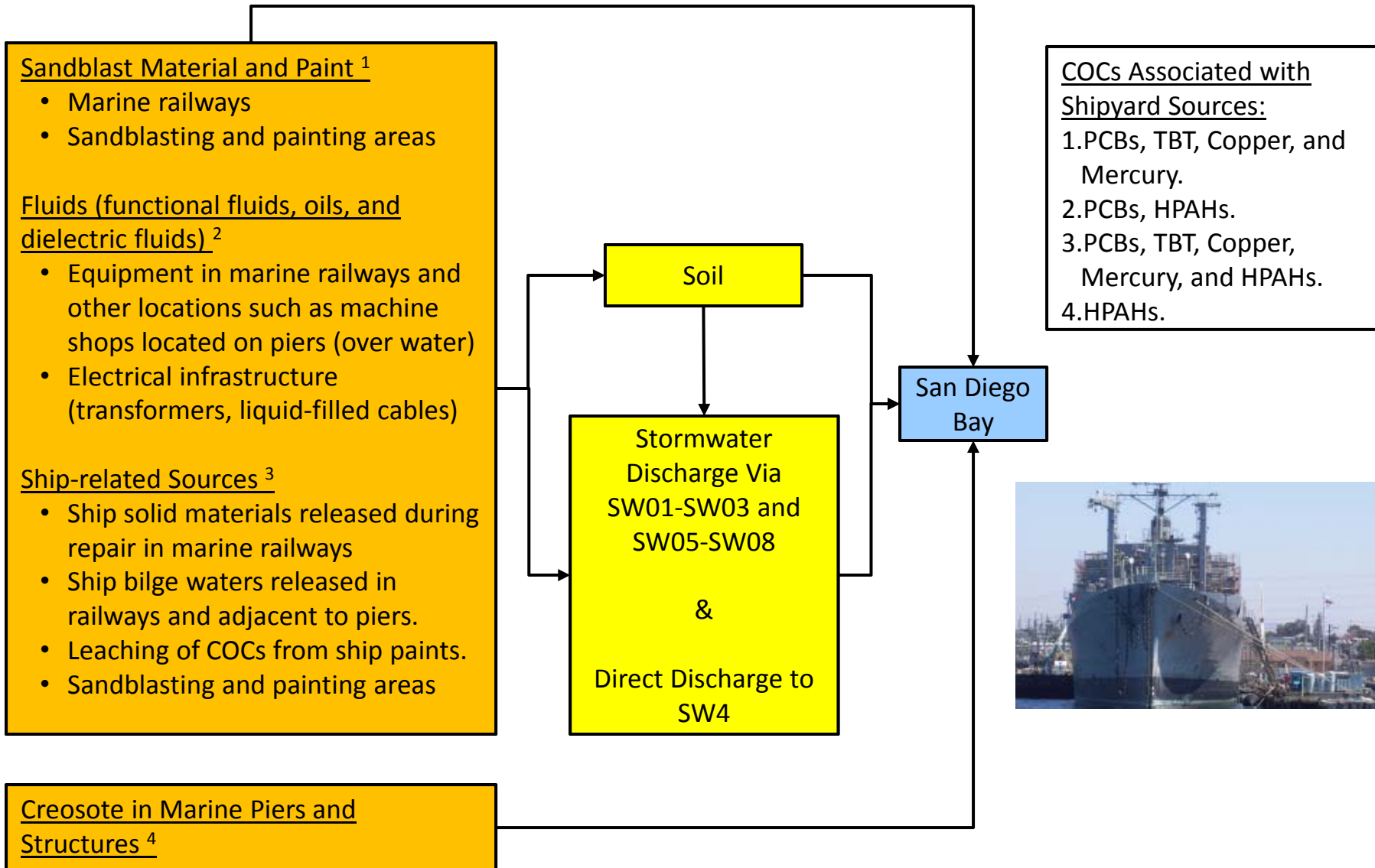


Demonstrative Exhibits Summary

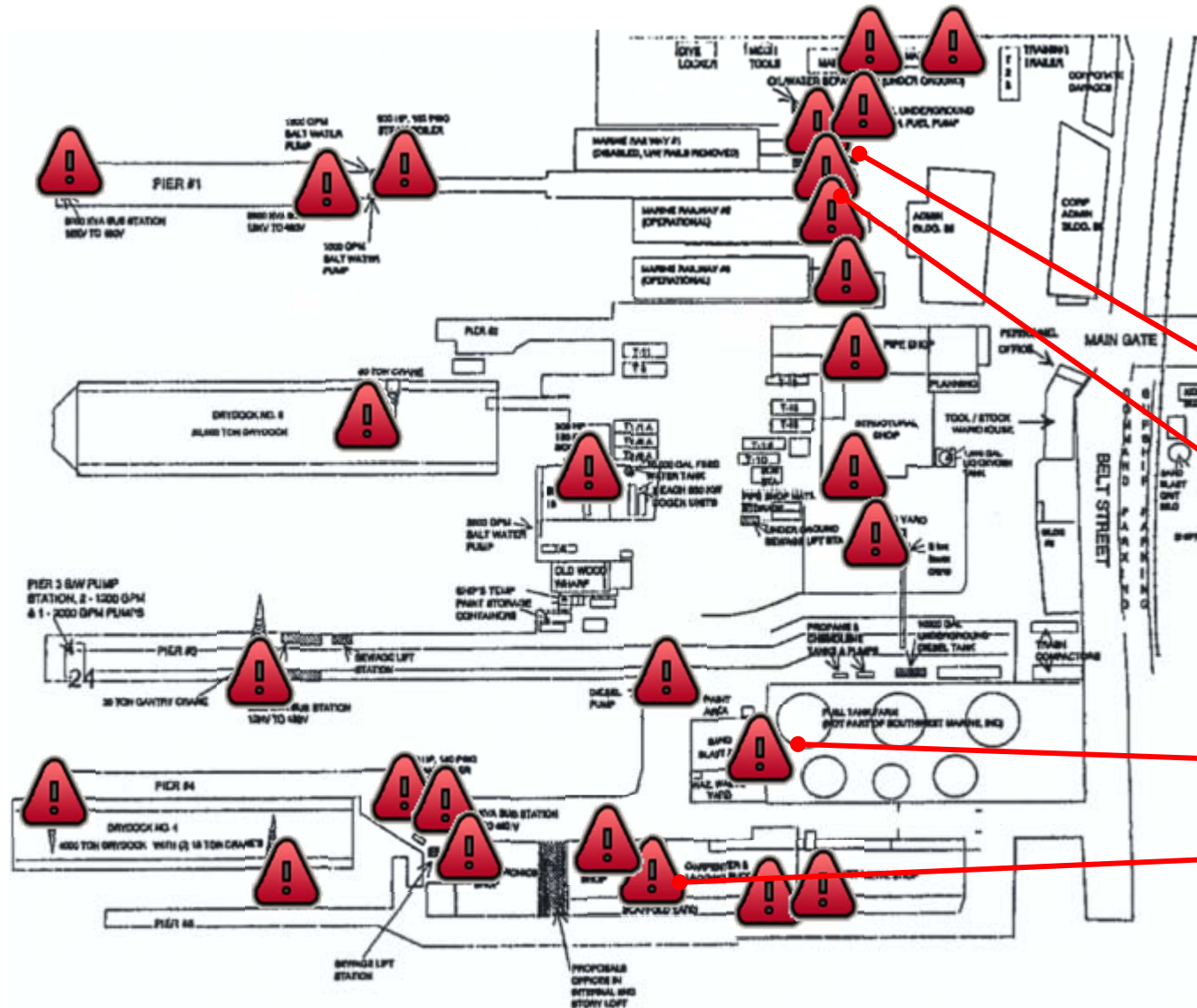
Evidence	Shipyard	SDG&E
COC Use	<input checked="" type="checkbox"/> Substantial documented evidence	<input checked="" type="checkbox"/> Substantial documented evidence
Environmental Pathways	Direct releases to/directly adjacent to Bay <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Paint and sandblast material <input checked="" type="checkbox"/> Runoff <input checked="" type="checkbox"/> Waste disposal <input checked="" type="checkbox"/> Direct releases 	Direct releases to Bay <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Cooling water Indirect/incomplete pathways <ul style="list-style-type: none"> <input type="checkbox"/> Tidelands ponds <input type="checkbox"/> CB-1 <input type="checkbox"/> Substation runoff to Sampson St.
High Magnitude of COC Mass Releases	<input checked="" type="checkbox"/> Substantial evidence	<input type="checkbox"/> No evidence
Corresponding Site-specific Chemistry Data	Strong evidence indicating shipyard source <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Concentrations in source areas (shipways) higher than sediment <input checked="" type="checkbox"/> Logical concentration gradient leading to source areas <input checked="" type="checkbox"/> Chemical fingerprint match 	Strong evidence indicating <u>absence of source</u> <ul style="list-style-type: none"> <input type="checkbox"/> Concentrations in source areas and along transport pathways lower than sediment <input type="checkbox"/> Lack of logical concentration gradient leading to source areas <input type="checkbox"/> Chemical fingerprint mis-match

= Evidence supporting condition of pollution or nuisance

Shipyard COC Sources



Shipyards COC Sources



Active primary sources associated with shipyard features:



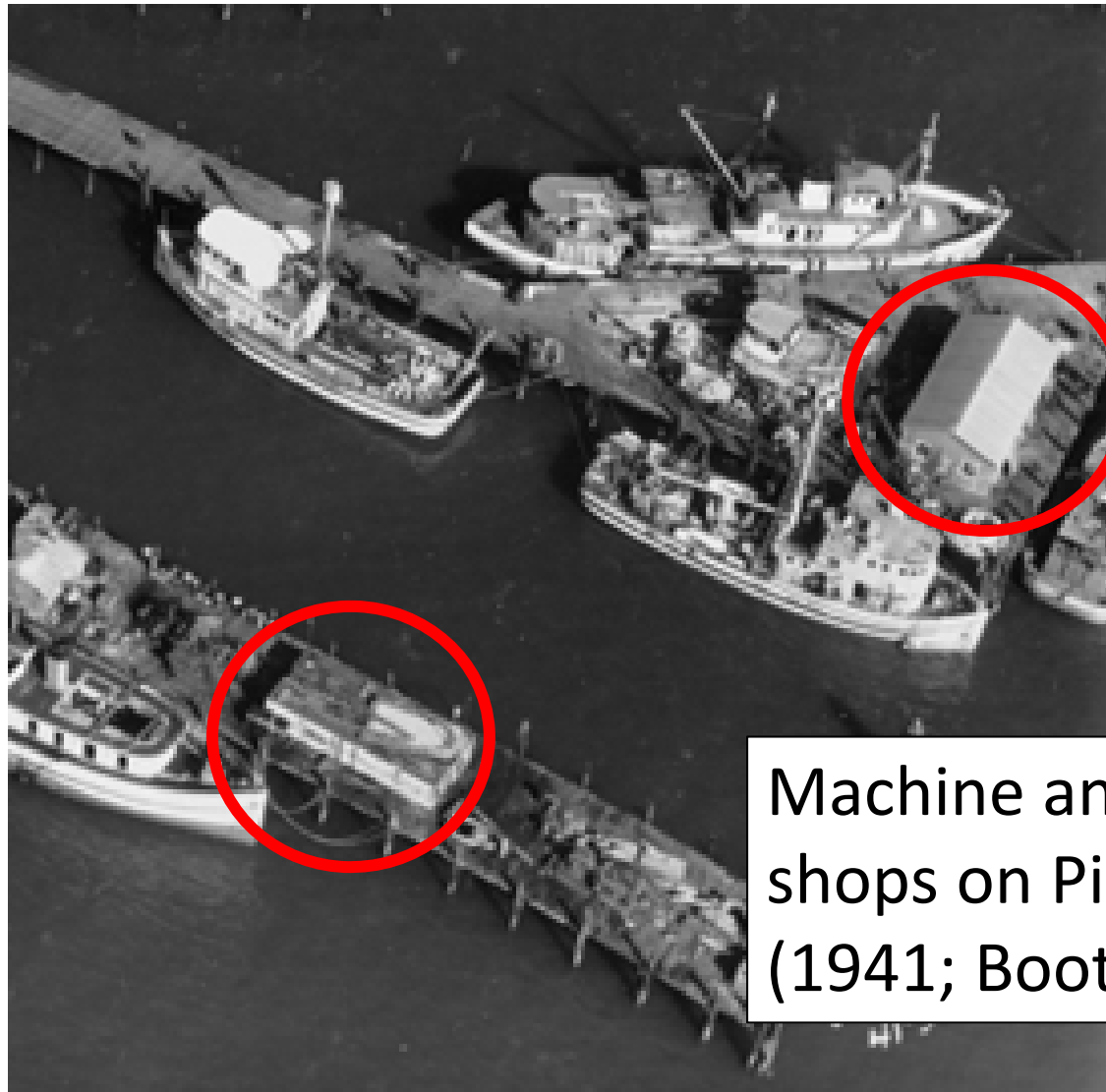
Oil-water separator

Wenches or other sources associated with shipways

Sandblasting Area

Building 40.3
Electrical Transformer

Shipyard COC Sources



Machine and electrical shops on Piers 1 & 2
(1941; Booth et al., 2004)

Shipyard COC Sources

55-gallon drums located adjacent to water on Pier 1 (1941; Booth et al., 2004)



Shipyard COC Sources

Wastes in Pier 1 shipways
(1998; Moser, 1998).



Shipyard PCB Uses and Sources

Shipyard Features	PCB Sources (<u>OPEN</u> system sources highlighted in yellow)				
	Hydraulic Fluid	Cutting / Machine Oils	Dielectric Fluid	Paint and Sand-blasting	Shipbuilding and Repair Materials
Repair Stations on Shipways	●	●	●	●	●
Stormwater outfalls	●	●	●	●	●
Cranes, Winches, Pumps, and Hydraulics	●	●			
Boiler, Steam Sheds, and Compressors	●	●			
Electric Saw, Electric Shops, Electric Sheds, Electrical Parts and Storage, Machine Shops, Welding Shops	●	●	●		●
Paint Shop, Paint Storage				●	
General Storage, Warehouses, Storage Tanks	●	●	●	●	●
Lumber and Woodworking Sheds	●	●			
Transformers and electrical infrastructure			●		

Active primary sources associated with shipyard features: ●

Widespread Shipyard PCB Use in Marine Paint

- 1971 inventory of pervasive use of PCBs in shipyard marine paint in Southern California, including San Diego (Young and Heesen, 1974)



Shipyard Marine Paints

Direct Releases of Paint to Shipyard Site Sediment

- Circa 1971, CRWQCB estimated that 5-10% of sandblasting material discharged to San Diego Shipyard Site, a mass of **~200-300 tons annually** (CRWQCB, 1972)
- During spray painting of ships in San Diego shipyards, 5-30% of paint is lost to the environment (USEPA, 1974)



SWM/BAE Sandblast and Paint Wastes Contaminated Surrounding Areas

- Internal memo from CRWQCB (1991, provided in Booth, 2004)
 - “sand blasting dust was observed on the ground at Chevron”
 - “dust from sand blasting operations at Southwest [Marine] is continually observed coming over the fence.”
 - “a ‘haze’ over the sand blasting areas was obvious”
 - “Southwest [Marine] is causing a nuisance at Chevron and discharging sand blast dust to San Diego Bay...”
 - “TBT could be directly attributable to Southwest Marine’s operations”

INTERNAL MEMORANDUM

TO: DTB/RS/BWP/DSJ
FROM:CLS

DATE:4/29/91

SUBJECT: APPARENT VIOLATIONS OF SOUTHWEST MARINE'S NPDES PERMIT

While at Chevron's Tank Farm, located adjacent to Southwest Marine, sand blasting dust was observed on the ground at Chevron. The dust from sand blasting operations at Southwest is continually observed coming over the fence. A "haze" over the sand blasting area was obvious. When Chevron initiates stormwater sampling, it is most likely that analytical results will show high concentrations of metals and TBT unless the ground at Chevron is frequently swept.

Southwest is causing a nuisance at Chevron and discharging sand blast dust to San Diego Bay through Chevron's storm drain system. If Southwest can't control their sand blast dust, maybe they should be required to sweep Chevron's property after each sand blasting operation.

Chevron has a three-stage clarifier for runoff. It might be interesting to sample the clarifier sediments for metals and TBT. The TBT could be directly attributable to Southwest Marine's operations.

file: Southwest Marine 03-137.01
Chevron, San Diego Marine Terminal 10-245.01

SWM/BAE's Consultant Acknowledges PCB Source Attributable to Marine Railways

- “From [the beginning of San Diego Marine Construction Corporation's use of the site] through to the mid 1970s, sandblast and paint wastes were discharged directly to the Bay from upland and drydock areas (SWM/BAE reports: Woodward Clyde, 1995; Anchor, 2005)

contract work in the blasting area (3). Dust suppression system for blasting house consisted of blowers directed at the bay with a water spray to cause the blast dust to settle in the water (4). All wastes generated on the dry dock including blast grit, paint, etc. were discharged into the Bay (5).

Woodward Clyde (1995)

were deposited in recent industrial times in the vicinity of the marine railway. The nature of the elevated chemical concentrations (metals and PCBs) is consistent with past industrial uses of the marine railways (repair, maintenance, and sandblasting). Therefore, the potential sources of waste constituent discharges at the project site appear to be, overall, primarily confined to historical ship repair and maintenance activities.

Anchor (2005)

Ubiquitous Oil Saturation Noted in SWM/BAE Shipways During Marine Railways Removal (1998)

Daily Log- Observations/ Turbidity Monitoring Southwest Marine- Marine Railway Removal Project, Ways 1 & Ways 2/3

Date: 8-18-98

Observer: Rick Schmitz

Weather: clear, sunny, wind SW @ 5+K

Observations:

	ways 1 time: 10	ways 2/3 time: 1:00P	Comments
1) Appearance of oil or other materials of petroleum origin	yes/no MINOR OIL/WATER MESS LAYER 4' FROM SURFACE	yes/no MINOR OIL/WATER MESS LAYER 4' FROM SURFACE	THE OIL/WATER MESS LAYER OR OIL SHEEN WAS OBSERVED IN THE COURSE OF WAYS 2/3. RETAINED DURING EXCAVATION OF E2-4
2) Discoloration and extent of any visible turbidity plume	none/minor/significant SOME VISIBLE TURBIDITY 2-3' OFF CHANNEL @ 1336	none/minor/significant SMALL MESS @ MATH BUT NOT SIGNIFICANT. SAMPLED INDEPENDENT	SOME ADDITIONAL MATERIALS (WATERING DOWN SILT CURTAIN) @ 1336 - WATER CURTAIN RAN UNDER PUMP (SOUTH WEST FACING) - REMAINS BLUE 2-2-12-1300-1400
3) Condition of silt curtain, and any turbidity	good/poor/unacceptable MATERIAL UNDER PUMP - REMAINS @ LOW TIDE	good/poor/unacceptable SAMPLED 1 SHALL HAVE (~1") W/ 6 SAMPLES	SEE COMMENT 2 ABOVE
4) Odors	none/minor/significant U. MINOR - DURING EXCAVATION	none/minor/significant U. MINOR - DURING EXCAVATION	

Turbidity Monitoring:

	Station A (@ 0-10 feet) time: 1204	Station B (@ >50 feet) time:	Difference (Sta A - Sta B)	Difference less than 20%?
Turbidity Units (ntu)	2.000	0.230	1.770	no - If no, halt dredging operations, see note.

Comments: A Secchi Disc will be used for turbidity measurements. Station A will be inside any visual plume if possible.
Note: If the turbidity at Station A increases more than 20% over the turbidity of Station B, the dredging operations shall be suspended and appropriate measures taken. These include notifying the Regional Board Executive Officer and implementing remedial measures.

Ubiquitous Oil Saturation Noted in SWM/BAE Shipways During Marine Railway Removal (1998)

Daily Log-Observations/ Turbidity Monitoring
 Southwest Marine- Marine Railway Removal Project, Ways 1 & Ways 2/3

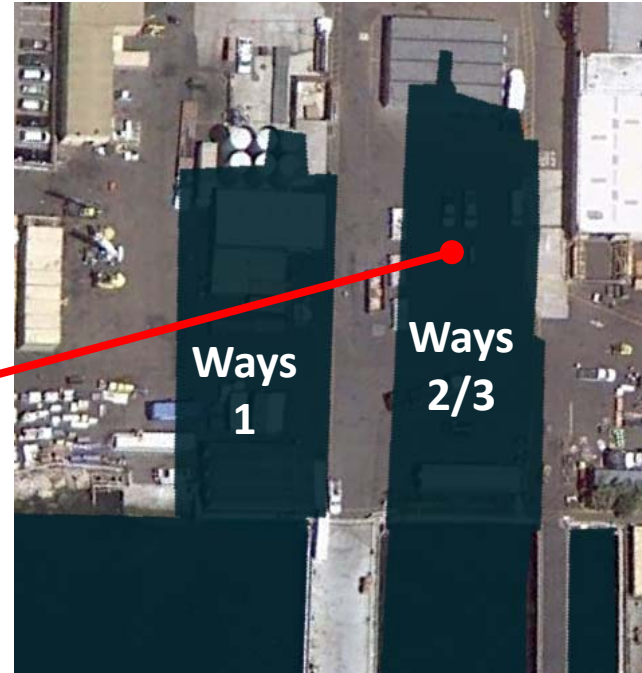
Date: 8-18-78

Observer: *Eric S. [unclear]*

Weather: *clear, sunny, wind 20-25 K*

Observations:

	ways 1 time: 10:00	ways 2/3 time: 10:00	Comments
1) Appearance of oil or other materials of petroleum origin	<i>yes</i> <i>thin oil/water "mousse" layer on NW corner of ways 1</i>	<i>yes</i>	<i>Thin oil/water "mousse" layer on NW corner of ways 2/3. Retrieved during excavation of E2-4</i>
2) Discoloration and extent of any visible turbidity plume	<i>none/minor</i> <i>some yellow turbidity in SW corner of ways 1</i>	<i>none/minor</i> <i>some yellow turbidity in SW corner of ways 2/3</i>	<i>SOME turbidity patches (yellow-brown) seen in SW corner of ways 1 & 2/3. Retrieved during excavation of E2-4</i>
3) Discoloration and extent of any visible turbidity plume	<i>none/minor</i> <i>some yellow turbidity in SW corner of ways 1</i>	<i>none/minor</i> <i>some yellow turbidity in SW corner of ways 2/3</i>	
4) Other	<i>none/minor</i> <i>some yellow turbidity in SW corner of ways 1</i>	<i>none/minor</i> <i>some yellow turbidity in SW corner of ways 2/3</i>	



1) Appearance of oil or other materials of petroleum origin	<i>yes</i> /no <i>thin oil/water "mousse" layer on NW corner of ways 1</i>	<i>yes</i> /no	<i>Thin oil/water "mousse" layer on NW corner of ways 2/3. Retrieved during excavation of E2-4</i>
---	---	----------------	--

Thin oil/water "mousse" layer on NW corner of ways 2/3. Retrieved during excavation of E2-4

Extensive Oil Saturation in Shipways Migrated to Bay

OBSERVATIONS:

TOP OF CORE

Black to Tan
unconsolidated
sand & silt

Black

18"

Tan

18"

Tan dense to
slightly unconsolidated
sand
some small shell
debris

36"

Tan dense to
slightly unconsolidated
sand
some small
shell debris

BOTTOM OF CORE

Is there a plug? YES / NO

Is Plug SOLID or LOOSE sand? SOLID / LOOSE

COLOR of plug? TAN, BROWN, GRAY, BLACK, GREEN

GRAINSIZE of plug? COARSE SAND, MEDIUM SAND, FINE SAND,
TAN CLAY, SANDSTONE


SHELL DEBRIS? YES / NO Fine

SMELL? NONE, ORGANIC OIL,
OTHER:

Does retrieval of core cause an OIL SHEEN?
 YES / NO
+ Top 2 feet only

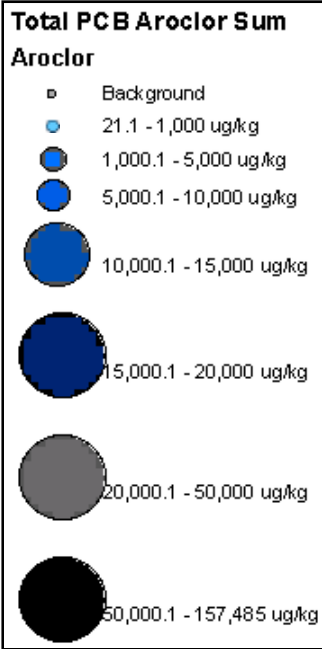
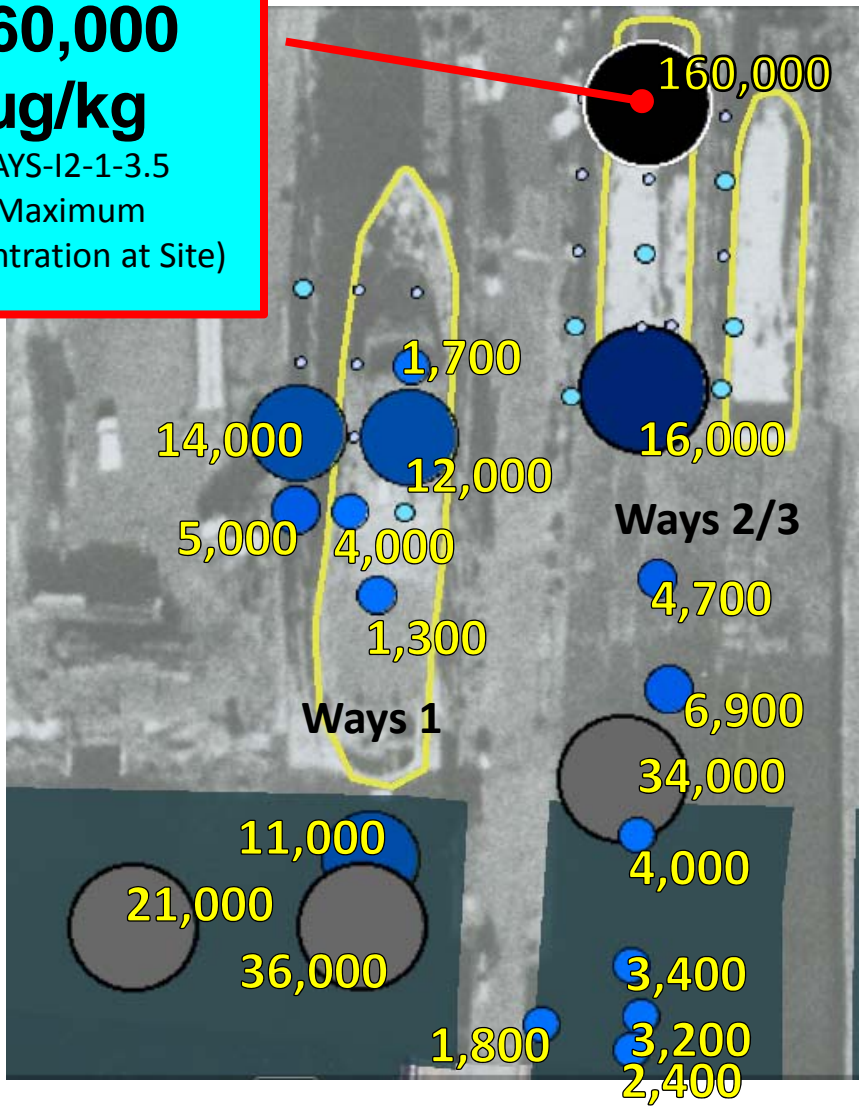


Does retrieval of core cause an OIL SHEEN?
 YES / NO
+ Top 2 feet only

 Oil sheen noted
in sediment
cores

PCB Data Confirm SWM/BAE Shipways as PCB Source

160,000
µg/kg
 WAYS-12-1-3.5
 (Maximum concentration at Site)



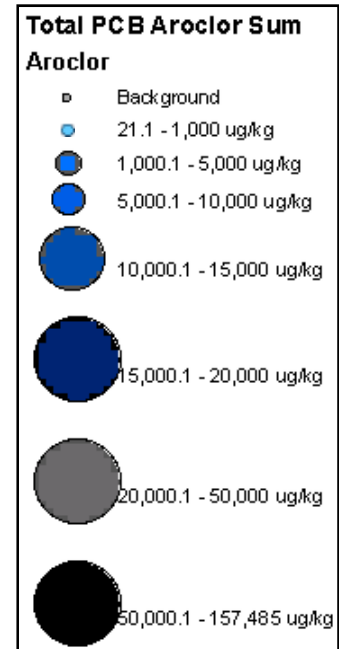
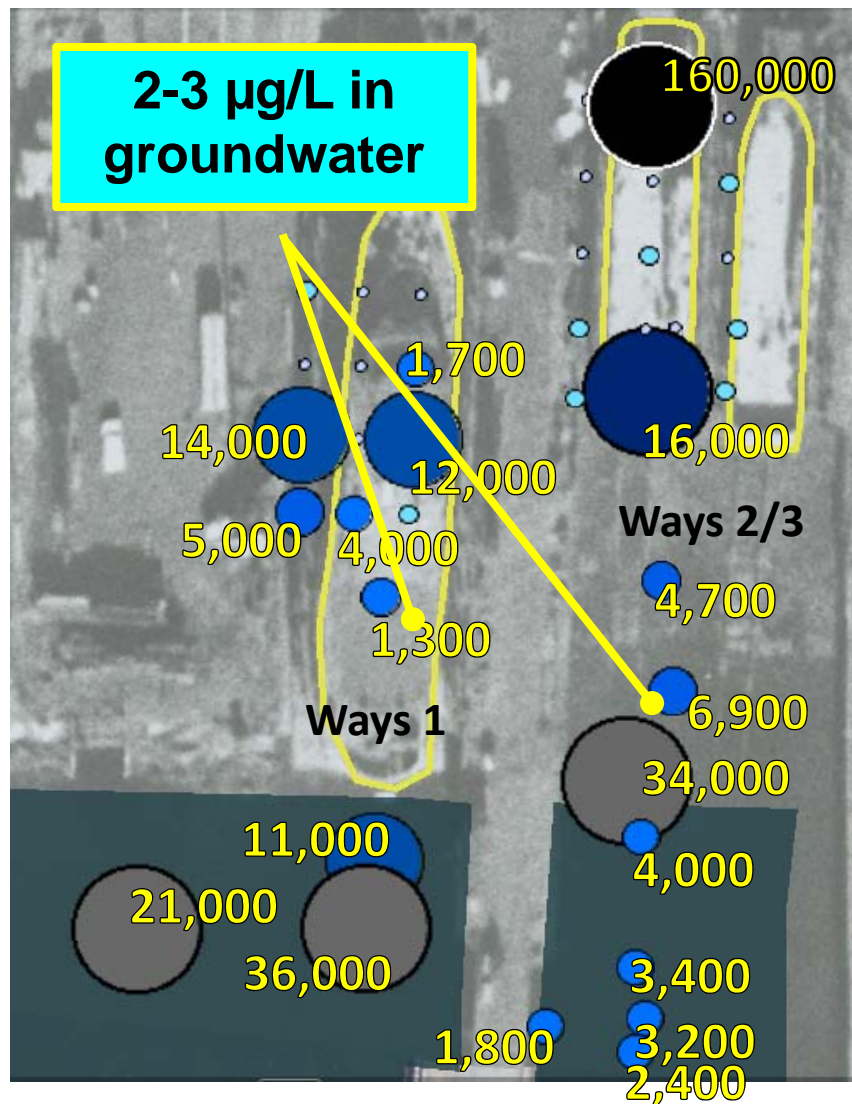
Ships in shipways

Concentrations represent maximum concentration of total PCB Aroclors at each location

Samples in shipways collected post-excavation of contaminated soils/sediments

Data Sources
 SAIC. 1992. SAR056453.; Ogden. 1998. SAR198846.; Ogden. 1998. SAR061831.; Ogden. 1998. SAR199495; Exponent. 2003. SAR105417.; CRWQCB et al. 1996. SAR280617.; Anchor. 2005. SAR374410. Aerial photo: ENVIRON. 2011.

PCB Contamination Persists in SWM/BAE Shipways as Late as 2005



Ships in shipways

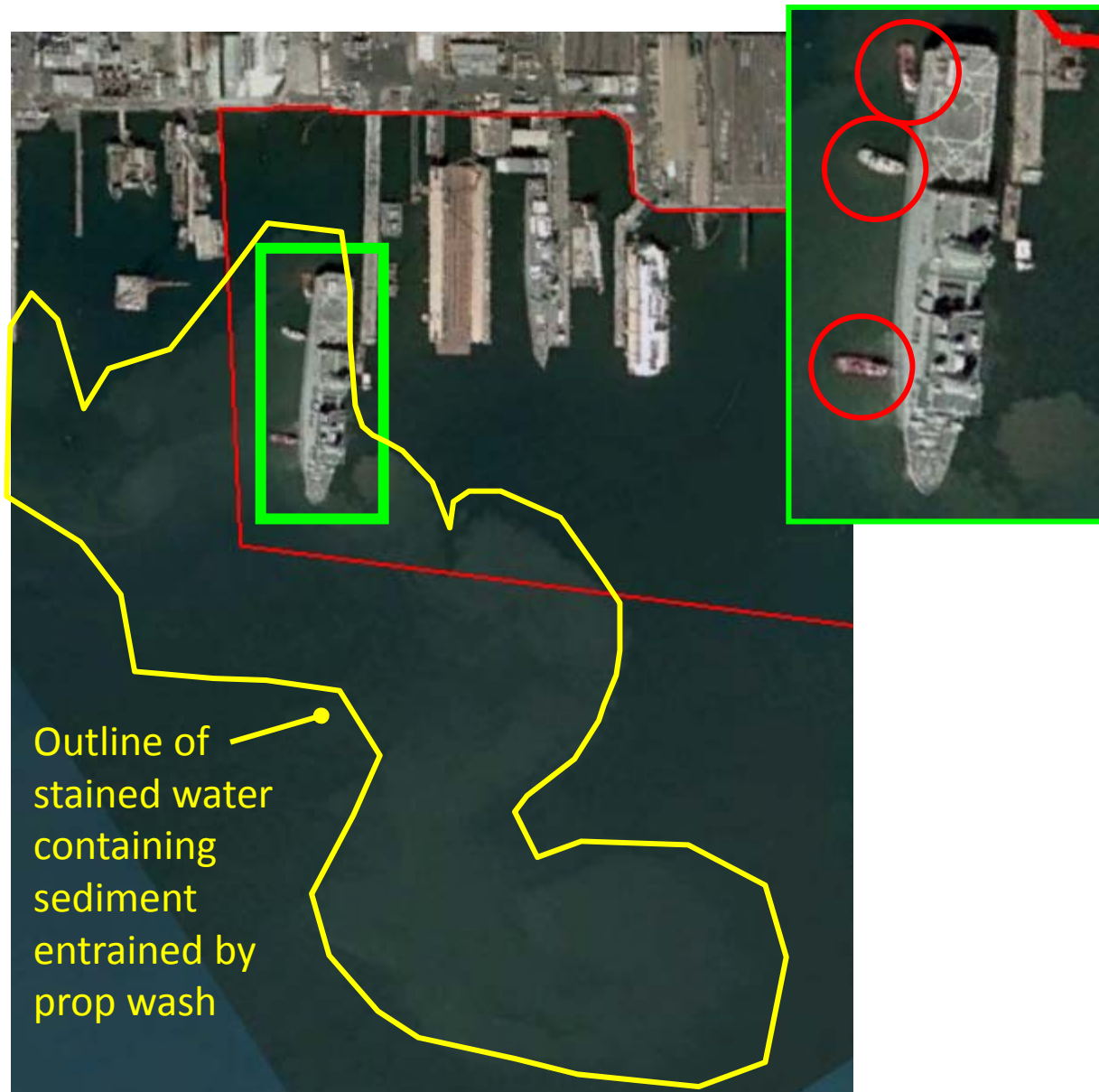
Concentrations represent maximum concentration of total PCB Aroclors at each location

Samples in shipways collected post-excavation of contaminated soils/sediments

Data Sources

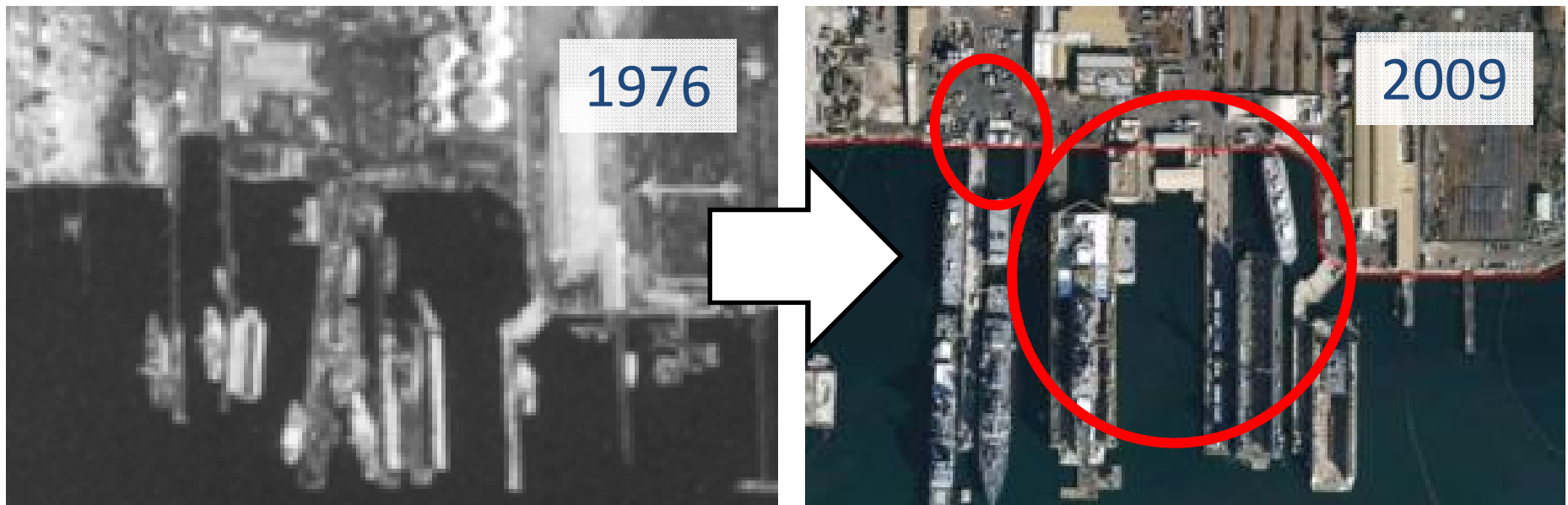
SAIC. 1992. SAR056453.; Ogden. 1998. SAR198846.; Ogden. 1998. SAR061831.; Ogden. 1998. SAR199495; Exponent. 2003. SAR105417.; CRWQCB et al. 1996. SAR280617.; Anchor. 2005. SAR374410. Aerial photo: ENVIRON. 2011.

SWM/BAE Operations Spread Historical Contamination



- Physical movement of sediment by shipyard activity:
 - Propeller wash (shown at left)
 - Dredging
 - In-water construction

SWM/BAE Operations Spread Historical Contamination

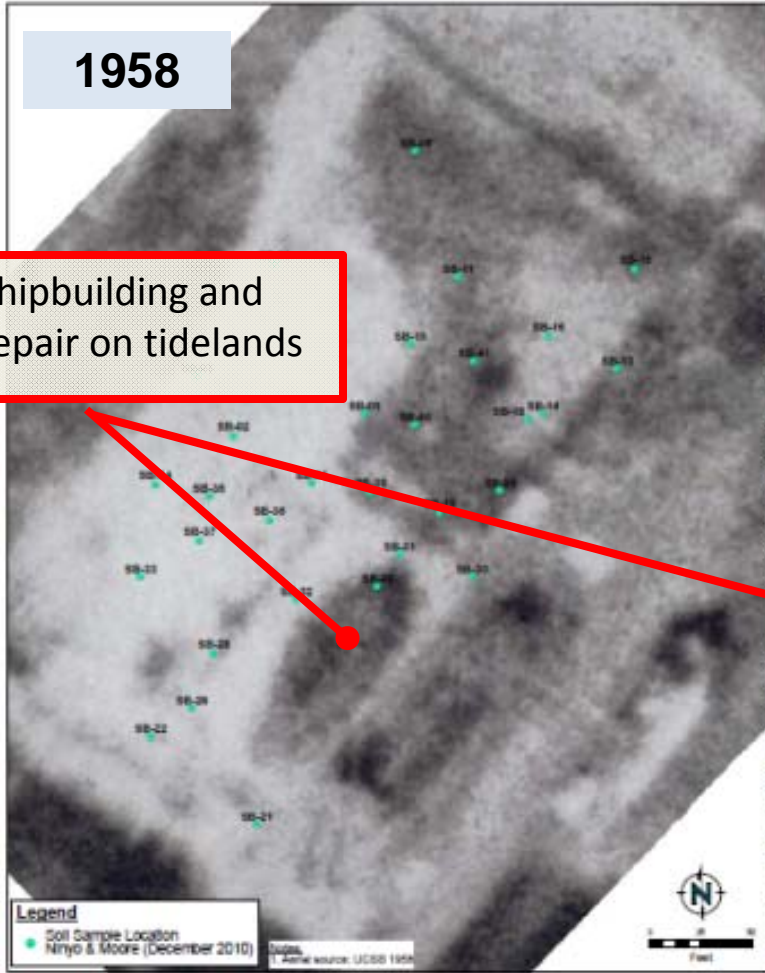


1970s-2000s: Major Pier Construction
(Including complete replacement and
extension of Pier 1); Filling of Shipways 1
and 2/3

Shipyard Use of SDG&E Tidelands Began in 1958

1958

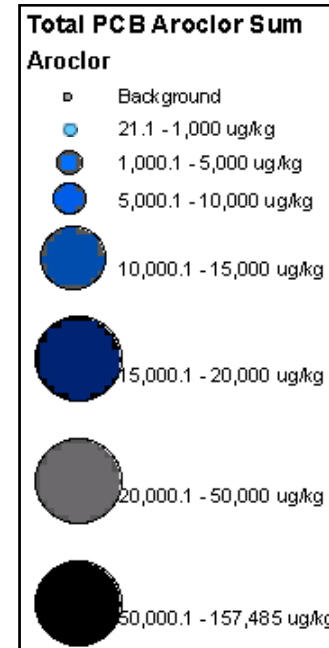
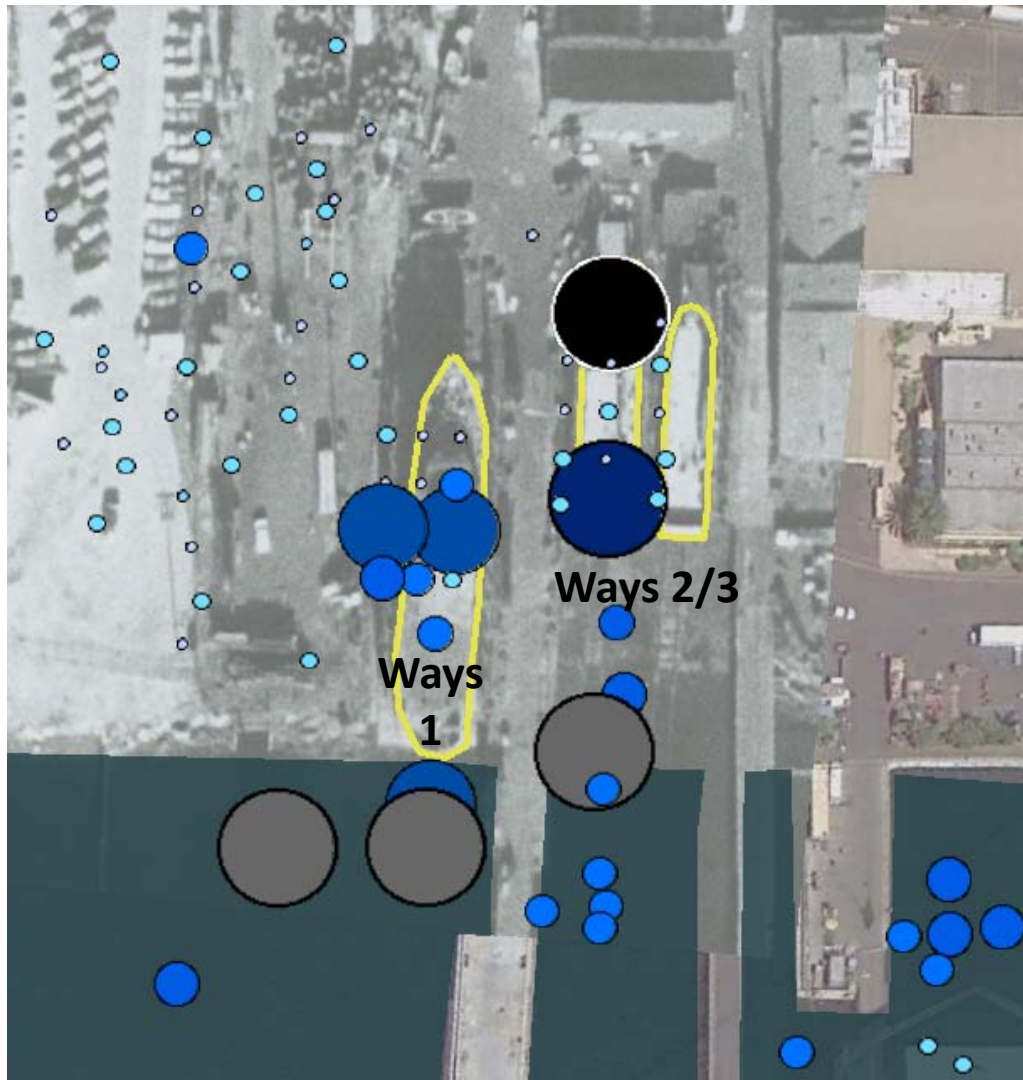
Shipbuilding and repair on tidelands



1978



Runoff from Tidelands Insufficient to Cause a Condition of Pollution or Nuisance



Ships in shipways

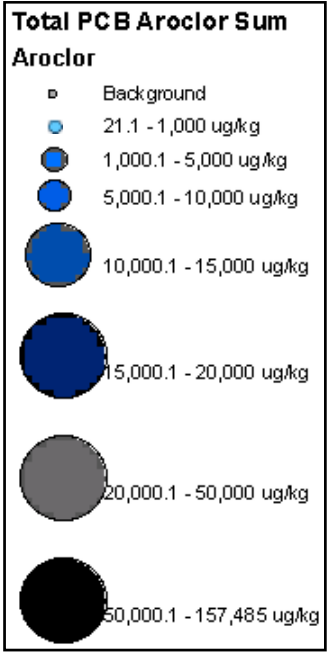
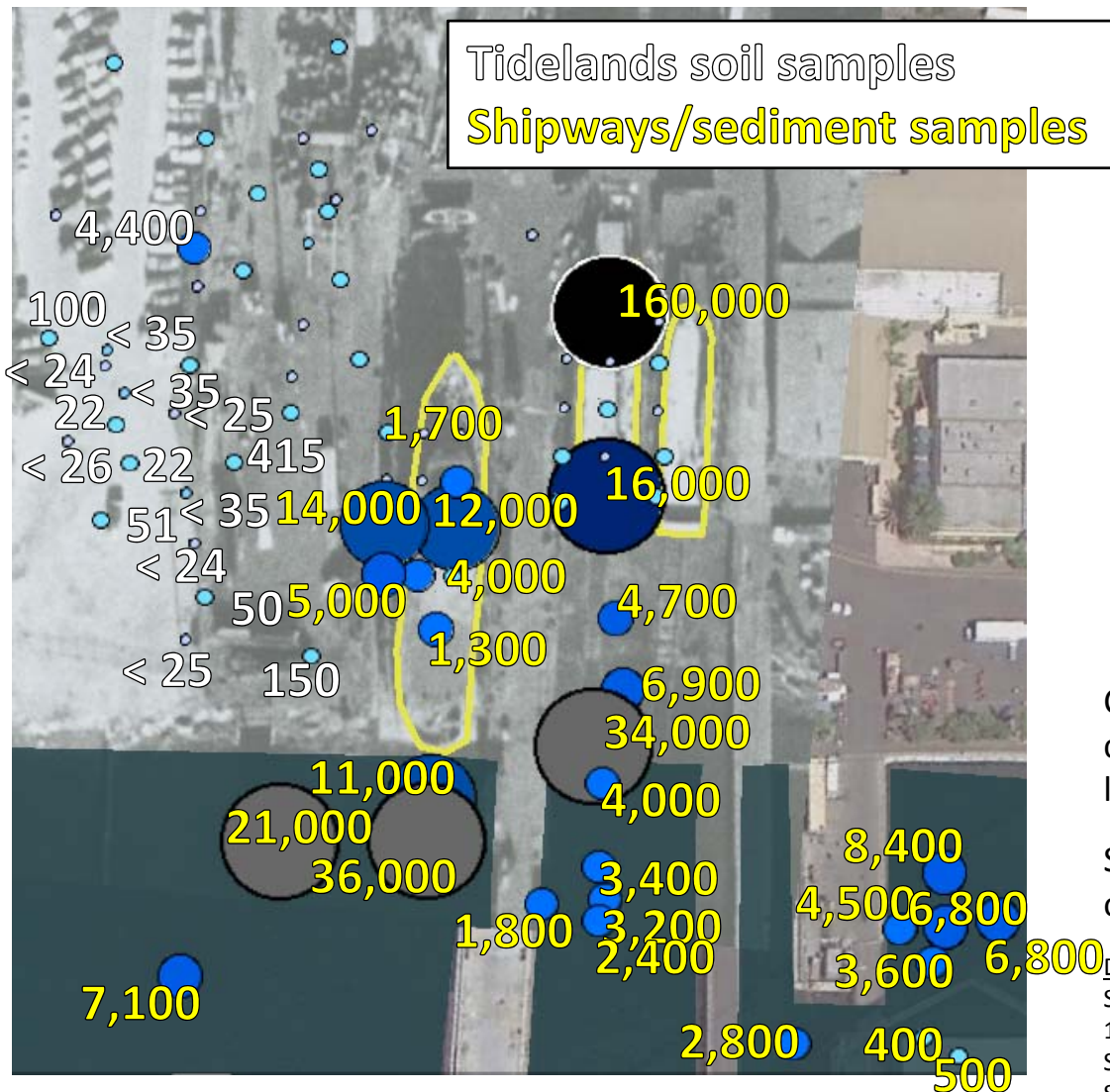
Concentrations represent maximum concentration of total PCB Aroclors at each location

Samples in shipways collected post-excavation of contaminated soils/sediments

Data Sources

SAIC. 1992. SAR056453.; Ogden. 1998. SAR198846.; Ogden. 1998. SAR061831.; Ogden. 1998. SAR199495; Exponent. 2003. SAR105417.; CRWQCB et al. 1996. SAR280617.; Anchor. 2005. SAR374410.; ENVIRON. 2011.

Runoff from Tidelands Insufficient to Cause a Condition of Pollution or Nuisance



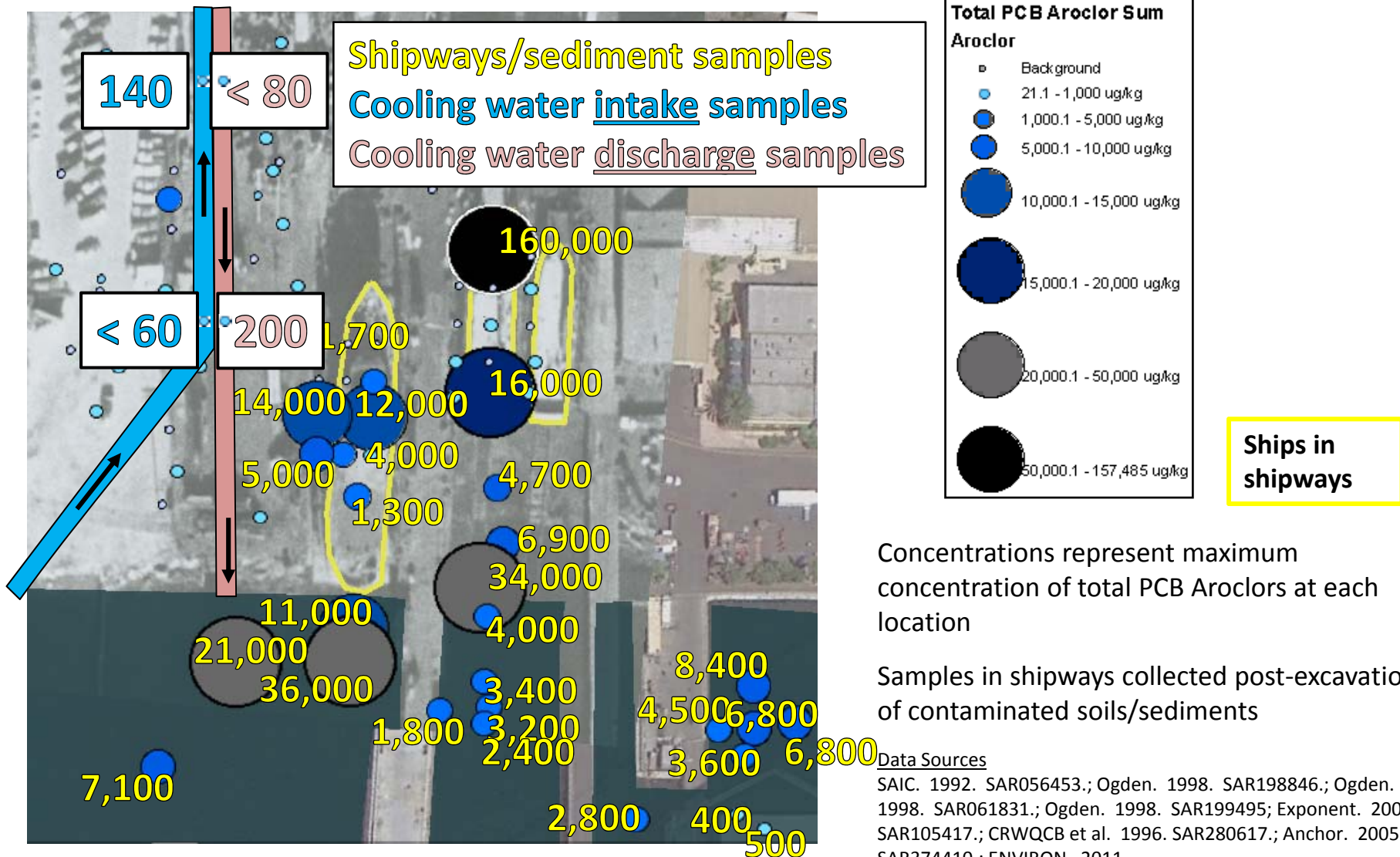
Ships in shipways

Concentrations represent maximum concentration of total PCB Aroclors at each location

Samples in shipways collected post-excavation of contaminated soils/sediments

Data Sources
SAIC. 1992. SAR056453.; Ogden. 1998. SAR198846.; Ogden. 1998. SAR061831.; Ogden. 1998. SAR199495; Exponent. 2003. SAR105417.; CRWQCB et al. 1996. SAR280617.; Anchor. 2005. SAR374410.; ENVIRON. 2011.

Cooling Water Discharge Insufficient to Cause a Condition of Pollution or Nuisance



140

< 80

< 60

200

160,000

1,700

14,000

12,000

16,000

5,000

4,000

4,700

1,300

6,900

34,000

11,000

21,000

36,000

4,000

8,400

1,800

3,400

3,200

4,500

6,800

7,100

3,600

6,800



2,800

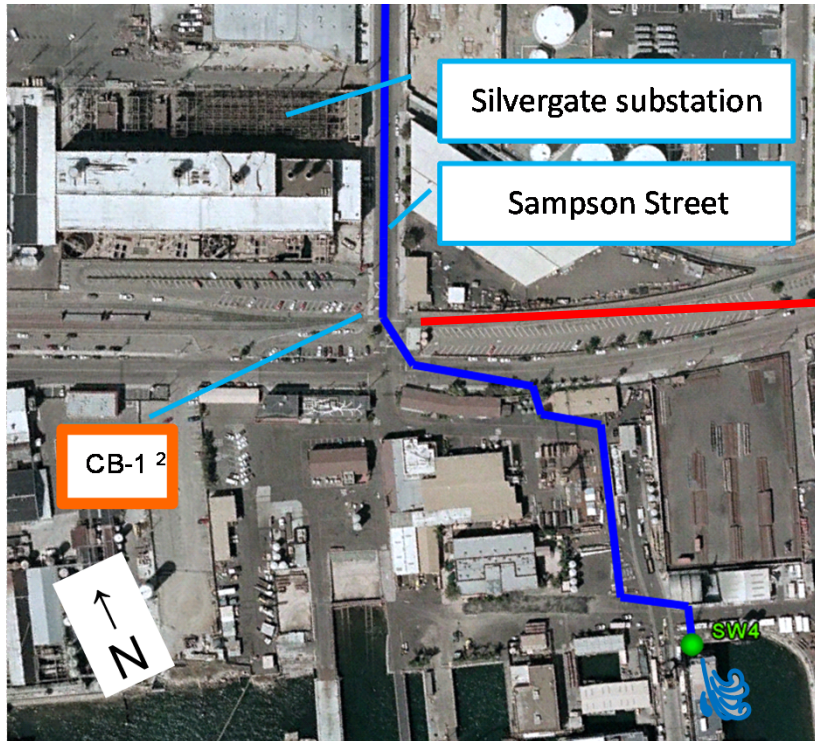
400

500

Runoff from Silvergate Substation Did Not Flow Through CB-1

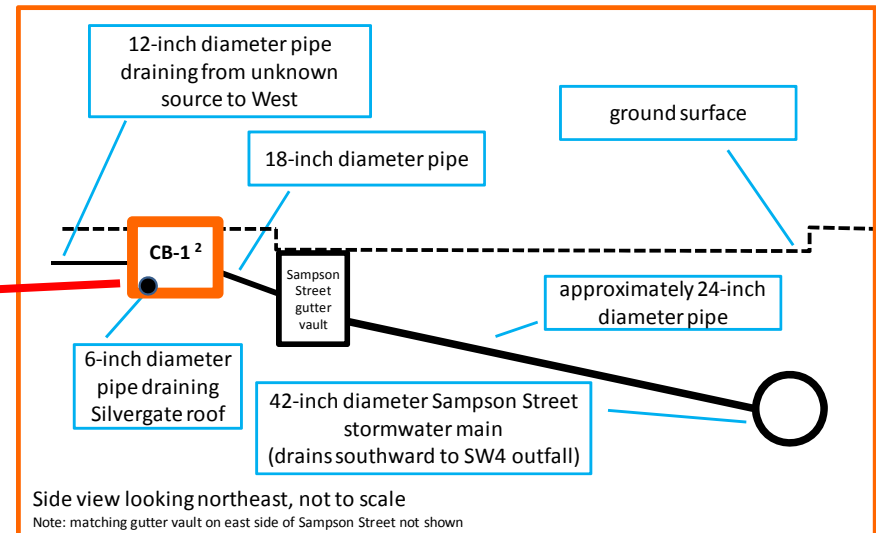
Legend

-  SW4 stormwater outfall location
-  SW4 stormwater main

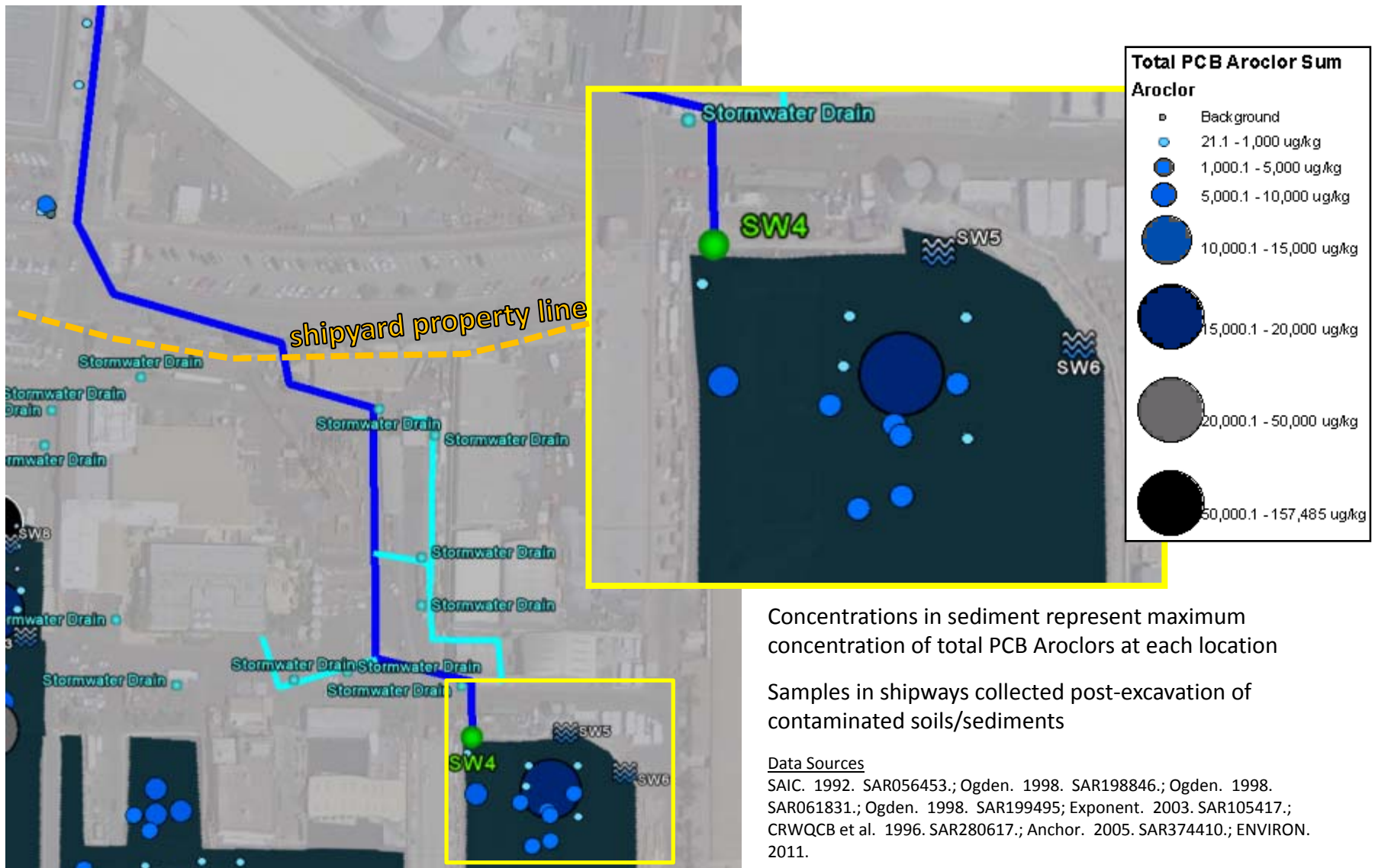


Notes:

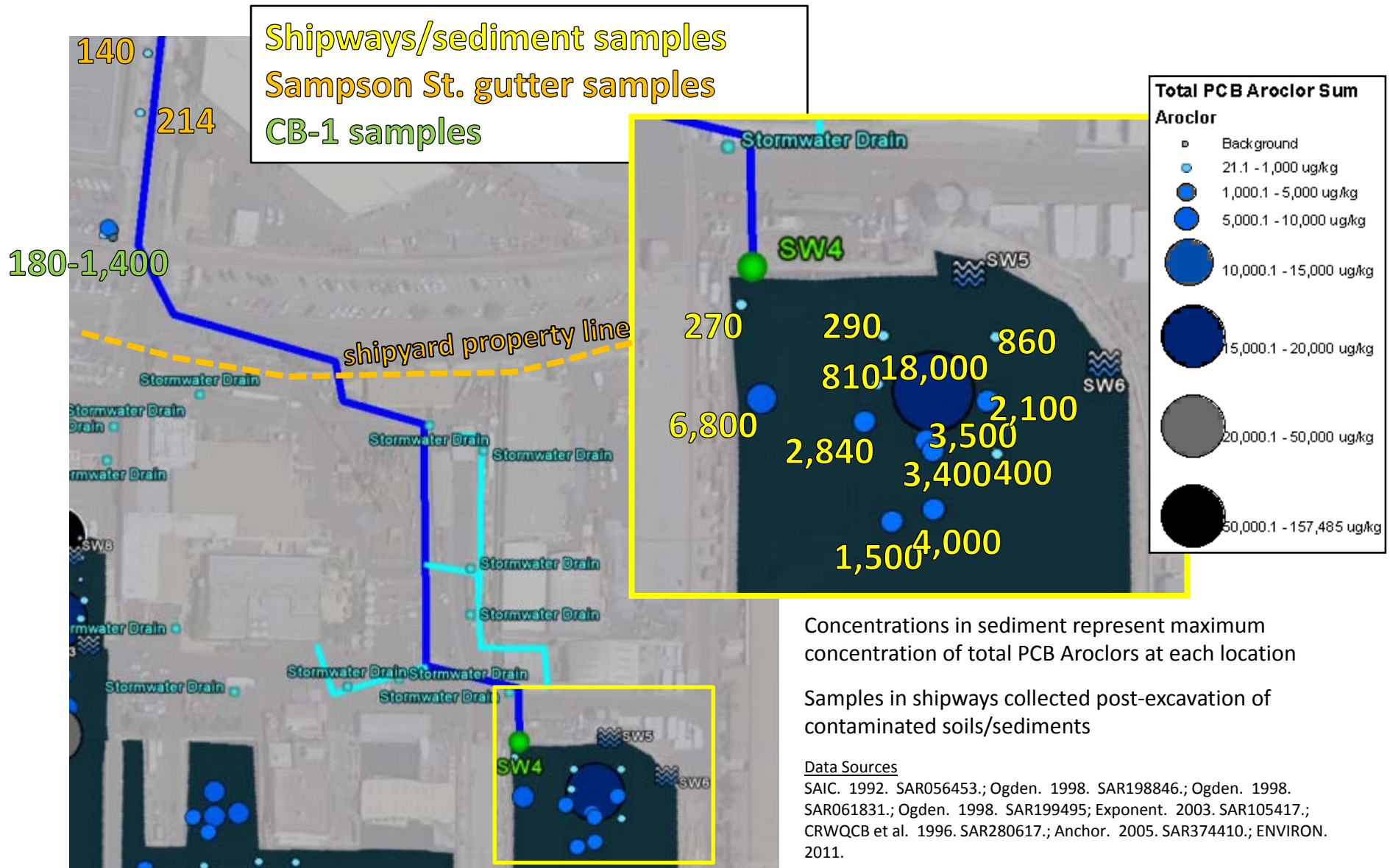
1. December 30, 2004 USGS aerial photo.
2. CB-1 is upgradient of the Sampson Street gutter vault.



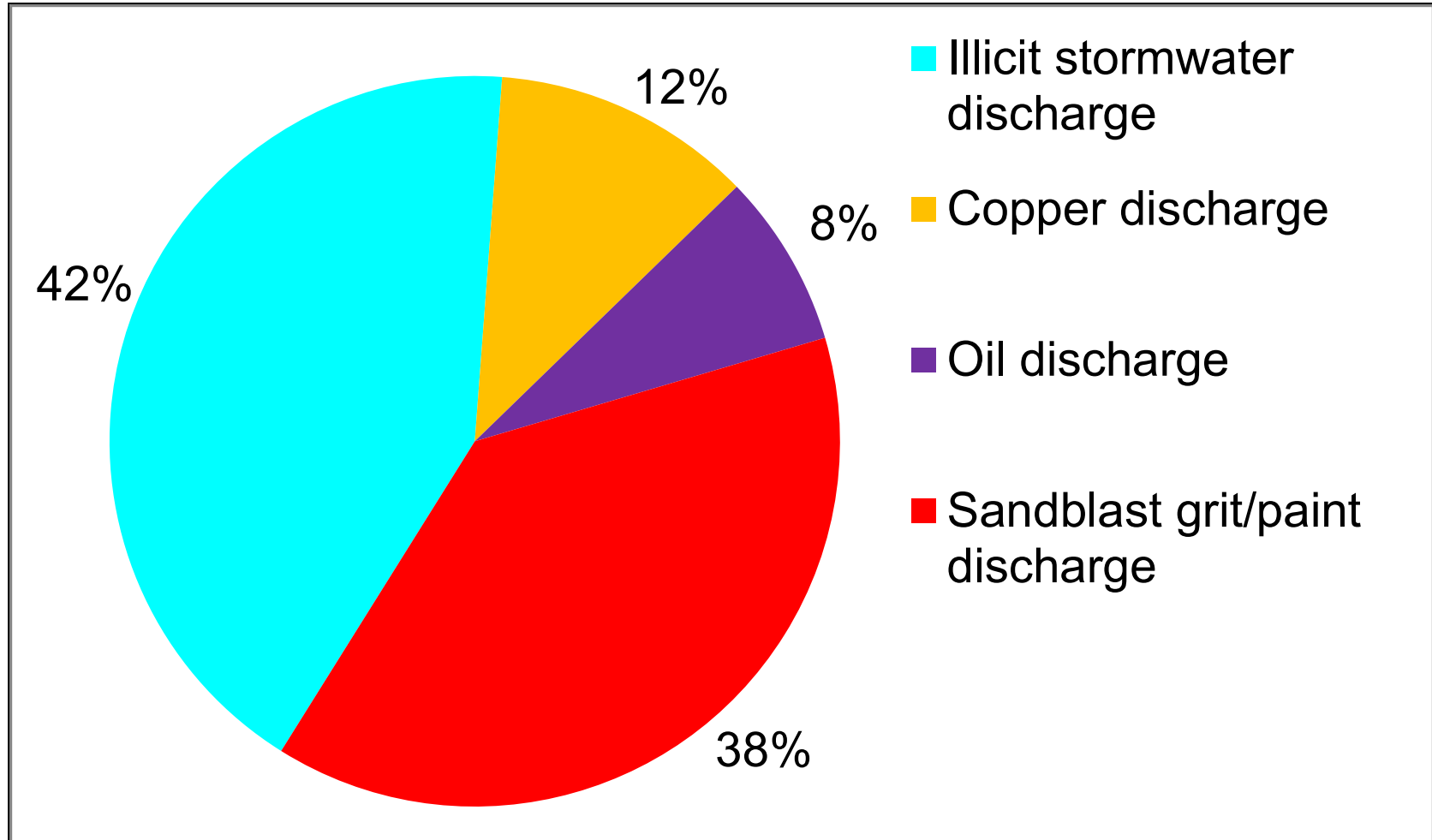
Stormwater Runoff Insufficient to Cause a Condition of Pollution or Nuisance



Stormwater Runoff Insufficient to Cause a Condition of Pollution or Nuisance



Over 100 SWM/BAE Violations Noted in Administrative Record and DTR from 1983-2005



CUT's Misstatement of SDG&E PCB Use in October 19, 2011 Hearing Brief

SDG&E also claims it should not be named as a Discharger despite operating a steam turbine power plant where equipment containing large quantities of PCBs was operated in "open" systems in close proximity to San Diego Bay for over 40 years. Despite its best effort to foist off

- Section 6 of the Toxic Substances Control Act (TSCA) states "no person may manufacture, process, or distribute in commerce or use any [PCB] in any manner other than in a totally enclosed manner" as of one year after the effective date of TSCA (i.e., as of January 1, 1978)."



Demonstrative Exhibits Summary

Evidence	Shipyards	SDG&E
COC Use	<input checked="" type="checkbox"/> Substantial documented evidence	<input checked="" type="checkbox"/> Substantial documented evidence
Environmental Pathways	Direct releases to/directly adjacent to Bay <input checked="" type="checkbox"/> Paint and sandblast material <input checked="" type="checkbox"/> Runoff <input checked="" type="checkbox"/> Waste disposal <input checked="" type="checkbox"/> Direct releases	Direct releases to Bay <input checked="" type="checkbox"/> Cooling water Indirect/incomplete pathways <input type="checkbox"/> Tidelands ponds <input type="checkbox"/> CB-1 <input type="checkbox"/> Substation runoff to Sampson St.
High Magnitude of COC Mass Releases	<input checked="" type="checkbox"/> Substantial evidence	<input type="checkbox"/> No evidence
Corresponding Site-specific Chemistry Data	Strong evidence indicating shipyard source <input checked="" type="checkbox"/> Concentrations in source areas (shipways) higher than sediment <input checked="" type="checkbox"/> Logical concentration gradient leading to source areas <input checked="" type="checkbox"/> Chemical fingerprint match	Strong evidence indicating <u>absence of source</u> <input type="checkbox"/> Concentrations in source areas and along transport pathways lower than sediment <input type="checkbox"/> Lack of logical concentration gradient leading to source areas <input type="checkbox"/> Chemical fingerprint mis-match

= Evidence supporting condition of pollution or nuisance

Demonstrative Exhibits - Index

Exhibit 1a-e - Shipyard COC Sources

- ENVIRON. 2011. Technical Comments on May, 26, 2011 Documents Submitted on Behalf of Parties to the San Diego Shipyard Sediment Site. June 23.
- Booth. 2004. SAR163351. (Shipyard facility map)

Exhibit 2 – Shipyard PCB Uses and Sources

Exhibit 3 - Widespread Shipyard PCB Use in Marine Paint

- Young, D.R., Heesen, T.C. 1974. Inputs and Distributions of Chlorinated Hydrocarbons in Three Southern California Harbors. SAR393796.

Exhibit 4 - Shipyard Marine Paints -

Direct Releases of Paint to Shipyard Site Sediment

- CRWQCB. 1972. Wastes Associated with Shipbuilding and Repair Facilities in San Diego Bay. SAR374265.
- USEPA. 1974. Guidelines for the Control of Shipyard Pollutants. Draft Report to the San Diego Regional Water Quality Control Board. SAR374317.
- Eco Systems. 1992. Report. SAR011470.
- Eco Systems. 2000. Report. SAR035020.

Demonstrative Exhibits - Index

Exhibit 5 - SWM/BAE Sandblast and Paint Wastes Contaminated Surrounding Areas

- Booth, S. 2004. Historical Study, San Diego Waterfront Sampson Street to 28th Street, Appendix J, San Diego, California. SAR169862.

Exhibit 6 - SWM/BAE's Consultant Acknowledges PCB Source Attributable to Marine Railways

- Woodward Clyde. 1995. HISTORICAL OCCUPANCY SEARCH, SOUTHWEST MARINE. Submitted to California Regional Water Quality Control Board. SAR056270.
- Anchor. 2005. Site Investigation and Characterization Report For 401 Water Quality Certification, BAE Systems, Inc. (Formerly southwest Marine, Inc.) Bulkhead Extension and Yard Improvement Phase 2 Activities. Revised August 2005. SAR374410.

Exhibit 7a-b - Ubiquitous Oil Saturation Noted in SWM/BAE Shipways During Marine Railways Removal (1998)

- Ogden. 1998. Final Report Site Remediation, Marine Railway Removal Project, Southwest Marine Shipyard. December. SAR198846.

Demonstrative Exhibits - Index

Exhibit 8 - Extensive Oil Saturation in Shipways Migrated to Bay

- Ogden. 1998. Final Report Sediment Characterization Study and Remediation Plan, Southwest Marine Shipyard. December. SAR061831.

Exhibit 9 - PCB Data Confirm SWM/BAE Shipways as PCB Source

- SAIC. 1992. SAR056453.
- Ogden. 1998. SAR198846.
- Ogden. 1998. SAR061831.
- Ogden. 1998. SAR199495
- Exponent. 2003. SAR105417.
- CRWQCB et al. 1996. SAR280617.
- ENVIRON. 2011. Summary of Sampling and Analysis of Soil and Cooling Water Tunnels, BAE Subleasehold Area, San Diego Bay, San Diego, CA. February 23.

Exhibit 10 - PCB Contamination Persists in SWM/BAE Shipways as Late as 2005

- Anchor. 2005. Site Investigation and Characterization Report For 401 Water Quality Certification, BAE Systems, Inc. (Formerly southwest Marine, Inc.) Bulkhead Extension and Yard Improvement Phase 2 Activities. Revised August 2005. SAR374410.

Demonstrative Exhibits - Index

Exhibit 11a-b - SWM/BAE Operations Spread Historical Contamination

- Conder, J.M. 2011. Comparison of 2001-2002 and 2011 Chemical Conditions in Surface Sediment at the San Diego Shipyard Sediment Site. March 11.
- ENV America. 2004. SAR193391.

Exhibit 12 - Shipyard Use of SDG&E Tidelands Began in 1958

- ENVIRON. 2011. Summary of Sampling and Analysis of Soil and Cooling Water Tunnels, BAE Subleasehold Area, San Diego Bay, San Diego, CA. February 23.

Demonstrative Exhibits - Index

Exhibit 13a-b - Runoff from Tidelands Insufficient to Cause a Condition of Pollution or Nuisance

- SAIC. 1992. SAR056453.
- Ogden. 1998. SAR198846.
- Ogden. 1998. SAR061831.
- Ogden. 1998. SAR199495
- Exponent. 2003. SAR105417.
- CRWQCB et al. 1996. SAR280617.
- Anchor. 2005. SAR374410.; ENVIRON. 2011.
- ENVIRON. 2011. Summary of Sampling and Analysis of Soil and Cooling Water Tunnels, BAE Subleasehold Area, San Diego Bay, San Diego, CA. February 23.

Exhibit 14 - Cooling Water Discharge Insufficient to Cause a Condition of Pollution or Nuisance

- SAIC. 1992. SAR056453.
- Ogden. 1998. SAR198846.
- Ogden. 1998. SAR061831.
- Ogden. 1998. SAR199495
- Exponent. 2003. SAR105417.
- CRWQCB et al. 1996. SAR280617.
- Anchor. 2005. SAR374410.; ENVIRON. 2011.
- ENVIRON. 2011. Summary of Sampling and Analysis of Soil and Cooling Water Tunnels, BAE Subleasehold Area, San Diego Bay, San Diego, CA. February 23.

Demonstrative Exhibits - Index

Exhibit 15 - Runoff from Silvergate Substation Did Not Flow Through CB-1

- ENVIRON. 2011. Technical Comments on May, 26, 2011 Documents Submitted on Behalf of Parties to the San Diego Shipyard Sediment Site. June 23.

Exhibit 16a-b - Stormwater Runoff Insufficient to Cause a Condition of Pollution or Nuisance

- SAIC. 1992. SAR056453.
- Ogden. 1998. SAR198846.
- Ogden. 1998. SAR061831.
- Ogden. 1998. SAR199495
- Exponent. 2003. SAR105417.
- CRWQCB et al. 1996. SAR280617.
- ENVIRON. 2011. Technical Comments on May, 26, 2011 Documents Submitted on Behalf of Parties to the San Diego Shipyard Sediment Site. June 23.

Exhibit 17 - Over 100 SWM/BAE Violations Noted in Record

- SAR050536-SAR050539.

Exhibit 18 - CUT's Misstatement of SDG&E PCB Use in October 19, 2011 Hearing Brief

- SWRCB. 2011. In the Matter of Tentative Cleanup and Abatement Order No. R9-2011-0001 (Formerly R9-2010-0002) Shipyard Sediment Cleanup; San Diego Water Board Cleanup Team's Hearing Brief. October 19.
- SDG&E. 1981. Spill Prevention and Countermeasure Plan. Silver Gate Power Plant. Phase I Appendix. SARI193541.

Exhibit 19 - Demonstrative Exhibits Summary