existing conditions at the Site, the Responses state without explanation that "[t]he EIR does not rely on an assumption that fishing occurs at the shipyards." RTC, at 101. This is does not qualify as the "reasoned analysis" that CEQA requires. If the FEIR truly does not assume fishing takes place at the Shipyards, then it must explain the basis for its finding of risk to human health beneficial uses, or be revised and recirculated to state clearly that there are no such risks.

In addition, for example, the Responses concede that the DEIR shows that the DTR's assumption that a least tern would consume 100% of its diet from the Site is unrealistic, but fails to square this concession with the fact that the DTR's conclusion of risk to aquatic-dependent wildlife at the Site (relied on in the FEIR's baseline) depends on this very same assumption. RTC, at 100. The Responses also acknowledge that the DEIR relied upon the assumption that special status species forage exclusively at the Site, but fail to address or respond to NASSCO's point that this assumption is unrealistic, does not reflect existing conditions at the Site, and is not appropriate for use in setting the CEQA baseline. *Id.*

The Responses cross-reference TCAO Response to Comment numbers 24.1 and 28.1, which address the assumptions used in the aquatic-dependent and human health beneficial use impairment analyses, respectively. These TCAO responses confirm NASSCO's position that the assumptions used are not based on existing conditions. For example, Response 24.1 states "[t]he Cleanup Team's selection of an AUF of 1.0 in the risk analysis may overestimate the exposure of the receptors to Site contaminants" because it does not account for the receptor's actual foraging activities. Appendix D, at 24-5. Further, the Cleanup Team concedes that the Site contains active industrial uses that would discourage foraging by aquatic-dependent wildlife species, but speculates that in the future (sometime after the current lease expires in **2040**) the land use <u>may</u> change and the Site <u>could</u> be transformed into an attractive spot for wildlife feeding. *Id.* at 24-6. In other words, the baseline is premised on assumptions derived from speculated future uses of the Site that might or might not occur in 30 years. Finally, it also is worth noting that Response 24.1 concedes that the Cleanup Team deviated from EPA Guidance in order to use even more conservative assumptions than those recommended by EPA. *Id.* at 24-4 and 24-6. Whether or not this is appropriate in the context of the Water Code, it is impermissible under CEQA.

Similarly, Response 28.1 concedes the human health analysis relied on the "assumption that recreational and subsistence anglers catch and consume 100 percent of their seafood from the Shipyard Sediment Site," even though security restrictions admittedly preclude fishing at the Site. Appendix D, at 28-5.

Finally, the Responses state that elevated levels of pollutants were found in sediments at the Site and present risk of a condition of pollution and harm to beneficial uses. RTC, at 76. But the Responses do not address NASSCO's comment that the alleged harm to beneficial uses is based on extremely conservative and unrealistic assumptions, or NASSCO's request that the Cleanup Team use realistic assumptions—based on actual conditions—to inform the CEQA analysis. The Responses therefore are inadequate. *California Oak Found. v. City of Santa Clarita*, 133 Cal. App. 4th 1219, 1236-37 (2005) (CEQA response to comment invalid where it is "completely devoid of any direct discussion" of the comment submitted and "provided no analysis of the point.").

VI. CEQA PRECLUDES ADOPTION OF THE CONVAIR LAGOON ALTERNATIVE IN PLACE OF THE PROPOSED PROJECT

A. The Responses Confirm That Alternative 3 Is Environmentally Inferior To The Proposed Project, And Infeasible

At the outset, NASSCO is pleased with the Cleanup Team's statement that the Convair Lagoon Alternative ("Alternative 3") is not "the preferred course of action," and that Alternative 3 is environmentally inferior to the proposed Project. RTC, at 130 ("The Convair Lagoon Alternative was not identified as an Environmentally Superior Alternative to the proposed project and would require mitigation measures in addition to those required for the proposed project in multiple areas, most significantly including water quality and biological resources."); *id.* at 138 ("The San Diego Water Board Cleanup Team agrees with the comments regarding the loss of eelgrass, intertidal and open water habitat . . . the scale, geographic location, and status of the eelgrass beds as an existing mitigation site ***clearly*** classifies Alternative 3 as ***not*** Environmentally Superior to the proposed project.") (emphasis added). The Responses also state that the Cleanup Team "concurs" with expert-prepared comments submitted on behalf NASSCO indicating Alternative 3 has "increased impacts to aquatic habitat compared to the proposed project." RTC, at 162 (responding to Comment O-3-190); *see also* FEIR, Appendix C, Comment O-3-190) ("[o]ne obvious negative aspect of Alternative 3 is the dramatically greater loss of aquatic habitat . . . due to the destruction of existing habitat in the CDF area, which is diverse and of relatively high quality.").

The Responses also appear to acknowledge that Alternative 3 (without further analysis) should be treated as causing a significant impact to water quality, hazards and hazardous materials, and marine biological resources, given that the FEIR fails to analyze in sufficient detail the risk that contaminated sediment placed into the CDF will escape and recontaminate another portion of the Bay. Rather than refuting or directly addressing this comment, the Responses indicate Alternative 3 would "also" result in significant unavoidable impacts to air quality. RTC, at 135-36 (Comment O-3-121).

Given the additional significant and potentially significant impacts of Alternative 3, and its additional mitigation requirements (with their own resulting impacts and mitigation requirements),[3] the Regional Board should clearly and expressly identify Alternative 3 as environmentally inferior to the proposed Project, consistent with the above-referenced Responses and the text of the DEIR.

We also note that the Responses acknowledge the "substantial regulatory obstacles" and associated issues that could prevent implementation of Alternative 3; in particular, the requirement to achieve upland source control from Convair Lagoon (to the satisfaction of the State Board) before Alternative 3 could be implemented. RTC, at 177-78. Thus, the Cleanup Team determined that "[e]ven assuming that a CDF could be permitted at Convair Lagoon, ***it is unlikely that it could be permitted in time to meet the contemplated TCAO implementation schedule***." *Id.* (emphasis added).

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[3] NASSCO's comments pointed out that Alternative 3 required additional mitigation measures, the success of which was uncertain, and that these additional mitigation measures would cause significant environmental impacts of their own requiring even further mitigation, weighing heavily against adoption of Alternative 3. The Responses fail to respond to this comment directly, so it is assumed that the Cleanup Team agrees. RTC, at 140-41 (Comment O-3-135).

Because the Cleanup Team does not specifically respond to comments requesting information on the anticipated time it would take to achieve control (of a still uncertain)[4] source of contaminants to Convair Lagoon, (RTC, at 136), and then obtain all necessary permitting, the Regional Board must make clear that Alternative 3 is not feasible, and therefore cannot be adopted in place of the proposed Project. CEQA Guidelines § 15364 ("'feasible' means capable of being accomplished in a successful manner *within a reasonable period of time*, taking into account economic, environmental, legal, social, and technological factors.") (emphasis added); RTC, at 74 (asserting MNA is infeasible because it allegedly could not implement TCAO remediation goals "in a reasonable period of time."). Since the Cleanup Team asserts that MNA is infeasible because it cannot be accomplished in a reasonable period of time (a point NASSCO disputes), it cannot make a contrary determination as to Alternative 3.

Alternative 3 is infeasible for the additional reason that it is not clear at this point whether Alternative 3 *could* ultimately be permitted, regardless of the anticipated delays that would arise. RTC, at 136, 177-78.

Since Alternative 3 is not environmentally preferable to the Project (indeed, quite the opposite), and since it cannot feasibly accomplish Project Objectives in a reasonable time period, there is no basis for including a detailed analysis of the alternative in the DEIR. *See* CEQA Guidelines § 15126.6(a) ("EIR shall describe a range of reasonable alternatives . . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.").[5] In any event, it certainly would not be permissible under CEQA for the Regional Board to adopt Alternative 3 in place of the proposed Project.

B. The Responses Confirm Alternative 3 Could Not Be Adopted Without Additional CEQA Review

As noted in NASSCO's DEIR Comments, it is quite unusual that approximately 31% of the DEIR is devoted solely to Alternative 3. Given this extensive treatment, it seemed possible that the Cleanup Team viewed the analysis as sufficient to adopt Alternative 3 in lieu of the Project at the upcoming hearing. We understand from the Responses, however, that the Cleanup Team believes additional "site specific" CEQA review would be necessary prior to adopting Alternative 3 (or any other dredging alternative). RTC, at 130-31. Such review, by way of example but without limitation, would be required to evaluate whether the proposed CDF would adequately protect against contaminated sediment escaping from the CDF and recontaminating the Bay. RTC, at 128-29 (Response O-3-105, the "integrity of an engineered cap [proposed in

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[4] The Responses acknowledge that the source of contamination to Convair Lagoon is not known with certainty. RTC, at 177, 136-37.

[5] For reasons discussed below, any argument that the Port District's "special status" as a responsible agency warrants evaluation of its proposed alternative, even though the alternative is infeasible and causes more environmental harm than the proposed Project, is inconsistent with CEQA.

Alternative 2] . . . notably would also be subject to further environmental review . . .[n]o reported CEQA case has suggested or required a level of detail similar to that of the proposed project [for an alternative]…"); RTC, at 136-37 (referencing Response O-3-105 as also applying to the need for additional analysis of the integrity of Alternative 3's CDF).

In fact, the Responses' acknowledgment that additional CEQA review is needed to determine if the proposed CDF is sufficient to sequester the contaminated sediment serves as a concession that there is no substantial evidence supporting a contrary conclusion, and that the Regional Board therefore must treat Alternative 3 as causing a significant impact to water quality, hazards and hazardous materials, and marine biological resources. CEQA does not permit a lead agency to defer assessment of environmental impacts or the development of mitigation for same. *E.g., Communities for a Better Env't v. City of Richmond*, 184 Cal. App. 4th 70, 95 (2010).

The Responses likewise defer analysis regarding a host of issues pertaining to the feasibility of Alternative 3, confirming the Cleanup Team's apparent position that the FEIR has not conducted sufficient analysis to make a determination as to the feasibility of Alternative 3 and its numerous required mitigations. RTC, at 164-66 (Comments O-3-193-199).

Another key omission in the analysis of Alternative 3 is a description of the contemplated future use of the Convair Lagoon parcel, beyond serving as a CDF. The analysis is critical, because, as stated in Exponent's comments, the proposed design is unlikely to be capable of supporting any structure or redevelopment without significant risk of containment failure. CEQA requires environmental review at the earliest possible time, and an agency may not defer evaluation of impacts from foreseeable future activities simply because such activities have not formally been approved. *E.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 47 Cal. 3d 376, 394-95 (1988); *Vineyard Area Citizens*, 40 Cal. 4th at 431 (CEQA "is not satisfied by simply stating information will be provided in the future" and "[t]iering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis . . ."). Any contemplated uses of the Convair Lagoon parcel should be made clear as part of the analysis of Alternative 3, so that the environmental consequences of those uses can be assessed at this time.

C. The Port District Received Improper Special Treatment With Regard To Alternative 3

NASSCO's initial CEQA comments explained that it was improper for the Regional Board to allow the Port District to prepare its own alternative, with its own consultants, that comprised approximately 31% of the entire DEIR, particularly when the alternative would result in significant financial benefits for the Port District. The Responses do not provide the good faith, reasoned analysis required by CEQA.

First, the Responses state that the inclusion of detailed analysis on Alternative 3 was merely "intended to illuminate the potential effects of such an alternative and to inform the decision-makers." RTC, at 133. But that should be the purpose of each alternative considered, and provides no basis for affording special consideration to a single alternative championed by one of the many Designated Parties to the TCAO proceeding.

Second, the Responses state that the Port District is entitled to special treatment because it is a responsible agency with some discretionary authority over the Project, and is not a private entity like the Shipyards. RTC, at 174-75. The Responses further indicate that, as a responsible agency, the Port District was entitled to request a meeting to discuss the EIR under Public Resources Code section 21080.4(b). *Id.* But these arguments do not apply in the context of the proposed Project. Like the Shipyards and other Designated Parties, the Port District is a named party to the TCAO, and is asserted to have primary liability for the alleged sediment contamination at the Site. It thus stands on equal footing with the other parties, will be liable for its equitable portion of the cleanup costs, and should not be afforded any special "status" because it is also a responsible agency.

CEQA is an environmental protection statute, and its provisions regarding responsible agencies are intended to further that goal. No provision in CEQA supports a finding that an entity's status as a responsible agency allows the entity to use that status to pursue financial or other gain. The FEIR's treatment of Alternative 3 reflects bias in favor of the Port District.

D. Alternative 3 Conflicts With Port Master Plan Goals

NASSCO commented that Alternative 3 is inconsistent with Port Master Plan ("PMP") Goal X, requiring protection of the waters of the state, because Alternative 3 would eliminate 10 acres of water by converting it to upland habitat. In response, the Cleanup Team contends that eliminating water can still protect the "quality" of that water, and that Alternative 3 does not conflict with this PMP goal. RTC, at 139. This argument contradicts the plain terms of the PMP.

The Cleanup Team also argues that its interpretation is supported by the opinion of the Port District, as expressed in private consultations, and thus is supported by "expert opinion." But no evidence of any interpretation by the Port District is included in the record, and no deference is warranted on the basis of an interpretation that was advanced in private conversations. *See McPherson v. City of Manhattan Beach*, 78 Cal. App. 4th 1252, 1266 n.6 (2000). Moreover, deference is never warranted to an interpretation that conflicts with the plain terms of a document, which a reviewing court will interpret as a matter of law. *See id.*

Likewise, Alternative 3 conflicts with PMP Goal XI, which requires natural resources to be protected, preserved and enhanced, because Alternative 3 will destroy up to six acres of eelgrass at the Convair site, and destroy the benthic community, and thus cannot be said to "preserve" the same. RTC, at 139-40. The creation of eelgrass off-site will not preserve the eelgrass currently existing at the site.

For these reasons, Alternative 3 will cause a significant impact regarding consistency with local policies and ordinances, and the FEIR is deficient for failing to so state.

VII. RECIRCULATION IS REQUIRED

Because the FEIR and the Responses fail to address meaningfully the concerns raised in NASSCO's comments on the DEIR, NASSCO reiterates that the FEIR requires recirculation, for the reasons previously stated as well as those set forth herein.

VIII. THE FEIR'S ASSUMPTION THAT 15% OF THE DREDGED MATERIAL WILL BE "HAZARDOUS" IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE

Comments submitted by NASSCO and other parties noted the lack of support for the DEIR's assumption that 15% of the material proposed to be dredged will be "hazardous." The Responses indicate that this assumption was determined by Regional Board staff, and "[m]ore specific information is not necessary." RTC, at 77. But one of the key purposes of an EIR is to foster informed decision-making and public participation; this purpose is not satisfied by statements that staff reached a given conclusion but will not provide information used to support that conclusion. *See California Oak Foundation*, 133 Cal. App. 4th at 1237 ("[t]o facilitate CEQA's informational role, the EIR must contain facts and analysis, not just the agency's bare conclusions or opinions."). Thus, the Responses' admitted reliance on the bare conclusion of Regional Board staff is insufficient under CEQA, and also constitutes a failure to adequately respond to comments. *See People v. County of Kern*, 62 Cal. App. 3d 761, 770, 772 (1976) ("conclusionary statement unsupported by empirical or experimental data, scientific authorities, or explanatory information of any kind" does not constitute good faith, reasoned response to comment, particularly where the agency "fail[s] to identify in any manner the data available to it upon which it reaches its conclusion . . .").

Nor is it appropriate to defer an adequate analysis of the likely extent of contaminated sediment included in the remedial footprint, as suggested by the Responses. RTC, at 77 ("Future decisions and implementing actions following certification of the PEIR and approval of the project will be subject to subsequent environmental review pursuant to CEQA."). Given that this assumption underlies all of the environmental impact areas assessed for the Project and the dredging alternatives, it demands thorough analysis at this time.

IX. THE CUMULATIVE IMPACTS ANALYSIS FAILS ADEQUATELY TO EVALUATE REASONABLY ANTICIPATED FUTURE DREDGING PROJECTS

NASSCO's comments on the DEIR noted that the cumulative impacts analysis does not address the potential impacts of the Project when considered cumulatively with other reasonably anticipated future dredging projects. Although the DEIR estimates that 245,000 cubic yards of sediment is dredged annually from San Diego Bay, the Responses state that no specific information regarding any future dredging projects could be obtained. *E.g.*, RTC, at 117 ("it is difficult or impossible to predict the timing that various areas within the Bay will require dredging."). The Responses also state, however, that permitting for dredging occurs after applications have been received, and that applications for dredging approvals and permits are available on the Regional Board's website. RTC, at 119. Based on this response, this information should have been obtained and included in the FEIR, in order to provide an accurate forecast for the cumulative impacts analysis.

The Responses go on to state that future dredging was estimated based on historical records, and that this estimate was used to analyze cumulative impacts. RTC, at 116. But this is incorrect; the FEIR does not analyze the proposed Project's impacts when considered cumulatively with the expected impacts of other dredging projects. No discussion of the expected impacts from other dredging projects is included. Accordingly, the cumulative impacts analysis is deficient.

In response to NASSCO's request for information regarding whether other dredging projects are subject to CEQA review, the Responses state that "CEQA review has been required for the referenced previous dredging projects that required issuance of a Certification of Water Quality or Waste Discharge Requirements." RTC, at 118. But this statement is unhelpful because no previous dredging projects are specifically referenced.

X. THE ANALYSIS OF THE "NO PROJECT" ALTERNATIVE IS FLAWED

The DEIR's conclusion that the "no project" alternative presents risk to aquatic life, aquatic-dependent wildlife and human health beneficial uses, and would perpetuate a "public nuisance" at the Site, is predicated entirely on the DEIR's hypothetical baseline, which admittedly was derived from the analysis in the DTR (using unrealistic assumptions) and does not reflect actual, existing conditions at the Site. RTC, at 126-27. For the reasons explained above, CEQA does not permit use of a hypothetical baseline, and the decision to do so invalidates the FEIR, including these statements regarding the "no project" alternative.

XI. THE ANALYSIS OF ALTERNATIVES 2 AND 4 IS FLAWED

With regard to the confined aquatic disposal ("CAD") facility proposed in Alternative 2, NASSCO commented that the DEIR fails to provide sufficient analysis to determine whether or not the CAD would maintain integrity and prevent contaminated sediments from escaping, which is further complicated by the DEIR's failure to identify any proposed locations for the CAD, precluding assessment of whether the alternative is feasible. RTC, at 127-29. The exact same concerns apply with respect to the CDF contemplated by Alternative 4. RTC, at 131-32.

The Responses state that the requested level of detail is not required at this time (because these are only alternatives), and that further "site specific" environmental review would be required under CEQA before either approach could be approved. Given this concession, the FEIR should treat each alternative as causing significant impacts to marine biological resources, hydrology and water quality (and any other areas affected by a breach of the CAD/CDF), and also treat each alternative as environmentally inferior to the proposed Project. Neither alternative may be approved now, given these additional significant impacts relative to the proposed Project. In addition, approval of the alternatives at this time is precluded because assessment of potentially significant environmental impacts and associated mitigation requirements may not be deferred. *E.g., Communities for a Better Env't v. City of Richmond*, 184 Cal. App. 4th 70, 95 (2010). It is also difficult if not impossible to assess the feasibility of a proposed CDF/CAD without identifying the proposed location of same.

It is noteworthy that the Responses do not squarely address the substantially different level of treatment afforded Alternative 3 as opposed to Alternatives 2 and 4. If, as the Responses contend, the robust description of Alternative 3 was needed "to illuminate the potential effects of such an alternative and to inform the decision-makers," (RTC, at 136), an explanation should also be provided as to whether or not the substantially less-detailed analysis of Alternatives 2 and 4 was sufficient for that purpose.

XII. THE PROJECT IS CATEGORICALLY EXEMPT FROM CEQA REVIEW

NASSCO's initial CEQA comments detailed the reasons why NASSCO believes the Project is categorically exempt from CEQA and no "unusual circumstances" apply to overcome the exemption, inasmuch as the proposed dredging of 143,000 cubic yards admittedly "falls within the historic ranges for the yearly overall volume of dredging activity in San Diego Bay." DEIR, at 4-2 (annual average of 245,000 cubic yards of sediment is dredged from the Bay). The Responses indicate that the lead agency has discretion to determine whether or not the Project is categorically exempt, which is not in dispute. RTC, at 145. But the lead agency's decision must be supported by substantial evidence in the administrative record. For the reasons explained in NASSCO's DEIR comments, no substantial evidence exists to support a finding of unusual circumstances here.

The Responses also indicate that the Regional Board may distinguish between maintenance and environmental dredging, (RTC, at 147), but provide no analysis of the extent to which the annual sediment dredging figures provided in the DEIR involve maintenance versus environmental dredging, or the extent to which (or reasons why) one type of dredging requires environmental review while the other does not. To the contrary, the Cleanup Team elected not to provide the records of annual dredging in San Diego Bay between 1994-2005, relied upon in the DEIR, in response to a direct request by NASSCO. Instead, the Cleanup Team stated that NASSCO should submit a Public Records Act request and then file a motion to have the documents admitted into the TCAO proceeding. CEQA's informational purpose is not fulfilled when highly relevant information is not included in the EIR or disclosed in response to comments, and the burden is shifted to the public to submit Public Records Act requests to obtain same.

Thank you for your consideration of these comments.

Very truly yours,

Jeffrey P. Carlin
of LATHAM & WATKINS LLP

cc: Frank Melbourn and Catherine Hagan, on behalf of the Advisory Team
Designated Parties (per attached proof of service)

PROOF OF SERVICE

I am employed in the County of San Diego, State of California. I am over the age of 18 years and not a party to this action. My business address is Latham & Watkins LLP, 600 West Broadway, Suite 1800, San Diego, CA 92101-3375.

On **October 19, 2011**, I served the following document described as:

NASSCO'S COMMENTS ON THE PROPOSED FINAL ENVIRONMENTAL IMPACT REPORT FOR THE SHIPYARD SEDIMENT REMEDIATION PROJECT (SCH #2009111098)

by serving a true copy of the above-described document in the following manner:

BY ELECTRONIC MAIL

Upon written agreement by the parties, the above-described document was transmitted via electronic mail to the parties noted below on **October 19, 2011**.

BY HAND DELIVERY

I am familiar with the office practice of Latham & Watkins LLP for collecting and processing documents for hand delivery by a messenger courier service or a registered process server. Under that practice, documents are deposited to the Latham & Watkins LLP personnel responsible for dispatching a messenger courier service or registered process server for the delivery of documents by hand in accordance with the instructions provided to the messenger courier service or registered process server; such documents are delivered to a messenger courier service or registered process server on that same day in the ordinary course of business. I caused a sealed envelope or package containing the above-described document and addressed as set forth below in accordance with the office practice of Latham & Watkins LLP for collecting and processing documents for hand delivery by a messenger courier service or a registered process server.

Frank Melbourn Catherine Hagan California Regional Water Quality Control Board, San Diego Region 9174 Sky Park Court, Suite 100 San Diego, CA 92123-4340 fmelbourn@waterboards.ca.gov chagan@waterboards.ca.gov Telephone: (858) 467-2958 Fax: (858) 571-6972

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I declare that I am employed in the office of a member of the Bar of, or permitted to practice before, this Court at whose direction the service was made and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on **October 19, 2011**, at San Diego, California.

Andrea Rasco

Certification of Authenticity of Electronic Submittal

I, Jeffrey P. Carlin, declare:

I am an associate at Latham & Watkins LLP, counsel of record for National Steel and Shipbuilding Company ("NASSCO") in the Matter of Tentative Cleanup and Abatement Order R9-2011-0001 before the San Diego Regional Water Quality Control Board ("Water Board"). I am licensed to practice law in the State of California and make this declaration as an authorized representative for NASSCO. I declare under penalty of perjury under the laws of the State of California that the electronic version of NASSCO's Comments on the Proposed Final Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH #2009111098), submitted to the "Water Board" and served on the Designated Parties by e-mail on October 19, 2011, is a true and accurate copy of the submitted signed original. Executed this 19th day of October 2011, in San Diego, California.

Jeffrey P. Carlin

SD\806543.7

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October 19, 2011

VIA EMAIL AND HAND DELIVERY

Mr. Vicente Rodriguez
California Regional Water Quality Control Board
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Re: NASSCO's Comments on the Final Environmental Impact Report for the Shipyard Sediment Remediation Project (SCH # 2009111098)

Dear Mr. Rodriguez:

Designated Party National Steel and Shipbuilding Company ("NASSCO") submits the enclosed comments regarding the Final Environmental Impact Report for the Shipyard Sediment Remediation Project ("Project"), State Clearing House Number 2009111098, publicly released by the California Regional Water Quality Control Board, San Diego Region on September 15, 2011. The enclosed comments were prepared by Michael Whelan and David Templeton of Anchor QEA, and supplement the comment letter prepared by my office that is being submitted concurrently.

Very truly yours,

Jeffrey P. Carlin
of LATHAM & WATKINS LLP

cc: Frank Melbourn and Catherine Hagan, on behalf of the Advisory Team
Designated Parties (per attached proof of service)

SD\808484.1

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MEMORANDUM

To:	San Diego Regional Water Quality Control Board	**Date:**	October 18, 2011
From:	David Templeton - Anchor QEA, L.P. Michael Whelan, P.E. - Anchor QEA, L.P.		
Re:	Comments on Mitigation Measures Described in September 2011 Final Environmental Impact Report, San Diego Shipyards Sediment Cleanup Project		

INTRODUCTION

This memorandum analyzes Mitigation Measures included in the San Diego Shipyard Project's Final Environmental Impact Report (Final EIR), dated June 16, and its' accompanying Mitigation Monitoring and Reporting Program (MMRP; Section 7 of the Draft EIR). The majority of the mitigation measures described in the MMRP are typical for environmental sediment cleanup projects, including such regional examples as the 2005-2006 cleanup of Campbell Shipyard and cleanup of the Rhine Channel in Newport Beach (ongoing). However, a number of the mitigation measures, as described in the MMRP, are atypical and unnecessary to achieve the desired level of mitigation because they are unnecessarily prescriptive and/or significantly increase construction costs. Based on our evaluation of potential cost impacts, if imposed in combination, the mitigation measures described in the MMRP that we consider atypical or unnecessary could add, in our opinion, approximately $9.6 to $13. 2 million to the total project costs for the San Diego Shipyard Cleanup Project.

Mitigation practices that decrease the contractor's productivity while failing to increase environmental protectiveness, would be considered undesirable and unnecessary. In the following sections, we discuss a series of selected mitigation measures for which we believe MMRP revisions would result in a more implementable (and cost-effective) project without sacrificing environmental requirements. We recommend that the atypical and unnecessary Mitigation Measures be revised to avoid this undesirable outcome.

MITIGATION ELEMENTS RELATED TO HYDROLOGY, WATER, AND AIR QUALITY

Mitigation Measure 4.2.1: Automated Turbidity Monitoring

This mitigation measure requires that "automatic systems" be used to monitor turbidity outside of the construction area. While automatic monitoring of dredging position and progress is a standard and beneficial industry practice (and a key monitoring element of the Section 401 WQC), the automated monitoring of *turbidity* is not, aside from a few isolated instances known nationally. In fact, requiring automated monitoring could have significant adverse effects on operations owing to the difficulty of discerning meaningful turbidity results from ambient conditions and statistical "noise."

In our experience, a regular, continuous, and well-documented manual monitoring program will be more than sufficient to ensure that water quality requirements are met throughout the project duration.

Turbidity is a complex phenomenon (based on refraction) and subject to a host of environmental variables as well as to the ever-changing conditions of construction. Successful monitoring of turbidity effects, and interpretation of the monitoring data, requires the judgment of a skilled operating team so that external variables can be properly taken into account. Automating the monitoring is likely to lead to significant uncertainty and false positives (unwarranted indications of exceedances) resulting from external factors such as currents, weather, and vessel traffic; and a frequent need to refine or clarify what the automatic monitors are indicating, which is likely to lead to confusion and loss of time on the project. We estimated that this translates to an additional $700,000 to $900,000.

Potential slowdowns to the dredging process, even if limited in duration, will result in considerable extra costs, because dredging effectiveness is primarily driven by production rate. Working in these active shipyards is already subject to a number of scheduling challenges. Alternatively, implementation of a water quality monitoring program that employs the manual collection of turbidity values allows for appropriate adjustments for tidal exchanges, wind, and vessel traffic. This flexibility will allow the contractor to adjust dredging and barge-loading methodologies (e.g., speed and bucket type) based on visual assessment at both the early warning and compliance distances from the construction area. In turn, manual collection of water quality results in better production rates and lower costs while providing better environmental protectiveness.

Mitigation Measure 4.2.2: Dredging Best Management Practices (BMPs)

This mitigation measure lists a number of best management practices (BMPs) intended to meet water quality objectives during the dredging work. Some of these BMPs are standard and would customarily be included in the project specifications, such as prohibitions against stockpiling, spillage, and splashing; bucket closure; and debris grid management. Other listed BMPs, however, do not represent standard practice. While there have been limited instances known nationally where they have been applied to highly toxic cleanup events, at this project they will add significantly to construction costs (and potentially slowing down the rate of progress) without a commensurate gain in environmental protectiveness. Examples of such BMPs can increase costs by $700,000 to $900,000 and include:

- **Double silt curtain enclosure.** Although double silt curtains were used for the Campbell Shipyard project in San Diego, they are not a standard practice; single silt curtains, for instance, have been required and successfully used for recent and ongoing sediment cleanup projects in Newport Beach and the Port of Long Beach. Employing double silt curtains adds considerable cost and management time without any demonstrated environmental benefit. We estimate that this measure could add $250,000 to $500,000 to project costs, owing not only to the increased cost of material purchase but also to the greater effort required to manage and move the double silt curtain. In our experience, a single and continuous length of silt curtain, fully enclosing the point of dredging, and combined with other water quality management BMPs, is more than sufficient to ensure compliance with water quality requirements.

- **Specialized bucket additions and controls (e.g., closure switches and Clam Vision TM).** Although contractor control over their dredging operations and controls is an essential part of a successful project, stipulating these specific controls could add unnecessary cost due to their purchase, installation, upkeep, calibration, and management. At worst, they could pose the risk of complicating the contractor's work by providing ambiguous or misleading data owing to the many variables that are in effect during dredging. We envision this measure adding as much as $250,000 to $500,000 to project costs. Alternatively, a practical water quality control and monitoring plan (as was used successfully for the Campbell Shipyard project in 2005-2006) will ensure compliance with the Section 401 WQC and allow the contractor to use the right equipment for the conditions while keeping production efficient.

Mitigation Measure 4.2.3: Complete Silt Curtain Enclosure

This mitigation measure stipulates that double silt curtains (previously discussed) are to "fully encircle the dredging equipment and the scow barge being loaded with sediment." Although a silt curtain enclosure around the dredging barge is a typical requirement, including the scow barge in the enclosure would have a significant impact on operations. Each time the scow barge is loaded, it would have to wait within the silt curtain enclosure until water quality within the curtains can be documented as meeting water quality criteria and then for the curtain enclosure to be opened. This delay on the contractor's work efforts will increase dredging cycle times and, therefore, significantly slow down the necessary progress of the cleanup work. We also anticipate an increase to the dredging unit cost that could add as much as $1.5 to $2 million to project costs, with little to no resulting environmental benefit. With the appropriate controls on scow leakage and overflow, it would be unnecessary to require that the scows also be situated within the silt curtains.

Mitigation Measure 4.2.7: Permanent Cap under Piers

This mitigation measure anticipates a fundamentally different concept for the underpier remediation aspect of the project work, than was originally envisioned by the design team. While the MMRP may not explicitly require an "engineered cap", per se, any expectation that the layer be permanent and protected against erosion and material redistribution would result in the same design features as a fully engineered cap.

In our opinion, a cover layer of sand or a sand-gravel mixture would be an appropriate remedial approach to below pier areas, since it would significantly lessen the incidence of exposed contaminants, while augmenting the ongoing process of sedimentation. While the placed material would likely be subject to redistribution resulting from currents and propeller wash forces, the addition of clean material below the piers would still provide an inherent benefit that is commensurate with the remedial need.

Installing the cover to be a permanent feature that is fully protected against erosion will very likely require a surficial armoring layer, potentially comprised of a heavy-duty stone product, comprising a permanent surface letter that is immune to disturbance. This layer would in turn need to be separated from the underlying sand by an intervening “filter layer” of gravel, and potentially a layer of filter fabric. The resulting sequence of aggregate material layers could well need to be 5 to 7 feet thick, comprised of layers of sand, gravel, and rock.

Not only is such sediment cover a far more complex element to design and construct, it also raises the risk of imposing stresses on the foundations and soils that underlie the overwater marine structures. Clearly, this measure has tremendous impacts on the project’s cost and timeframe. We estimate that the cost impact would be as much as $5 to $7 million, which makes it the most costly of all the mitigation measures described in the MMRP, because the material and placement costs increase so substantially. Allowing for some degree of material redistribution in the cover layer, by de-emphasizing the concept of a permanently situated and monitored cap, would result in considerable improvements in constructability, site impacts, and cost - without sacrificing project cleanup goals.

Mitigation Measure 4.2.8: Hydraulic Placement of Sand

Hydraulic placement of sand cover material might in fact be a feasible and cost-effective option for some contractors, but including hydraulic placement as a project requirement will unnecessarily disrupt the ability of otherwise qualified contractors to submit competitively priced bids. Other feasible methods are also available for placement of sand and gravel materials below overwater structures, including long-reach conveyors and reticulated bucket arms. Rather than making hydraulic placement a project requirement, we recommend instead letting individual contractors determine whether they will use mechanical or hydraulic methods to place sand cover materials – in other words, approach the project requirements in much the same way as was done for the successful Campbell Shipyard project. Otherwise, the cost difference could be substantial, as much as $1.5 to $2 million for this relatively high-cost element of the project.

Mitigation Measure 4.6.15: Deodorizing Additives

The MMRP describes the application of a sanitizing solution (Simple Green and water mixed in a 10:1 ratio) as a potential means of controlling potential odors from sediment stockpiles. The method would slow down the dewatering and drying process, because water would be added to the sediment and would add weight to sediment loads being hauled off for disposal, while also possibly delaying the processing and disposal rate for dredged sediments. We believe that cost increases will range from $200,000 to $400,000. The subsequent Errata issued in September 2011 for this mitigation measure makes this requirement appropriately conditional based on “the extent to which odor issues arise with respect to particular portions of the dredged material”. We further recommend that the concept of Simple Green and water be stated as one possible means of dealing with odor issues, but that other similar techniques may be suggested by the Contractor based on the conditions encountered.

DAVID W. TEMPLETON

Principal

PROFESSIONAL HISTORY

Anchor QEA, Principal, 1998 to Present
Foster Wheeler, 1998 to 1999
Hart Crowser 1991 to 1998

EDUCATION

University of Washington, Management Program, School of Business Administration, 2001
Western Washington University, M.S., Environmental Chemistry, 1991
Western Washington University, B.S. Marine Biology/Chemistry, 1982

EXPERIENCE SUMMARY

David Templeton has more than 19 years of experience bringing complex sediment remedial investigation/feasibility study (RI/FS) projects with multiple objectives to successful completion through the careful coordination and management of a multidisciplinary team of environmental, engineering, and sediment management professionals. He has worked on sediment sites his entire career and is responsible for developing technically defensible effective strategies that blend habitat and permitting elements with practical site remediation solutions. In addition, he has extensive experience applying federal and state sediment criteria, such as Washington's Sediment Management Standards (SMS), to the characterization and remediation of contaminated sediments. He is also experienced with ecological and human-health risk management issues as they apply to contaminated sediment sites, including fingerprinting of polycyclic aromatic hydrocarbons (PAHs). He has researched the fate and migration of PAH contaminants and the behavior of organotins (e.g., tributyltin [TBT]) in the aquatic environment. As an instructor for the U.S. Army Corps of Engineers' Dredging Fundamentals course, Mr. Templeton is well versed in dredging issues. Mr. Templeton also conducts peer reviews for research on sediment chemistry proposed for publication in *Environmental Toxicology and Chemistry*. Mr. Templeton also provides expert testimony for litigation support and insurance matters.

REPRESENTATIVE PROJECT EXPERIENCE

Shipyards Sediment Remediation Design, San Diego, California

Mr. Templeton was retained by Southwest Marine (SWM) and National Steel and Shipbuilding Company (NASSCO) to assist with FS (supporting Exponent) and sediment remediation design for these two active shipyards. In response to the Regional Water Quality Control Board (RWQCB), activities included an evaluation of alternatives that considered various sediment cleanup levels, source control, technical feasibility, shipyard operations, and economic considerations to arrive at an achievable and implementable remediation scenario. The remediation scenario considered dredging, capping, and habitat enhancements. The FS was completed in late 2003 with design of the selected scenario immediately following. Anchor is also providing its services in helping SWM and NASSCO in allocation issues, as well as providing technical support for RWQCB negotiations.

Commencement Bay Nearshore/Tideflats Superfund Site - Middle Waterway Problem Area, Tacoma, Washington

Mr. Templeton was retained by a group of primary responsible parties (PRPs) to perform Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) pre-remedial and remedial design (PRD/RD) and construction services for this sediment problem area. Mr. Templeton serves as client manager and project manager. He serves as the project coordinator of record and has had involvement beginning with strategy development in response to the Record of Decision (ROD), negotiation of an Administrative Order on Consent (AOC) and Statement of Work (SOW), and preparation of preliminary cost estimates. The AOC became effective April 14, 1997, and key staff summarized existing data and prepared PRD/RD Work Plans. Anchor performed sediment and water quality sampling and analyses. To support design of the dredging plans and permitting requirements, a biological assessment (BA) was performed. This effort included an evaluation of how the dredging action will affect salmonid habitat. Specifically, we evaluated existing habitat, water quality impacts during dredging, various construction techniques, and habitat function (salmonids) to develop a dredge design that meets cleanup objectives, navigation requirements, expected 401 Water Quality Certification elements, the 404 process, and Endangered Species Act (ESA) consultation requirements. Based on these considerations and discussions with the permitting agencies, final design was completed in spring of 2003. Mr. Templeton also provided expert testimony for litigation support (third party issues) and insurance matters.

In addition, Anchor performed the construction management (CM) of the project. The project consisted of dredging and disposing of over 100,000 cy of contaminated sediment, placing 40,000 tons of cap/backfill material, installing a new bulkhead, demolishing 70,000 square feet of overwater structures, and enhancing shoreline fish habitat. The results of the project have been considered successful by the PRPs and regulatory agencies. Anchor won an award of merit from the Construction Management Association of America, Pacific Northwest Chapter for our CM work on the project.

Eddon Boatyard, Gig Harbor, Washington

In 2004, the residents of the City of Gig Harbor approved the $3.5 million Proposition No. 1 Land Acquisition and Development General Obligation Bond (Proposition No. 1) to preserve a portion of the historic waterfront known as the Eddon Boathouse property. After completing a review of environmental conditions, the City purchased the property in March 2005. Mr. Templeton was retained to direct a strategy for this property that will achieve closure under the Washington State Model Toxics Control Act (MTCA) and the SMS and develop the property into a City park.

8801 East Marginal Way Property, Duwamish River, Seattle, Washington

Mr. Templeton was retained to provide MTCA/SMS expertise to support a property transaction. Currently, Mr. Templeton is supporting the negotiation of a Washington State Department of

Ecology (Ecology) Agreed Order (AO) to address sediment issues adjacent to the property. He also provided expert testimony for litigation support (third party issues) and insurance matters.

Jorgensen Forge Corporation, Duwamish River, Seattle, Washington

Mr. Templeton was retained to provide MTCA/SMS and National Pollutant Discharge Elimination System (NPDES) expertise to support ongoing operations. Currently, Mr. Templeton is supporting the negotiation of an Ecology AO to perform an RI/FS that addresses source control and upland issues on the property. This work is integrated with work performed under an EPA AOC for RI activities to address adjacent sediments. Currently, a sediment removal order is being negotiated for FS activities, design, and implementation of a sediment remedial action. He also provided expert testimony for litigation support (third party issues) and insurance matters.

Duwamish Shipyard, Inc., Duwamish River, Seattle, Washington

As project manager, Mr. Templeton designed, developed, and negotiated a chemical and biological sediment monitoring program to meet NPDES requirements and to assess the shipyard's compliance with SMS. In addition, he managed the remediation of upland soil and groundwater to meet MTCA criteria. Currently, Mr. Templeton is evaluating existing information to support the development of an RI/FS for upland and sediments under an Ecology AO that will lead to an early action sediment remediation under the SMS (with EPA input).

Slip 3 Fox Avenue Facility, Duwamish River, Seattle, Washington

Mr. Templeton serves as project manager for all aspects of environmental operations on behalf of this property. Working all aspects of the property over the last 10 years, he has investigated sediment quality under the SMS, designed dredging and construction activities to meet Puget Sound Dredge Disposal Analysis (PSDDA) requirements, performed preliminary environmental assessments under MTCA to support property transfer. Currently, Mr. Templeton is evaluating existing information to support the development of an RI/FS that will lead to an early action sediment remediation. He also provided expert testimony for litigation support (third party issues) and insurance matters.

Foss Maritime, Tacoma, Washington

Mr. Templeton assists Foss Maritime with a number of aquatic parcels of which a majority are managed by DNR and involve issues associated with log booming and log rafting activities. DNR aquatic land lease terms are unclear as to how DNR should assess and address wood debris issues. By staying abreast of DNR interim guidance and working closely with Ecology site managers as they dedicated more resources to this issue, Mr. Templeton is central to working out site strategies that focus on practical lease termination strategies that meet the requirements of SMS. Sites include the West Hylebos Log Storage Area (Tacoma), Port Angeles, and Longview.

MICHAEL WHELAN, P.E.

Senior Managing Engineer

EDUCATION

B.S. Geological Engineering, Colorado School of Mines, 1990
M.S. Environmental Engineering, Georgia Institute of Technology, 1992
M.S. Geotechnical Engineering, Massachusetts Institute of Technology, 1995

PROFESSIONAL REGISTRATIONS AND MEMBERSHIPS

Professional Engineer, licensed in Washington and California
Member, Western Dredging Association (WEDA)
Member, American Society of Civil Engineers (ASCE)

PROFESSIONAL EXPERIENCE

Michael Whelan's 15 years of experience as a civil, environmental, and geotechnical engineer includes management, design, and oversight of numerous sediment remediation, restoration, monitoring, and development projects for both offshore and upland sites around the United States. His background in environmental engineering, coupled with his extensive experience with civil and sediment design, allows him to develop cost-effective and readily implemented design and construction approaches for remediation projects involving waterfront cleanup and construction, stabilization of landslide areas and offshore slopes, and design of nearshore and offshore waste containment facilities and upland landfill caps. Mr. Whelan specializes in managing sediment characterization studies, negotiation of cleanup requirements with regulatory agencies, comparative evaluations of design alternatives, creation of plans, specifications, and cost estimates, assistance with bidding and contractor selection, and construction oversight and management. His technical expertise in engineering and design includes management of sediment remedial actions (dredging, excavations, capping, and confined disposal facilities; field exploration and laboratory testing programs; and geotechnical analyses of slope stability and seismic effects on marine structures and slopes.

REPRESENTATIVE PROJECT EXPERIENCE

Port Hueneme Maintenance Dredging and CAD Site Construction, Port Hueneme, California

Mr. Whelan is the lead civil and environmental engineer for this project involving development of a multi-user confined aquatic disposal (CAD) site for contaminated sediments within Port Hueneme. The project consists of three distinct phases: excavating a large pit in the middle of the Harbor and placing the clean sand onto an adjacent beach; dredging contaminated sediment from the Federal Channel, Oxnard Harbor District docks and Navy docks and placing the material into the CAD cell; constructing a clean cap of sand on top of the contaminated layer to seal the cell and prevent chemical migration. Specific design elements of this project include dredging design, resistance to erosion, modeling of chemical breakthrough and water quality impacts, and consolidation of materials placed within the CAD.

Newport Harbor/Rhine Channel Sediment Investigation and Alternatives Evaluation, Newport Beach, California

Mr. Whelan is Anchor QEA's lead engineer for the engineering evaluation and development of conceptual cost estimates for various remedial alternatives of contaminated sediment in Newport Harbor and the Rhine Channel, a waterway area that is heavily used by public, business, and industrial interests. Specific responsibilities included determining overall volume of impacted sediments, developing cost-effective and technically feasible methods for removing or managing the sediments, and reviewing structural conditions of existing seawalls and facilities in the channel. To date, Mr. Whelan's engineering findings and conclusions have been documented in a Draft Feasibility Study and Alternatives Evaluation.

Hylebos Waterway Sediment Remediation and Confined Disposal Facility Design, Tacoma, Washington

Mr. Whelan managed engineering analysis and preparation of plans and specifications for waterway remediation, involving open-water dredging and rehabilitation of adjacent slopes below marginal wharf structures. Designed CDF for dredged sediments that were unsuitable for open-water disposal. Responsible for ensuring consistency of design and schedule with other parties slated to contribute dredged sediment to the designed CDF.

Thea Foss Waterway Sediment Remediation and Disposal Facility, Tacoma, Washington

Mr. Whelan performed and supervised geotechnical and civil engineering analyses of waterway dredging and capping, including design of two waterway disposal sites: excavation and infilling of a Confined Aquatic Disposal (CAD) site, and infilling of a nearby waterway with dredged sediment to form a Confined Disposal Facility (CDF). Analyses included the effects of dredging on adjacent slopes and structures, and consolidation of placed sediment within the CDF. Also designed required habitat improvements, including excavation of a hog-fuel storage area to re-established a former wetland.

Eagle Harbor Remediation and Nearshore Fill Construction, Bainbridge Island, Washington

Mr. Whelan was responsible for engineering design, construction observation, and post-construction for this sediment remediation project, which involved dredging, on-site containment in a constructed nearshore containment facility, and soil stabilization for pavement section installation.

PROOF OF SERVICE

I am employed in the County of San Diego, State of California. I am over the age of 18 years and not a party to this action. My business address is Latham & Watkins LLP, 600 West Broadway, Suite 1800, San Diego, CA 92101-3375.

On **October 19, 2011**, I served the following document described as:

LETTER TRANSMITTING COMMENTS ON MITIGATION MEASURES PREPARED BY ANCHOR QEA, L.P.

by serving a true copy of the above-described document in the following manner:

BY ELECTRONIC MAIL

Upon written agreement by the parties, the above-described document was transmitted via electronic mail to the parties noted below on **October 19, 2011**.

BY HAND DELIVERY

I am familiar with the office practice of Latham & Watkins LLP for collecting and processing documents for hand delivery by a messenger courier service or a registered process server. Under that practice, documents are deposited to the Latham & Watkins LLP personnel responsible for dispatching a messenger courier service or registered process server for the delivery of documents by hand in accordance with the instructions provided to the messenger courier service or registered process server; such documents are delivered to a messenger courier service or registered process server on that same day in the ordinary course of business. I caused a sealed envelope or package containing the above-described document and addressed as set forth below in accordance with the office practice of Latham & Watkins LLP for collecting and processing documents for hand delivery by a messenger courier service or a registered process server.

Frank Melbourn
Catherine Hagan
California Regional Water Quality Control Board, San Diego Region
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San Diego, CA 92123-4340
fmelbourn@waterboards.ca.gov
chagan@waterboards.ca.gov
Telephone: (858) 467-2958
Fax: (858) 571-6972

BY ELECTRONIC MAIL

Upon written agreement by the parties, the above-described document was transmitted via electronic mail to the parties noted below on **October 19, 2011**.

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Sarah R. Brite Evans Schwartz Semerdjian Ballard & Cauley 101 West Broadway, Suite 810 San Diego, CA 92101 sarah@ssbclaw.com Telephone (619) 236-8821 Fax: (619) 236-8827	Roslyn Tobe Senior Environmental Litigation Attorney U.S. Navy 720 Kennon Street, #36, Room 233 Washington Navy Yard, DC 20374-5013 roslyn.tobe@navy.mil Telephone: (202) 685-7026 Fax: (202) 685-7036

C. Scott Spear U.S. Department of Justice, Environmental Defense Section P.O. Box 23986 Washington, D.C. 20026-3986 scott.spear@usdoj.gov Telephone: (202) 305-1593 Fax: (202) 514-8865	Suzanne Varco Opper & Varco LLP 225 Broadway, Suite 1900 San Diego, California 92101 svarco@envirolawyer.com

I declare that I am employed in the office of a member of the Bar of, or permitted to practice before, this Court at whose direction the service was made and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on **October 19, 2011**, at San Diego, California.

Andrea Rasco

Certification of Authenticity of Electronic Submittal

I, Jeffrey P. Carlin, declare:

I am an associate at Latham & Watkins LLP, counsel of record for National Steel and Shipbuilding Company ("NASSCO") in the Matter of Tentative Cleanup and Abatement Order R9-2011-0001 before the San Diego Regional Water Quality Control Board ("Water Board"). I am licensed to practice law in the State of California and make this declaration as an authorized representative for NASSCO. I declare under penalty of perjury under the laws of the State of California that the electronic version of Letter Transmitting Comments on Mitigation Measures Prepared by Anchor QEA, L.P., submitted to the "Water Board" and served on the Designated Parties by e-mail on October 19, 2011, is a true and accurate copy of the submitted signed original. Executed this 19th day of October 2011, in San Diego, California.

Jeffrey P. Carlin

Brown & Winters
Attorneys at Law

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Telephone: (760) 633-4485
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Scott E. Patterson, Esq.
Extension 104
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October 19, 2011

VIA E-MAIL & HAND DELIVERY

Catherine Hagan
Frank T. Melbourn
Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Re: **In the Matter of Tentative Cleanup and Abatement Order No. R9-2011-0001; Comments on the Shipyard Sediment Remediation Project Draft EIR Response to Port Comments found in the Proposed Final Environmental Impact Report (Proposed FEIR)**

Dear Mr. Melbourn and Ms. Hagan:

The San Diego Unified Port District (District) has reviewed the above referenced Proposed Final EIR (Proposed FEIR) and provides this response to the comments that the San Diego Regional Water Quality Control Board (San Diego Water Board) [California Environmental Quality Act (CEQA) lead agency] and the Cleanup Team (CUT) prepared in response to the District's August 1, 2011 comments on the Draft PEIR. The District's response to the CUT's comments follows.

There is a fundamental shortcoming in the way the Proposed FEIR defines the proposed project as it pertains to the dewatering sites and the environmental impacts associated with this part of the proposed project. As indicated on page 2-4 in the Draft PEIR, a Programmatic EIR is prepared for a series of actions that can be characterized as one large project and are related:

- Geographically;
- As logical parts in the chain of contemplated events;
- In connection with issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program; or
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects that can be mitigated in similar ways.

However, the proposed project dewatering areas are described as ***potential*** dewatering areas. This results in a couple of shortcomings. First, the dewatering sites do not legitimately constitute logical parts of the project. They are instead ***potential*** dewatering sites that may or may not be used in implementing the project. As the District indicated in its previous comment letter on the Draft PEIR, dated August 1, 2011, it is more appropriate for the feasibility of these sites to be considered prior to the San Diego Water Board's preparation of the Draft PEIR. It is very possible that none of these dewatering sites will be feasible based on the issues raised by the District in their comments A-2-2 through A-2-14, and as a result the environmental impacts associated with this part of the project are unknown and therefore not adequately addressed in the Proposed FEIR. In other words, the environmental analysis of the proposed project took place too early in the planning process, before the issues were ripe for a decision. (*In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1170).

The second issue pertains to the selection of project alternatives that were addressed in the Draft PEIR. Although one of the project alternatives involved minimal landside dewatering (Alternative 2: Confined Aquatic Disposal Site), an alternative that ***completely*** avoids landside dewatering would be appropriate to include in Chapter 5.0 Alternatives in the Proposed FEIR. This alternative would avoid the issues raised by the District in its comments A-2-2, through A-2-14 with respect to the feasibility of the landside dewatering sites, which as indicated above, none of which may be feasible. The District's comment A-2-3 specifically requests that the Proposed FEIR should analyze a project alternative that would result in "less space intensive sediment dewatering systems, such as centrifuges and /or reagent dehydration of sediments, which could be used on barges and would allow for sediment to be directly off-loaded from barges to trucks for disposal." The CUT did not include this analysis as requested, and as a result the Proposed FEIR is deficient in this regard.

District's comments A-2-10 through A-2-14 pertain to the projects impacts on operations associated with the Tenth Avenue Marine Terminal (TAMT) and the National City Marine Terminal (NCMT). The CUT's responses inadequate because the land use and rail transportation impacts described in these comments, which are associated with the operations of TAMT and the NCMT, should be, and were not, addressed in the Proposed Final EIR.

In conclusion, the District considers the CUT's responses to the District comments listed above to be inadequate for the reasons described. As a result, the Proposed Final EIR in its current state is incomplete and should not be certified.

Very truly ~~yours~~,

Scott E. Patterson

SEP/jd

cc: All Counsel & Designated Parties (via electronic mail only)
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