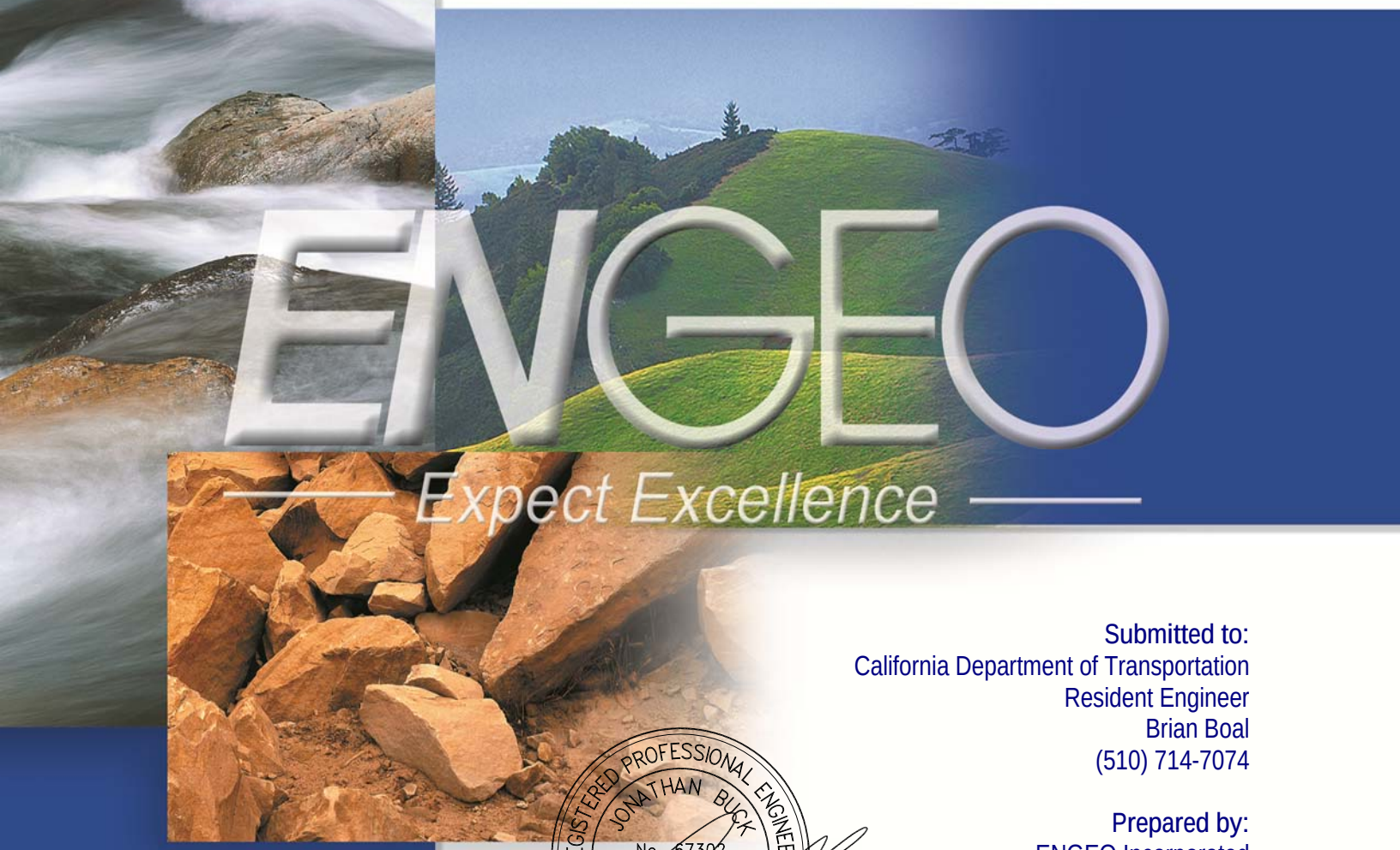
Construction Dewatering And Discharge Work Plan

Pier Foundation Demolition (E4 through E18)
San Francisco-Oakland Bay Bridge Project
(Contract 04-013574)
San Francisco, California



Submitted to:
California Department of Transportation
Resident Engineer
Brian Boal
(510) 714-7074

Prepared by:
ENGEO Incorporated
Jonathan D Buck, PE, QSD
(925) 866-9000

April 27, 2016
Latest Revision May 9, 2016

Project No:
9050.000.004

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Project No.
9050.000.004

April 27, 2016
Latest Revision May 9, 2016

Mr. Frederic Lausier
Kiewit/Manson Joint Venture
4650 Business Center Drive
Fairfield, CA 94534

Subject: Piers E4 through E18 Demolition (Contract 04-013574)
San Francisco, California

CONSTRUCTION DEWATERING AND DISCHARGE WORK PLAN

Dear Mr. Lausier:

As requested by you, we have prepared the following Dewatering and Discharge Work Plan (DDWP) for the Pier E4 through E18 Demolition (Caltrans Contract No. 04-013574) which is part of the San Francisco-Oakland Bay Bridge project in San Francisco County, California. Dewatering operations are practices that manage the discharge of excess water, when it must be removed from a work location, so that construction work may be accomplished. Untreated water from construction dewatering operations may contain pollutants or other impurities that if discharged to a natural water body could cause the water quality of the receiving water to be impacted. The intent of the DDWP is to provide a guidance document with regard to the temporary storage and discharge of excess construction water in general conformance with National Discharge Pollution Elimination System (NPDES) requirements. This DDWP is also intended to meet any additional requirements for the project as requested by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) and the San Francisco Bay Conservation and Development Commission (BCDC).

This document will focus specifically on dewatering operations to be performed at Piers E4 and E5 during the 2016 construction season. Pier dewatering that occurs in subsequent seasons will be addressed specifically in amendments to this document. Amendment forms are located in Appendix A.

1.0 LOCATION OF RELATED ACTIVITIES

The approximate limits of the Pier E4 through E18 Demolition project where dewatering activities are anticipated are shown on Figure 1. The longitude and latitude for Pier E4 are 37°48’58”N and 122°21’09”W. The longitude and latitude for Pier E5 are 37°49’00”N and 122°21’03”W. The Piers are located approximately 600 feet south of the newly constructed San Francisco-Oakland Bay Bridge, approximately 2,300 feet east of Yerba Buena Island (YBI), in San Francisco County, and approximately 12,000 feet from the wharf at the Port of Oakland where Kiewit/Manson plans to stage the project overland as shown on Figure 1. A

cross-sectional view of the pier showing the internal geometry of cells within the larger caisson superstructure is included in Appendix F. The project is surrounded by San Francisco Bay. There are no sanitary sewers or other practical discharge points near the demolition project that would be capable of transporting excess construction water to an existing water treatment plant. The work is planned for July to December 2016.

2.0 DESCRIPTION OF RELATED CONSTRUCTION ACTIVITIES

The California Department of Transportation (Department), as part of the dismantling of the original East Span of the San Francisco-Oakland Bay Bridge (SFOBB) for the SFOBB East Span Seismic Safety Project (SFOBB Project), is planning the controlled implosion of the in-water concrete caissons supporting Piers E4 and E5, and subsequently Piers E6 through E18. Removal of the original span, including its marine foundations, is required to satisfy regulatory requirements of the SFOBB Project.

This phase of marine foundation removal incorporates and applies the experience of the Pier E3 Demonstration Project Work. An amendment will be prepared to this DDWP to ultimately include Piers E6 – E18. However, Piers E6 – E18 are not hollow piers like Pier E3 and thus will not require a large dewatering effort when the above-water demolition takes place.

Based on existing Federal and State permits for the project, Kiewit/Manson JV intends to demolish the existing above-ground pier systems in place and fill the void spaces in the existing hollow caisson structure below the pier with concrete rubble, in lieu of off-hauling the debris. It is expected that approximately 550,000 gallons total of non-stormwater in the caissons for Piers E4 and E5 will be displaced as the concrete debris fills the void spaces. During the operations, the displaced caisson water will rise above its current depth and will need to be removed in order to avoid direct discharges into the San Francisco Bay.

The project water quality objectives (WQOs) are summarized in Table 2.0-1:

TABLE 2.0-1
Water Quality Objectives
Per Project Waste Discharge Requirements

Parameter	Test Method	Detection limit (min)	Units	WQO
Turbidity (during activities for in-water work)	Field test with calibrated portable instrument (Measured at downstream sampling location)	1	NTU	Must not be greater than 10 percent above background in areas where natural turbidity is greater than 50 NTU
Temperature (during activities for in-water work)	Field test with calibrated portable instrument	0.1	°F	Must not be increased 5 degrees above natural background
pH	Field test with calibrated portable instrument (Measured at downstream sampling location)	0.2	pH	Lower WQO = 6.5 Upper WQO = 8.5 And any change greater than 0.5 units from natural background

Parameter	Test Method	Detection limit (min)	Units	WQO
Dissolved oxygen	Field test with calibrated portable instrument	0.05	mg/L	Must not be reduced below 5 mg/L. When natural background is less than 5 mg/L, then must not cause further reductions in the concentration of the dissolved oxygen
Dissolved sulfide	Lab	0.05	mg/L	0.1 mg/L maximum

In addition, discharged water should meet Surface Water Screening Levels as defined by the SFBRWQCB for any additional water quality constituents of concern (COCs).

It should be noted that additional water quality monitoring will be conducted by the California Department of Transportation, 100 feet away from the pier and dewatering operation. This monitoring is intended to verify that the project is in conformance with project Waste Discharge Requirements (R2-2002-0011).

3.0 WATER PROFILING

Because the water within the concrete-lined caisson structure does not readily exchange with ambient water in the San Francisco Bay, testing was conducted in 2014 by EnviroSurvey and the results published in the report *Technical Memorandum — Pier E3 Caisson Water Quality.* The report demonstrates that a direct discharge of the displaced caisson water may exceed water quality objectives for the San Francisco Bay as defined by the SFBRWQCB Surface Water Screening Levels. The following COCs in Table 3.0-1 were identified in the internal caisson structure water that need to be addressed in terms of potential project water quality violations.

TABLE 3.0-1
Water Quality Constituents of Concern Identified in Pier E3 Caisson
per Pier E3 Caisson Water Quality Report

Water Quality Constituent	Concern
Dissolved Oxygen (DO)	Dissolved oxygen measurements taken within the top 10 feet and below the mudline were generally less than 5mg/L, which is below discharge requirements stated in the project specifications.
Silver, Copper, Chromium, Nickel	At least one sample indicated concentrations above the Surface Water Screening Limit. However, averages of all samples were below SFBRWQCB Screening Levels.
Lead	Approximately 10 percent of samples were greater than the Surface Water Screening Limits. However, average lead content of all samples was below SFBRWQCB Screening Levels.
pH	pH readings were generally between 7.5 and 8.0, which is in the range of ocean water. However, pH readings higher than 8 were recorded in the first few feet of the water column. pH levels may increase from ambient conditions when concrete is introduced to the internal caisson structure water.

The study concludes that, "aside from a small volume of water near the surface, caisson water generally has DO and metal concentrations similar to ambient bay quality and below [SFBRWQCB] trigger levels."

Additional Water Quality Constituents of Interest are summarized in Table 3.0-2 below:

TABLE 3.0-2
Additional Water Quality Constituents of Interest

Water Quality Constituent	Conclusion
Temperature	Sampling indicated that caisson temperature roughly corresponds to ambient bay temperatures down to the mud line except in the top few feet. Therefore, it does not appear that temperature is a COC.
Turbidity	Sampling indicated that turbidity within the caisson structure is less than the ambient bay turbidity. Therefore, it does not appear that ambient turbidity is a COC. However, during the demolition process, turbidity issues may arise if pulverized concrete is introduced into the internal caisson structure water.

The DDWP takes into consideration the possibility that pH or metal concentrations may result in exceedances of water quality objectives if directly discharged in the San Francisco Bay.

For purposes of this study, we would assume that the internal water quality in Pier E3 is similar to the internal water quality of Piers E4 and E5 and that similar precautions will take place in the dewatering operations such that exceedances of the above water quality constituents in water discharged to San Francisco Bay will not occur.

In terms of actual dewatering operations, Table 3.0-3 below summarizes constituents of concern that were encountered during dewatering operations in 2015 during the Pier E3 demolition, where constituent exceedances prevented direct discharge of caisson water into the San Francisco Bay.

TABLE 3.0-3
Water Quality Constituents of Concern identified during 2015 Pier E3 Dewatering Operations

Water Quality Constituent	Conclusion
pH	Sampling indicated pH was in the range of 8.3 – 9.6 above the upper WQO limit for pH of 8.5
TPH Diesel	Sampling indicated TPH Diesel readings in at least two samples were over the 210 µg/L SFBRWQCB Screening Level. All sampling indicated levels less than 300 µg/L in collected caisson water.

4.0 COLLECTION OF EXCESS WATER

Prior to the start of demolition, weep holes on the sides of the pier will be plugged using a steel plate and Splash Zone, a silica compound used in marine construction to seal holes in structures so that they are watertight (Figure 2A). As demolition commences, it is anticipated that the top

10 feet of water, where most of the high readings of COCs have been documented, will be disrupted by concrete rubble in the cells of the structure, which will settle to the bottom of the caisson and cause mixing within the water column.

For each cell, a visual inspection of surface water will be performed after the pier cap is removed and any deleterious material and/or sludge will be skimmed, deposited in watertight drums, and off-hauled.

The project will then employ either a 4- or 6-inch submersible pump to collect excess water from the caisson structure, as soon as practical, which will transmit the caisson water into steel storage tanks located on a floating barge using a watertight hose, as concrete debris is introduced into the caisson structure. The pump will be able to collect excess water at a rate of up to 750 gallons per minute. The pump will be powered by a 6-inch hydraulic power unit, which will be mounted on the pier and will be fueled on the dewatering operations barge. The pump and hydraulic power unit will be replaced as necessary if it is not functioning properly.

We understand the project will employ the use of up to 12 steel storage tanks (Baker Tanks) with capacities up to 20,000 gallons to store excess water pumped from the caisson structure onto a barge specific to the dewatering operation. Storage tanks holding excess construction water will be inspected for leakage by the project Water Pollution Control Manager or representative on a daily basis (Figure 2B).

Although the caisson structure is thought to be generally watertight, it is possible during dewatering operations in certain cells that leakage through the outer walls of the caisson structure will occur even after weep holes are sealed. Therefore, the water level in the cell may not drawdown as pumping commences. Kiewit/Manson will monitor this situation with great care at each cell to verify that storage on the dewatering operations barge is sufficient to detain additional excess water created by unanticipated in-structure seepage during pumping operations. This will include the installation of a water level sensor with instantaneous reading capability at each cell prior to commencement of dewatering to monitor changes to water surface elevations within the structure during demolition activities.

If the rate of demolition and water withdrawal is such that sufficient storage is not available on barges for dewatering operations, an additional barge may need to be deployed specifically to store and/or off-haul excess water. During the demonstration demolition of Pier E3, approximately 200,000 gallons were removed during dewatering. As the caisson volumes for Piers E4 and E5 are comparable, the 240,000-gallon storage capacity is expected to be sufficient.

It should be noted that, depending on contractor progress, dewatering may occur from both Piers at the same time. If dewatering from both Piers is mixed in the same storage tank, care will be given to ensure that documentation occurs describing the multiple sources of the water.

After any cell is finished, the project will continue to demolish the structure above additional cells until the project is complete. The project will thus dewater intermittently in batches. Dewatering is anticipated between the months of July 2016 and September 2016 depending on

demolition progress. The project will demobilize the dewatering operation barges and tanks after this conventional demolition is complete. The caisson void space should be sufficient to contain all demolished debris from its respective pier based on a comparison of void space to estimated debris quantities. However, an additional Amendment to this document will be filed if operations are required as part of any post-blast cleanup effort that would require a supplemental construction dewatering and discharge work plan.

In the unlikely event of a rain event during July through September, the Water Pollution Control Manager or representative will perform a pre-storm inspection of the project to verify that stormwater best management plan practices are in place to protect receiving waters from co-mingled rainfall runoff.

A typical figure showing location of storage tanks, pumps and pipes is shown on Figure 2B. Specification sheets for technical products are provided in Appendix G. The excess water will be pumped into tanks placed in series. As each tank is filled, a shut-off valve will be closed and excess water will be routed to the next empty tank.

The Dewatering Operations Monitoring Form included in Appendix A should be used for the documentation of dewatering activities.

5.0 MINOR TREATMENT AND DISCHARGE OF EXCESS WATER

The following discharge protocols will apply based on sample analyses as shown on the attached flow chart (Figure 3) and as summarized as follows.

- Excess water will be sampled in the storage tanks directly after pumping per the sampling and analysis plan for pH, temperature, dissolved oxygen and turbidity. For lab samples, one sample will be taken for every 80,000 gallons of water pumped at a maximum (including dissolved sulfide). For pH, turbidity, temperature and dissolved oxygen, field samples will be taken in each tank and averaged over the batch. If sampling results indicate that the non-stormwater meets water quality objectives for these constituents, additional sampling for a wider range of constituents will be performed and sent to one of the laboratories identified in the sampling analysis plan. Laboratory turnaround time is expected to be a minimum of 24 hours based on the wide list of constituents that need to be identified to meet trigger requirements identified in Tables 6.0-1 and 6.0-2. Thus, some additional settling in the tanks is expected. If test results indicate that WQOs are within acceptable limits, the water will be directly discharged into the San Francisco Bay.

- If instantaneous sampling indicates exceedances in pH, dry ice will be added to the water in the storage tanks. We estimate that two pounds of dry ice will be required to adjust pH downwards of 0.5 units in a 20,000-gallon tank. The exact dosing rate will vary depending on the amount of adjustment required. pH will be resampled to verify adjustments have been performed if water meets trigger requirements identified in Tables 6.0-1 and 6.0-2 to discharge into the San Francisco Bay. Dry ice will be brought to the site daily and stored in airtight containers on the barge. If a surplus of dry ice is added such that the pH is lowered to

below WQO discharge limits, additional construction water will be siphoned into the storage tank where the pH issue is occurring until the pH has been raised to within discharge limits.

- If turbidity exceedances occur, turbidity will be sampled again after a minimum of 24 hours of settling has occurred. Turbidity will be resampled to verify adjustments have been performed if water meets WQO and trigger requirements identified in Tables 6.0-1 and 6.0-2 prior to discharge into the San Francisco Bay.

- If metals or total petroleum hydrocarbon exceedances occur, water will be off-hauled per the protocol described below.

- In terms of discharge, the drain intake in each tank will be elevated from the bottom of the tank a minimum of 18 inches to prevent the discharge of settled solids, if excess water is found acceptable to discharge into the San Francisco Bay. Before each tank is drained, a visual inspection will be performed to determine that sediment retention devices are functioning correctly and that discharges are unlikely to lead to an exceedance of a regulatory limit described herein. At the end of any discharge event, the bottom 2 feet of water will be pumped into one tank and retested or off-hauled per the protocol described below.

- If water does not meet trigger requirements identified in Tables 6.0-1 and 6.0-2 after 24 hours, the non-stormwater within the storage tank will be discharged into a holding barge at Bay Ship and Yacht. From there, it will be discharged to the East Bay Municipal Utility District wastewater collection center. We understand that Kiewit/Manson will hire a contractor to off-haul any construction water pumped into the storage tanks. A Resource Recovery Permit will be included in Appendix D of this document for the off-haul contractor, allowing disposal to the EBMUD wastewater collection center after a contractor has been selected. A map to the facility is located in Appendix D. The facility is open year-round and has confirmed it has the capacity to accept any excess water from the project.

6.0 SUMMARY OF TESTING AND DISCHARGE REQUIREMENTS

Tables 6.0-1 and 6.0-2 below summarize dewatering sampling and discharge requirements for the project to San Francisco Bay. Constituents and methods identified for Piers E4 and E5 caisson dewatering and discharge monitoring are based on current permit requirements and Agency-accepted scope applied during Pier E3 operations.

TABLE 6.0-1

Summary of Sampling, Analysis and Discharge Requirements for Discharges to San Francisco Bay

Parameter	Test Type	Method	Sampling Location	Frequency	Trigger Level
Turbidity	Field	Optical backscatterance probe with data logging	Influent to treatment system, effluent prior to discharge	Continuous	Must not be greater than 10 percent above background in areas where natural turbidity is greater than 50 NTU
Temperature	Field	Temperature probe	Influent to treatment system, effluent prior to discharge	Continuous	< 5 degree change above natural.
pH	Field	pH probe	Influent to treatment system, effluent prior to discharge	Continuous	No less than pH 6.5 and greater than pH 8.5 No change > 0.5 units above or below natural pH.
Dissolved oxygen	Field	YSI or similar instrument	Tanks - Effluent	Every 24 hours for first 2 weeks and then weekly thereafter unless trigger exceeded	5.0 mg/L minimum.
Dissolved sulfide	Lab	SM 4500S2-D	Tanks - Effluent		0.1 mg/L maximum
Arsenic, cadmium, copper, lead, nickel, zinc, selenium	Lab	EPA 6020	Tanks - Effluent		Trigger limits based on Marine Acute Water Quality Objectives per Table 6.0-2 below.
Hexavalent chromium	Lab	SM 3500-Cr-B	Tanks - Effluent		
Suspended Solids Concentration	Lab	EPA 160.2 or SM2540 D	Tanks - Effluent		50 mg/L
TPH Diesel / motor oil / gasoline	Lab	EPA Method 8015 without silica gel clean-up	Tanks - Effluent		210 µg/L
Hydrocarbons	Field	Visual observation	Tanks - Effluent	4 hours	Visible sheen

TABLE 6.0-2

Trigger Levels for Metals per Marine Acute Water Quality Objectives

Constituent	Trigger Level (µg/L)
Arsenic	69
Cadmium	42
Copper	9.4
Chromium (VI)	1,100
Lead	210
Nickel	62.4
Zinc	90
Selenium	5

REFERENCES

1. AMEC Foster Wheeler, Technical Memorandum— Pier E3 Caisson Water Quality, December 17, 2014.

2. California Department of Transportation Contract Plans and Special Provisions for Contract No. 04-013574, dated March 2016.

3. California Department of Transportation, SWPPP/WPCP Preparation Manual, March 2011.

4. California Department of Transportation, Caltrans Construction Site Monitoring Program Guidance Manual, August 2013.

5. California Department of Transportation, Caltrans Statewide Storm Water Management Plan (SWMP), July 2012.

6. East Bay Municipal Utility District, Wastewater Discharge Requirements, https://www.ebmud.com/water-and-wastewater/wastewater-treatment/wastewater-control.

7. Curtis and Tompkins Ltd. Sampling Containers and Holding Times, March 2015.

8. Curtis and Tompkins Ltd., Results from Sampling Pier E3, June-July 2015.

9. Regional Water Quality Control Board Water Quality Certification Order 01-120, San Francisco Bay Oakland Bay Bridge East Span Project, 2001. (R2-2002-0011).

10. Regional Water Quality Control Board, Estuary Statutory Limits, March 2015.

11. State Water Resources Control Board, Order No. 2009-0009-DWQ, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES).

If you have any questions, please contact us.

Sincerely,

ENGEO Incorporated

Jonathan Buck, PE, QSD

Jeffrey A. Adams, PhD, PE

jb/jaa/jf

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENT CERTIFICATION AND ACCEPTANCE

CEM-2008 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM PROJECT IDENTIFIER NUMBER WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Storm Water Pollution Prevention Plan (SWPPP)/Water Pollution Control Program (WPCP)

Amendment Number _____

CONTRACTOR WATER POLLUTION CONTROL MANAGER SIGNATURE	DATE
CONTRACTOR WATER POLLUTION CONTROL MANAGER NAME	PHONE NUMBER

Contractor Certification of SWPPP or WPCP Amendment

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

CONTRACTOR SIGNATURE	DATE
CONTRACTOR NAME	PHONE NUMBER
TITLE	

Resident Engineer Acceptance of SWPPP or WPCP Amendment

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

RESIDENT ENGINEER SIGNATURE	DATE OF AMENDMENT ACCEPTANCE
RESIDENT ENGINEER NAME	PHONE NUMBER

SWPPP/WPCP AMENDMENT CERTIFICATION AND ACCEPTANCE

CEM-2008 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER

Required for Private Entity Administered Projects

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief is true, accurate, and complete. I am aware that significant penalties exist for submitting false information, including the possibility of fine and imprisonment for knowing violations.

LEGALLY RESPONSIBLE PERSON SIGNATURE	DATE
LEGALLY RESPONSIBLE PERSON NAME	PHONE NUMBER
TITLE	

Required for Local Agency/Private Entity Administered Project

Caltrans Oversight Engineer's Concurrence With SWPPP/WPCP Amendment

I and personnel acting under my direction and supervision have reviewed this SWPPP/ WPCP and find that it meets the requirements set forth in the contract Special Provisions, Caltrans *Standard Specifications,* and the Caltrans SWPPP/WPCP Preparation Manual.

OVERSIGHT ENGINEER SIGNATURE	DATE OF AMENDMENT CONCURRENCE
OVERSIGHT ENGINEER NAME	PHONE NUMBER

Instructions

General Information

- The information on CEM-2008 is required for projects with either a Stormwater Pollution Prevention Plan (SWPPP) or a Water Poilution Control Program (WPCP) to document amendment acceptance and certification.
- SWPPP amendments must be certified by the approved signatory as identified in CEM-2006 or 2006T, "Legally Responsible Person Authorization of Approved Signatory," signed by the legally responsible person (LRP).
  1. For Caltrans, the LRP is the district director. The LRP may authorize the project resident engineer to be approved signatory.
  2. For a local agency, the LRP is either a principal executive officer or a ranking elected official. The local agency LRP may authorize the project resident engineer to be approved signatory.
  3. For a private entity performing work in the state right-of-way under an encroachment permit, the LRP must be one of the following:
     a. For a corporation, a responsible corporate officer.
     b. For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

     The private entity LRP may not authorize an approved signatory.
  4. Attach a completed copy of CEM-2008 to each SWPPP or WPCP amendment, and include it in the SWPPP Attachment DD or the WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a Project Identifier Number. For projects without one, write "N/A" in the field.

WDID Number
For projects that have a Water Pollution Control Program enter "WPCP" in this field.

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SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER
	WDID NUMBER
CONTRACTOR NAME AND ADDRESS	PROJECT SITE RISK LEVEL ☐ Risk Level 1 ☐ N/A. WPCP ☐ Risk Level 2 ☐ N/A. Project resides in the Lake Tahoe Hydrologic Unit and is regulated under Order No. R6T-2011-0019, NPDES No. CAG616002. ☐ Risk Level 3

Amendments

Amendment Number	Date Prepared	Brief Description of Amendment	Requested by	Accepted Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SWPPP/WPCP AMENDMENTS LOG

CEM-2009 (REV 11/2013)

Instructions

General Information

- Projects with either a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) require the information on this form to track amendments.
- Attach a completed copy of the form to each accepted SWPPP/WPCP amendment, and include in SWPPP Attachment DD or WPCP Attachment C.

Form

Contract Number/Co/Rte/PM
For local agency encroachment permit projects, write the encroachment permit number in the Contract Number field.

Project Identifier Number
Caltrans projects starting July 1, 2010, will have a project identifier number. For projects without one, write "N/A" in the field.

WDID Number
For projects with WPCP enter "WPCP" in this field.

When the resident engineer has accepted SWPPP or WPCP amendments, enter:

1. The amendment number.
2. The date the Water Pollution Control Manager signed form CEM-2008.
3. A brief description of the amendment.
4. The name and title of person who requested the amendment.
5. The date the resident engineer accepted form CEM-2008.

REFERENCES

1. AMEC Foster Wheeler, Technical Memorandum— Pier E3 Caisson Water Quality, December 17, 2014.

2. California Department of Transportation Contract Plans and Special Provisions for Contract No. 04-013574, dated March 2016.

3. California Department of Transportation, SWPPP/WPCP Preparation Manual, March 2011.

4. California Department of Transportation, Caltrans Construction Site Monitoring Program Guidance Manual, August 2013.

5. California Department of Transportation, Caltrans Statewide Storm Water Management Plan (SWMP), July 2012.

6. East Bay Municipal Utility District, Wastewater Discharge Requirements, https://www.ebmud.com/water-and-wastewater/wastewater-treatment/wastewater-control.

7. Curtis and Tompkins Ltd. Sampling Containers and Holding Times, March 2015.

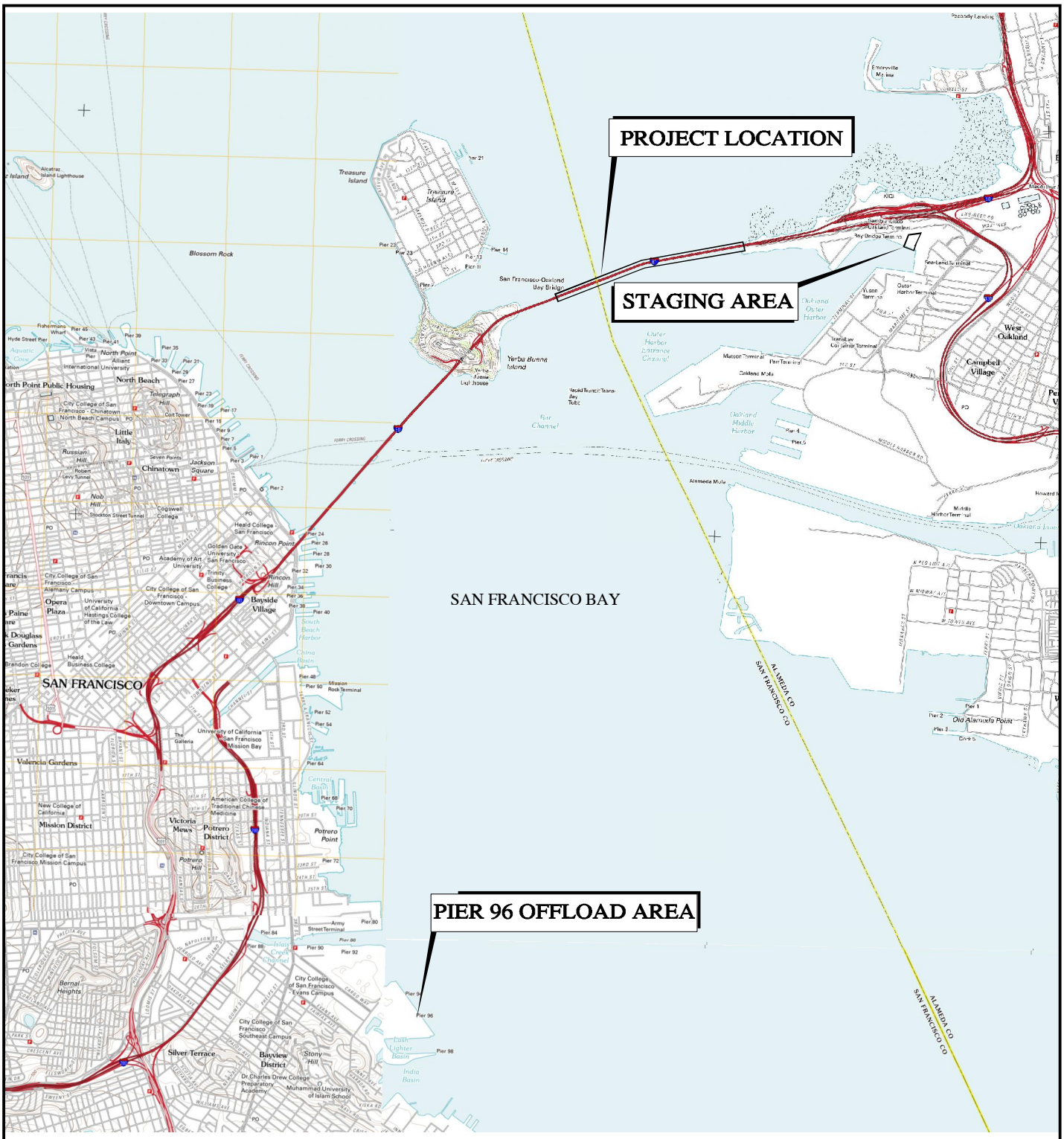
8. Curtis and Tompkins Ltd., Results from Sampling Pier E3, June-July 2015.

9. Regional Water Quality Control Board Water Quality Certification Order 01-120, San Francisco Bay Oakland Bay Bridge East Span Project, 2001. (R2-2002-0011).

10. Regional Water Quality Control Board, Estuary Statutory Limits, March 2015.

11. State Water Resources Control Board, Order No. 2009-0009-DWQ, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-0006-DWQ NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES).

FIGURES



BASE MAP SOURCE: USGS

ENGEO Expect Excellence

VICINITY MAP

PIER E4 - E18 - CONSTRUCTION DEWATERING AND DISCHARGE

OAKLAND, CALIFORNIA

PROJECT NO.: 9050.000.004		FIGURE NO. 1A
SCALE: AS SHOWN		
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0 METERS 200

BASE MAP SOURCE: GOOGLE EARTH MAPPING SERVICE

ENGEO Expect Excellence

VICINITY MAP

PIER E4 - E18 - CONSTRUCTION DEWATERING AND DISCHARGE

SAN FRANCISCO, CALIFORNIA

PROJECT NO.: 9050.000.004

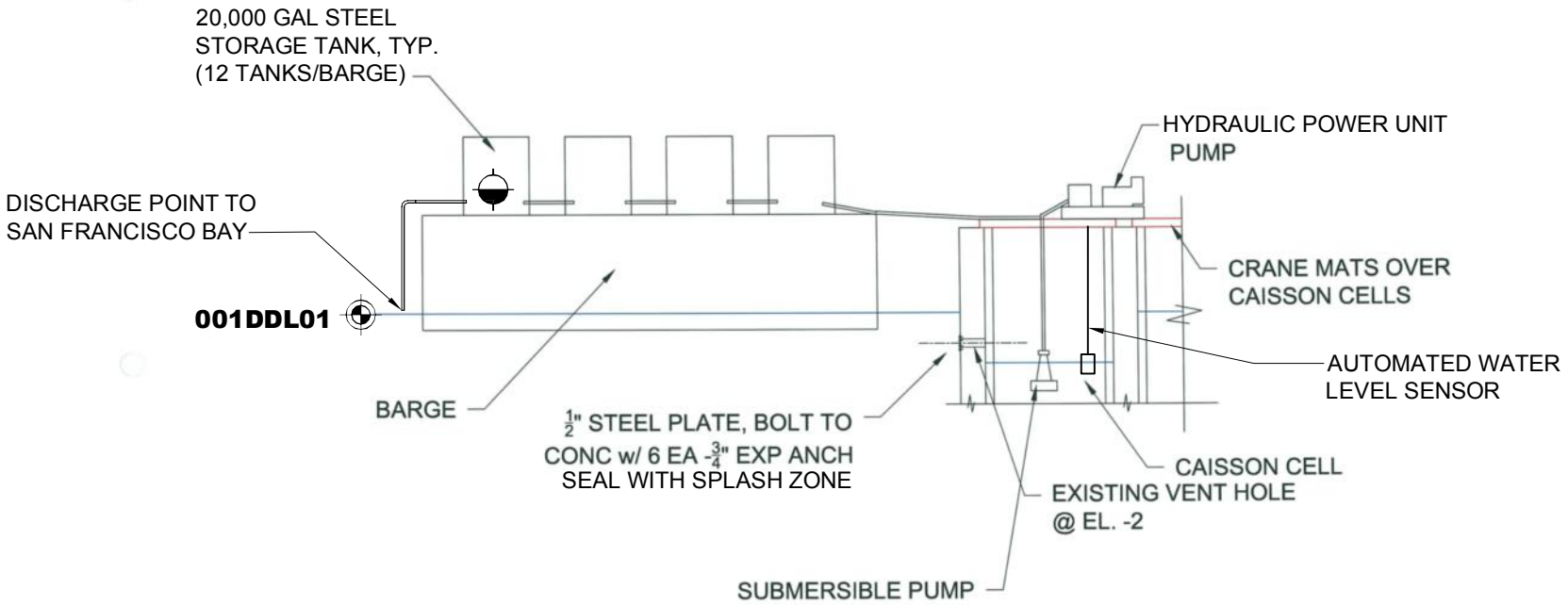
SCALE: AS SHOWN

DRAWN BY: PC CHECKED BY: JB

FIGURE NO. 1B

G:\Drafting\DRAFTING2_Dwg\9050\000\Kiewit-DEMO\DEWATERING-DISCHARGE\PIERS E4 & E18\9050000004-DW-1B-SitePlan-0316.dwg Plot Date: 5-09-16 spatters

ORIGINAL FIGURE PRINTED IN COLOR



001DDL01 DEWATERING DISCHARGE LOCATION

DEWATERING SAMPLING LOCATION

ENGEO Expect Excellence

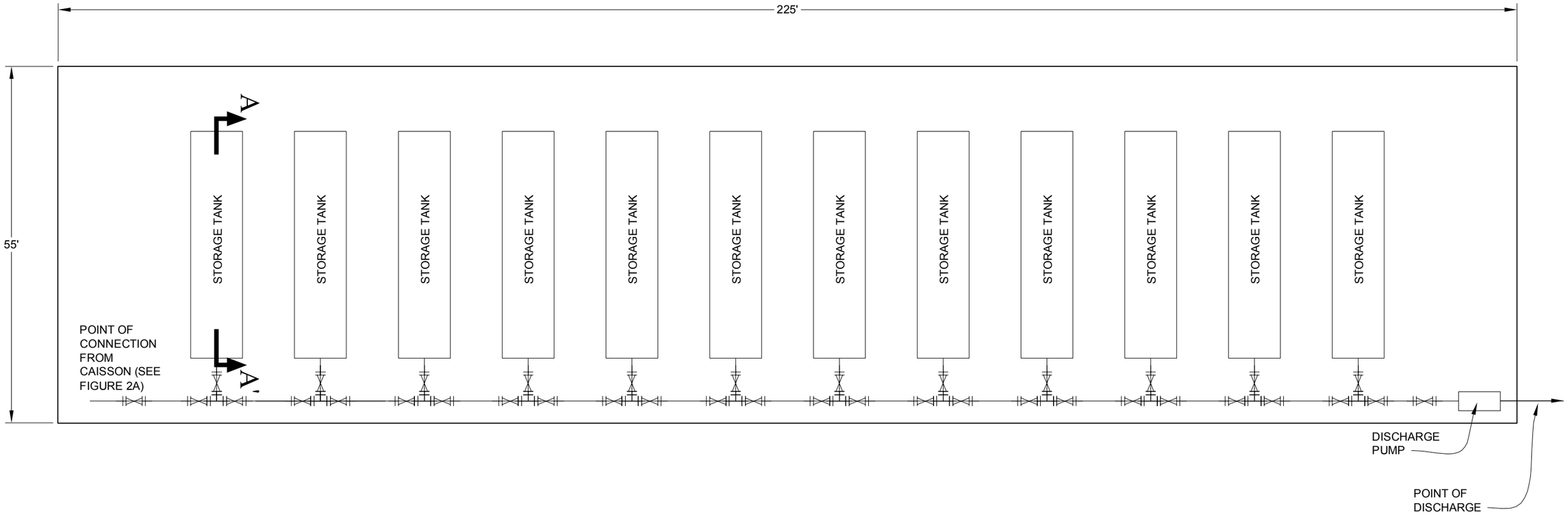
CAISSON DEWATERING

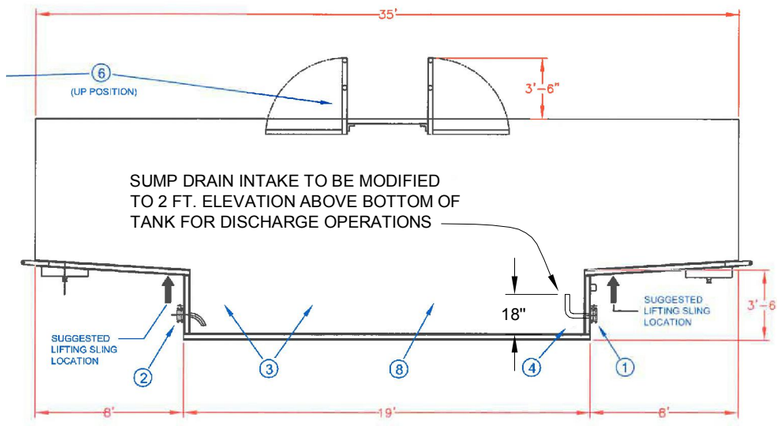
PIER E4 - E18 - CONSTRUCTION DEWATERING AND DISCHARGE

SAN FRANCISCO, CALIFORNIA

PROJECT NO.: 9050.000.004	FIGURE NO. 2A
SCALE: NO SCALE	
DRAWN BY: PC	CHECKED BY: JB

ORIGINAL FIGURE PRINTED IN COLOR





SECTION A-A'

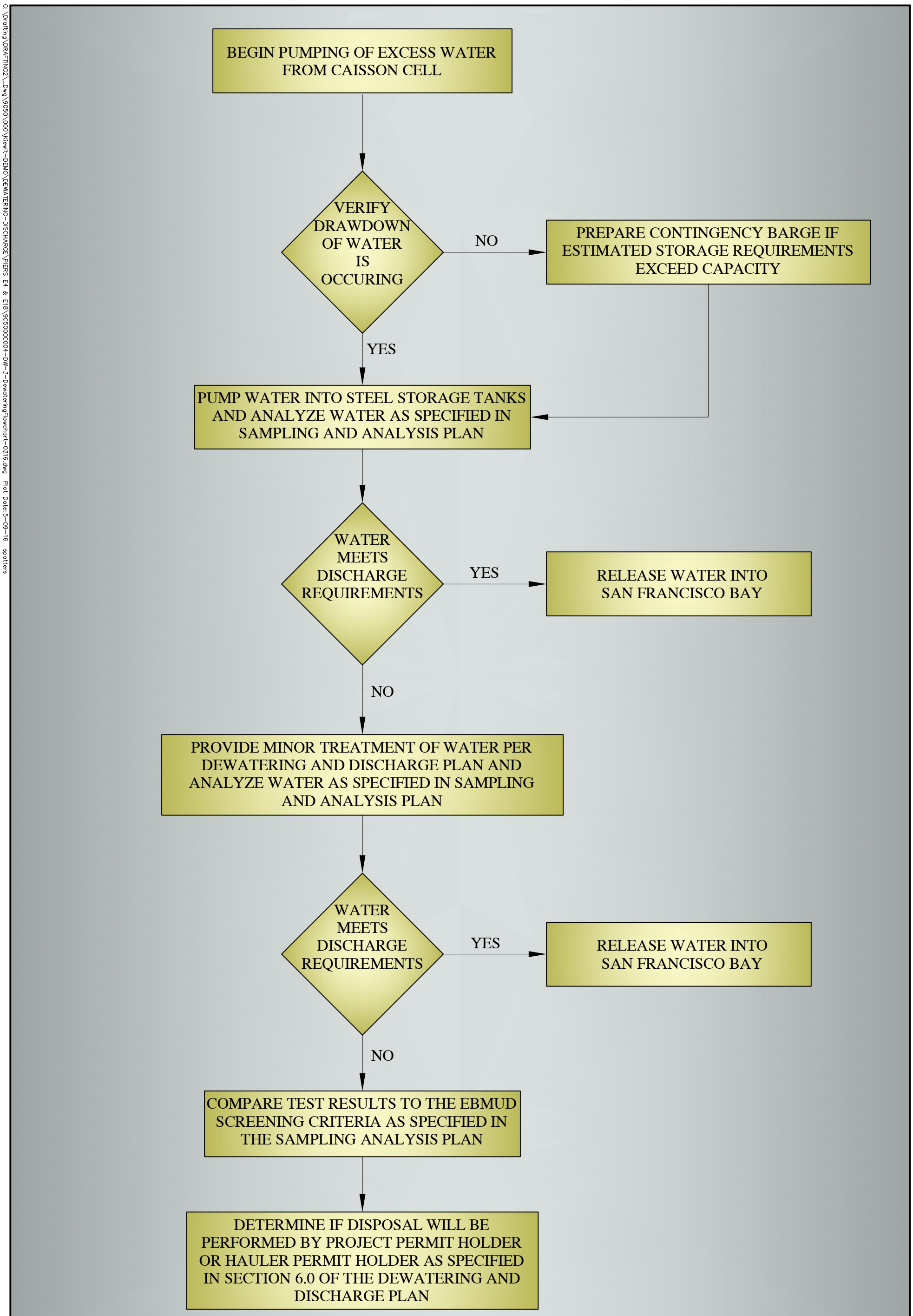
ENGEO Expect Excellence

TYPICAL DEWATERING
OPERATIONS BARGE LAYOUT
PIER E4 - E18 - CONSTRUCTION DEWATERING AND DISCHARGE
SAN FRANCISCO, CALIFORNIA

PROJECT NO.: 9050.000.004		FIGURE NO. 2B
SCALE: NO SCALE		
DRAWN BY: PC	CHECKED BY: JB	

G:\Drafting\DRAFTING2_Dwg\9050\000\Kiewit-DEMO\DEWATERING-DISCHARGE\PIERS E4 & E18\9050000004-DW-2B-BakerTank-0316.dwg Plot Date: 5-09-16 spatters

ORIGINAL FIGURE PRINTED IN COLOR



ENGEO Expect Excellence

DEWATERING PROCESS FLOWCHART

PIER E4 - E18 - CONSTRUCTION DEWATERING AND DISCHARGE

SAN FRANCISCO, CALIFORNIA

PROJECT NO.: 9050.000.004

SCALE: NO SCALE

DRAWN BY: PC CHECKED BY: JB

FIGURE NO. 3

ORIGINAL FIGURE PRINTED IN COLOR

APPENDIX A

Dewatering Operations Monitoring Form

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

Form A - Instantaneous Sampling for Excess Construction Water
Pier E3 Demolition (Contract 04-013574)

Name of Sampler _____ Date:_____
Cell: _____

TANK	TIME	Tank Temp (F)	Bay Temp (F)	Tank pH	Bay pH	Tank Turbidity (NTU)	Bay Turbidity (NTU)	DO (mg/L)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
Avg								

Waste Discharge Requirement Checklist for Temperature, pH, Turbidity and Dissolved Oxygen

1. Is average tank temperature greater than 5 degrees above bay temperature? yes no

2. Is average tank pH less than 6.5, greater than 8.5 or different from Bay pH by greater than 0.5 units
yes no

3. Is average tank turbidity greater than 50, or 10% greater than bay turbidity if bay turbidity is over 50?
yes no

4. Is average tank DO less than 5 mg/L? yes no

If yes was answered to any of the above questions, water does not meet waste discharge requirements
Water should be treated in accordancy with project DDWP standards or off-hauled to EBMUD facility.

Form B - Lab Analysis Checklist for Excess Construction Water
Pier E3 Demolition (Contract 04-013574)

Name of Water Quality Monitor _____ Date:_____
Cell _____

CONSTITUENT	RESULT FROM LAB	TRIGGER LIMIT
Dissolved sulfide		0.1 mg/L maximum
Arsenic		69 ug/L maximum
Cadmium		42 ug/L maximum
Copper		9.4 ug/L maximum
Chromium (VI)		1100 ug/L maximum
Lead		210 ug/L maximum
Nickel		62.4 ug/L maximum
Zinc		90 ug/L maximum
Selenium		5 ug/L maximum
Suspended Solids Concentration		50 mg/L maximum
TPH Diesel / motor oil / gasoline		210 ug/L maximum

If results exceed trigger levels, water does not meet waste discharge requirements
Water should be off-hauled to EBMUD facility.

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

CHAIN OF CUSTODY

Page _____of _____
Chain of Custody # : _____

C&T LOGIN # _____

Project No: _____
Project Name: SFOBB Piers E4 - E5
EDD Format: _____ **Rpt Level:** ☐II ☐III ☐IV
Turnaround Time: ☐ RUSH _____ ☐ Standard

Sampler:
Report To:
Company :
Telephone:
Email:

Lab No.	Sample ID.	Sampling		Matrix					Chemical Preservative					Analytical Request														
		Date	Time	Water	Soil			# of Containers	HCl	H_2SO_4	HNO_3	NaOH	None	6020 T - CAM 22 Metals	Turbidity	pH	DO	Dissolved Sulfide	TPH Diesel & Motor Oil	TSS								

Notes:

SAMPLE RECEIPT
☐ Intact ☐ Cold
☐ On Ice ☐ Ambient

RELINQUISHED BY:	RECEIVED BY:
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

WEEKLY DISCHARGE REPORT

PROJECT INFORMATION AND SITE ADDRESS SFOBB Pier E4 – E18 Demolition Proect 171 Burma Rd Oakland, CA 94607	CONTRACT NUMBER 04-013574
CONTRACTOR NAME AND ADDRESS Kiewit/Manson, AJV 4650 Business Center Dr Fairfield, CA 94804	PROJECT IDENTIFIER NUMBER 0416000287
SUBMITTED BY CONTRACTOR (PRINT AND SIGN)	WDID NUMBER
DATE OF SAMPLING FROM _____ TO _____	DATE SUBMITTED
LOCATION OF DISPOSAL, REASON OF DECISION (e.g. Why discharged to EBMUD or SF Bay) AND FINAL QUANTITY DISCHARGED.	
ACTIVITIES FOR THE WEEK	
OBSERVATIONS (IF ANY)	

APPENDIX B

Sampling and Analysis Plan

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

SAMPLING AND ANALYSIS PLAN

PIERS E4 AND E5 Dewatering Operations
ALAMEDA COUNTY, CALIFORNIA
CONTRACT NO. 04-013574

I. Description of Dewatering Activities

The California Department of Transportation (Department), as part of the dismantling of the original East Span of the San Francisco-Oakland Bay Bridge (SFOBB) for the SFOBB East Span Seismic Safety Project (SFOBB Project), proposed a demonstration project for the controlled implosion of the in-water concrete caisson supporting Pier E3. Removal of the original span, including its marine foundations, was required to satisfy regulatory requirements of the SFOBB Project. Pier E3 was located approximately 1,535 feet east of Yerba Buena Island (YBI), in San Francisco County. The removal of Pier E3 was completed in December 2015.

The second phase of the project intends to demolish the above-water portion of Piers E4 and E5. The project contractor Kiewit/Manson JV, will perform the demolition and stage the project from a portion of Wharf 6 located within the Port of Oakland.

Based on existing Federal and State permits for the project, Kiewit/Manson JV intends to demolish the existing above-ground pier systems in place and fill the void spaces in the existing hollow caissons structure below the pier with concrete rubble, in lieu of off-hauling the debris. During the operations, the displaced caisson water will rise above the existing weep holes in the above-ground portion of the pier, and would thus otherwise directly discharge into the San Francisco Bay. To prevent potential overflow and direct discharge from the caisson voids to the Bay, the water will be pumped into storage tanks located on an adjacent barge.

Water will be sampled within the metal storage tanks to determine if water quality objectives are met so that discharge may occur within acceptable limits. Depending on the sample results, water may be directly discharged or initially treated (if pH adjustment required) before discharge into the San Francisco Bay, or if necessary may be off-hauled to an East Bay Municipal Utility District (EBMUD) waste water collection center if receiving water parameters are not met.

II. Excavation Water Sampling and Analyses

Prior to sampling, all sampling personnel and alternates will review the Sampling and Analysis Plan (SAP). Water samples will be collected by the trained personnel listed below in accordance with the following protocol:

- Water Quality Monitor: Richard Gandolfo, QSD #295, (925) 866-9000, ENGEO.

  Richard has 8 years of experience and specializes in phase I/ phase II environmental site assessments (ESA), groundwater/soil environmental/dewatering operation sampling, monitor

well sampling, and Storm Water Pollution Prevention Plan (SWPPP) and Erosion Control Plan (ECP) design.

Representative Projects include:
- San Francisco - Oakland Bay Bridge YBITS 1 Project – Stormwater Sampling.
- Highlands Ranch Antioch – Environmental and Stormwater Sampling.
- Arroyo Crossing, Livermore – Environmental and Stormwater Sampling.
- Additional references on request.

- Field testing for pH, turbidity, Dissolved Oxygen and temperature will be conducted using hand measurement tools in each tank according to the protocols outlined in Section 6 of the Construction Dewatering and Discharge Work Plan.

- Once all of the storage tanks are full for each batch, a grab sample will be collected by attaching a laboratory provided unpreserved poly container to an extension pole, and submerging the poly container into stored excavation water. One set of laboratory tests will be run for every 80,000 gallons of water to be processed. For the majority of cells, this is far less than the expected batch sizes. The excess water will be transferred from the poly container into the appropriate laboratory provided container as outlined in the tables below after pumping is completed:

LABORATORY ANALYSIS SUMMARY

For San Francisco Bay Discharges

Parameter	Testing Method	Reporting Limit	Minimum Sample Volume	Container Specification	Preservative Specification	Holding Time
Total CAM 17 Metals	EPA 6020	5-50 ug/L	1L	1L Poly	Preserved at Lab, Ice or refrigerate at 4 degrees C (39.2 degrees F), Dark	7 days
Dissolved Sulfide	SM 4500S2-D	5-50 ug/L	250 ml	250 mL polypropylene with sodium hydroxide	Ice or refrigerate at 4 degrees C (39.2 degrees F), Dark	7 days
Hexavalent Chromium	SM 3500-Cr-B	5-50 ug/L	250 ml	250 ml poly	Ice or refrigerate at 4 degrees C (39.2 degrees F), Dark	24 hours
Suspended Solids Concentration	ASTM D3977-77-B	1 mg/L	1L	1L Poly	Ice or refrigerate at 4 degrees C (39.2 degrees F), Dark	7 days
TPHg	EPA 8015M	50 ug/L	120 mL	40 mL VOA	HCL, Ice or refrigerate at 4 degrees C (39.2 degrees F)	14 days

- Immediately following collection, sample bottles for laboratory analytical testing will be capped, labeled, documented on a Chain-of-Custody form provided by the analytical laboratory, sealed in a re-sealable storage bag, placed in an ice-chilled cooler, at as near to 4 degrees Celsius as practicable, and delivered within 4 hours to Curtis and Tompkins Analytical Laboratories for analysis on a 24-hour turnaround time.

- All original data documented on sample bottle identification labels, Chain-of-Custody forms, Sampling Activity Logs, and Inspection Checklists will be recorded using waterproof ink. These will be considered accountable documents. If an error is made on an accountable document, the individual will make corrections by lining through the error and entering the correct information. The erroneous information will not be obliterated. Sampling and field analysis activities will be documented using the following:

  - Sample Bottle Identification Labels: Sampling personnel will attach an identification label to each sample bottle. At a minimum, the following information will be recorded on the label, as appropriate:
    - Project name
    - Project number
    - Unique sample identification number and location. [Caltrans Number]- [Six digit sample collection date]-[Location] (*Example:* 07-0G5304-081801-Inlet472). Quality assurance/ quality control (QA/QC) samples shall be identified similarly using a unique sample number or designation (*Example:* 07-0G5304-081801-DUP1).
    - Collection date/time (No time applied to QA/QC samples
    - Analysis constituent

  - Sampling Activity Logs: A log of sampling events will identify:
    - Sampling date
    - Separate times for collected samples and QA/QC samples recorded to the nearest minute
    - Unique sample identification number and location
    - Analysis constituent
    - Names of sampling personnel
    - Weather conditions (including precipitation amount)
    - Field analysis results
    - Other pertinent data

  - Chain-of-Custody (COC) forms: All samples to be analyzed by a laboratory will be accompanied by a COC form provided by the laboratory. Only the sample collectors will sign the COC form over to the laboratory. COC procedures will be strictly adhered to for QA/QC purposes.

  - Storm Water Quality Construction Inspection Checklists: When applicable, the contractor's stormwater inspector will document on the checklist that samples for non-visible pollutants were taken during a rain event.

III. Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) will be performed for all sampling activities, laboratory reports, and COCs to provide for consistency between laboratory methods, sample identifications, dates, and times for both primary samples and QA/QC samples.

For each sample shipment, trip blanks will be prepared to evaluate if the shipping and handling procedures are introducing contaminants into the samples and if cross contamination has occurred between the collected samples. A minimum of one trip blank will be submitted to the laboratory for analysis with every shipment of samples. Trip blanks will consist of representative sample containers that have been filled with High Performance Liquid Chromatography (HPLC) organic-free (for organics) or de-ionized water (for inorganics) and shipped with the empty sampling containers to the site or sampling area prior to sampling. The sealed trip blanks are not opened in the field and are shipped to the laboratory in the same cooler with the samples collected for analyses. The trip blanks will be preserved, packaged, and sealed in the manner described for the environmental samples. A separate sample number and station number will be assigned to each trip sample and it will be submitted blind to the laboratory.

For every 20 samples taken for laboratory analysis, one duplicate sample will also be taken to verify consistency of the laboratory results.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel will:

- Wear a clean pair of surgical gloves prior to the collection and handling of each sample at each location.
- Not contaminate the inside of the sample bottle by allowing it to come into contact with any material other than the water sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Not leave the cooler lid open for an extended period of time once samples are placed inside.
- Not sample near a running vehicle where exhaust fumes may impact the sample.
- Not touch the exposed end of a sampling tube, if applicable.
- Avoid allowing rain water to drip from rain gear or other surfaces into sample bottles.
- Not eat, smoke, or drink during sample collection.
- Not sneeze or cough in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample.

- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water.

IV. Data Evaluation and Regulatory Criteria

The water quality analytical results and the QA/QC data analytical results will be submitted to the Resident Engineer for evaluation within 24 hours of receiving the laboratory analytical results, and at least 24 hours in advance of planned discharges to the EBMUD Treatment Plant or the San Francisco Bay. Discharges will not occur without approval from the Resident Engineer. Water sample results will be evaluated based on EBMUD screening levels if high metal concentrations are found and the need to off-haul the water is required. Otherwise, the project Surface Water Screening Levels apply. Screening levels are furnished in Appendix C.

The following discharge protocols will apply based on sample analyses:

1. Discharge into San Francisco Bay

Parameter	Test Type	Method	Sampling Location	Frequency	Trigger Level
Turbidity	Field	Optical back scatterance probe with data logging	Influent to treatment system, effluent prior to discharge	Continuous	Must not be greater than 10 percent above background in areas where natural turbidity is greater than 50 NTU
Temperature	Field	Temperature probe	Influent to treatment system, effluent prior to discharge	Continuous	< 5 degree change above natural.
pH	Field	pH probe	Influent to treatment system, effluent prior to discharge	Continuous	No less than pH 6.5 and greater than pH 8.5 No change > 0.5 units above or below natural pH.
Dissolved oxygen	Field	YSI or similar instrument	Tanks – Effluent	Every 24 hours for first 2 weeks and then weekly thereafter unless trigger exceeded	5.0 mg/L minimum.
Dissolved sulfide	Lab	SM 4500S2-D	Tanks – Effluent		0.1 mg/L maximum
Arsenic, cadmium, copper, lead, nickel, zinc, selenium	Lab	EPA 6020	Tanks – Effluent		Trigger limits based on Marine Acute Water Quality Objectives per Table below.
Hexavalent chromium	Lab	SM 3500-Cr-B	Tanks – Effluent		
Suspended Solids Concentration	Lab	EPA 160.2 or SM2540 D	Tanks – Effluent		50 mg/L

Parameter	Test Type	Method	Sampling Location	Frequency	Trigger Level
TPH Diesel / motor oil / gasoline	Lab	EPA Method 8015 without silica gel clean-up	Tanks – Effluent		210 µg/L
Hydrocarbons	Field	Visual observation	Tanks - Effluent	4 hours	Visible sheen

Trigger Limits for Metals
per Marine Acute Water Quality Objectives

Constituent	Trigger Level (µg/L)
Arsenic	69
Cadmium	42
Copper	9.4
Chromium (VI)	1,100
Lead	210
Nickel	62.4
Zinc	90
Selenium	5

2. Disposal at EBMUD Wastewater Treatment Plant by Authorized Permit Holder (Disposal Contractor)

   a. Metal/organics concentrations and pH levels less than EBMUD acceptance criteria.
   b. Turbidity less than the 10% total solids (100,000 NTU) acceptance criteria established by EBMUD.

   Note that off-haul water will be tested by the approved EBMUD off-haul contractor.

V. Quality Assurance and Quality Control

Sample Control

To maintain evidence of authenticity, the collected samples will be properly identified with a label attached to the sample container specifying the sample identification number, location, date collected, time collected, and the sampler's name or initials. Water samples for laboratory analyses will be kept under custody from the time of collection to the time of analysis. Chain-of-custody forms will be used to list all sample transfers to confirm that the sample was in constant custody between collection and analysis.

While the samples are in shipment to the approved analytical laboratory, custody seals will be placed over the sample cooler opening to provide that the integrity of the samples has not been compromised. The receiving laboratory must examine the seals on arrival and document that the seals are intact. Upon opening the container, the receiving laboratory will note the condition of the sample containers (e.g., broken or leaking bottles).

Laboratory Quality Control

Laboratory quality control (QC) will follow the relevant specifications in *EPA SW-846, or the Handbook of Analytical and Sample-Preparation Procedures, Volumes I, II, and III.* The selected analytical laboratory will be certified in accordance with the quality control procedures per the California Department of Public Health Environmental Laboratory Accreditation Program (ELAP)

APPENDIX C

EBMUD and SFBRWQCB Screening Levels

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

Wastewater control ordinance & discharge limits

EBMUD's Wastewater Control Ordinance regulates wastewater discharges into our wastewater system and includes discharge limits (local limits) for select pollutants.

Wastewater Control Ordinance

EBMUD's Wastewater Control Ordinance provides legal authority for EBMUD to implement the pretreatment program. The ordinance establishes regulations and charges for the collection, treatment, and disposal of wastewater, as well as penalties for violations.

Document
EBMUD's Wastewater Control Ordinance (http://www.ebmud.com/index.php/download_file/for

Wastewater Discharge Limits

Some industrial customers of EBMUD may also be subject to federal regulations for specific categories of businesses. These "categorical industries" are subject to additional regulations that include discharge limits (pretreatment standards) for pollutants specific to the category. If a pollutant has both a local limit and federal limit, the more stringent limit is applied. The federal regulations can be viewed on the U.S. EPA

(http://water.epa.gov/scitech/wastetech/guide/industry.cfm) website by scrolling down to "Subchapter N - Effluent Guidelines and Standards" and selecting "Parts 400 - 424" or "Parts 425 - 471".

EBMUD Local Limits

Arsenic	2 mg/L
Cadmium	1 mg/L
Total Identifiable Chlorinated hydrocarbons (TICH (Total Identifiable Chlorinated Hydrocarbons))	0.5 mg/L
Chromium (total)	2 mg/L
Copper	5 mg/L
Cyanide	5 mg/L
Iron	100 mg/L
Lead	2 mg/L
Mercury	0.05 mg/L
Nickel	5 mg/L
Oil and Grease	100 mg/L
pH	not less than 5.5 S.U.
Phenolic compounds	100 mg/L
Silver	1 mg/L
Temperature	150°F
Zinc	5 mg/L

mg/L - milligrams per liter
S.U. - standard units

Total Identifiable Chlorinated Hydrocarbons (TICH) - The sum of the concentrations of all quantifiable values equal to or greater than the detection limit for all chlorinated hydrocarbons identified by EPA Method 624.

Table 3-3A: Water Quality Objectives for Copper and Nickel in San Francisco Bay Segments (ug/L)

Compound	4-day Average (CCC)[1]	1-hr Average (CMC)[2]	Extent of Applicability
Copper	6.9	10.8	The portion of Lower San Francisco Bay south of the line representing the Hayward Shoals shown on Figure 7.2.1-1. and South San Francisco Bay
Copper	6.0	9.4	The portion of the delta located in the San Francisco Bay Region, Suisun Bay, Carquinez Strait, San Pablo Bay, Central San Francisco Bay, and the portion of Lower San Francisco Bay north of the line representing the Hayward Shoals on Figure 7.2.1-1.
Nickel	11.9	62.4*	South San Francisco Bay

[1]Criteria Continuous Concentration

[2]Criteria Maximum Concentration

*Handbook of Water Quality Standards, 2nd ed. 1994 in Section 3.7.6 states that the CMC = Final AcuteValue/2; 62.4 is the Final Acute Value (resident species database)/2; so the site-specific CMC is lower than the California Toxics Rule value because we are using the resident species database instead of the National Species Database.

Table 3-3: Marine[a] Water Quality Objectives for Toxic Pollutants for Surface Waters (all values in ug/l)

Compound	4-day Average	1-hr Average	24-hr Average
Arsenic[b, c, d]	36	69	
Cadmium[b, c, d]	9.3	42	
Chromium VI[b, c, d, e]	50	1100	
Copper[c, d, f]			
Cyanide[g]			
Lead[b, c, d]	8.1	210	
Mercury[h]	0.025	2.1	
Nickel[b, c, d]	8.2	74	
Selenium[i]			
Silver[b, c, d]		1.9	
Tributyltin[j]			
Zinc[b, c, d]	81	90	
PAHs[k]			15

NOTES:

a. Marine waters are those in which the salinity is equal to or greater than 10 parts per thousand 95% of the time, as set forth in Chapter 4 of the Basin Plan. Unless a site-specific objective has been adopted, these objectives shall apply to all marine waters except for the South Bay south of Dumbarton Bridge (where the California Toxics Rule (CTR) applies) or as specified in note h (below). For waters in which the salinity is between 1 and 10 parts per thousand, the applicable objectives are the more stringent of the freshwater (Table 3-4) or marine objectives.

b. Source: 40 CFR Part 131.38 (California Toxics Rule or CTR), May 18, 2000.

c. These objectives for metals are expressed in terms of the dissolved fraction of the metal in the water column.

d. According to the CTR, these objectives are expressed as a function of the water-effect ratio (WER), which is a measure of the toxicity of a pollutant in site water divided by the same measure of the toxicity of the same pollutant in laboratory dilution water. The 1-hr. and 4-day objectives = table value X WER. The table values assume a WER equal to one.

e. This objective may be met as total chromium.

f. Water quality objectives for copper were promulgated by the CTR and may be updated by U.S. EPA without amending the Basin Plan. Note: at the time of writing, the values are 3.1 ug/l (4-day average) and 4.8 ug/l (1-hr. average). The most recent version of the CTR should be consulted before applying these values.

g. Cyanide criteria were promulgated in the National Toxics Rule (NTR) (Note: at the time of writing, the values are 1.0 µg/l (4-day average) and 1.0 µg/l (1-hr. average)) and apply, except that site-specific

marine water quality objectives for cyanide have been adopted for San Francisco Bay as set forth in Table 3-3C.

h. Source: U.S. EPA Ambient Water Quality Criteria for Mercury (1984). The 4-day average value for mercury does not apply to San Francisco Bay; instead, the water quality objectives specified in Table 3-3B apply. The 1-hour average value continues to apply to San Francisco Bay.

i. Selenium criteria were promulgated for all San Francisco Bay/Delta waters in the National Toxics Rule (NTR). The NTR criteria specifically apply to San Francisco Bay upstream to and including Suisun Bay and Sacramento-San Joaquin Delta. Note: at the time of writing, the values are 5.0 ug/l (4-day average) and 20 ug/l (1-hr. average).

j. Tributyltin is a compound used as an antifouling ingredient in marine paints and toxic to aquatic life in low concentrations. U.S. EPA has published draft criteria for protection of aquatic life (Federal Register: December 27, 2002, Vol. 67, No. 249, Page 79090-79091). These criteria are cited for advisory purposes. The draft criteria may be revised.

k. The 24-hour average aquatic life protection objective for total PAHs is retained from the 1995 Basin Plan. Source: U.S. EPA 1980.

APPENDIX D

Resource Recovery Permit – Materials Acceptance Agreement

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336 Fax (510) 287-1530
RRwaste@ebmud.com

RESOURCE RECOVERY PERMIT

RE: EBMUD Resource Recovery Permit (Non-Hazardous)

Dear Prospective Customer:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to assist you with your waste disposal needs. Attached is an application for a Resource Recovery Permit for delivery of non-hazardous materials and related documents required to set up an account for material disposal at EBMUD. Please complete the permit application packet and return it to the Resource Recovery Program at the address above.

Permit Application

The checklist below lists the forms required to be completed to start the permitting process.

REQUIRED FOR ALL COMPANIES

☐ Permit Application (two pages)
☐ Material Acceptance Agreement(s) (Addendum A), required for *each* separate type of material to be delivered
☐ Insurance: General Liability (Addendum B) Insurance Certificate, Auto/Trucking (Addendum C), and Worker's Compensation (Addendum D) Insurance Certificates
☐ (optional) Resource Recovery Third Party Billing Agreement (Addendum A1), required to establish third-party billing for each material to be delivered

Additional Information

- No material may be delivered until an EBMUD Gate Pass is provided for that material.
- Annual fee of $300 will be invoiced to your company. Please do not send a check at this time.
- Disposal fees are based on a full tanker capacity for each delivery.
- The receiving stations are available 24-hours per day, 7 days per week for routine deliveries, and located at 2020 Wake Avenue, Oakland, CA.
- Non-routine deliveries requiring staff involvement (e.g. issuance of a new tanker decal, driver site orientation, and first-load sampling for all new materials) are required to have an appointment during regular business hours with the Senior Environmental Health and Safety Specialist, (510) 986-7835.
- All vehicles entering the EBMUD facility for waste disposal must be equipped with:
  - Back-up alarm
  - Tanker equipped with a four-inch male camlock fitting adaptor to connect to the EBMUD receiving station.

If you have any questions about the permit process or information required, please contact the Wastewater Control Representative at (510) 287-1336.

Attachments

RESOURCE RECOVERY PROGRAM
P. O. BOX 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336 Fax (510) 287-1530
RRwaste@ebmud.com

Instructions For Completing the Resource Recovery Permit Application

Please Type or Print the Requested Information

Permit Application Business Name – Enter the name of the business that is accepting legal responsibility for material discharge, including responsibility for any enforcement actions and/or penalties imposed by EBMUD. Upon approval of the permit, this will be the permitted party. This party will also provide insurance certificates for General Liability (Addendum B) Auto/Trucking (Addendum C) and Workers Compensation (Addendums D). Each proposed waste stream must have a Material Acceptance Agreement (Addendum A).

EBMUD Permit Number and Expiration Date – completed by EBMUD.

Permit Holder Applicant Contract Information - Enter the applicant's business contact information.

Billing Contact Information – Enter the billing contact information.

Reference is made to the **Wastewater Control Ordinance**. The Ordinance may be obtained from our website:

http://www.ebmud.com/our-water/wastewater-treatment/wastewater-treatment-mandate/control-ordinance/wastewater-control-ord

Permit Applicant Signature – Enter the name and title of the person signing the application. The person signing the application must be authorized to sign under 40 CFR 403.12(l), and Title V, Section 3 of the Wastewater Control Ordinance. Authorized signatories may include:

1) A responsible corporate officer, such as:
   a. a president, vice-president, secretary, treasurer, or other person performing similar policy or decision making functions or;
   b. a manager of one or more manufacturing, production, or operating facilities, if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures and the manager is authorized to make management decisions which govern the operation of the regulated facility.

2) A general partner or sole proprietor, if the applicant is a partnership or sole proprietorship.

3) A duly authorized representative. The duly authorized representative must be:
   a. an individual having responsibility for the overall operation of the facility from which the wastewater discharge originates. Examples include plant manager, field superintendent, or environmental manager; and
   b. authorized in writing by a person described in paragraph (1) or (2). The written authorization must be submitted to the District.

Return the signed original application to:

East Bay Municipal Utility District
Resource Recovery Program
P.O. Box 24055, MS 702
Oakland, CA 94623-1055

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336
RRwaste@ebmud.com

RESOURCE RECOVERY PERMIT (NON-HAZARDOUS)

Application Business Name ("Permit Holder")	EBMUD Permit Number	Expiration Date
EBMUD USE ONLY	EBMUD USE ONLY	EBMUD USE ONLY

Permit Holder-Applicant Contact Information

Contact Name / Title		Company	
Mailing Address		Street Address	
City	Zip Code	Telephone	E-Mail

Billing Contact Information

Contact Name / Title		Company	
Mailing Address		Street Address	
City	Zip Code	Telephone	E-Mail

This Non-Hazardous Resource Recovery Permit ("Permit") is issued to the Permit Holder described above for the delivery of non-hazardous materials to EBMUD's Main Wastewater Treatment Plant ("WWTP"). The Permit includes all Addenda hereto.

MATERIAL ACCEPTANCE

Permit Holder must submit a Material Acceptance Agreement ("MAA", Addendum A) and wastestream-specific analytical results for each proposed wastestream. EBMUD Resource Recovery Program will review the submittal and either approve or not approve the wastestream for receipt at the WWTP. Disposal may **not** proceed without prior approval from EBMUD.

CONDITIONS OF DISCHARGE

Permit Holder must comply, and must require its haulers, generators, brokers and contractors to comply, with all of the following conditions at all times:

1. Discharge ONLY material for which the Permit Holder has submitted an MAA, approved by EBMUD.
2. Not dispose of any regulated radioactive waste, regulated PCBs, materials regulated by Toxic Substances Control Act, or hazardous waste as defined by Section 25117 of the California Health and Safety Code or by any other federal, state, or local statute or regulation, to the WWTP.
3. Not dispose of any material that may interfere with WWTP operations.
4. Allow EBMUD staff to conduct random inspections and collect samples at the place of generation and on the truck.
5. Maintain all appropriate and valid county and state permit(s) for hauling material to EBMUD.
6. FOG haulers must maintain current Inedible Kitchen Grease (IKG) registration from California Dept. of Food & Agriculture.
7. Comply with all applicable Cal OSHA requirements, including but not limited to California Code of Regulations, title 8, section 3210(b) relating to driver fall protection.
8. Supply equipment to properly dispose of material (e.g., backup horn alarm safety device and 4-inch male camlock fittings).
9. Dispose of all material at the designated disposal locations as printed on EBMUD-issued receipt.
10. Pay all required fees and charges and comply with all orders issued by the Director of Wastewater.
11. Comply with all other provisions of this Permit and EBMUD's Wastewater Control Ordinance at all times.

INSURANCE REQUIREMENTS

Throughout the life of the Permit, Permit Holder must maintain, and must require its haulers, generators, brokers and contractors to maintain, commercial general liability insurance, commercial auto/trucking liability insurance, and workers' compensation insurance to the extent specified within Addenda B, C, and D hereto. Permit Holder must provide evidence of insurance coverage by completing and submitting the EBMUD certificate forms attached as Addenda B, C and D hereto. Each EBMUD certificate form must be completed and signed by the Permit Holder's insurance company representative. All changes to insurance coverage must be submitted in writing to, and approved in advance by, EBMUD.

DISPOSAL CHARGES

The disposal charge for each load is based upon (a) the applicable disposal rate for the material type delivered, and (b) tanker capacity. The disposal rate for each material type is provided within the Wastewater System Schedule of Rates and Charges and Fees adopted by EBMUD's Board of Directors. All deliveries are charged on the basis of total tanker capacity.

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336
RRwaste@ebmud.com

REPORTING REQUIREMENTS

Permit Holder must provide, and must require its haulers, generators, brokers and contractors to provide, the following to EBMUD upon request: records, pumping logs, manifests, or analytical results pertaining to the disposal of materials at WWTP.
Permit Holder must immediately report, and must require its haulers, generators, brokers and contractors to immediately report, any deviation from the information reported on this Permit or any MAA to the EBMUD Resource Recovery Program, including but not limited to changes to truck size, significant temporary or ongoing changes to the anticipated volume of delivered material, changes to wastewater generation that may affect the characteristics of the delivered material, and changes concerning the presence of constituents of concern or known pollutants in the delivered material.

ENFORCEMENT AND PENALTIES

Permit Holder is subject to enforcement remedies and penalties in accordance with the EBMUD Wastewater Control Ordinance. EBMUD reserves the right to suspend or revoke a Permit for cause, including past due payments.

INDEMNIFICATION

I agree to defend, indemnify, and hold harmless EBMUD and its Directors, officers, agents and employees from and against any and all loss, liability, expense, claims, suits, and damages, including attorneys' fees, arising out of or resulting from Permit Holder's, its generators', haulers', brokers', associates', employees', sub-consultants', or other agents' operation or performance under this Permit.

WAIVER OF SUBROGATION RIGHTS

I agree to waive any and all rights of recovery against EBMUD regardless of the applicability of any insurance proceeds and to require all indemnifying parties to do likewise. All insurance coverage maintained or procured by Permit Holder shall be endorsed to delete the subrogation condition as to EBMUD or must specifically allow all the named insured to waive subrogation prior to a loss.

CERTIFICATION

I, Permit Holder, acknowledge that I have received and had an opportunity to review this Resource Recovery Permit and its Addenda. I understand that all Addenda hereto are part of this Permit and that their terms are incorporated by reference herein. I understand I am legally responsible for the disposal of material and for complying with EBMUD's Wastewater Control Ordinance and with all provisions of this Permit. I understand that noncompliance with the Permit or the Wastewater Control Ordinance may subject me to enforcement remedies and penalties, including suspension or revocation of this Permit, in accordance with applicable provisions of the Wastewater Control Ordinance and this Permit. I hereby certify that I will not deliver, or cause to be delivered, any regulated radioactive waste, regulated PCBs, materials regulated by Toxic Substances Control Act, or hazardous waste as defined by Section 25117 of the California Health and Safety Code or by any other federal, state, or local statute or regulation. I understand that EBMUD may refuse to accept deliveries at any time if determined by EBMUD to be necessary to avoid interference with WWTP operations or EBMUD's compliance with legal requirements. I further understand that I must submit information for EBMUD's review and approval on a Material Acceptance Agreement (Addendum A) regarding each wastestream I propose to deliver, or cause to be delivered, before any load is delivered to EBMUD. I also agree to maintain insurance coverage at the levels required by the Certificate of Commercial General Liability Insurance (Addendum B), Certificate of Commercial Auto/Trucking Liability (Addendum C) and the Certificate of Workers' Compensation Insurance (Addendum D) and upon any changes to or expiration of that insurance, to notify the EBMUD Resource Recovery Program. I certify under penalty of law that this document and all attachments hereto were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations. I understand and accept that the Permit may be suspended or revoked if any provision of this Permit is not complied with. I understand and acknowledge that EBMUD may amend this Permit from time to time and that the Permit as amended will supersede this Permit and shall be binding and enforceable against the Permit Holder.

_____ _____
NAME TITLE

_____ _____
PERMIT HOLDER - SIGNATURE DATE

(TO BE SIGNED BY CHIEF EXECUTIVE OFFICER OR DULY AUTHORIZED REPRESENTATIVE. SEE INSTRUCTIONS.)

AUTHORIZATION

The above-named Permit Holder is hereby authorized to dispose non-hazardous material as provided by this Permit, subject to Permit Holder's compliance with EBMUD's Wastewater Control Ordinance and with all provisions of this Permit.

_____ _____
Bennett K. Horenstein, Director of Wastewater Date

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336
RRwaste@ebmud.com

RESOURCE RECOVERY PERMIT (NON-HAZARDOUS)
Addendum A

Material Acceptance Agreement

A Material Acceptance Agreement must be completed for each material. Include a complete description of the process generating the material. If applicable, include analytical data and MSDS, along with percentage concentration of constituents of concern within the material. If your Material Acceptance Agreement is approved, a Gate Pass will be sent to you. You may only deliver materials for which you have received a Gate Pass; each delivery must be accompanied by an EBMUD Gate Pass.

I certify that the description of the waste below is a true and accurate representation of the wastewater and any changes to the wastewater described below will be disclosed to the EBMUD Resource Recovery Program for further review of material acceptability.

To be completed by CUSTOMER	**To be completed by EBMUD**
1) Permit Holder (Company Name)	**Permit Number**
2) Generator / Site Name	**Material Description**
3) Site Address	**Material Type**

4) Material Composition (Ex: liquid, sludge, etc)

5) Estimated Volume (gallons or pounds)

6) Estimated Delivery Dates (Ex: April 8-16, 2013, or on-going)

7) Delivery Frequency (Ex: M, W, F (3) loads/day)

8) Describe wastewater generation and its known and potential pollutants.

9) Is the wastewater generation subject to Federal Categorical Pretreatment Standards? Yes ☐ No ☐

- **If yes, indicate Federal Categorical regulation 40 CFR** _____
- **If yes, is the wastewater fully compliant with the applicable federal categorical regulations?** Yes ☐ No ☐

10) P.O. or job number (if desired for your tracking purposes): _____

11) Permit Holder Signature (or duly authorized representative):

Print Name and Title | **Date**

Signature of Permit Holder | **Email Address**

Recommendation by R2 Program Manager: _____ ***(For EBMUD Use Only)***

COMMENTS (such as volume capacity):

EBMUD Resource Recovery Program Permit Decision: Approved ☐ Rejected ☐ Expiration Date:

Division Manager Signature: Date:

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336 Fax (510) 287-0621
RRwaste@ebmud.com

INSURANCE REQUIREMENTS

Listed below are EBMUD's insurance requirements for the holder of Resource Recovery Permits. The requirements of the insurance program must be maintained by the Permit Holder at all times in order to be in permit compliance. All changes in the Permit Holder's insurance coverage must be reported to EBMUD in advance of any further load deliveries.

The Permit Holder's **insurance company representatives** must complete each of the **required forms in their entirety**:

☐ Certification of Commercial General Liability Insurance (Addendum B), including the endorsement number and Additional Insured supporting document

☐ Certification of Commercial Auto/Trucking Liability Insurance (Addendum C)

☐ Certification of Worker's Compensation Insurance (Addendum D)*

** Not required if there are no employees; indicate on the form that you are an "owner/operator" or "employee-owned company."*

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336 Fax (510) 287-1530
RRInsure@ebmud.com

NON-HAZARDOUS RESOURCE RECOVERY PERMIT
Addendum B

CERTIFICATE OF COMMERCIAL GENERAL LIABILITY INSURANCE

THIS IS TO CERTIFY TO:

East Bay Municipal Utility District (EBMUD)
Department: Environmental Services Division
Street Address: 375 11th Street, MS 702
Mailing Address: P.O. Box 24055
City, State, Zip: Oakland, CA 94623-0155

THE FOLLOWING DESCRIBED POLICY HAS BEEN ISSUED TO:

District Permit Number: (Completed by EBMUD):

Insured: _____

Address: _____

LOCATION AND DESCRIPTION OF PROJECT/AGREEMENT:
Trucked non-hazardous waste permitted for disposal at designated EBMUD Wastewater Treatment facilities

TYPE OF INSURANCE: Commercial General Liability Coverage/Endorsements as required by agreement.
LIMITS OF LIABILITY: (MINIMUM) $1,000,000/Occurrence, Bodily Injury, Property Damage-General Liability

SELF INSURED RETENTION ($): Aggregate Limits: _____
INSURANCE COMPANY(IES): _____
POLICY NUMBER(S): _____
POLICY TERM: From: _____ To: _____

THE FOLLOWING COVERAGES OR ENDORSEMENTS ARE INCLUDED IN THE POLICY(IES):

1. ☒ The District, its Directors, Officers and Employees are *Additional Insureds* in the policy(ies) as to work being performed under this agreement. ENDORSEMENT NO. _____
2. ☒ The coverage is *Primary* and *non-contributory* to any other applicable insurance carried by the District.
3. ☒ The policy(ies) covers waiver of subrogation by the Carrier(s) against the District and its Directors, officers, agents, and employees.
4. ☒ The policy(ies) covers *contractual liability.*
5. ☒ The policy(ies) is written on an *occurrence* basis.
6. ☒ The policy(ies) covers *District Property in the care, custody, and control of the Contractor.*
7. ☒ The policy(ies) covers *personal injury* (libel, slander, and wrongful entry and eviction) liability.
8. ☒ The policy(ies) covers *products and completed operations.*
9. ☒ The policy(ies) shall cover pollution liability for claims related to the release or the threatened release of pollutants into the environment arising out of or resulting from Consultant's performance under this agreement.
10. ☒ The policy(ies) will not be canceled nor reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

IT IS HEREBY CERTIFIED that the above policies provide liability insurance as required by the agreement between the East Bay Municipal Utility District and the insured.

Signed _____ Firm _____

Address _____ Date _____

_____ Phone _____

E-mail _____

"This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term or conditions of any contract or other document with respect to which this certificate or verification or insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of the policies."

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336 Fax (510) 287-1530
RRInsure@ebmud.com

NON-HAZARDOUS RESOURCE RECOVERY PERMIT
Addendum C

CERTIFICATE OF COMMERCIAL AUTO/TRUCKING LIABILITY INSURANCE

THIS IS TO CERTIFY TO:

East Bay Municipal Utility District (EBMUD)
Department: Environmental Services Division
Street Address: 375 11th Street, MS 702
Mailing Address: P.O. Box 24055
City, State, Zip: Oakland, CA 94623-1055

THE FOLLOWING DESCRIBED POLICY HAS BEEN ISSUED TO:

District Permit Number: (Completed by EBMUD):

Insured: _____

Address:

LOCATION AND DESCRIPTION OF PROJECT/AGREEMENT:

Trucked non-hazardous waste permitted for disposal at designated EBMUD Wastewater Treatment facilities

TYPE OF INSURANCE: Automobile/Trucking Liability: Coverage/Endorsements as required by agreement.
LIMITS OF LIABILITY: (MINIMUM) $1,000,000/Occurrence, Bodily Injury, Property Damage- Auto Liability

SELF INSURED RETENTION ($): _____ Aggregate Limits: _____

INSURANCE COMPANY(IES): _____

POLICY NUMBER(S): _____

POLICY TERM: From: _____ To: _____

THE FOLLOWING COVERAGES OR ENDORSEMENTS ARE INCLUDED IN THE POLICY(IES):

1. ☒ The coverage is *Primary* and *non-contributory* to any other applicable insurance carried by the District.
2. ☒ The policy(ies) covers *contractual liability*.
3. ☒ The policy(ies) covers the use of *owned, non-owned, and hired* automobiles and trucks.
4. ☒ The policy(ies) will not be canceled nor the above coverages/endorsements reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

IT IS HEREBY CERTIFIED that the above policies provide liability insurance as required by the agreement between the East Bay Municipal Utility District and the insured.

Signed _____ Firm _____

Address _____ Date _____

_____ Phone _____

E-mail _____

"This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term or conditions of any contract or other document with respect to which this certificate or verification or insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of the policies."

Resource Recovery Program
P. O. Box 24055, MS 702
Oakland, CA 94623-1055
(510) 287-1336 Fax (510) 287-1530
RRInsure@ebmud.com

NON-HAZARDOUS RESOURCE RECOVERY PERMIT
Addendum D

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

THIS IS TO CERTIFY TO:	East Bay Municipal Utility District (EBMUD) Department: Environmental Services Division Street Address: 375 11th Street, MS 702 Mailing Address: P.O. Box 24055 City, State, Zip: Oakland, CA 94623-0155

THE FOLLOWING DESCRIBED POLICY HAS BEEN ISSUED TO:

District Permit Number:
(Completed by EBMUD) _____

Insured: _____

Address: _____

LOCATION AND DESCRIPTION OF PROJECT/AGREEMENT:

Non-hazardous material permitted for disposal at designated EBMUD Wastewater Treatment facilities

TYPE OF INSURANCE: **Workers' Compensation Insurance as required by California State Law**.

The Workers' Compensation Carrier agrees to waive rights of recovery against District regardless of the applicability of any insurance proceeds, and to require all indemnifying parties to do likewise. All Workers' Compensation coverage maintained or procured by permit Holder shall be endorsed to delete the subrogation condition as to District, or must specifically allow the named insured to waive subrogation prior to a loss.

INSURANCE COMPANY: _____

POLICY NUMBER: _____

POLICY TERM: From: _____ To: _____

The policy will not be canceled nor the above coverage reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

IT IS HEREBY CERTIFIED that the above policies provide liability insurance as required by the agreement between the East Bay Municipal Utility District and the insured.

Date _____ Signed _____

E-mail: _____ Firm _____

Phone _____ Address _____

"This certificate or verification of insurance is not an insurance policy and does not amend, extend, or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term or conditions of any contract or other document with respect to which this certificate or verification or insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of the policies."

Resource Recovery Materials Delivery Procedures

GENERAL INFORMATION

The EBMUD Wastewater Treatment Plant is located at 2020 Wake Avenue, Oakland. The Plant is open 24 hours/day, 7 days/week for routine transactions. **Appointments must be scheduled in advance with the Senior Environmental Health and Safety Specialist at 510-986-7835 for non-routine transactions such as receiving an EBMUD-issued truck decal, driver Site Orientation, and submitting a first-load confirmation sample for each new waste stream.**

HAULING COMPANY, DRIVER AND TANKER REQUIREMENTS

1. All hauling company contact information, driver names, and required insurance certifications must be current and on-file before any deliveries may be made.
2. Charges are based on full tanker capacity. EBMUD staff will affix a decal to each tanker, and that decal number must be presented at the time of the load check-in.
3. Each driver must receive a Site Orientation for each applicable discharge location within the treatment plant; schedule with Staff as above.
4. Tanker discharge line must have a 4-inch male cam lock adaptor and a back-up horn alarm safety device.

PLANT HAZARDS

1. The Plant entrance is crossed by a live railroad line. Do not wait or park on the tracks at any time.
2. NO SMOKING. No smoking allowed while on the Plant, as it is a safety hazard due to presence of flammable gases (such as oxygen and methane).
3. During transportation, degradation of the waste material may occur inside the tanker and build up gases that may have immediately dangerous to life and health concentrations present when the driver vents the tanker. Be cautious when venting the tanker for discharge.
4. Infectious materials are present at the Plant and managed in the wastewater treatment process.
5. If the emergency alarm (6 long tones) sounds while at the Plant, call the supervisor at 510-287-1522 (site phone, dial 1522), or contact EBMUD staff for further instructions.
6. Construction activities. When overhead activities are occurring hard hats (available) are required.

RULES OF CONDUCT

1. Speed Limit is **10** miles per hour unless otherwise posted.
2. If you find a spill upon arrival, before off-loading report it to EBMUD staff. If no one is at the location, call the supervisor at 510-287-1522 (site phone, dial 1522). Driver is responsible for wash down of own spills.
3. Driver must be in compliance with all OSHA regulations, including fall protection per title 8 CA Code Regulations sections 3210(b) and 5155. Driver must *not* break the plane of the trailer (i.e., do not put your head inside hatch). Do *not* stand on tanker without OSHA-specific fall protection.
4. Driver must lock brakes before commencing discharge.
5. Driver must stay with truck/tanker during discharge unless instructed otherwise by District Staff.
6. All waste must be discharged through hose directly to pipe. Do not disconnect site discharge hose from discharge pipe. Do *not* discharge from the trailer directly to the wash down trench.
7. No exterior truck or trailer washing is permitted.
8. Do *not* leave any trash or debris at the discharge area.
9. Do *not* drink or wash hands with wash down water as it is non-potable!
10. Firearms and weapons, as defined in the California Penal Code, are not permitted on EBMUD property except by law enforcement officers.

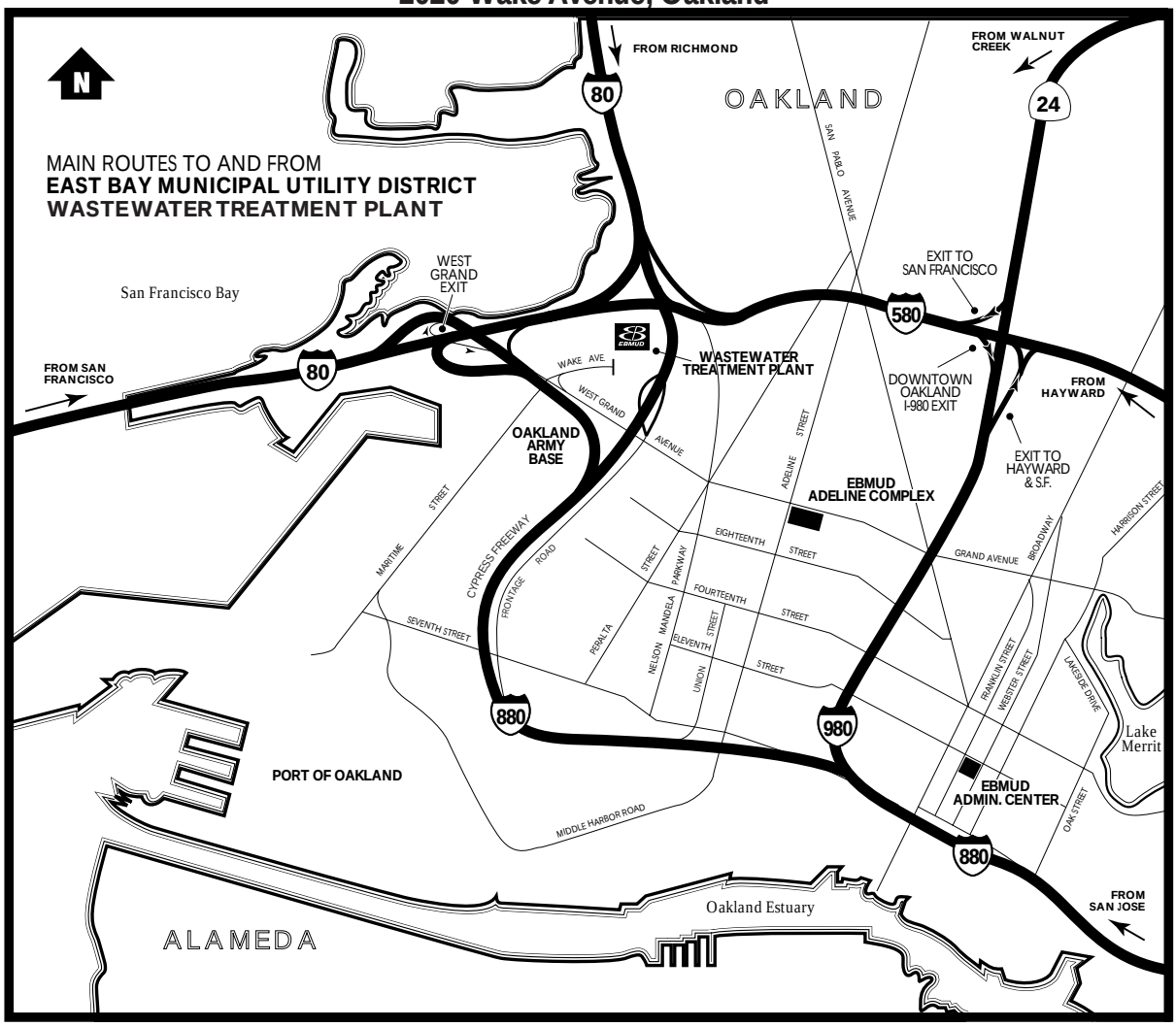
DISCHARGE INSTRUCTIONS

1. *Each* delivery must be accompanied with the appropriate EBMUD-issued documentation (Gate Pass).
2. Review your ticket issued by the guard to verify all items are correct, sign the ticket, and proceed to the appropriate discharge location (see map printed on ticket).
3. Specifics of receiving location discharge instructions are detailed in the Site Orientation, which is scheduled in advance with the Senior Environmental Health and Safety Specialist.

DIRECTIONS TO THE EAST BAY MUNICIPAL UTILITY DISTRICT (EBMUD) WASTEWATER TREATMENT PLANT

*****

2020 Wake Avenue, Oakland



When you turn onto Wake Avenue, follow the road as it curves to the right. The Wastewater Treatment Plant (WWTP) is approximately 1/4 mile, at the end of Wake. The security guard will provide parking directions. Look for signs that will direct you to the building entrance and to the reception.

- **From the San Francisco-Oakland Bay Bridge eastbound:** Stay in the right lanes of I-80 about 1/2 mile to the I-880 off-ramp (toward San Jose) and almost immediately take the **West Grand Ave./Maritime St.** exit. At the foot of the ramp (Maritime Street/Wake Avenue), turn left from West Grand Avenue onto Wake Avenue.

- **From the south on I-880**: As you approach the I-880/I-980 split, stay in the middle lanes of I-880, toward San Francisco. After you pass the I-980 turnoff, move to the right lane of I-880 and take the **West Grand/7th Street** exit. This is the last Oakland off-ramp. At the 7th Street intersection, go straight ahead for approximately 3/4 mile. Turn left at West Grand, and move to the right lane. At the foot of the West Grand ramp (Maritime Street/Wake Avenue), turn right on Wake Avenue.

- **From I-580 & Highway 24 westbound:** Proceed toward the Bay Bridge toll plaza. Move to the right lanes and take the last Oakland exit, **West Grand Ave./Maritime St.** ***This turnoff is just past the carpool lane turnoff for the Bridge. Don't turn off too soon.*** Follow the West Grand off-ramp to the intersection (Maritime Street/Wake Avenue) and turn left on Wake Avenue.

- **From the north on I-80/Eastshore Freeway:** Take the I-580/I-880 exit (toward San Jose) off the Eastshore Freeway. Stay to the right on I-880 and take the **West Grand Avenue** exit. Turn right at West Grand. At the foot of the West Grand ramp (intersection of Maritime Street/Wake Avenue), turn right on Wake Avenue.

APPENDIX E

Technical Memorandum Pier E3 Caisson Water Quality, AMEC 2014

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

DATE: 12/17/2014 **AMEC PROJECT NO.:** 5025133004

TO: Analette Ochoa
WRECO
1243 Alpine Road, Suite 108
Walnut Creek, CA 94596

FROM: Emily Sportsman, AMEC E&I
180 Grand Avenue
Oakland, CA

REVIEWED BY: Dr. Khalil E.P. Abusaba, AMEC E&I

REFERENCE: Technical Memorandum— Pier E3 Caisson Water Quality

1. INTRODUCTION

The California Department of Transportation (Caltrans) is deconstructing the Old East Span of the San Francisco–Oakland Bay Bridge. AMEC Environment & Infrastructure, Inc. (AMEC) is assisting WRECO, as a subcontractor, in updating the Water Quality Study developed in support of the Old East Span of the San Francisco–Oakland Bay Bridge Pier E3 Pilot Demolition Project.

AMEC has reviewed the water quality monitoring data from the Pier E3 caisson sampling program (EnviroSurvey, Inc., 2014) and the current project description (Caltrans, 2014a). This technical memorandum presents the data and focuses on how the results of the sampling may affect the findings and recommendations of the water quality study (Caltrans, 2014b).

2. BACKGROUND AND OBJECTIVES

The Old East Span of the San Francisco–Oakland Bay Bridge contains a cantilever trussed segment with its main foundations situated on Pier E3, which is supported by 28 concrete caissons, each approximately 250 feet long surrounded by 2 inches thick concrete walls (Figure 1). Twelve inch weep holes are located at -5 feet National Geodetic Vertical Datum 1929 (NGVD 29) in all of the caissons. The bottom of these caisson chambers rest on a concrete pad. The depth to Bay Mud in this location is at a scour depth of approximately -51 feet NGVD(Figure 2). Outside of the scour caused by the pier, the depth to Bay Mud is approximately -41 feet NGVD. The majority of the caisson is below the mud line.

The water quality study (Caltrans, 2014b) stated the potential caisson water quality concerns as:

- Low dissolved oxygen (DO);
- Floating oil or debris;
- Accumulation of contaminated sediments;
- High oxygen demand and/or low pH; and,
- High turbidity, metals, and/or organics.

The basis for concern with all of these constituents was the potential for sudden release into surrounding Bay waters upon implosion of the caissons. Until this survey was completed, the caisson water quality was unknown. The objective of this memorandum is to describe how new

water quality data from the caissons will be used to update potential impacts and concerns described in the water quality study.

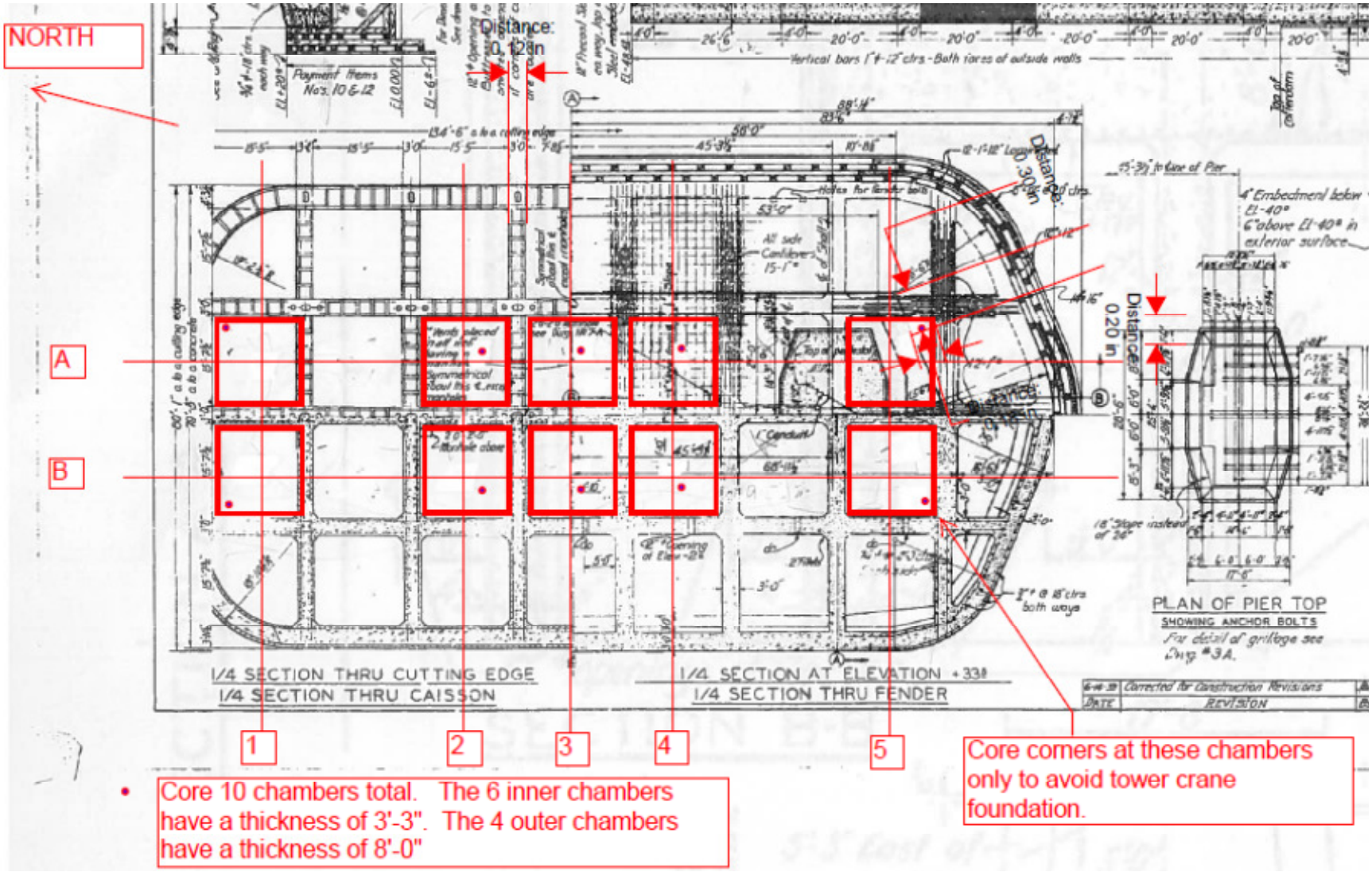


Figure 1: Plan View of Pier E3 Caissons and Water Quality Sample Locations (Source: EnviroSurvey, Inc., 2014)

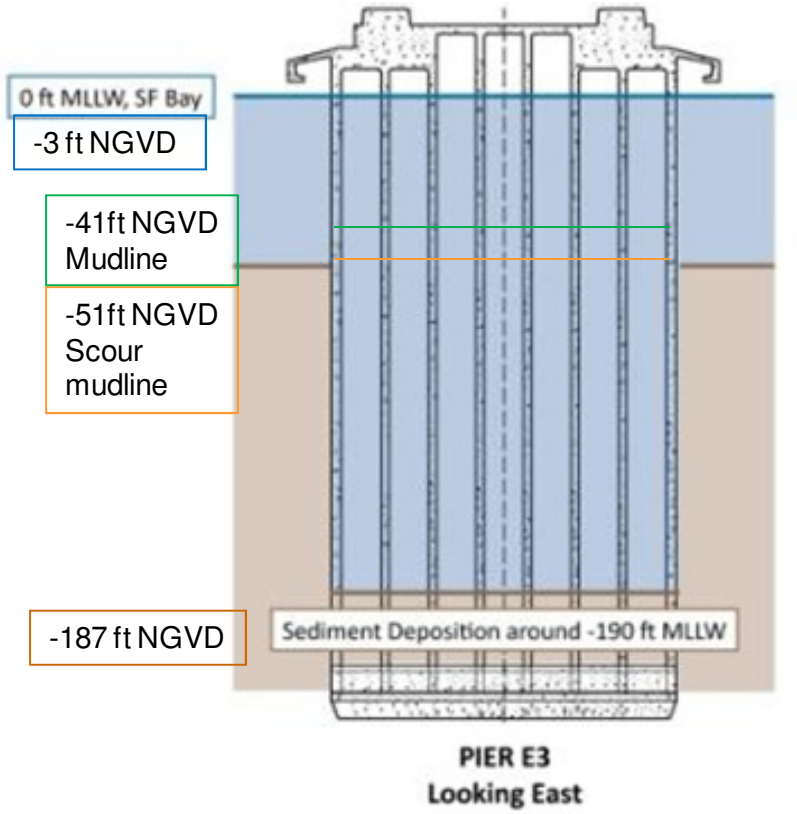


Figure 2: Cross Section of Pier E3 Caissons (Source: Modified from Caltrans, 2014c)

3. SAMPLING AND ANALYTICAL METHODS

Complete details of the sampling and analytical methods, including quality control procedures, were given in the EnviroSurvey, Inc. (2014) report. A summary is presented here.

EnviroSurvey collected water samples from ten of the 28 Pier E3 caissons and sediment samples from two of the caissons (Figure 1). Caisson water was accessed through surface sampling ports drilled through the concrete. Care was taken to ensure than concrete did not fall into the caisson or disturb the water.

A conductivity-temperature-depth probe was used to collected regular measurements of caisson water quality from all ten caissons. Discrete water samples were collected at three depths (3, 100 and 185 feet as measured from the water surface) from all ten caisson chambers. Field duplicates were taken at locations A2 – 3' and B2 – 3'. Two samples of ambient San Francisco Bay water also were collected near the project area (SE Barge and NE Barge samples).

Water samples were submitted for the following analysis:

- Trace metals by U.S. Environmental Protection Agency (EPA) Method 200.7 and Method 1640
- Total hexavalent chromium by Standard Method 3500-Cr-B

- Mercury by EPA Method 245.1
- Total dissolved solids by Standard Method 2540B
- Volatile organic compounds (VOCs) by EPA Method 8260B
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270C
- Pesticides by EPA Method 8081
- Polychlorinated biphenyl (PCBs) by EPA Method 8082

Sediment samples were collected from the bottom of two caissons (B2 and B4) and submitted for the following analysis:

- Regulated Title 22 metals total threshold limit concentrations by EPA Method 6010C/3050B
- Mercury by EPA Method 7471
- Total recoverable petroleum hydrocarbons by EPA Method 418.1
- Oil and grease by EPA Method 1664
- VOCs by EPA Method 8260B
- SVOCs by EPA Method 8270C
- Pesticides by EPA Method 8081
- PBCs by EPA Method 8082

4. WATER QUALITY RESULTS

This section will present the results of the conductivity, temperature and depth casts (CTD), as well as the total metals in caisson water using EPA Method 1640. Analytical results for EPA Method 1640 are in Table 1. Results for all other analysis are given in the EnviroSurvey, Inc. report (2014).

4.1 CTD Casts

Prior to each CTD cast the water surface of each caisson was visually examined and no sheen or free hydrocarbon product was observed by Envirosurvey.

Depth profiles of turbidity, temperature, pH and dissolved oxygen were collected from all ten caissons. Conductivity was measured only in caisson A1. EnviroSurvey reports this was due to the length of time required to obtain steady measurements.

The depth profiles in Figures 3 through 7 have not been corrected for water surface elevation. The mud line and scour lines shown should be considered approximate depths and be used for general reference only.

4.1.1 Conductivity

Conductivity was measured only in caisson A1 (Figure 3). Conductivity increased rapidly from a minimum of 22 microSiemens per centimeter (mS/cm) at 2 feet to a consistent value of approximately 48 mS/cm at 8 feet.

The presence of a lower conductivity "lens" of less salty water in the upper few feet of the water column is typical of estuaries, including San Francisco Bay, where tributaries mix with ocean waters. The presence of a lower conductivity layer within the caissons indicates stratification of the water column that is substantiated by other measurements, as discussed below.

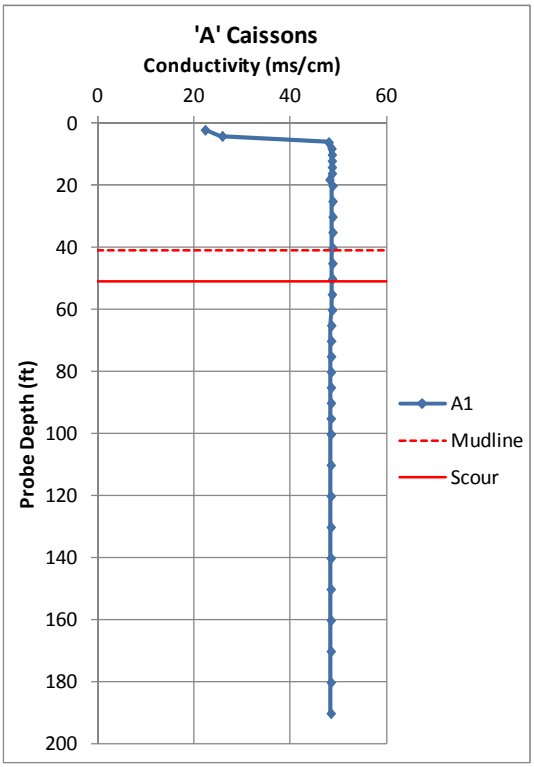


Figure 3: Conductivity - Depth Profile

4.1.2 Temperature

Figure 4 shows the temperature profiles from the caissons and the October 2013 and 2014 US Geological Survey (USGS) water quality data at Bay Bridge Station 21 (USGS, 2014).

The profiles show that caisson temperature roughly corresponds to ambient bay temperatures down to the mud line, with the exception of the surface layer. Similar to conductivity, the temperature profiles within the caissons show a thin surface layer with higher temperatures above 8 feet; in contrast, Bay profiles show more consistent temperatures near the surface. The presence of a thin lens of lower conductivity water with elevated temperature within the caissons indicates little mixing between the lens and underlying water within the caissons.

Not surprisingly, below the mud line and scour line temperatures in all caissons are lower than above and consistent at or near 13.5°C. The temperature profiles did not show a relationship between interior and exterior caissons.

The similar temperatures measured by EnvioSurvey and the October 2014 USGS survey suggests that temperature can equalize between the caissons and ambient bay conditions on the scale of days to weeks. Note that, unlike other parameters, temperature does not require physical exchange between the caissons and bay water for the values to be the same.

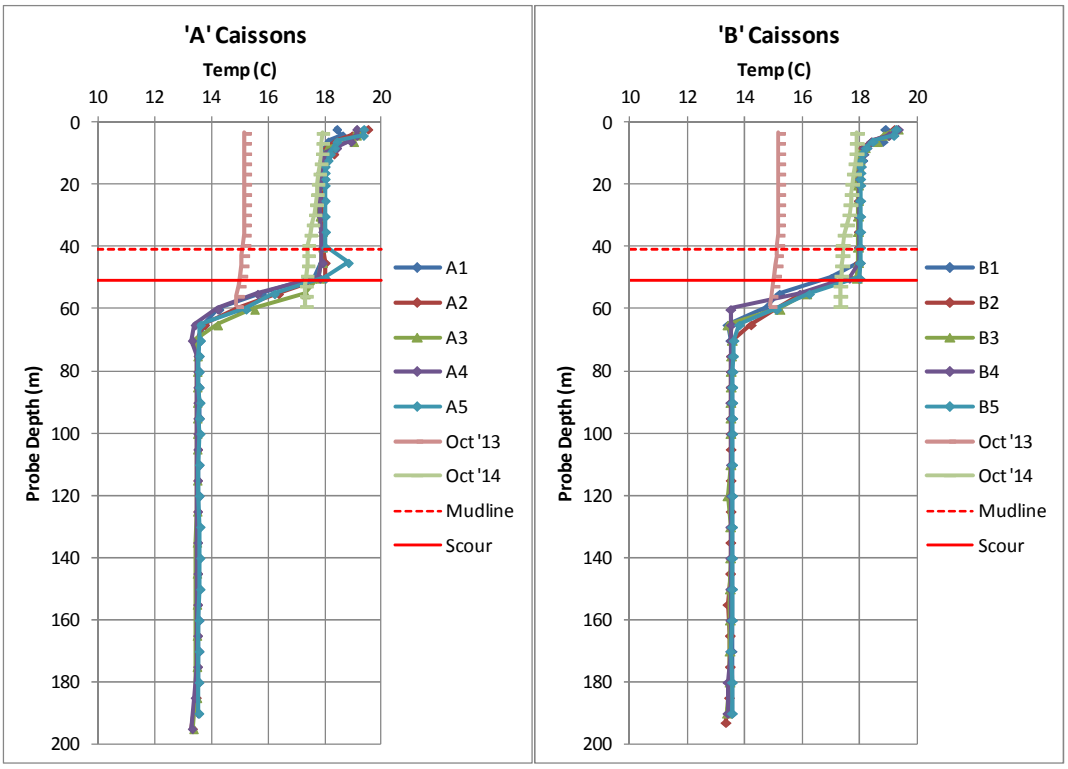


Figure 4: Temperature Depth Profiles

4.1.3 pH

The pH profiles are shown in Figure 5. In all caissons the highest pH values were measured 2 feet below the water surface and minimum values at approximately 6 to 8 feet. Except for A1, A3 and A4, caisson pH values below 6 to 8 feet rapidly increased to 7.8, until decreasing to 7.6 below the approximate scour line. A1 had a stable pH of approximately 7.8 from 8 feet to the bottom of the caisson. A3 and A4 pH values had greater variability than the other caissons, but reached steady state values of 7.6 and 7.75, respectively, approximately 75 feet below water surface. The slightly lower pH values below the scour line for all caissons, except A1 and A3, are likely an indication of anoxic conditions in the adjacent Bay Mud. The pH did not show a relationship between interior and exterior caissons.

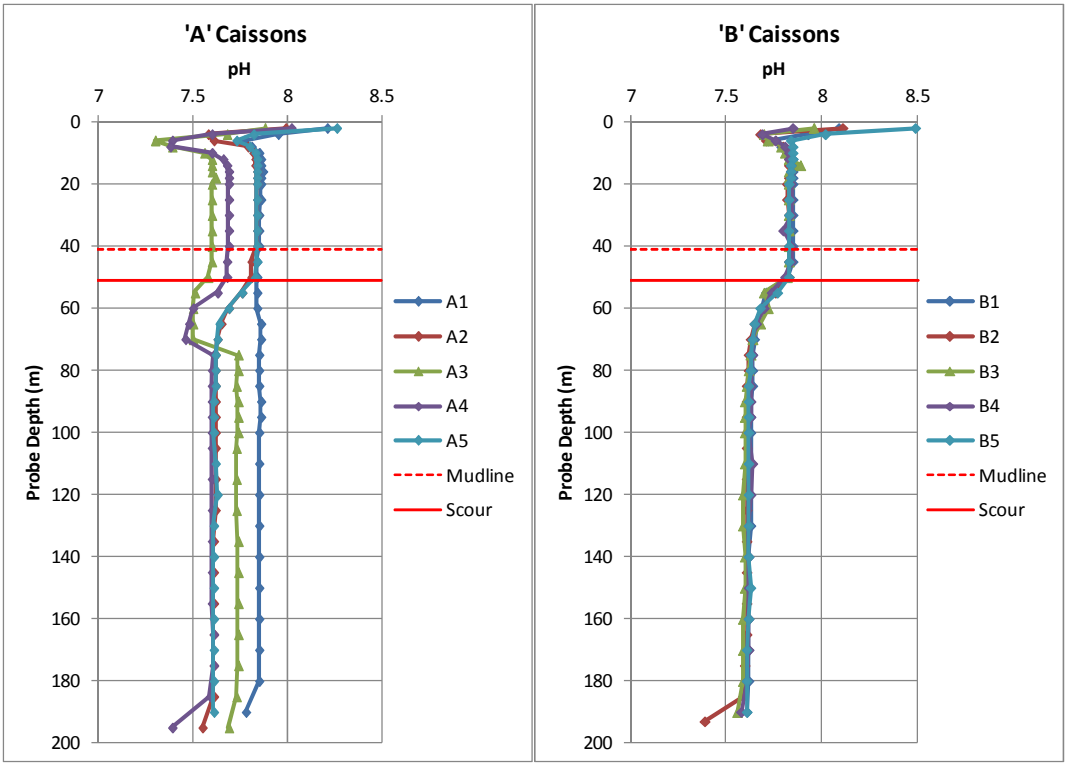


Figure 5: pH Depth Profiles

4.1.4 Dissolved Oxygen

Figure 6 shows the DO profiles from the caissons and October 2013 and 2014 USGS water quality data at Bay Bridge Station 21 (USGS, 2014).

All DO profiles showed a depression in concentration in the top 8–10 feet of the caissons. This is consistent with the stratification in the upper 8 – ten feet that is indicated by conductivity and temperature profiles. Between approximately 8 and 10 feet to the scour line, DO concentrations were approximately 5.5 milligrams per liter (mg/L) for all caissons, which is slightly less than the Bay ambient concentrations of approximately 6.7 mg/L recorded by the USGS survey in 2014. As expected, DO concentrations decreased rapidly below the approximate scour line to near 0 mg/L.

The results indicate that above the mud line, caisson DO is similar to ambient Bay concentrations; it is slightly depressed compared to ambient Bay waters due to metabolic activity by bacteria and other microorganisms, but continuously replenished by exchange through the weep holes. The low DO concentrations below the mud line reflect low DO and anoxic conditions below the Bay Mud line outside of the caissons. Low DO at the water surface within the caissons likely reflects microbial metabolic activity with limited vertical mixing and limited exchange with Bay waters in the upper layer owing to the fact that the uppermost vents are at -5 feet NGVD (two feet below mean lower low water [MLLW]), and therefore hardly ever exposed to air.

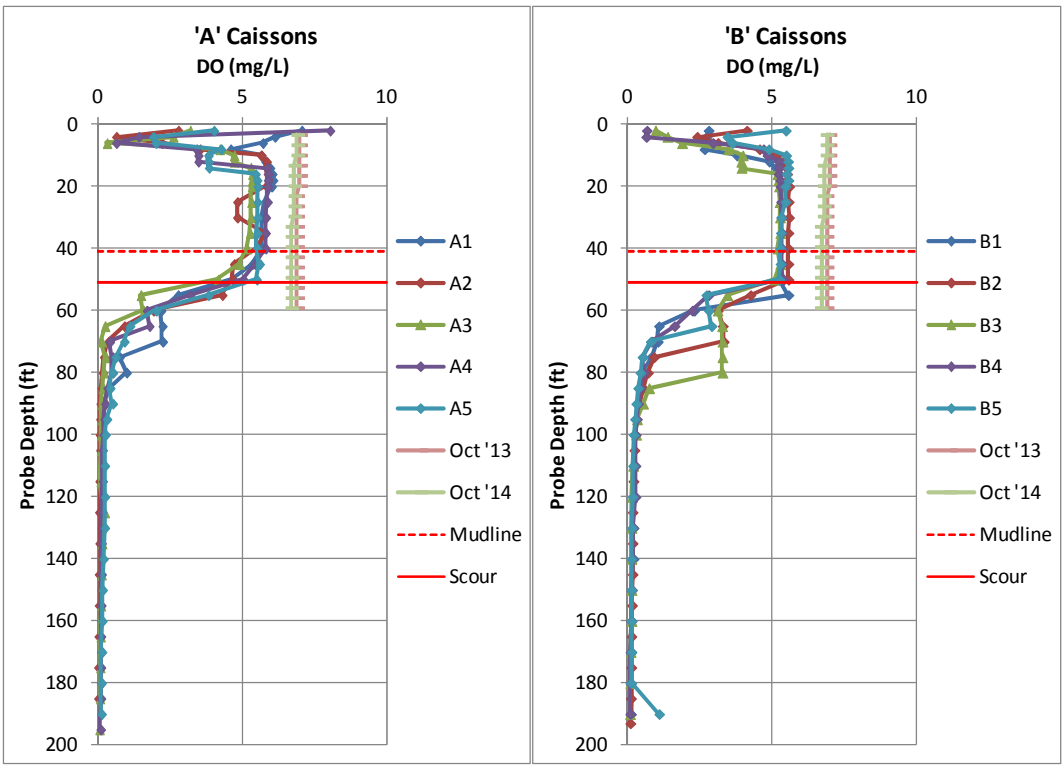


Figure 6: Dissolved Oxygen Depth Profiles

4.1.5 Turbidity

Figure 7 shows the caisson turbidity profiles and the September 2011 Regional Monitoring Program (RMP) turbidity measurement at the Yerba Buena Station (SFEI, 2014). No consistent relationship was observed between the caisson chambers and depth. Several of the caissons had elevated turbidity at the shallow depths and the exterior caissons A1, B1, A5 and B5 tended to have higher turbidity measurements than the interior caissons. This is likely related to the weep holes in the outer caissons having direct exchange with Bay water relative to the interior caissons. Overall, the turbidity within the caissons is less than the ambient bay turbidity.

The depth to sediment was assumed where turbidity measurements increased to greater than 100 nephelometric turbidity units (NTUs). This was generally between 190 and 200 feet below the water surface. This depth to sediment corresponds roughly to about 10 feet above the total caisson length and indicates that there has been accumulation of sediment within the caisson.

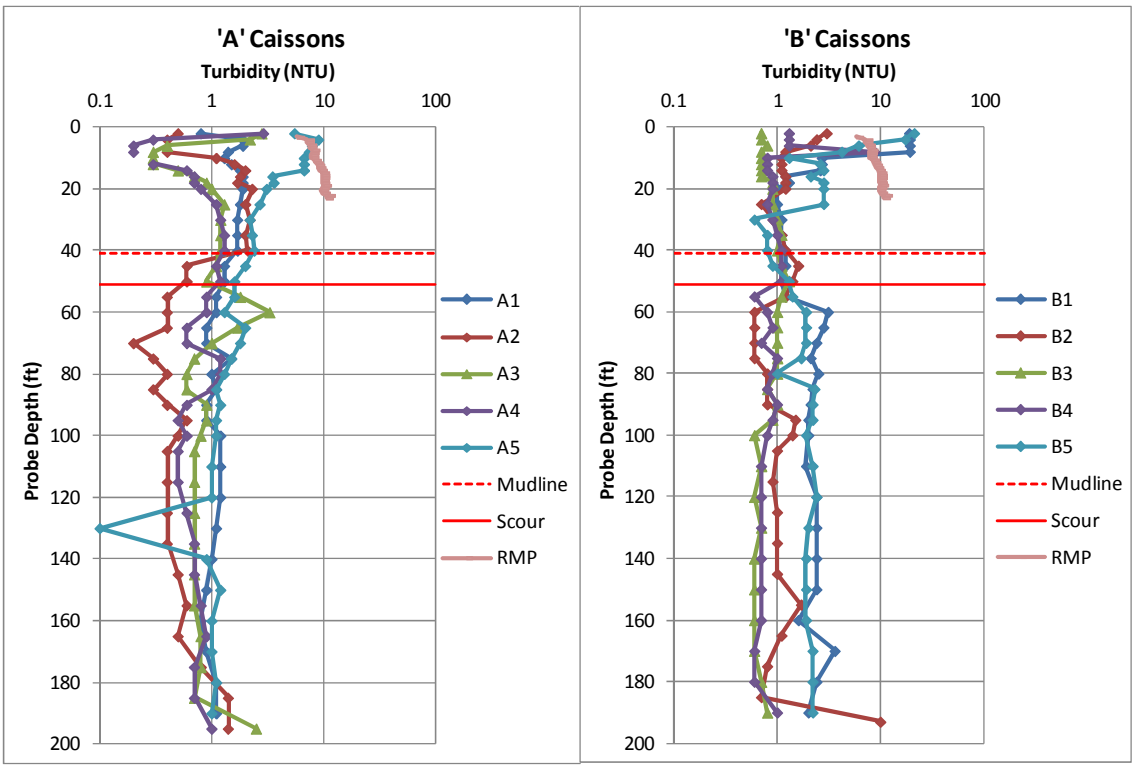


Figure 7: Turbidity Depth Profiles

4.2 Metals

Total metals concentrations in caisson water were analyzed using EPA Method 200.7 and Method 1640. Method 200.7 uses inductively coupled plasma- atomic emission spectrometry. Method 1640 uses inductively coupled plasma-mass spectrometry. Results from Method 200.7 were presented in the EnviroSurvey, Inc. (2014) report. Results from Method 1640 are given in Table 1.

For samples with high dissolved solids, such as saline water from the bay, Method 200.7 can have spectral interference that generates inaccurately high concentrations of elements such as trace elements, especially arsenic and selenium. For this reason, EPA Method 1640 is generally more appropriate for analysis of bay water.

Table 1: Method 1640 Water Quality Analytical Results – Pier E3 Caissons

Certificate No.	Sample No.	Caisson	Depth (feet)	Chromium (µg/L)	Nickel (µg/L)	Lead (µg/L)	Thallium (µg/L)	Arsenic (µg/L)	Cadmium (µg/L)	Copper (µg/L)	Antimony (µg/L)	Selenium (µg/L)	Zinc (µg/L)	Silver (µg/L)
1446012	A1W-3'	A1	3	0.68	1.07	0.63	0.006	2.1	0.03	3.5	0.17	0.47	2.0	0.02
1446012	A1W-100'	A1	100	0.04	1.27	0.01	0.008	3.5	0.06	0.5	0.16	0.18	1.2	0.01
1446012	A1W-185'	A1	185	0.23	0.77	0.07	0.009	2.6	0.06	0.6	0.14	0.16	1.1	0.01
1446011	A2W-3'	A2	3	0.96	1.12	0.16	0.013	1.7	0.06	1.0	0.17	0.13	1.6	0.01
1446008	A2 W-3'	A2	3	4.64	3.00	0.37	0.006	0.04	1.90	0.03	1.88	0.14	0.4	2.82
1446011	A2W-100'	A2	100	0.44	1.40	0.10	0.010	2.7	0.06	0.6	0.20	0.14	7.1	0.01
1446011	A2W-185'	A2	185	0.80	1.57	2.76	0.010	2.5	0.07	0.8	0.19	0.16	13.5	0.01
1446008	A3 W-3'	A3	3	2.37	1.55	1.08	0.004	0.03	1.72	0.0	2.04	0.11	0.4	2.92
1446011	A3W-100'	A3	100	0.30	0.96	1.84	0.003	5.9	0.06	0.5	0.22	0.21	18.3	0.01
1446011	A3W-(185'-190')	A3	185	42.10	31.80	11.50	0.057	6.5	0.14	21.4	0.03	0.20	53.8	0.02
1446008	A4 W-3'	A4	3	4.54	3.83	0.95	0.005	0.1	1.91	0.0	2.46	0.11	0.4	5.26
1446009	A4W-100'	A4	100	0.10	1.68	0.16	0.011	3.0	0.09	0.7	0.17	0.17	8.8	0.01
1446009	A4W-195'	A4	195	0.45	1.17	11.10	0.010	2.2	0.11	1.8	0.16	0.17	51.0	0.04
1446012	A5W-3'	A5	3	0.25	0.66	0.25	0.003	1.4	0.02	0.3	0.04	0.09	1.5	0.01
1446012	A5W-100'	A5	100	0.20	0.80	0.07	0.004	2.0	0.05	0.4	0.10	0.18	5.9	0.01
1446012	A5W-185'	A5	185	0.05	1.19	4.70	0.004	3.0	0.04	0.4	0.21	0.30	7.5	0.01
1446012	B1W-3'	B1	3	0.39	0.82	0.57	0.007	1.5	0.04	0.7	0.14	0.24	3.5	0.15
1446012	B1W-100'	B1	100	0.24	1.09	0.61	0.003	3.0	0.03	0.5	0.10	0.07	3.9	0.01
1446012	B1W-185'	B1	185	0.26	0.70	0.04	0.003	1.9	0.02	0.4	0.03	0.08	1.8	0.01
1446011	B2W-3'	B2	3	0.74	0.91	1.23	0.015	1.5	0.05	0.6	0.11	0.15	4.9	0.01
1446009	B2W-3'	B2	3	0.65	0.82	34.40	0.011	1.6	0.10	2.4	0.15	0.42	179.0	0.20
1446011	B2W-100'	B2	100	0.33	0.89	1.56	0.007	1.9	0.04	0.5	0.12	0.15	3.8	0.01
1446011	B2W-185'	B2	185	1.23	1.01	28.60	0.008	2.2	0.07	1.1	0.24	0.08	23.6	0.02
1446009	B3W-3'	B3	3	1.31	1.33	11.60	0.012	1.7	0.08	2.1	0.13	0.30	90.3	0.02
1446011	B3W-100'	B3	100	0.34	1.20	0.15	0.003	3.0	0.02	0.3	0.12	0.14	1.3	0.01
1446011	B3W-185'	B3	185	0.35	0.49	7.45	0.003	1.7	0.02	0.4	0.08	0.07	10.5	0.01
1446011	B4W-3'	B4	3	0.29	0.91	0.39	0.009	2.1	0.02	0.8	0.13	0.29	1.5	0.01
1446011	B4W-100'	B4	100	0.35	1.11	0.74	0.006	2.3	0.02	0.4	0.13	0.15	4.7	0.01
1446011	B4W-185'	B4	185	0.23	1.11	0.70	0.006	3.1	0.03	0.5	0.23	0.16	49.7	0.01
1446012	B5W-3'	B5	3	0.15	0.92	0.07	0.013	1.8	0.06	0.9	0.16	0.18	0.9	0.01
1446012	B5W-100'	B5	100	0.04	1.23	0.08	0.003	2.6	0.02	0.3	0.15	0.22	3.0	0.01
1446012	B5W-185'	B5	185	0.04	1.27	0.01	0.003	2.8	0.02	0.3	0.15	0.34	2.8	0.01
1446013	Bay Water-10' Barge NE	NE	10	0.68	0.61	0.34	0.014	1.4	0.05	2.6	0.10	0.25	6.8	0.02
1446013	Bay Water-10' Barge SE	SE	10	0.43	0.42	0.22	0.015	1.4	0.05	2.2	0.11	0.20	7.3	0.03
	Reporting Limit (µg/L)			0.2	0.28	0.026	0.02	0.07	0.3	0.02	0.24	0.03	0.42	1.5
	Trigger Limit (µg/L)			11	13	2.5	6.3	36	2.2	3.4	4300	5	81	1.9

Notes: Red shading indicates a result greater than the trigger limit.
µg/L = micrograms per liter

False positives for arsenic and selenium were observed in the caisson samples when EPA Method 200.7 was used. Figure 8 gives the box and whisker plots for arsenic and selenium concentrations in caisson and background ambient bay water samples (NE and SE Barge samples [identified as 200.7 Bkgnd and 1640 Bkgnd in figures]) using EPA Methods 200.7 and 1640, compared to the 2003–2013 RMP results from location BC10 at the Bay Bridge (SFEI, 2014).

These figures clearly indicate that the arsenic and selenium results reported by Envirosurvey using EPA Method 200.7 are false positives. Note that arsenic and selenium concentrations in ambient bay water samples collected by Envirosurvey are comparable to the ambient measurements made by the San Francisco Bay RMP when the samples are measured by EPA Method 1640, but much higher than the established RMP baseline when Method 200.7 is used. Method 1640 also has lower reporting limits compared with Method 200. Since EPA Method 1640 is the accepted approach for characterizing ambient conditions through the RMP, results using Method 1640 are considered more accurate than Method 200.7. This water quality assessment relies only on trace element data that was generated by EPA Method 1640.

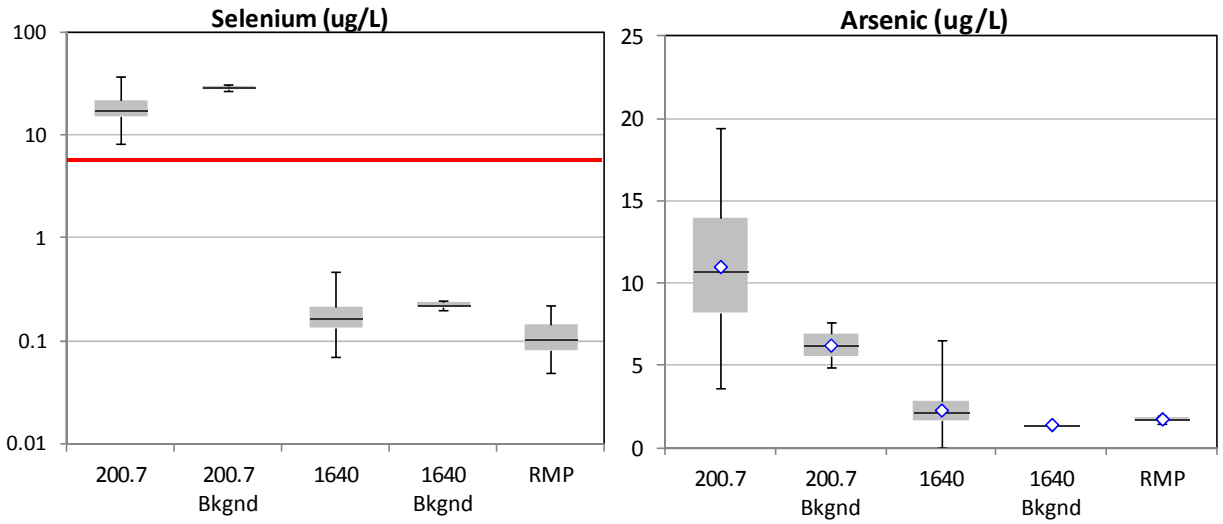


Figure 8: Box and Whisker Plots for Selenium and Arsenic in Water Samples

Figures 9 through 15 show EPA Method 1640 results at each sample depth compared to bay ambient samples, the 2003–2012 RMP results, and the trigger limit for chromium, nickel, lead, copper, selenium, zinc and silver. These metals were chosen because they either exceeded the trigger limit for at least one sample or are of special interest in bay water (e.g., selenium).

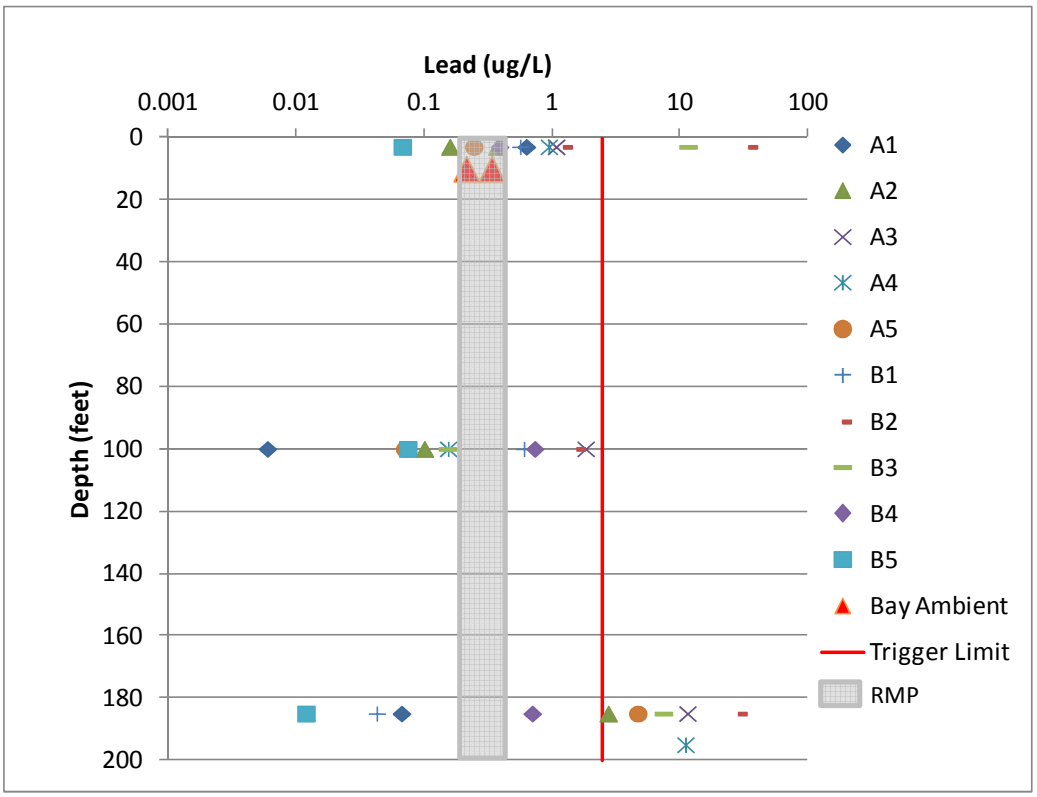


Figure 9: Lead Concentrations in Caisson and Ambient Bay Waters

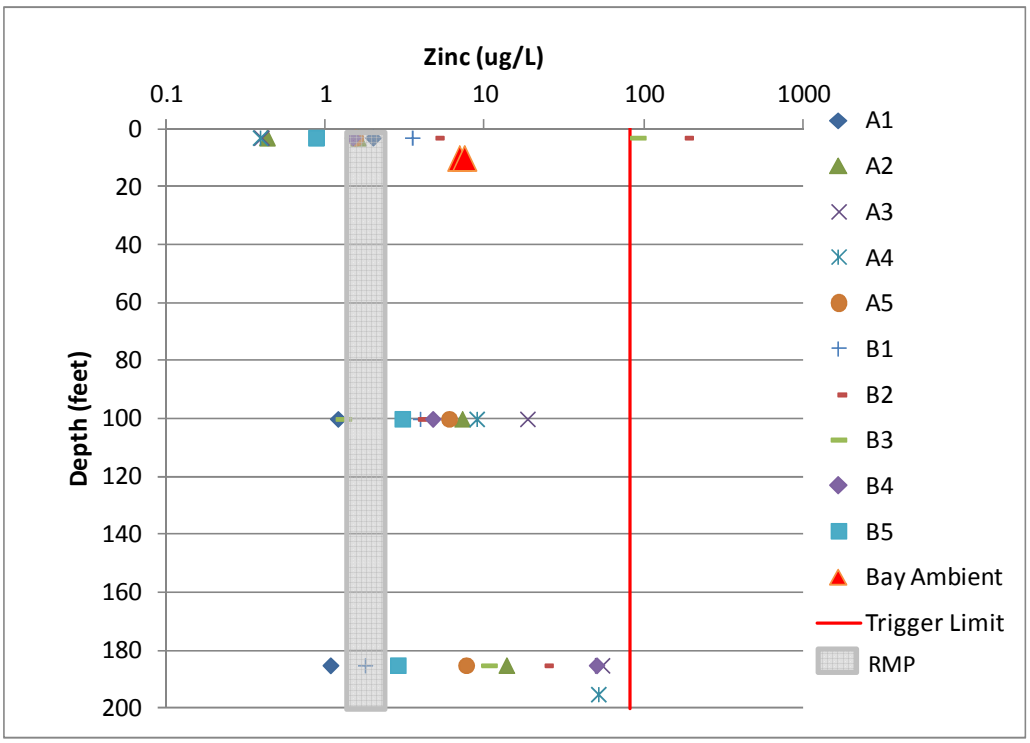


Figure 10: Zinc Concentrations in Caisson and Ambient Bay Waters

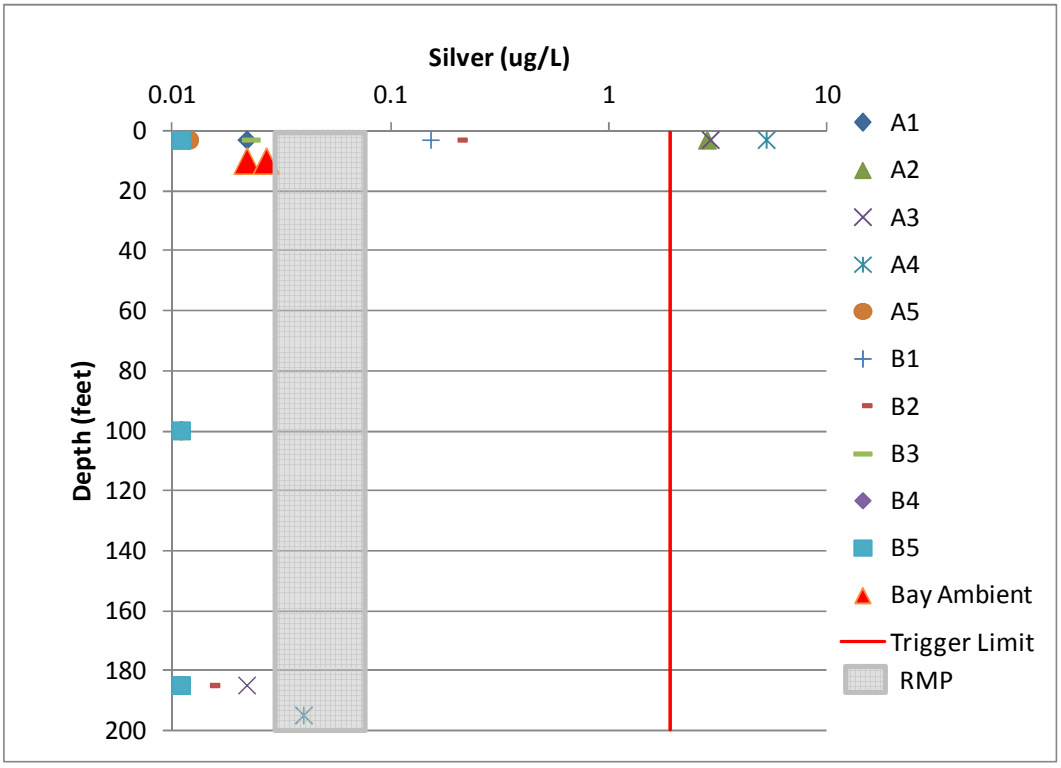


Figure 11: Silver Concentrations in Caisson and Ambient Bay Waters

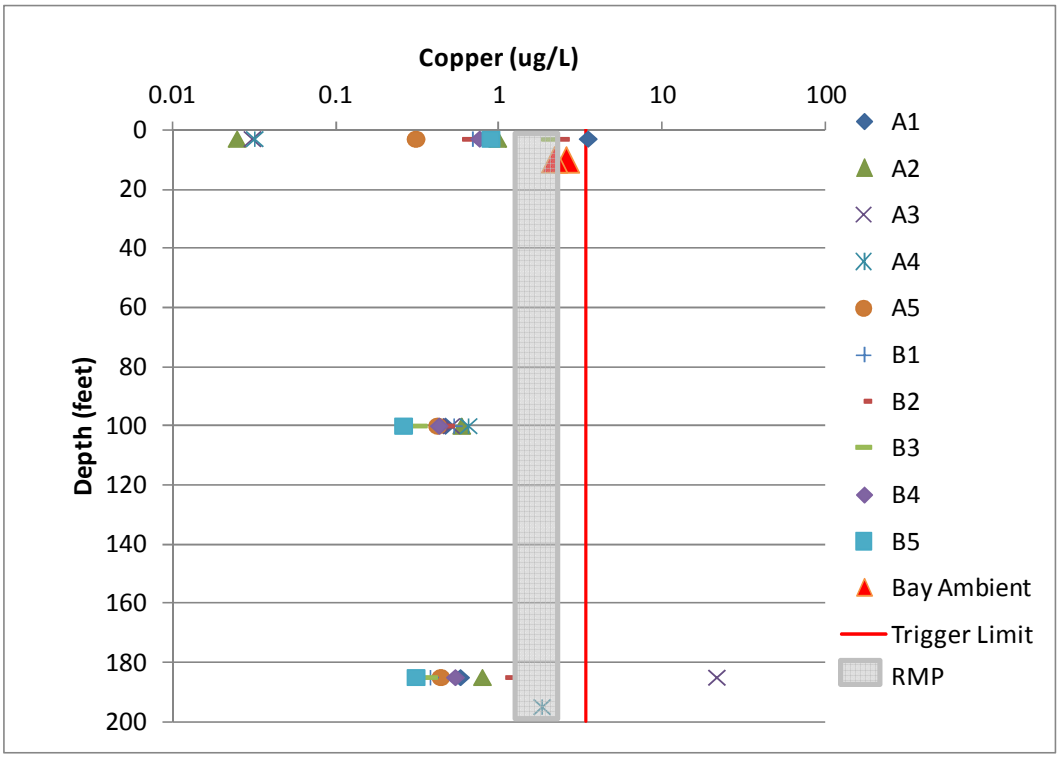


Figure 12: Copper Concentrations in Caisson and Ambient Bay Waters

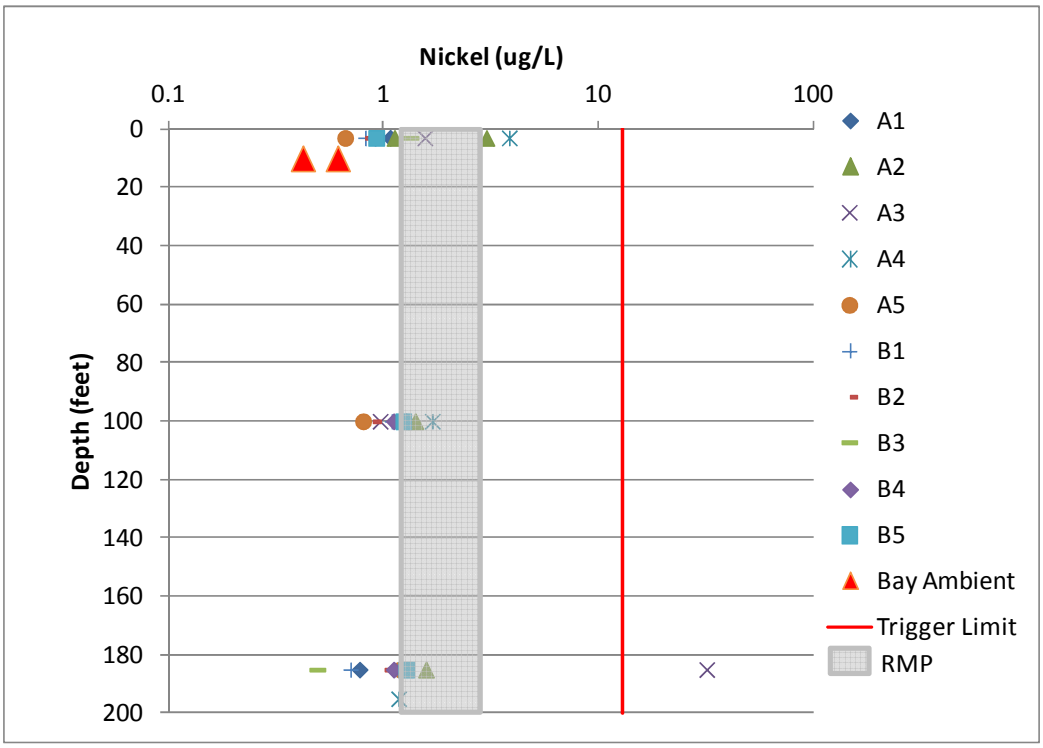


Figure 13: Nickel Concentrations in Caisson and Ambient Bay Waters

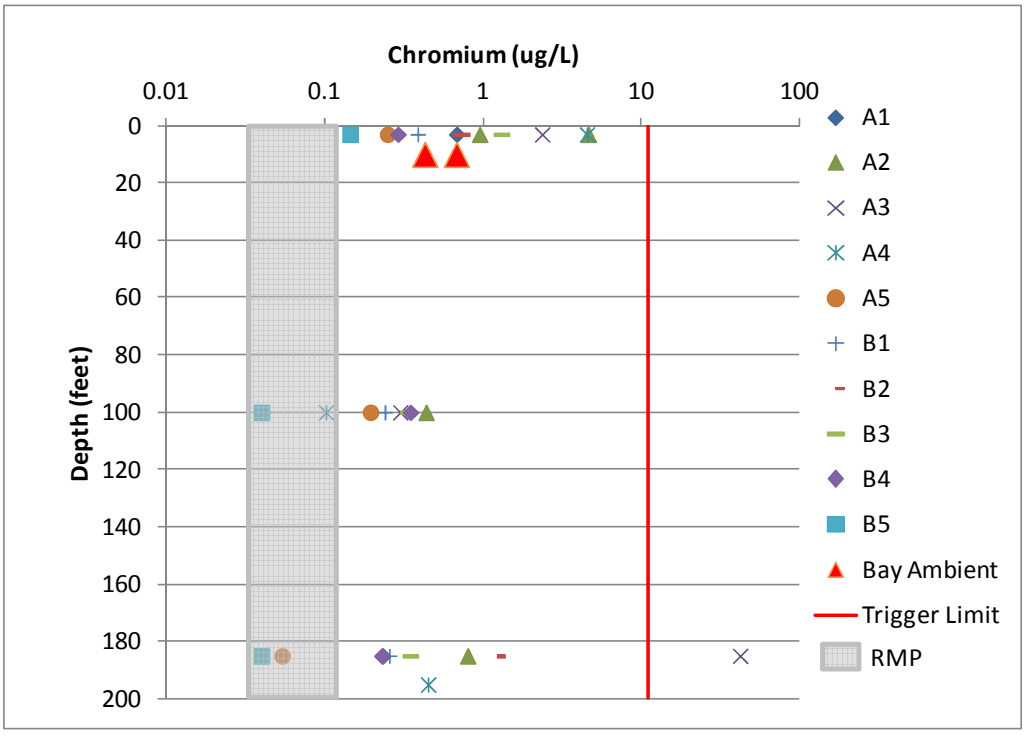


Figure 14: Chromium Concentrations in Caisson and Ambient Bay Waters

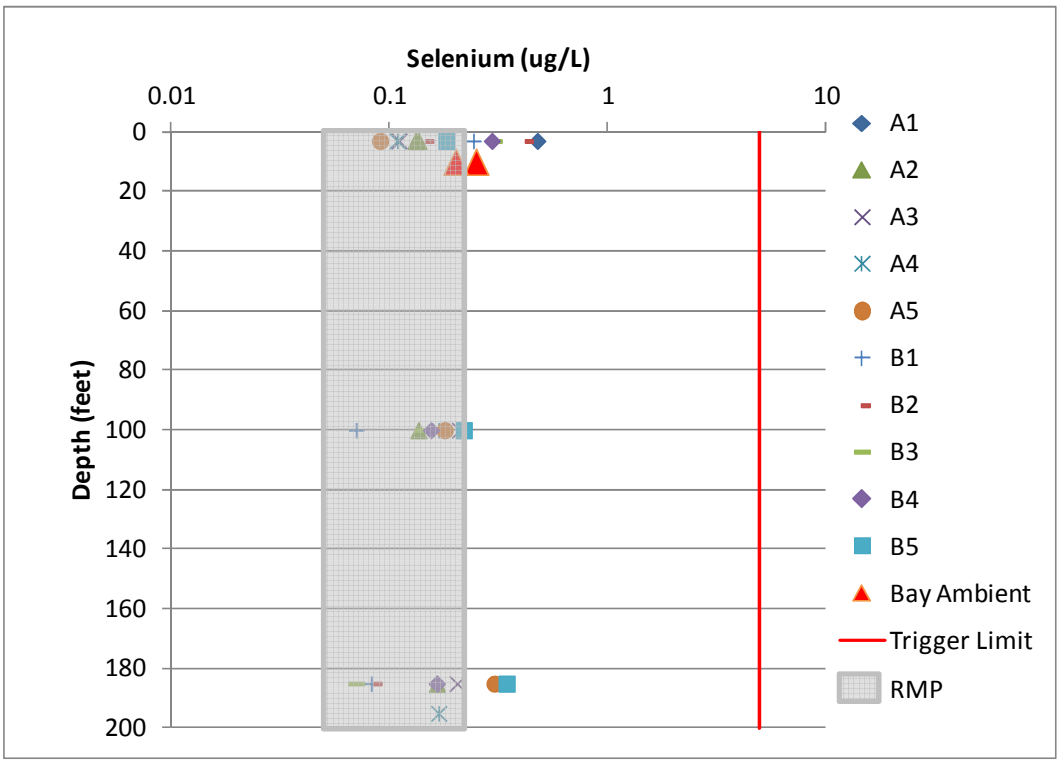


Figure 15: Selenium Concentrations in Caisson and Ambient Bay Waters

Sample A3-185' accounted for 24 percent (four out of 17) of all exceedances, with chromium, nickel, lead and copper concentrations greater than the trigger limits, but EnviroSurvey noted that "exceedances may be due to the presence of black sludge that was drawn up by the pump at the bottom of this chamber A3" (Envirosurvey, Inc., 2014),

Except for lead, metals concentrations in the caissons were generally less than the regulatory trigger limits for most samples (Table 1 and Figures 9 through 15). Most metals concentrations were at or slightly above expected bay water quality as represented by the bay ambient samples and the range of RMP concentrations. As shown in Figure 9, 75 percent of the lead concentrations greater than the trigger limit were taken from the bottom of the caissons; two samples at the 3-foot depth also exceeded the trigger limit (caissons B2 and B3).

Zinc concentrations tended to be slightly higher at greater depths; however, the trigger limit was only exceeded for two samples at the 3-foot depth (caissons B2 and B3) (Figure 10).

Silver concentrations exceeded the trigger limit for samples at the 3-foot depth at caissons A2, A3 and A4. Most concentrations were at or near bay ambient and RMP concentrations (Figure 11).

Copper, nickel, and chromium concentrations were generally at or near bay ambient and RMP concentrations except for sample A3-185' (Figures 12, 13, and 14).

Finally, selenium concentrations in caisson samples were well below the trigger limit and at or near bay ambient and RMP concentrations for all samples (Figure 15).

In summary, metals concentrations appear to be similar to ambient bay water, and were generally less than their trigger limits, except for lead. Lead concentrations were elevated in water taken from near the bottom of the caissons. A few caissons had concentrations in near-surface water samples that exceeded trigger limits for lead, zinc and copper. The cause of elevated metals in some of the surface waters is not known, but is likely related to the low DO conditions. In both the surface layer and below the mud line, low DO can promote release of metals from particulates by dissolving iron and manganese oxide surfaces that are typically adsorption sites for metals.

4.3 Additional Parameters

The majority of VOC, pesticides, and PCB concentrations were non-detect. Five samples returned detected-not quantified (DNQ) for SVOCs; all other were non-detect.

5. SEDIMENT QUALITY RESULTS

Two sediment samples were collected from the bottom of caisson chambers B2 and B4, between 190 and 195 feet below the water surface. Results are presented in the EnviroSurvey, Inc. (2014) report.

Metals concentrations in both samples were low, with some elements of concern, such as selenium, below the analytical detection limit. Both samples had non-detectable amounts of VOCs, pesticides, and PCBs. All SVOC results were non-detect except one, which was showed minor amounts of oil and grease and total recoverable petroleum hydrocarbons.

Sediment quality is not expected to affect overall water quality, as caisson sediment is approximately 190 to 195 feet below the water surface compared to the scour mud line of 55 feet. As the caisson foundations will not be removed, it is considered unlikely that any sediment contained in the caissons will be mobilized.

6. CONCLUSIONS

Results of this sampling program indicate that except for a small volume of water near the water line, caisson water quality above the mud line is comparable to ambient Bay water and below regulatory trigger limits. The apparent false positives for selenium concentrations using EPA Method 200.7 were resolved to concentrations less than the trigger limit and on par with ambient Bay concentrations using Method 200.7

Near the water surface there is a depression of DO in all caissons and elevated lead, zinc, and silver in selected caissons. Lead concentrations exceeded the trigger limit at the lowest sampling depth (approximately 185–195 feet) for six of the ten caissons. The pH was generally in a narrow range between 7.5 and 8.

VOCs, SVOCs, PCBs, and pesticides were generally not detected or at were detected but not quantified (DNQ) concentrations.

The water quality study (Caltrans, 2014b) stated the potential water quality concerns as:

- Low DO;
- Floating oil or debris;
- Accumulation of contaminated sediments;
- High oxygen demand and/or low pH; and
- High turbidity, metals, and/or organics.

The additional information gained from this water quality survey indicates that aside from a small volume of water near the surface, caisson water generally has DO and metal concentrations similar to ambient bay quality and below trigger levels. Additionally, the results do not indicate that the caissons have a large biochemical oxygen demand or a significant accumulation of contaminated sediments in the bottom. Because of trigger exceedances in surface waters, it may be prudent to consider removing and treating the top approximately 10 feet of water from the caissons. This would be approximately 500,000 gallons (the top 10 feet of water from 28 caissons, each 15 feet, 7.5 inches by 15 feet, 5 inches). The method of treatment could be very basic – e.g, sand filters to remove particles and oil socks or granular activated carbon to remove hydrocarbons, so high treatment flow rates could be achieved. The need for treatment of the upper layer, and the type of treatment, will need to be revisted as the definition of the project approach evolves; the actual condition of the water quality within the caissons may be altered by the method of removing the upper portion of the piers.

Trigger exceedances below the mud / scour line are not a concern because the exceedances are limited to the deepest portions, where little water is expected to reach the Bay by displacement during demolition of Pier E-3.

The next step will be to incorporate the results of this survey into an update version of the water quality study (Caltrans, 2014b). The updated water quality study will quantify the potential impacts using these results, as well as changes to the project description and blasting plan.

7. REFERENCES

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APPENDIX F

Pier E4 and E5 As-Built Drawings

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

SECTION A-A

HALF SIDE ELEVATION

HALF SECTION ON ℄

HALF END ELEV.

SECTION D-D

HALF TOP PLAN

HALF PLAN AT ELEV. +19.2

SECTION B-B

SECTION C-C

SECTION LOOKING NORTH

SECTION LOOKING EAST

SECT. ELEV. LOOKING EAST

SECT. ELEV. LOOKING NORTH

PLAN OF GRILLAGE UNDER 504' SPAN

PLAN OF GRILLAGE - ANCHOR SPAN

GENERAL NOTES

All exposed edges to be chamfered 1".
All reinforcing steel to be embedded 6" from face of concrete unless otherwise noted.
All bars to be lapped not less than 40 diameters when spliced.
Tremie seal concrete to be class A.
All other concrete to be class B, except from -8.82 to +30.00
Grillage steel not to be painted.
Nuts of lower ends of anchor bolts to be swedged or welded.
See Sup. Drwg. No. 7A for details of Manhole Frame and Cover.

All concrete from El. -8.82 to +30.00 poured class A

NOTE :- For cutting edge details See Contractors Drawings #13447-X and #13450-X.

For larger scale detail of reinforcing steel see Pier E3 Drwg. #5.

Date	Revision	By	Chkd.
11-21-33	Anchor Bolt lengths changed	D.L.S	J.W.G.
8-3-33	Added Manholes and 8" Drain	C.M.	J.W.G.
7-25-33	Pier top cells removed	C.M.	J.W.G.
1-24-34	1" Galv. Conduit Added	C.A.B.	
3-21-34	Anchor Bolt lengths changed	C.M.	
6-14-39	Corrected for Construction Revisions	D.L.S.	

BOARD OF CONSULTING ENGINEERS

APPROVED: Director of Public Works

CORRECT: Engineer of Design

APPROVED: August 8, 1932
Bridge Engineer
Chief Engineer
Chairman

BOARD OF CONSULTING ARCHITECTS

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

SAN FRANCISCO-OAKLAND BAY BRIDGE

SUBSTRUCTURE - EAST BAY CROSSING

PIER E 4

GENERAL PLAN & ELEVATION

SCALE IN FEET

CONTRACT NO. 4 SUP. DRAWING NO. 6A

JULY - 1933

GENERAL NOTES

Concrete seal to be class A.
All exposed edges of concrete to be chamfered 1 inch.
Reinforcing steel, when spliced, to be lapped not less than 40 diameters.
All reinforcing steel to have not less than 6" cover unless otherwise noted.
Anchorage steel not to be painted.
Nuts on lower ends of anchor bolts to be welded or swedged.
All temporary construction to be removed above El. -40.0
Concrete seal and all concrete above Elev. -6.50 poured Class A*
All other concrete to be Class B
* NOTE: Deck over all wells except 4a, 4b and 4c was made of Class B

NOTE:—For cutting edge details See Contractors Drawings, #13447-X and 13450-X.

Date	Revision	By	Ch'k'd
6-15-39	Corrected for Construction Revisions	J.L.E.	
1-24-34	1" Conduit Added.	C.J.B.	
11-21-33	Manhole dimension changed	D.L.S.	J.M.G.
8-1-33	Inspection manholes added		

BOARD OF CONSULTING ARCHITECTS

APPROVED: Director of Public Works
CORRECT: Engineer of Design
APPROVED: August 8, 1932 Bridge Engineer, Chief Engineer, Chairman
BOARD OF CONSULTING ENGINEERS

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
SAN FRANCISCO-OAKLAND BAY BRIDGE
SUBSTRUCTURE-EAST BAY CROSSING
PIER E5
GENERAL PLAN & ELEVATION
SCALE IN FEET
CONTRACT NO 4 SUP. DRAWING NO. 7A
JULY-1933

APPENDIX G

Dewatering Product Information

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

Esterline
Pressure Systems

Submersible Level Transducer

KPSI™ Transducers | Series 700

FEATURES

- Custom Level Ranges up to 700 ft (210 m) H_2O
- Accuracy of up to ±0.05% FS Available
- Analog Outputs of 4-20 mA, 0-5 VDC or mV
- Welded 316 SS or Titanium Construction
- Optional Lifetime Lightning Protection
- Optional Temperature Measurement Output
- Custom Cable Lengths

APPLICATIONS

- Well Monitoring
- Level Control
- Oceanographic Research
- Lift Stations
- Ground Water Monitoring
- Surface Water Monitoring
- Slug Tests
- Pump Control
- Soil Remediation

The Series 700 family of submersible hydrostatic level transducers is specifically designed to meet the rigorous environments encountered in liquid level measurement and control. They can be configured to perform to specifications under most adverse, reactive conditions.

All KPSI Transducers utilize a highly accurate pressure sensor assembly specifically designed for hostile fluids and gases. The assembly is integrated with supporting electronics in a durable waterproof housing constructed of 316 stainless steel or titanium. The attached electrical cable is custom manufactured to Pressure Systems' specifications and includes Kevlar® members to prevent errors due to cable elongation, and a unique water block feature that self-seals in the event of accidental cuts to the cable. Each transducer is shipped with our latest SuperDry™ Vent Filter that prevents moisture from entering the vent tube for at least one year without maintenance, even in the most humid environments.

These units are designed for installation in a Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F and G, Class III, Division 1 hazardous location when connected to appropriate apparatus such as those manufactured by R. G. Stahl, Inc., and others. KPSI transducers are type approved by the American Bureau of Shipping (ABS) and are UL, CUL, and FM approved and have a IP 68 and NEMA 6P housing protection rating. The Series 700 is CE compliant to EN 61000-6-4:2001 and EN 61000-6-2:2001. All KPSI Transducer calibrations are traceable to the National Institute of Standards and Technology (NIST).

Sensing the Environment™

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www.PressureSystems.com

Order on-line!
www.LevelandPressure.com

ISO-9001:2000 Certified

PSI Ltd.
124 Victoria Road
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GU147PW
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Fax: +44 1252 510099
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Series 700 Specifications

Specifications subject to change without notice.

Parameter	735[1]	730[1]	720	710	700	Units	Comments
LEVEL RANGES							
Full Scale Level Ranges[2]	5 thru 700 (1.5 thru 210)		2.5 thru 700 (0.75 thru 210)			ft H_20 (m H_20)	for vented gage reference
	N/A	35 thru 700 (10 thru 210)	10 thru 700 (3 thru 210)			ft H_20 (m H_20)	for sealed gage reference
	N/A	35 thru 700 (10 thru 210)				ft H_20 (m H_20)	for absolute reference
Proof Pressure	1.5					x FS	
Burst Pressure	2.0					x FS	
STATIC PERFORMANCE							
Static Accuracy[3]	±0.05	±0.10	±0.25	±0.50	±1.00	%FSO	BFSL method
Resolution	Infinitesimal						
ENVIRONMENTAL							
Wetted Materials	316 SS or Titanium; Delrin®; polyurethane or Viton®						Delrin® and Viton® are registered trademarks of DuPont.
Compensated Temp Range	0 to 50					ºC	
Thermal Error[4]	±0.05[5]					%FSO/ ºC	worst case over compensated temperature range
Operating Temp Range	-20 to 60					ºC	when using polyurethane cable
	0 to 50					ºC	when using ETFE cable[11]
Protection Rating	IP 68, NEMA 6P						
ELECTRICAL							
Excitation	9 - 30 2.5 - 10					VDC	for mA, VDC and non-ratiometric mV output for ratiometric mV output
Input Current	20 3.5					mA max	for mA output for VDC output
Output[10]	4 - 20 0 - 5 0 – 100[7] 2.5 - 10					mA VDC mV mV / V	options available[6] non-ratiometric ratiometric (range dependent)
Zero Offset	±0.20[8] < 0.25 ±0.6					mA VDC mV	for mA output for VDC output for mV output
Output Impedance	See Loop Resistance diagram on page 7 < 10 3000 - 5000					ohm	for mA output for VDC output for mV output
Insulation Resistance	100					mega ohm	at 50 VDC
Circuit Protection	Polarity, surge/shorted output						

Series 700 Specifications

Specifications subject to change without notice.

Parameter	735[1]	730[1]	720	710	700	Units	Comments
PHYSICAL							
Approximate Weight	0.44 (198) 0.05 (79)					lbs (g) lbs/ft (g/m)	transducer cable
Cable							
Jacket Material	Polyurethane (std) ETFE[9] (opt)						Tefzel®, Teflon® and Kevlar® are registered trademarks of DuPont.
Pull Strength	200 (90)					lbs (kg)	
Number of Conductors	4						
Conductor Size	22					AWG	
Cable Seal	Molded Polyurethane Viton® Gland						for polyurethane cable for ETFE cable
TEMPERATURE OUTPUT OPTION (NOT INTRINSIC SAFETY APPROVED)							
Temperature Range	0 to 50 -20 to 60					ºC	available for 4-20mA output versions only
Output Signal[10]	4-20					mA	
Temperature Measurement Accuracy	±4					ºC	
LIGHTNING PROTECTION (OPTIONAL)							
Life Expectancy	> 1000 operations						
Peak Clamping Voltage	36 volts						
Response Time	< 10 nsecs						

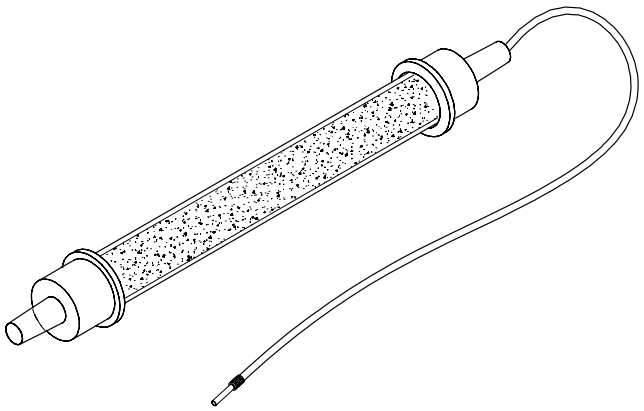
Notes:

1 For ranges > 230 ft (70 m) H_2O, output is 4-20 mA only.
2 Intermediate level ranges are available.
3 Static accuracy includes the combined errors due to nonlinearity, hysteresis and nonrepeatability on a Best Fit Straight Line (BFSL) basis, at 25ºC per ISA S51.1.
4 Thermal error is the maximum allowable deviation from the Best Fit Straight Line due to a change in temperature, per ISA S51.1.
5 For ranges < 12 ft (4 m) H_2O, maximum thermal error is ±0.1% FSO/ºC.
6 Custom VDC output levels can be provided up to 2.5 VDC less than the excitation supply voltage.
7 For ranges < 23 ft (7 m) H_2O, output is 0-50 mV.
8 For ranges <= 5 ft (1 m) H_2O, zero offset is ±0.25 mA.
9 ETFE is a fluoropolymer (Teflon® derivative) material, Tefzel® or equivalent
10 For ranges < 5 ft (1.5 m) H_2O, only 4-20 mA output is available.
11 -20ºC to 50ºC for level ranges <= 100 ft (70m) H_2O when using ETFE cable.

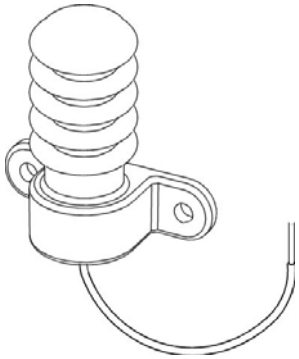
Uniquely-Designed Submersible Cable
The attached cable can incorporate either polyurethane or ETFE jacket material. The ETFE (Tefzel® or equivalent) cable jacket provides superior chemical resistance and durability over polyurethane. While more expensive and less flexible then polyurethane, ETFE cable can reduce overall maintenance costs when used in applications involving caustic media, high abrasion, or potential cross-contamination. ETFE is a fluoropolymer recommended over Teflon® for such applications due to its superior tensile strength and flexibility while rivaling Teflon's chemical resistance.

Both cable types incorporate Kevlar® strength members to prevent errors due to cable elongation, and a unique liner to prevent water intrusion in the event the cable jacket suffers minor cuts. Cable length is determined from the cable end of the transducer and any length of 5 feet or more may be ordered. Polyurethane cable is attached using a polyurethane molded seal while ETFE cable is attached using a compressed Viton® gland seal.

Moisture Protection
Our submersible transducers are equipped with custom, vented cable. The vent provides an atmospheric reference for the sensor, which is necessary for ensuring the highest possible accuracy when making a level measurement. It must be noted that if left unprotected, it provides a pathway for water vapor to enter the level transducer. This vapor will condense into water and could create an offset in the transducer output, or cause permanent damage. For these reasons, a Series 810 desiccant-filled vent filter is provided free of charge with each Series 700 we ship. Our latest SuperDry™ Vent Filter prevents moisture from entering the vent tube for at least one year without maintenance. Replacement filters are available from the factory.



Series 810
SuperDry™ Long Life Vent Filter



Series 815
Aneroid Bellows

For applications where periodic maintenance of the Series 810 Vent Filter is not practical, our Series 815 Aneroid Bellows may be a preferable alternative. The sensitive bellows responds to and transmits changes in atmospheric pressure to the reference of the vented gage sensor while providing a maintenance-free, closed system.

The Series 815 is not recommended for the following applications:

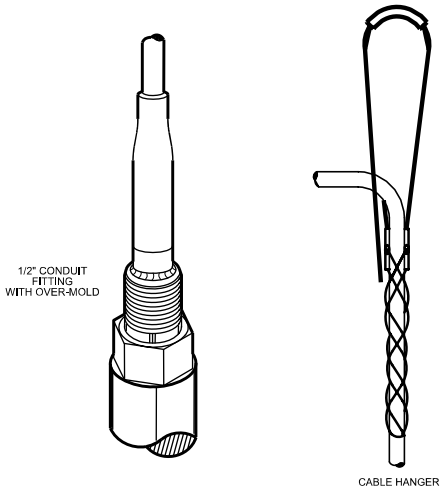
- Full scale level ranges of less than 5 ft (1.5 m) H_2O
- Measurement accuracy of 0.25% or better
- Environments subject to extreme temperature changes

Installation Tips

The Series 700 family of submersible transducers may be suspended directly in the media or in a perforated 1" PVC instrumentation still well. Alternatively, the transducer may be attached to a rigid conduit using a ½" NPT male conduit fitting.

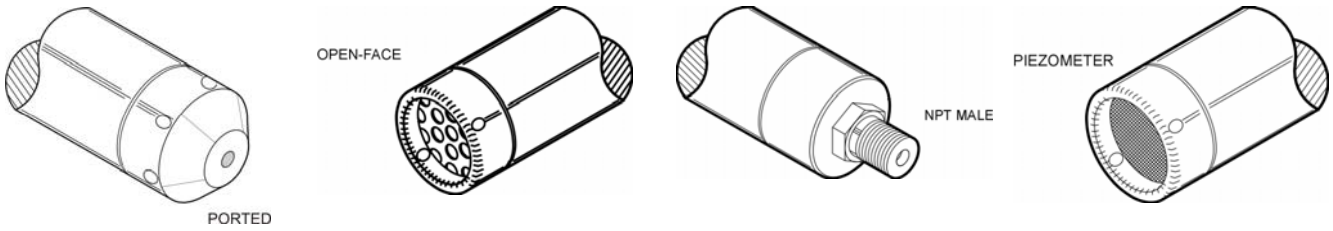
When suspended by the cable, users often utilize our cable hanger (PN# 12-90-0931). This device slides onto the cable from the bare-wire end and is easily positioned anywhere on the cable by pushing the ends together. Once positioned, the cable hanger contracts to provide a snug grip.

For applications requiring cable length in excess of 500 feet, consult the factory for proper installation and maintenance



Nose Cap

Several different user-installable nose caps are available for the Series 169 & 173 submersible level transducers. The ported nose cap with #8-32UNC-2B threaded hole is best used where weights are required and for those installations where users may encounter sharp, protruding objects. **Caution must be exercised when inserting a screw into the nose cap as the maximum insertion length should not exceed 0.175".** The standard submersible open-face nose cap which allows maximum contact with the liquid media is ideal for wastewater and "greasy" applications where clogging of the sensor is a concern. The ¼" male NPT pressure nose cap is not only useful for calibration purposes but also allows the device to be used as a submersible or above ground pressure transducer. The piezometer nose cap allows the unit to be buried in the ground without damage to the sensor diaphragm.



Unamplified mV Output Signal Versions (Ratiometric vs. Non-ratiometric)

In addition to the amplified VDC and mA output signal versions, two unamplified millivolt output versions are offered depending on the available excitation supply voltage and the capabilities of the system to which the transducers are connected.

The ratiometric mV output version is used when the excitation is externally regulated or the system interfaced with the transducer is capable of compensating for fluctuations from the excitation supply. Such fluctuations to the supply will cause the output signal to fluctuate, and must therefore be measured and compensated. The benefit of a ratiometric design is that the output signal can also be compensated for temperature changes to the pressure sensor if the voltage sense lines are employed. **Transducers ordered with this option do not carry IS approvals.**

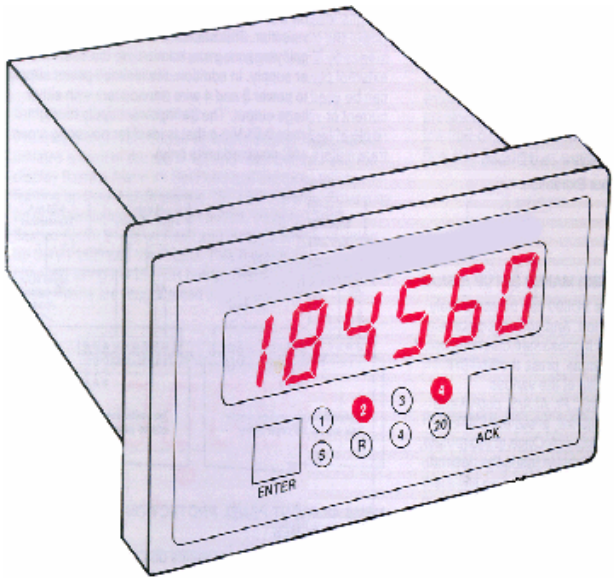
The non-ratiometric mV output version is used when the excitation voltage cannot be externally regulated or the system is incapable of compensating for changes to the excitation voltage.

Optional Lifetime Lightning/Surge Protection
Lightning/Surge protection is offered for output signal versions of 0-5 VDC (PN# OPTION-012) and 4-20 mA (PN# OPTION-009). The option is ordered separately from the transducer.

Protection is achieved through the use of 2 components. One is located in a 6.5 inch long, 1 inch OD 316 SS housing extension to the non-sensing end of the transducer while the other is located at the surface and grounded via DIN-rail or ground wire. This option requires a minimum input voltage of 12 VDC. ***A unit ordered with this option is warranted for the life of the instrument against damage due to voltage surge, when this 2-part option is properly installed.***

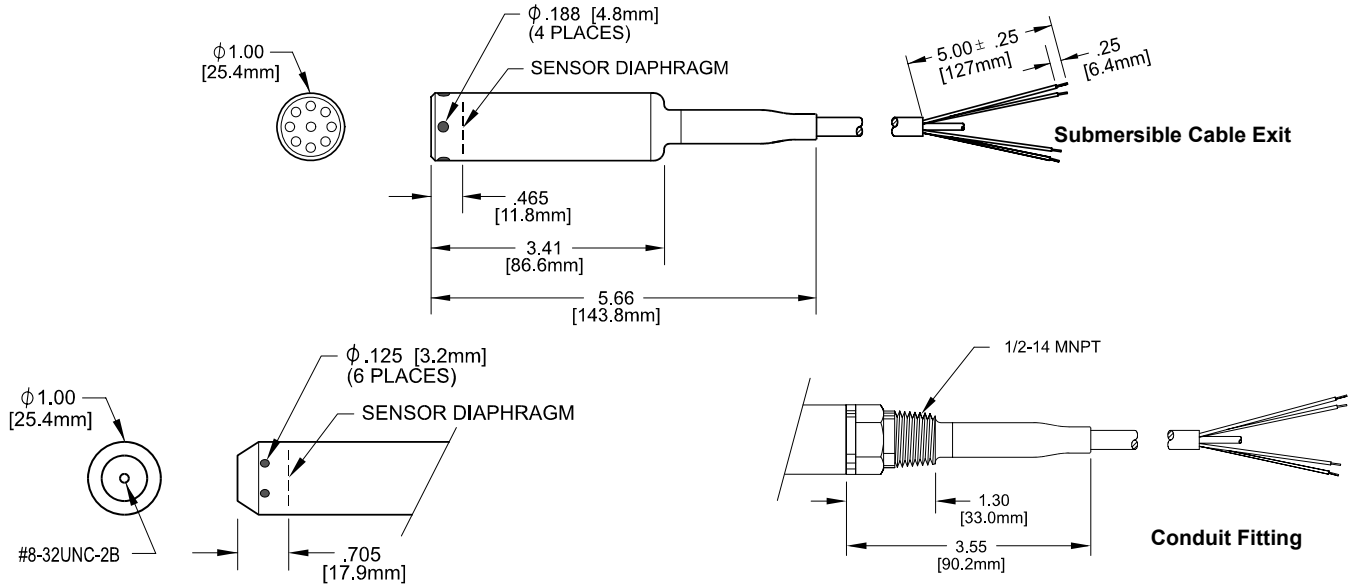
Temperature Measurement Output Option
As an option, a precision silicon temperature sensor can be installed within the transducer to provide a separate 4-20 mA temperature measurement output over the range of 0 to 50ºC or -20 to 60ºC. The accuracy of the temperature measurement is ±4ºC. **Transducers ordered with this option do not carry IS approvals.**

Display Meter
Pressure Systems offers two types of Display Meters to provide a visual readout of a single KPSI transducer having mA or VDC output. Both varieties utilize a red 0.54" LED display with 4 active characters to indicate a numeric range of -1999 to 9999. The units operate from 115 VAC power and provide a 24 VDC supply for power to the transducer.

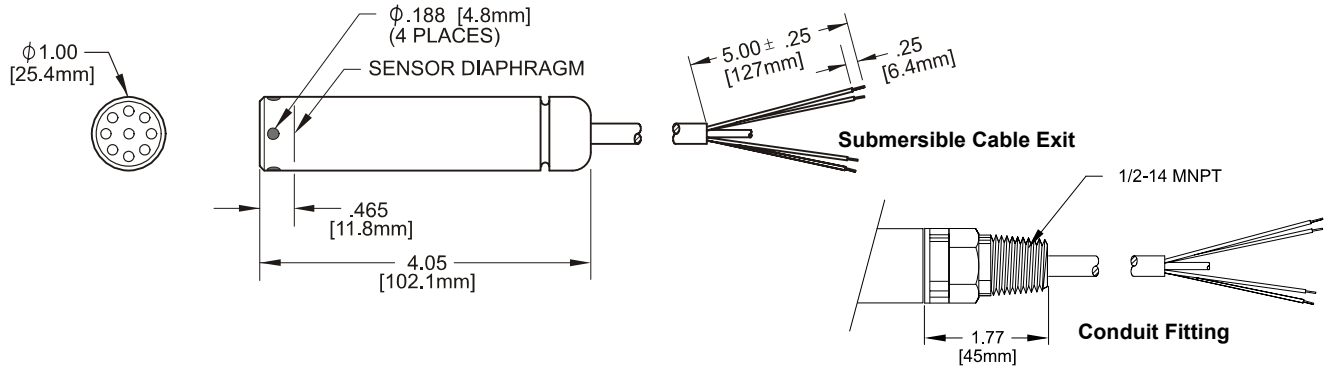


The Model 3019 Digital Readouts provide a sophisticated display of the transducer output with six 14-segment LED's for display of true alphanumeric characters; the last two used for process descriptors. These readouts offer programmable input configuration, isolated transducer power supply, selectable 2-point scaling or up to 17-point linearization, optional 4-20 mA retransmission, and two or four optional 10-amp SPDT alarm contacts for control. The 3019 has a NEMA 4X front panel with a polycarbonate bezel and a 1/8 DIN aluminum housing measuring 1.9375" H x 3.75 "W x 6.5" D.

The Model 3620 Pump Controllers provide a more rugged package specifically designed to operate external pumps via two 10-amp SPDT alarm contacts. The 3620 provides front panel scaling, operates from -20 to 70ºC, and uses 120 or 240 VAC. The NEMA 4X rated enclosure can be surface or panel mounted and measures 3.2" H x 5.5" W x 2.7" D

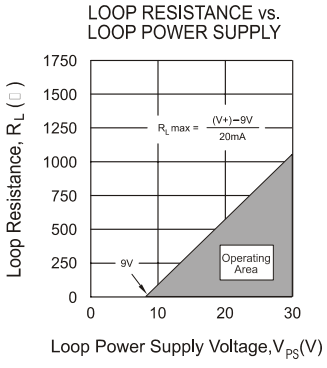


Molded Cable Seal Configuration for Polyurethane Cable



Gland Cable Seal Configuration for ETFE cable

ELECTRICAL TERMINATION		
22AWG CONDUCTORS IN A SHIELDED CABLE WITH VENT TUBE		
4-20 mA	RED	+ EXCITATION
	BLACK	- EXCITATION
0-5 VDC	RED	+ EXCITATION
	BLACK	- EXCITATION
	WHITE	+ SIGNAL
mV	RED	+ OUTPUT
	BLACK	+ EXCITATION
	WHITE	- EXCITATION
	GREEN	- OUTPUT
ALL	DRAIN WIRE	SHIELD



MODEL	SUBMERSIBLE LEVEL TRANSDUCER
7 3 5	±0.05% FSO Static Accuracy
7 3 0	±0.10% FSO Static Accuracy
7 2 0	±0.25% FSO Static Accuracy
7 1 0	±0.50% FSO Static Accuracy
7 0 0	±1.00% FSO Static Accuracy

MATERIAL

Code	Description
S	Stainless Steel
T	Titanium

REFERENCE FORMAT

Code	Description
1	Vented gage
3	Sealed gage (except 735)
4	Absolute (except 735)

OUTPUT

Code	Description
2	mV, non-ratiometric
3	0-5 VDC
4	4-20 mA
5	mV, ratiometric (not IS approved)
6	4-20 mA, temp. measurement option, -20 to 60ºC (not IS approved)
7	4-20 mA, temp. measurement option, 0 to 50ºC (not IS approved)
E	Custom VDC output

PRESSURE CONNECTION

Code	Description
A	Open-face nosecap
B	Ported nose cap
E	Piezometer nosecap
2	1/4" - 18 NPT male fitting
7	1/2" - 14 NPT male fitting
F	G 1/4 male fitting, BSP
G	M14 x 1.5 – 60º Internal cone male fitting

ELECTRICAL CONNECTION

Code	Description
0	Molded cable seal
4	1/2" - 14 NPT male conduit fitting with molded cable seal
A	Gland cable seal
B	1/2" - 14 NPT male conduit fitting with gland cable seal

LIGHTNING PROTECTION

Code	Description
A	None
B	Lightning Protection

LEVEL RANGE (at MAX output)[1]

x x x . x x x

LEVEL RANGE (at MIN output)[1]

x x x . x x x

MOISTURE PROTECTION

Code	Description
A	None (sealed/absolute only)
B	Vent Filter
C	Aneroid Bellows

CABLE TYPE

Code	Description
1	Polyurethane
2	ETFE

CABLE LENGTH

x x x x (in feet)

LABEL[2]

Code	Description
A	psi
B	ft H_2O
C	m H_2O

7																													

Notes:

1 The part number requires two level range limits, corresponding to the maximum and minimum analog outputs of the transducer, to be specified in **pounds per square inch (psi)** to three decimal places. The lower level range is typically 000.000 unless otherwise required. For reverse output requirements, enter the lower level range for the maximum output signal and the upper range for the minimum output. Use the following conversion factors:

ft H_2O / 2.3073 = psi — Examples: 10 ft H_2O / 2.3073 = 4.334 psi (enter 004.334 in the part number)
m H_2O / 0.703265 = psi — 10m H_2O / 0.703265 = 14.219 psi (enter 014.219 in the part number)

For sealed gage reference add local atmosphere when converting to psi. Contact PSI for assistance.
Example: 10 ft H_2O / 2.3073 +14.7 = 19.034 psi (enter 019.034 in the part number)

2 Units of measure on standard PSI label. Contact PSI if private labeling is required.

Warranty: The Series 700 product is warranted against defects in material and workmanship for 2 years from date of shipment. Products not subjected to misuse will be repaired or replaced. THE FOREGOING IS IN LIEU OF ANY OTHER EXPRESSED OR IMPLIED WARRANTIES. We reserve the right to make changes to any product herein and assume no liability arising out of applications or use **of any product or circuit described. Products described in this Specification are not intended for life support applications.**

No. 0608

PRODUCT DATA SHEET

January, 2007

OPEN TOP TANK

GENERAL INFORMATION

This tank is designed to provide easy viewing of the contents. A catwalk with guardrails is provided over the center of the tank. These tanks can be converted to closed top by adding a snap-on deck lid. This tank has a smaller footprint than other style tanks of the same volume.

WEIGHTS AND MEASURES

» Capacity:	Standard tank – 500 BBL. (21,000 gal.) Short tank – 475 BBL. (19,950 gal.)
» Height:	Standard – 12′-5″ Short – 11′-2″
» Width :	Standard – 8′-0″ Short – 8′-0″
» Length:	Standard – 35′-0″ Short – 35′-0″
» Weight:	Standard – 18,000 lbs. (approx.) Short – 17,750 lbs. (approx) Standard w/coils – 18,800 lbs. (approx.) Short w/ coils – 18,550 lbs. (approx.)

STRUCTURAL DESIGN

» Floor:	¼" thick ASTM A36 carbon steel
» Sides/Ends:	¼″ thick ASTM A36 carbon steel
» Wall Frame:	Structural steel channel/angle on interior side
» Floor Frame:	6″ carbon steel I-beam on exterior side
» Internal Cross Bracing:	17 – 3″x3″x¼″ angle iron

FEATURES

» Valves:	1-4″ butterfly valve tractor end – driver side; 1-4″ butterfly valve dolly end – passenger side (some tanks have 6")
» Exterior Stairway:	1- external removable ladder that is mounted on the side of the tank at the catwalk
» Manways:	None
» Guardrails:	Along catwalk only
» Internal Ladder:	One – fixed to side wall near catwalk
» Bottom Sump:	One on each end of tank, either flat bottomed, 12″ diameter, 3″ deep, or domed, 14″ diameter 4″ deep
» Front Inlet:	4″ diameter capped nipple
» Front Drain:	4″ diameter capped nipple (some tanks have 6"; some may also be total drain with valve)
» Level Gauge:	None
» Rear Wheels:	Removable dolly (not a fixed axle)

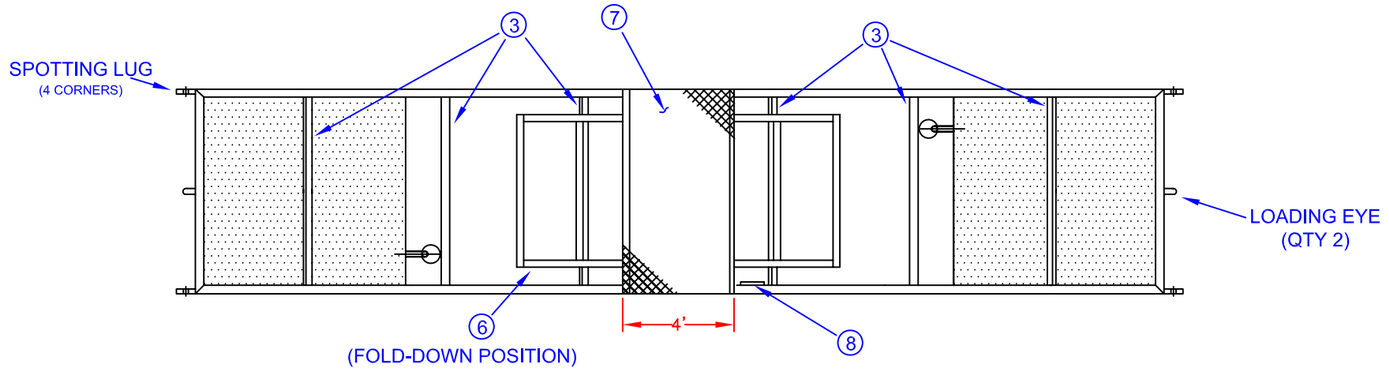
SURFACE DETAILS

» Exterior Coating:	High Gloss Polyurethane
» Interior Coating:	None

TESTS/CERTIFICATIONS

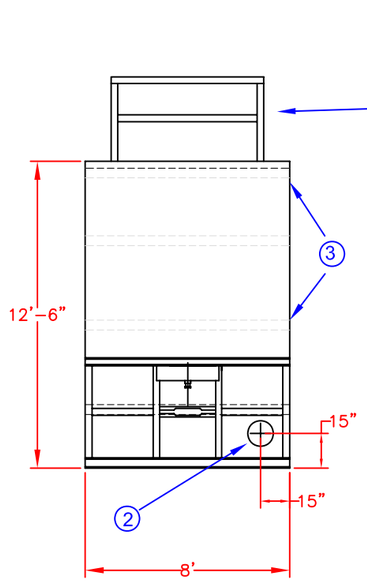
» Test Performed:	Major repairs – hydrotest Scheduled- Level I, II and III inspections

BAKERCORP™

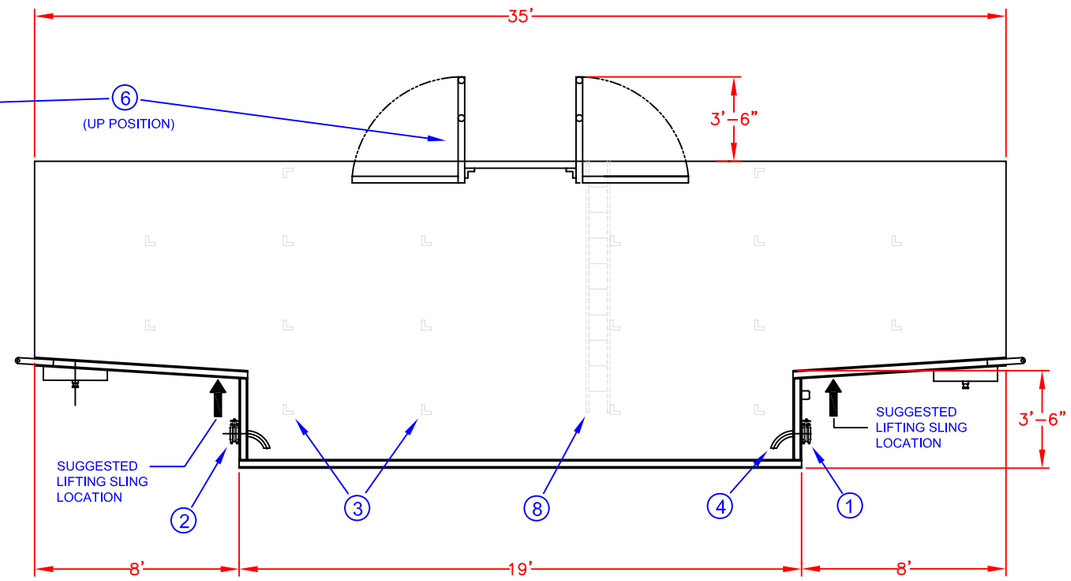


TOP VIEW

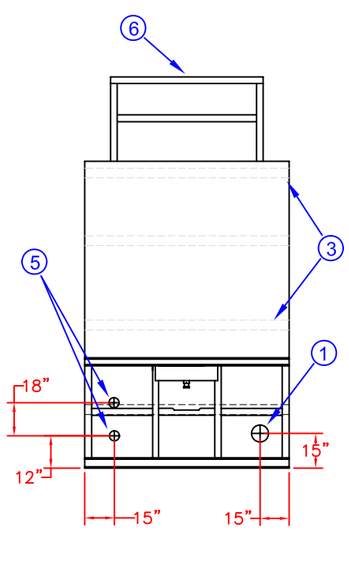
ITEM	QTY	DESCRIPTION
1	1	4" Butterfly Valve (see note 1)
2	1	6" Butterfly Valve (see note 1)
3	20	Internal Crossties
4	2	Sump Draw
5	2	4" Diameter Capped Nipple (see note 1)
6	2	Catwalk Handrail (foldable)
7	1	Expanded Metal Catwalk
8	1	Internal Ladder



DOLLY END



SIDE VIEW



TRACTOR END

SPECIFICATIONS:

1) Tank Capacity: 21,000 gallons (500 BBL)
2) Tank Weight: 18,000 - 19,000 lbs. (empty)
3) Material of Construction: A36 Carbon Steel

NOTES:

1. This drawing is a baseline representation for this model of tank. Variations between this drawing and the actual equipment in the field can and do exist, primarily with appurtenance locations, sizes and quantities. Consult your local BakerCorp representative if specific needs exist.
2. THESE TANKS ARE NOT DESIGNED FOR *TRANSPORTING* LIQUIDS. Tanks should be moved only when empty.
3) A removable ladder (not shown) is required to access the catwalk.

REV.	DESCRIPTION	DATE	BY
G			
F			
E			
D			
C			
B	Added Hidden lines	7/12/05	Z.E.R
A	Misc Dim Revs	2/2/05	P.J.B.

BAKERCORP™ 3020 OLD RANCH PARKWAY SEAL BEACH, CA 90740-2751

SCALE: None	SIZE B	ORIGINAL DWG. DATE 27FEB02
DRAWN BY: A. R.	APPROVED BY: –	CAT/CLASS 100-0XXX
TITLE: OPEN TOP TANK		SHEET 1 OF 1
DRAWING NO. S-1-M0001-1-		REV. B

PRODUCT DATA SHEET

April, 2012

PORTABLE HYDRAULIC POWER UNIT MODEL HSPU66

GENERAL INFORMATION

The hydraulic power unit (HPU) is located high above the pump and connected via hydraulic hoses. The pump is submerged in the liquid being pumped and is powered by circulating hydraulic fluid. Suction lift and priming are not considerations. The pump can run dry without damage. CAUTION: HYDRAULIC FLUID IS UNDER HIGH PRESSURE.

HPU SPECIFICATIONS

» HPU/Trailer Weight:	2460 lbs.[2]
» HPU/Trailer Height:	5'-9"
» HPU/Trailer Width:	5'-2"
» HPU/Trailer Length:	10'-2"
» Hydraulic Fluid:	SAE 10W or 20W Type AW, or biodegradable oil
» Max. Hydraulic Oil Pressure:	2700 psi
» Hose Connections:	Pressure – 1" Return – 1-1/4"
» Hydraulic Oil Flow:	28 gpm (Max.)
» Oil Reservoir Capacity:	50 gallons
» Hydraulic Filters:	10 micron
» Trailer:	Highway trailer mounted w/lifting bracket and tie downs, single axle suspension w/electric brakes 15" wheels

ENGINE SPECIFICATIONS

» Engine Make/Model:	John Deere 4024H (Interim Tier 4)
» Max. Continuous BHP:	66 @ 2300 RPM
» Crankcase Oil:	SAE 10W40 [3]
» Safety Shutdowns:	High water temperature, low oil pressure and low coolant level
» Fuel Capacity:	88 gallons
» Fuel Consumption:	2.8 gal/hr
» Fuel Type:	Grade No. 2 diesel
» Run Time:	24+ hours
» Coolant Type:	50/50 water/antifreeze mix
» Number of Cylinders:	Four

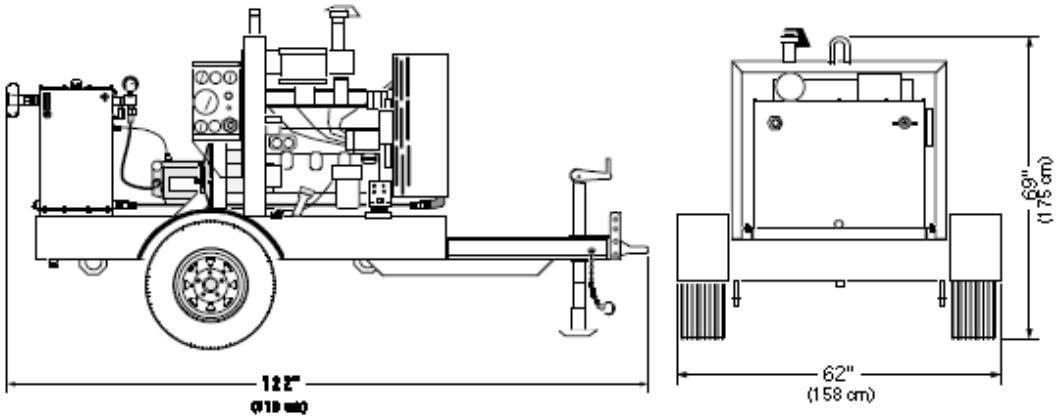
Notes:

[1] Based on 1.0 specific gravity

[2] Includes weight of trailer, hydraulic oil tank and engine; does not include weight of fuel or hydraulic fluid

[3] Midrange compromise. See John Deere manual.

BakerCorp Reference # 420-6002



PRODUCT DATA SHEET

April, 2012

6" HYDRAULIC SUBMERSIBLE PUMP MODEL HSH6S

GENERAL INFORMATION

This type of pump is submerged in the liquid being pumped and is powered by circulating hydraulic fluid. Designed to pass through 22' diameter manholes. Suction lift and priming are not considerations. This pump can run dry without damage. CAUTION: HYDRAULIC FLUID IS UNDER HIGH PRESSURE.

PERFORMANCE DATA

» Flow (min/max):	1800 gpm max (1)
» Shutoff Head:	125' (54 psi) (1) (2)
» Hydraulic Input:	15 – 28 gpm
» Maximum Temperature:	120° F (4)
» Maximum Solids Size:	3"

PUMP SPECIFICATIONS

» Weight:	255 lbs.
» Height:	34"
» Width:	20.75" (at widest point)
» Discharge Size:	6" FNPT
» Inlet Flange:	6" 125# ANSI
» Hose Ports:	1" (-16) SAE

MATERIAL SPECIFICATIONS

» Pump Body:	Ductile Iron
» Impeller:	Ductile Iron
» Wear Ring:	Ductile Iron
» Shaft:	17-4 PH Stainless Steel
» Shaft Seal:	Carbon/Ceramic
» Elastomers:	Buna N

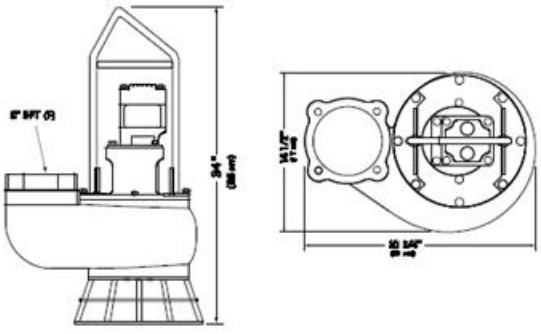
Notes:

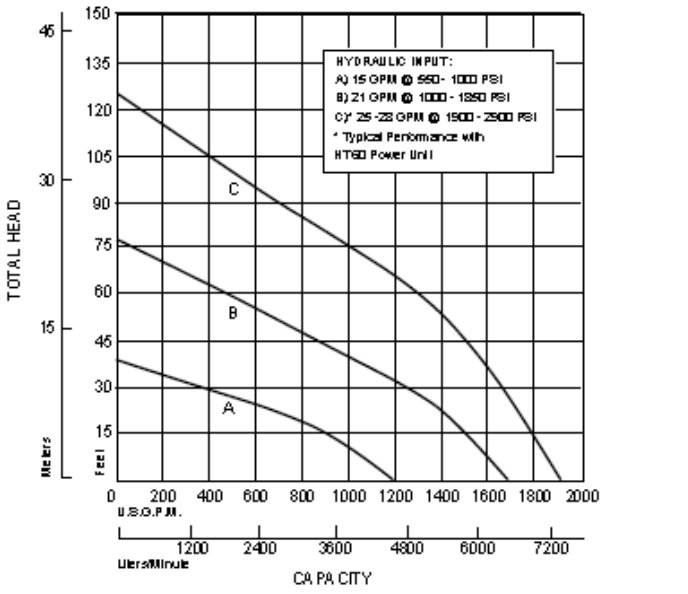
(1) Typical performance with the HSPU66 hydraulic power unit.

(2) Based on 1.0 specific gravity

(3) Includes weight of trailer, hydraulic oil tank and engine

(4) Hydraulic oil temperature is the limiting factor. The pumps can be used for higher temperature liquids if an additional hydraulic oil cooler is installed. Also, the standard seals and O rings in the pump are good for temps to about 170°F.





Curves are based on pumping water at 60°F. For performance curves other than shown above, consult factory.

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PRODUCT DATA SHEET

April, 2012

6” HYDRAULIC SUBMERSIBLE PUMP MODEL HSH4S

GENERAL INFORMATION

This type of pump is submerged in the liquid being pumped and is powered by circulating hydraulic fluid. Designed to pass through 20’ diameter manholes. Suction lift and priming are not considerations. This pump can run dry without damage. CAUTION: HYDRAULIC FLUID IS UNDER HIGH PRESSURE.

PERFORMANCE DATA

» Flow (min/max):	700 gpm max (1)
» Shutoff Head:	210’ (90 psi) (1) (2)
» Hydraulic Input:	14 – 25 gpm
» Maximum Temperature:	120° F (4)
» Maximum Solids Size:	3"

PUMP SPECIFICATIONS

» Weight:	295 lbs.
» Height:	33”
» Width:	19.75” (at widest point)
» Discharge Size:	4” FNPT
» Inlet Flange:	4” 125# ANSI
» Hose Ports:	1” (-16) SAE

MATERIAL SPECIFICATIONS

» Pump Body:	Ductile Iron
» Impeller:	Stainless steel
» Wear Ring & Wear Plate:	Stainless steel
» Shaft:	Stainless Steel
» Shaft Seal:	Carbon/Ceramic
» Elastomers:	Buna N

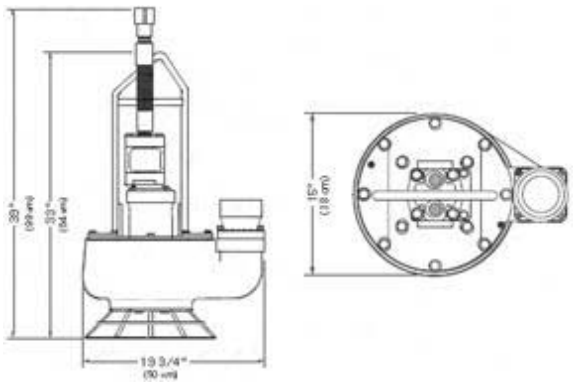
Notes:

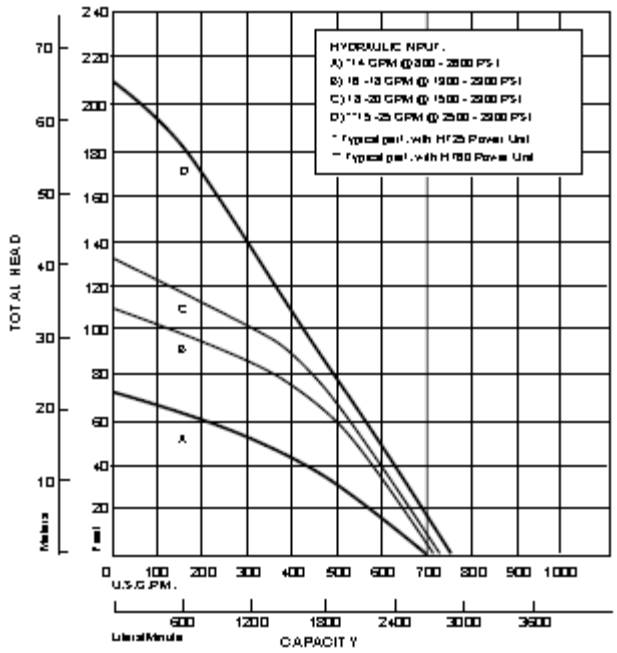
(1) Typical performance with the HSPU66 hydraulic power unit.

(2) Based on 1.0 specific gravity

(3) Includes weight of trailer, hydraulic oil tank and engine

(4) Hydraulic oil temperature is the limiting factor. The pumps can be used for higher temperature liquids if an additional hydraulic oil cooler is installed. Also, the standard seals and O rings in the pump are good for temps to about 170°F.





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APPENDIX H

Health and Safety/Spill Prevention Plan

9050.000.004
April 27, 2016
Latest Revision May 9, 2016

TABLE OF CONTENTS

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GLOSSARY

APR	Air Purifying Respirator
ACGIH	American Conference Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CCR	California Code of Regulations
CFR	Code of Federal Regulations
COPC	Contaminant of Potential Concern
CPR	Cardiopulmonary resuscitation
CRZ	Contaminant Reduction Zone
dBA	Decibels on the A scale
DOT	Department of Transportation
DTSC	California Department of Toxic Substance Control
EPA	U.S. Environmental Protection Agency
^{0}F	Degrees Fahrenheit
eV	Electron Volt
EZ	Exclusion Zone
FEV	Forced expiratory volume
FVC	Forced vital capacity
GISO	General Industry Safety Order
GPS	Global Positioning System
HEPA	High Efficiency Particulate Air
HSM	Health and Safety Manager
mg/m^3	Milligrams per cubic meter
MSDS	Material Safety Data Sheets
OSHA	Occupational Safety and Health Administration
PAH	Polyaromatic Hydrocarbons
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
ppb	Parts per Billion
PPE	Personal Protective Equipment
ppm	Parts per million
PSHM	Program Safety and Health Manager
ROPS	Roll over protection structure
RV	Reserve volume
HASP	Health and Safety Plan
SSHO	Site Safety and Health Officer
SVOC	Semi-volatile organic compound
TLV	Threshold Limit Value
TPH	Total Petroleum Hydrocarbons
TWA	Time Weighted Average

GLOSSARY

µg/L	Micrograms per liter
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound

DISCLAIMER

This Health and Safety Plan (HASP) was prepared for use as for operations related to Dewatering and Discharge for the Piers E4 and E5 demolition project in San Francisco, California (the "Study Area", and "Site"). The Plan was prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present at the Study Area and for the execution of the proposed scope of work. It is not possible in advance to discover, evaluate, and protect against all possible hazards, which may be encountered during the duration of this project. Therefore, this HASP may not be appropriate if the work is not performed by or using the methods presently anticipated. In addition, as the work is performed, conditions different from that anticipated may be encountered and this HASP may have to be modified.

Adherence to the requirements of this HASP will significantly reduce, but not eliminate, the potential for occupational injury and illness at the Study Area. The guidelines contained in this HASP were developed specifically for the groundwater assessment at the Site described herein and should not be used at any other site without the review and approval of a qualified health and safety professional.

1.0 INTRODUCTION

The California Department of Transportation (Department), as part of the dismantling of the original East Span of the San Francisco-Oakland Bay Bridge (SFOBB) for the SFOBB East Span Seismic Safety Project (SFOBB Project), is proposed a demonstration project for the controlled implosion of the in-water concrete caisson supporting Pier E3. Removal of the original span, including its marine foundations, was required to satisfy regulatory requirements of the SFOBB Project. Pier E3 is located approximately 1,535 feet east of Yerba Buena Island (YBI), in San Francisco County. The removal of Pier E3 was completed in December 2015.

The second phase of the project intends to demolish the above-water portion of Piers E4 and E5. The project contractor Kiewit/Manson JV will perform the demolition and stage the project from a portion of Wharf 6 located within the Port of Oakland. This HASP has been prepared specifically for portions of the project associated with Dewatering Operations and has been inserted into the Dewatering and Discharge Work Plan (DDWP).

2.0 DEWATERING OPERATIONS CHARACTERIZATION

Because the water within the concrete-lined caisson structure does not readily exchange with ambient water in the San Francisco Bay, testing was conducted in 2014 by EnviroSurvey and the results published in the report *Technical Memorandum— Pier E3 Caisson Water Quality*. The report demonstrates that a direct discharge of the displaced caisson water may exceed water quality standards for the San Francisco Bay as defined by the Project 401 SFRWQCB Water Quality Certification, or Surface Water Screening Limits as defined by that agency. The following COCs in Table 3.0-1 were identified in the internal caisson structure water that need to be addressed in terms of potential project water quality violations. The results of this study likely apply to Piers E4 and E5. Because these constituents will be removed from the caissons, they are included here as Constituents of Concern.

TABLE 2.0-1
Water Quality Constituents of Concern Identified in Pier E3 Caisson

Water Quality Constituent	Concern
Dissolved Oxygen	Dissolved oxygen measurements taken within the top 10 feet and below the mudline were generally less than 5mg/l, which is below discharge requirements stated in the project specifications.
Silver, Copper, Chromium, Nickel	At least one sample indicated concentrations above the Surface Water Screening Limit. However, averages of all samples were below SFRWQCB Screening Limits.
Lead	Approximately 10 percent of samples were greater than the Surface Water Screening Limits. However, average lead content of all samples was below SFRWQCB Screening Limits.
pH	pH readings were generally between 7.5-8.0 which is in the range of ocean water. However, pH readings higher than 8 were recorded in the first few feet of the water column. pH levels may increase from ambient conditions when concrete is introduced to the internal caisson structure water.

Other constituents that may be encountered during dewatering operations include dry ice, diesel fuel, Splash Zone, a silica based compound used to seal weep holes, and concrete rubble.

3.0 SITE SAFETY REGULATORY REQUIREMENTS

Work performed under this HASP will comply with applicable Federal, State of California, and local safety and occupational health laws and regulations. Applicable regulations include, but are not limited to, Occupational Safety and Health Administration (OSHA) Standards 29 CFR, Part 1910.120, "Hazardous Waste Site Operations and Emergency Response"; 29 CFR 1910.1025, General Industry Standards; 8 CCR 5216. General Industry Standard 29 CFR 1926.62, Lead in the Construction Industry; and 8 CCR 1532.1, Lead in the Construction Industry. Where the requirements of these specifications, applicable laws, criteria, ordinances, regulations and referenced documents vary, the most stringent will apply.

4.0 STAFF ORGANIZATION, QUALIFICATIONS, AND RESPONSIBILITIES

4.1 GENERAL

This section of the HASP outlines the organizational structure and Site personnel responsible for the safety and health of personnel during the proposed work. The replacement of any member of the Health and Health Staff requires the acceptance of the Project Manager. Replacement requests will include the names, qualifications, duties, and responsibilities of each proposed replacement.

4.2 PROJECT MANAGER

The Project Manager (PM) for Kiewit/Manson JV is Mr. Frederic Lausier. Mr. Lausier is responsible for:

- Oversight of Site activities required to implement this HASP.
- Directing work performed under this contract.
- Verifying that work is completed in accordance with the project workplan.

4.3 HEALTH AND SAFETY MANAGER (HSM)

The Site Health and Safety Manager (HSM) will be delegated by the Project Manager prior to commencement of activity. The HSM is responsible for:

- Implementing and enforcing of the HASP.
- Providing the initial and periodic site-specific training.
- Monitoring of remediation activities.
- Coordinating activities in the event of an onsite emergency.

- Evaluating air monitoring data and changes to engineering controls, work practices, and personal protection equipment (PPE) that may be warranted.

- Receiving onsite accident reports.

4.4 SITE SAFETY OFFICER (SSHO)

A Site and Safety Officer (SSHO) will be assigned to the project prior the commencement of construction. The SSHO will have the following responsibilities:

- Conduct onsite training and the day-to-day onsite implementation and enforcement of the HASP.

- Be assigned to the site on a full-time basis for the duration of field activities.

- Have authority to ensure Site compliance with specified safety and health requirements, Federal and State of California OSHA regulations and all aspects of the HASP including, but not limited to, activity hazard analyses, air monitoring, use of PPE, decontamination of personnel and equipment, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, confined space entry procedures, spill containment-program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log.

- Have the authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.

- Consult with proper authorities and coordinate any modifications to the HASP with the Project Manager.

- Serve as a member of Kiewit/Mason quality control staff on matters relating to safety and health.

- Conduct accident investigations and prepare accident reports per the master project HASP.

- Review results of daily quality control inspections and document safety and health findings into the Project Manager's Daily Log HASP.

- In coordination with site management recommend corrective actions for identified deficiencies and oversee the corrective actions.

4.5 PERSONS CERTIFIED IN FIRST AID AND CPR

CPR, if needed, will be conducted by trained personnel, or offsite emergency responders (i.e. paramedics, fire fighters). The consultant/contractor is responsible for identifying and informing workers of designated first aid trained personnel. These persons may perform other

duties but will be immediately available to render first aid when needed. The identity of these persons will be posted and made known to all personnel involved in this project.

5.0 HAZARD/RISK ANALYSIS

5.1 IDENTIFIED TASKS

The tasks identified for the dewatering operations include the following:

- Mobilization/demobilization
- Installation of borings using Geoprobe® direct push technology.
- Collection of grab water samples
- Operations of pumps, tanks and other equipment.

5.2 POTENTIAL HAZARDS

5.2.1 General Safety Hazards

Potential safety hazards will include, but are not limited to, general construction hazards, such as:

- Physical contact with heavy equipment.
- Physical contact with motor vehicles.
- Slips/trips/falls due to unstable surfaces, or uneven terrain.
- Exposure to site contaminants including dust.
- Equipment noise.
- Buried utility lines and energized overhead and underground power lines.
- Heat stress and cold stress.
- Lifting heavy objects.
- Sunburn.
- Biological hazards.

These hazards are described below.

5.2.1.1 Noise

Noise exposures will be controlled to levels below the permissible noise exposure levels, which are equivalent to an 8-hour time weighted average (TWA) level of 85 decibels (dBA). Reduction of exposures may be by engineering controls or adequate hearing protection. Engineering controls will include isolation of the noise source by their enclosure and reduction of noise transmission by application of noise absorbing materials.

Most work site noise will originate from heavy equipment. As a result, equipment operators and observers will be required to use hearing protection when exposed at or above 85 decibels.

5.2.1.2 Heat Stress

A worker's risk for developing heat stress is greatly increased when wearing impermeable clothing or respirators. This type of clothing interferes with the body's normal cooling mechanisms by preventing the evaporation of perspiration. For workers who wear permeable clothing, work/rest schedules recommended in the current ACGIH Threshold Limit Values (TLV) for Heat Stress will be followed. For workers who wear semi-permeable or impermeable clothing, technical guidelines in "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" will be followed. Monitoring of personnel wearing impermeable clothing will commence when the ambient temperature is above 70 degrees Fahrenheit. Monitoring frequency will increase as the ambient temperature increases or as slow recovery rates are observed. A shady rest area and an adequate supply of cool drinking water will be provided for the workers.

5.2.1.3 Cold Stress

Cold stress may be an exposure hazard during the project based on the current work schedule and anticipated weather conditions. Exposure to cold weather can lead to frost bite and/or hypothermia. The signs and symptoms of excessive exposure to cold are listed in Table 5.2.1.3-1.

TABLE 5.2.1.3-1
Different Levels of Cold Exposure and Associated Symptoms

Condition	Signs and symptoms
Hypothermia - A condition when a person's body loses heat faster than it can be produced.	Vague, slow, slurred speech, impaired judgment, forgetfulness, memory lapses, drowsiness, inability to use the hands.
Frostbite - A condition where a part of the body is frozen	Loss of the sensation of touch, pressure and pain in the affected part of the body. This may occur without awareness of any numbness. Just before freezing, the skin becomes bright red and at freezing, small patches of white appear on the skin.

When weather conditions are cold, wet and windy, the following precautions will be instituted:

- Field personnel should wear layered clothing. Mittens, heavy socks, hats, jackets/vests, long underwear, glove liners or other suitable clothing should be worn when air temperatures fall below 40^{o}F. Chemical protective clothing will be worn over the warm garments when protective clothing is required by the field operations.

- At temperatures below 30^{o}F, temperature insulating suits and gloves should be considered.

- Protective outerwear should be used to prevent wetting of work shoes and feet, when appropriate.

- Additional clothing worn in layers allows gradual removal as work activities generate metabolic heat.

- At temperatures below 35°F, raingear should be worn if an employee could become wet on the job.

- At temperatures below 35°F, employees shall be provided with warm (65°F or above) break areas. If appropriate, space heaters will be provided to warm hand and feet.

- Hot liquids such as soups and warm drinks should be consumed during break periods. Caffeine beverages should be limited due to attendant diuretic and circulatory effects.

- A buddy system shall be practiced at all times. An employee that is observed shivering or showing signs of frostbite shall leave the cold area immediately.

- Work should be arranged to avoid sitting or standing for long periods.

- All employees who work in cold areas should be trained in the following subjects:
  - Proper first aid treatment for cold stress
  - Proper clothing practices
  - Proper eating and drinking habits
  - Recognition of impending adverse health effects due to cold
  - Safe work practices

5.2.1.4 Sunburn

Sunburn is caused by overexposure to ultraviolet light (sunshine). The symptoms of exposure are not usually apparent until two to four hours after the exposure ceases. Depending upon the severity of the exposure, the symptoms can range from reddening of the skin, accompanied by mild discomfort, to painful deep burns and blisters. Although light-haired, fair-skinned, blue-eyed personnel are at the greatest risk of sunburn, all complexion types can develop sunburn.

The physical hazard of sunburn can be controlled by: (1) providing a shady rest area; (2) wearing appropriate clothing (long pants and tee shirts, i.e. no tank tops); (3) wearing sunscreen with an appropriate protection factor, as appropriate; and (4) working in shifts.

5.2.1.5 Heavy Equipment Operation

The contractor is responsible for all personnel associated with heavy equipment operation. Equipment operators should maintain a constant awareness of their surroundings and associated hazards. Constant visual or verbal contact between the equipment operators and laborers will facilitate such awareness. When operating heavy equipment near an embankment, a spotter shall be present at all times to observe the soil behavior on which the unit is situated. All heavy equipment shall be equipped with a roll over protection structure (ROPS) and seat belts. Operators shall use

seat belts at all times when in the cab of operating equipment. All personnel will wear high visibility safety vests and hearing protection if appropriate.

5.2.1.6 Slip/Trip/Fall Hazards

Prevention of slips/trips and fall hazards can be reduced to a minimum if employees use caution when working on slick, uneven or unsteady surfaces. The risk of injury will be minimized by implementing proper site control measures such as daily safety meetings, proper footwear and by keeping the work area free of obstructions.

5.2.1.7 Lifting Hazards

Field operations often require that heavy physical labor tasks be performed. All employees will be instructed by the SSHO and contractor in proper lifting techniques through safety meetings and demonstration. Additionally, employees will be instructed to not attempt to lift objects heavier than 60 pounds without mechanical assistance or the assistance of a fellow worker.

5.2.1.8 Tool and Equipment Hazards

Improper tool handling and inadequate tool maintenance will increase risk of injury during their use. Management of these hazards requires rigorous maintenance of tools and equipment. The contractor is responsible for effective training of employees in the proper use of the tools. Hand tools that are damaged shall be tagged and removed from the work area. Equipment in need of maintenance or repair shall be tagged and removed from operation until repairs or replacement is accomplished. Only tools with immediate use will be present onsite. Unused tools shall be assembled at a collection point and removed from underfoot and immediate use.

5.2.1.9 Biological Hazards

Training will be performed by the Project Biologist in regard to any site hazards related to birds, marine mammals, or other aquatic species.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 LEVELS OF PPE

All personnel working on the project site will wear the appropriate level of protection as described herein. It is anticipated that EPA level D modified will be required as the initial level of protection. The SSHO, in consultation with the HSM may upgrade or downgrade levels of protection. In general, all onsite work will be conducted in Modified Level D PPE. Level A, B or C work is not anticipated for the project. A description of the PPE ensembles is presented below.

6.1.1 Level D

- Hearing Protection - custom fitted or disposable ear plugs/ear muffs (85dBA or above)
- Hard hat (meets ANSI requirements)
- Safety glasses with side shields (meets ANSI requirements)
- Safety shoes or boots
- Coveralls or long pants and orange shirts or high visibility safety vests
- Leather work gloves

6.1.2 Level D Modified

- Hearing protection as described above
- Work clothing, as dictated by the weather
- Safety shoes or boots
- Hard hat
- Tyvek (or equivalent) coveralls
- Nitrile gloves (when handling or contact may occur with contaminated soils or materials)
- Safety glasses with side shields
- High Visibility Safety vest

6.1.3 Level C

This level of protection is not anticipated for the Scope of Work assigned to this project.

6.1.4 Level B

This level of protection is not anticipated for the Scope of Work assigned to this project.

6.1.5 Level A

This level of protection is not anticipated for the Scope of Work assigned to this project.

6.2 INSPECTION OF PPE

Specific procedures recommended by equipment manufacturers should be followed for inspection of PPE. A general inspection checklist for PPE before use includes:

- Determining that the clothing material is correct for the specified task at hand.

- Visually inspect for imperfect seams, non-uniform coatings, tears, closure malfunctions, hold up to light and check for pinholes.

- Hard Hats - Head harness is intact and installed properly. Check for cracks.

- Safety Glasses/Goggles - Lenses are clear and free of scratches. Side shields are present.
- Safety Shoes/Boots - Free of holes, damage, soles have ample thread, and laces are adequate.
- Air Purifying Respirators, if appropriate - Parts to respirators are intact and in place. Inspect for malfunctions, tears or disfigurement of the mask, proper cartridges, valves are not torn or warped, head and neck straps have ample elasticity.

7.0 SAFETY PROCEDURES, ENGINEERING CONTROLS, AND WORK PRACTICES

7.1 GENERAL SITE RULES/PROHIBITIONS

During the field activities, all employees, subcontractors or persons entering the work site shall sign in with the SSHO and shall sign out upon departing. Employees, subcontractors or persons who will be engaged in hazardous materials or waste operations or have the potential to be exposed to hazardous materials will be informed of the nature, and level of exposure. Each person engaged in such operations will be required to indicate they have been informed of the associated hazards and requirements by signing the Project Manager's notification form.

7.1.1 Buddy System

Contractor personnel will not conduct work activities alone at any of the sites. The "Buddy System", as specified in 29 CFR 1910.120 and 8 CCR Section 1532.1 will be implemented. The buddy teams working at the site will maintain visual and audible contact so that they may provide emergency assistance to each other. Both members of the buddy team need not be in the same site zone, but each member must be wearing adequate PPE to assist the other member.

7.1.2 Engineering Controls and Work Practices

Engineering controls are not anticipated for the proposed activity. Work practices to minimize exposure to nuisance dust will include the wetting down of dusty operations and relocating employees upwind of dusty areas, if necessary.

7.1.3 Employee Rotation

A schedule of employee rotation will not be implemented as a means of compliance with permissible exposure.

7.1.4 Work Practices and Procedures

The following health precautions will be implemented:

- Avoid skin contact and ingestion of soil.
- Avoid excessively dusty areas
- Keep work areas clean and well ventilated
- Clean up spills promptly

7.2 MATERIALS HANDLING

7.2.1 Spill and Discharge Control

Petroleum products will be use to fuel pumps. Fueling shall be conducted on the barge structure at least 25 feet away from edge of deck. Should a spill or discharge of petroleum products occur, the following measures will be taken:

- Take immediate measures to control and contain the spill to the smallest area possible.
- Keep unnecessary people away, isolate the hazardous area, deny entry to unauthorized people, do not allow unauthorized people to touch spilled material.
- Stay upwind.
- Keep out of low areas.
- Keep combustibles away from the spilled material.
- Use a water spray to reduce vapor or dust generation being cautious not to cause the migration of water outside the set boundaries.
- If necessary, take samples for analysis to determine adequate cleanup was performed.
- Remove or retrieve any discharged liquids or slugs. Absorb discharged materials with absorbents such as commercial pillows, kitty litter, sand, clean fill, or other noncombustible absorbent material. Place the absorbent/spill mixture into leak proof containers and dispose per EPA and DOT requirements.
- If spills occur in San Francisco Bay water outside of caisson structure, sheens should be contained in a boom, and collected from the water surface using skimmer equipment

7.2.2 Notification of Spills and Discharges

If the spill or discharge is reportable, and/or human health or the environment is threatened, the Resident Engineer and Kiewit/Manson should be immediately notified. Spills or leaks, regardless of their quantity will be reported to the Kiewit/Manson Project Manager and Project Water Pollution Control Manger immediately following discovery. A follow-up written report will be submitted to the Project Manager within seven (7) days after the initial report. The written report will be in narrative form and as a minimum include the following:

- A description of the material spilled including identity and quantity. Photographs showing the location and extent of the spill.
- A statement as to whether the amount spilled is EPA/State reportable and when and to whom it was reported.

- Exact time and location of the spill, including a description of the area involved.

- Containment procedures initiated and a full description of the cleanup measures taken, or to be taken, including disposal location of the spill residue.

If significant spills occur in the San Francisco Bay, a Notice of Discharge may need to be filed at the discretion of the Project Water Pollution Control Manager.

7.2.3 Material Storage, and Disposal

Employees will be trained in and will use proper lifting techniques. Material handling devices will be available for the material handling needs of an activity. Whenever heavy or bulky material is to be moved, the material handling needs will be evaluated in terms of weight, size, and distance and path of move. The following hierarchy will be followed in selecting a means for material handling:

- Elimination of material handling need by engineering controls
- Movement by mechanical device (e.g. lift truck, backhoe, loader, etc.)
- Movement by manual means with handling aid (e.g. dolly or cart)
- Movement by manual means with protective equipment (e.g. lifting belt or lifting monitor).

Materials will not be moved over or suspended above personnel unless positive precautions have been taken to protect the personnel from falling objects. Where the movement of materials may be hazardous to personnel, taglines or other devices will be used to control the loads being handled by hoisting equipment. These devices will be nonconductive when used near energized lines.

Non-compatible materials will be segregated in storage.

Work areas and means of access will be maintained safe and orderly. Sufficient personnel and equipment will be provided to insure compliance with all housekeeping requirements. Work areas will be inspected daily for adequate housekeeping and findings recorded on daily inspection reports. Work will not be allowed in those areas that do not comply with the requirements of this section.

Hazardous material waste (i.e. vehicle and equipment oils and lubricants, containers and drums for solvents, adhesives, etc. and Splash Zone) will be collected, stored, and disposed of in accordance with the project Stormwater Pollution Prevention Plan.

7.2.4 Handling and Storage of Dry Ice

Dry Ice temperature is extremely cold, with service temperatures registered at -109.3°F or -78.5°C. Dry Ice should be handled with care and protective cloth or leather gloves should be worn whenever touching it. An oven mitt or towel is required at a minimum. If touched briefly it is harmless, but prolonged contact with the skin will freeze cells and cause injury similar to a burn.

Dry Ice should be stored in an insulated container. The thicker the insulation, the slower it will sublimate. Dry Ice should not be stored in a completely airtight container. The sublimation of Dry Ice to Carbon Dioxide gas will cause any airtight container to expand or possibly explode. Wherever Dry Ice is stored, proper air ventilation is required. Dry Ice shall not be stored in unventilated rooms, cellars, autos or boat holds. The sublimated Carbon Dioxide gas will sink to low areas and replace oxygenated air. This could cause suffocation if breathed exclusively. Dry Ice should be stored in a Commercial Storage Container, or another container approved by the project HSM.

Dry Ice should be brought to the site as close to the time it is needed as possible. Dry Ice sublimates at 10 percent, or 5 to 10 pounds every 24 hours, whichever is greater. Dry Ice should be carried in a well-insulated container such as an ice chest. If it is transported inside a car or van for more than 15 minutes the driver should verify that air circulation in the transport vehicle is adequate and occurring.

Dry Ice burns should be treated the same as a regular heat burns. A doctor should be consulted if the skin blisters or comes off. Otherwise if only red it will heal in time as any other burn. Apply antibiotic ointment to prevent infection and bandage only if the burned skin area needs to be protected.

7.3 FIRE PROTECTION AND PREVENTION PLAN

The following are the elements of the Fire Protection and Prevention Plan:

- Portable fire extinguishers will be provided at each work site. Extinguishers shall be inspected weekly and tagged with inspection dates.

- Fire extinguishers will be suitably placed at each work site, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

- A fire extinguisher, rated not less than 20-AB will be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the work site. This requirement does not apply to the integral fuel tanks of motor vehicles.

- At least one portable fire extinguisher having a rating of not less than 20-AB will be located not less than 25 feet, nor more than 75 feet, from any bulk flammable liquid storage area. This requirement does not apply to the integral fuel tanks of motor vehicles.

- At least one portable fire extinguisher not less than 20-ABC will be provided on all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.

- Each service or fueling area will be provided with at least one fire extinguisher having a rating of not less than 20-AB located so that an extinguisher will be within 50 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service area.

- At least one portable fire extinguisher not less than 5-ABC shall be mounted and accessible in each commercial vehicle and piece of heavy equipment.

- Fire extinguishers listed or approved by the California Fire Marshal and/or a nationally recognized testing laboratory will be used.

7.4 HAZARD COMMUNICATION

All personnel must follow established work practices to safely handle hazardous materials and chemicals. A hazardous chemical is broadly defined as a chemical that is a health hazard, a physical hazard or both. A hazard communication program has been developed to limit the risks of personnel exposures, damage to equipment, and the unplanned release of hazardous materials and chemicals to the environment due to normal operations. The written program includes protocols for:

- Assessment of the hazards associated with chemicals onsite.

- Inventory and labeling of chemicals and their containers.

- Communication of hazards to the employee through Material Safety Data Sheets (MSDSs) for chemical products and tailgate meetings to discuss hazards of impacted environmental media, such as impacted soil or water.

- Training on the safe handling of chemicals.

- Acquisition, transportation and handling of chemicals.

- Emergency response to releases of chemicals.

The requirements of this program will apply to consultant/contractor in the event that they need to store hazardous materials and/or chemicals such as equipment, fuel, caustic compounds for sample preservation, or solvents for equipment decontamination on the site. The consultant/contractor will be responsible for coordinating the inventory of hazardous materials and chemicals used or stored at the site. The inventory will be utilized for reporting and emergency response purposes. Data contained in the inventory will include the name, quantity, and location of the chemical. Material Safety Data Sheets shall be readily available onsite for reference.

7.5 SANITATION

7.5.1 Potable Water

An adequate supply of drinking water will be supplied from sources approved by Federal, State, or local health authorities. Drinking water will be dispensed by means, which prevent contamination between the consumer and source. Approved potable water systems will only be used for the distribution of drinking water.

7.5.2 Non-Potable Water

Outlets for non-potable water, such as water for firefighting purposes, will be identified to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes. Non-potable water will be conspicuously posted: "CAUTION -- WATER UNFIT FOR DRINKING." There will be no cross-connection, open or potential, between a system furnishing potable water and a system furnishing non-potable water.

7.5.3 Washing Facilities

Washing facilities will be provided onsite to maintain healthful and sanitary conditions. The washing facility will be maintained in a sanitary condition and provided with water, soap, individual means of drying, and covered receptacles for waste. An eye wash station will be provided at the work site.

7.6 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

The work will be performed without damage or contamination of adjacent work or surrounding areas. Where such work or surrounding area is damaged or contaminated it will be restored to its original condition and decontaminated at no additional expense to the client as deemed appropriate by the Project Manager. When satisfactory visual inspection and/or sampling analysis results are obtained and have been evaluated, work may proceed.

7.7 MACHINERY AND MECHANIZED EQUIPMENT

Before any pumping machinery or mechanized equipment is placed in use, the contractor is responsible for the inspection and testing by a competent person and certified to be in safe operating condition. Inspections and tests will be in accordance with manufacturer's recommendations and will be documented in the daily logs. Records of tests and inspections will be maintained at the site, and will be made available upon request of the designated authority.

Daily/shift inspections and tests:

- All machinery and equipment will be inspected daily (when in use) to ensure safe operating conditions. The Site Superintendent will designate competent persons to conduct the inspections. These inspections will be documented and incorporated into the field logs.

- Tests will be made at the beginning of each shift during which the equipment is to be used to determine that the brakes and operating systems are in proper working condition and that all required safety devices are in place and functional.

Whenever any machinery or equipment for the dewatering operation is found to be unsafe, or whenever a deficiency, which affects the safe operation of equipment, is observed, the equipment will be tagged and immediately taken out of service until the unsafe condition(s) have been corrected. The tag will indicate the equipment will not be operated. The tag will not be removed and

will be placed in a conspicuous location on the equipment. The tag will remain in its attached location until it is demonstrated to the individual dead lining the equipment that it is safe to operate. When corrections are complete, the machinery or equipment will be re-tested and re-inspected prior to being returned to service.

Machinery and mechanized equipment will be operated only by designated qualified personnel. Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded. Getting off or on any equipment where it is in motion is prohibited. Machinery and equipment will be operated in accordance with the manufacturer's instructions and recommendations. Inspections or determinations of road conditions and structures will be made in advance to assure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.

Mobile equipment, operating within an off-highway job site not open to public traffic, will have a service brake system and a parking brake system capable of stopping and holding the equipment while fully loaded on the grade of operation. In addition, it is recommended that heavy-duty hauling equipment have an emergency brake system, which will automatically stop the equipment upon failure of the service brake system. This emergency brake system should be manually operable from the driver's position.

Preventive maintenance procedures recommended by the manufacturer will be followed. All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or maintenance is being done. Equipment designed to be serviced while running are exempt from this requirement. All repairs on machinery or equipment will be made at a location, which will protect repair personnel from traffic. Heavy machinery, equipment, or parts thereof which are suspended or held apart by slings, hoist, or jacks also will be substantially blocked or cribbed before personnel are permitted to work underneath or between them. Only, authorized factory trained personnel shall do repairs to heavy equipment. Routine daily lubrication, fueling, etc. shall be conducted by the operator.

All vehicles which will be parked or moving slower than normal traffic on haul roads will have a yellow flashing light or four-way flashers visible from all directions.

All industrial trucks will meet the requirements of design, construction, stability, inspection, testing, maintenance, and operation, defined in ANSI/ASME B56.1, Safety Standards for Low Lift and High Lift Trucks.

Self-propelled construction equipment, whether moving alone or in combination, will be equipped with a reverse signal alarm. Equipment designed and operated so that the operator is always facing the direction of motion does not require a reverse signal alarm. Reverse signal alarms will be audible and sufficiently distinct to be heard under prevailing conditions. Alarms will operate automatically upon commencement of backward motion. Alarms may be continuous or intermittent (not to exceed 3-second intervals) and will operate during the entire backward movement. Reverse signal alarms will be in addition to requirements for signal persons. A warning device or signal-

person will be provided where there is danger to persons from moving equipment, swinging loads, buckets, booms, etc.

All belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating or moving parts of equipment will be guarded when exposed to contact by persons or when they otherwise create a hazard. All hot surfaces of equipment, including exhaust pipes or other lines, will be guarded or insulated to prevent injury and fire. All equipment having a charging skip will be provided with guards on both sides and open end of the skip area to prevent persons from walking under the skip while it is elevated. Platforms, foot walks, steps, handholds, guardrails, and toe boards will be designed, constructed, and installed on machinery and equipment to provide safe footing and access. Equipment will be provided with suitable working surfaces of platforms, guard rails, and hand grabs when attendants or other employees are required to ride for operating purposes outside the operator's cab or compartment. Platforms and steps will be of nonskid material. Substantial overhead protection will be provided for the operators of forklifts and similar material handling equipment.

Fuel tanks, if any, will be located in a manner, which will not allow spills or overflows to run onto engine, exhaust, or electrical equipment. Exhaust or discharges from equipment will be so directed that they do not endanger persons or obstruct view of operator.

All points requiring lubrication during operation will have fittings so located or guarded to be accessible without hazardous exposure.

7.8 CONFINED SPACE OPERATIONS

All work will be performed at or above current grades at the Site. No work within trenches or other confined spaces will occur during the course of the proposed project.

7.9 SITE ILLUMINATION

All work will be performed during daylight hours. No work will be performed within structures. No special illumination devices will be necessary to perform the proposed scope of work. Vehicular headlights will be required in the event that vehicular transport operations are required outside of daylight hours or during times of limited visibility (i.e. fog, rain). Additionally, site workers will be required to use vehicular headlights in accordance with State of California motor vehicle laws during onsite or offsite transport.

8.0 SITE CONTROL MEASURES

All employees and personnel entering the site will be required to report to the Site Safety Officer. The purpose of the site control measures is to prevent the spread of contamination, control the flow of personnel, vehicles, and materials into and out of work areas. Procedures for preventing the spread of contamination include maintaining a site control log, developing a communications program, and implementing site security measures are presented below.

8.1 SITE CONTROL LOG

Kiewit/Manson will maintain documentation of sign-in/out forms, employee training records, PPE use and applicable medical surveillance records. In addition, any unsafe conditions present or work practices that have been identified and action taken to correct the identified unsafe conditions and work practices will be identified by the SSHO and documented on the site control log. Record keeping will be performed in accordance with the following.

Kiewit/Manson will maintain logs and reports covering the implementation of the HASP. If necessary the format will include training logs and bi-weekly reports. The training log will include the following information for both initial training and refresher training sessions:

- Date and place.
- Area (specific zone) checked.
- Employees in a particular area.
- Equipment being utilized by employees named.
- Protective clothing being worn by employees named.
- Protective devices being used by employees named and area assignment.

Should this project be extended, the bi-weekly reports will include the following information:

- Summary sheet covering the range of work being done.

- Any incidents of nonuse of protective devices in an area where required, nonuse of protective clothing, disregard of buddy system, violation of eating, smoking, and chewing in prohibited areas, instances of job-related injuries and illness, and monitoring results.

- Copies of medical certificates for employees and the waivers of visitors.

9.0 EMERGENCY EQUIPMENT

The following items, at a minimum, will be maintained onsite and available for immediate use:

- First aid equipment and supplies.

- Emergency eyewashes which comply with ANSI Z358.1 will be located near the work areas.

- Fire extinguishers with a minimum rating of 5-A, B, or C will be carried in all vehicles and heavy equipment. Fire extinguishers will also be available at any site where flammables or combustible materials present a fire risk.

- Spill response kit.

10.0 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

10.1 PRE-EMERGENCY PLANNING

Emergency response agencies will be contacted, and notified of upcoming site activities and potential emergency situations. The capabilities and commitment of the local agencies will be ascertained and obtained. Kiewit/Manson will verify that this Emergency Response Plan is compatible and integrated with disaster, fire, and emergency response plans of the local, state, and federal agencies.

10.2 LINES OF AUTHORITY

The HSM and SSHO are responsible for overall Site safety. In the case of a Site safety concern, emergency or accident, the SSHO should be contacted immediately. Upon notification, the SSHO will make appropriate decision regarding the incident.

10.3 EMERGENCY RECOGNITION AND PREVENTION

The recognition and prevention of hazards and potential emergencies are discussed in detail elsewhere in this plan. In general, emergency situations occur when personnel are seriously injured and require first aid or hazardous or potentially hazardous materials are spilled or released to the environment. Attachment D provides a checklist for critical information and procedures in cases of emergency.

10.4 PROCEDURES FOR SITE EVACUATION

10.4.1 Emergency Equipment

The following items, as a minimum will be immediately available for onsite use:

- First aid equipment and supplies
- Spill control materials and equipment
- Fire extinguishers
- Telephone

10.4.2 Adverse Weather Conditions

In the event of adverse weather conditions, the SSHO will assess if work can continue without sacrificing the health and safety of any field workers. Items to be considered prior to assessing if work should continue include:

- Potential for heat stress and heat-related injuries
- Limited visibility
- Potential for electrical storms
- Potential for high winds resulting in contaminant transport

10.4.3 Earthquakes

This guidance assumes that personnel will be outdoors. In the event of a major earthquake:

- Field personnel should immediately evacuate any tank, or confined structure near the dewatering operation.
- Personnel should move to an area where there is the least chance of something falling from above.
- Personnel should assume a position of low center of gravity to avoid being thrown or falling to the ground. A position on "all fours" can minimize shaking.
- Personnel should remain alert for rolling or traveling objects to avoid injury.
- The buddy system shall be maintained in the event of earthquake.
- Consult the master project HASP for information related to tsunami response.

10.4.4 Evacuation Routes and Places of Refuge

Prior to access into the work areas, workers will be instructed as to designated evacuation routes and procedures. A route map detailing directions to the emergency medical facility will be posted conspicuously at the job site. Additionally, each support vehicle should be equipped with copies of this map and each driver should be familiar with the route and travel time to that facility.

Workers will be instructed during the preliminary and subsequent tailgate meetings to proceed away from the hazard in a direction of 90° to the prevailing wind for at least 50 feet prior to heading up wind of the hazard should an emergency evacuation occur. A place of refuge will be identified. The purpose of the place of refuge is to provide an offsite meeting place in the event that site evacuation is required. The actual place of refuge will be determined during the weekly onsite safety meetings.

10.4.5 Site Security and Control

Areas onsite where hazardous substances are known to exist will be secured through demarcation tape and warning signs. Access to the work area will be restricted, and all personnel (regardless of status) requesting entry the work area will be required to report to the Site safety officer and sign in on the Site control log. All visitors will be briefed onsite-specific safety and health issues. The gated Site will be kept closed and locked during hours of non-operation.

10.5 NEAREST HOSPITAL

The nearest hospital is located in Fremont, approximately 2 miles from the project site.. The address and telephone numbers are as follows:

Sutter Alta Bates Summit Medical Center
350 Hawthorne Avenue, Oakland
(510) 655-4000

A map to the facility will be provided in the overall Project HASP.

10.6 EMERGENCY ALERTING AND RESPONSE PROCEDURES

10.6.1 Emergency Alerting Procedures

If physical injury or illness due to accidental exposure to hazardous materials or waste occurs, uninjured/unaffected personnel should do the following:

- Evacuate all non-essential personnel.
- Remove injured/exposed person(s) from the work zone.
- Remove protective gear from injured/exposed person(s).
- Decontaminate exposed person(s).
- Render first aid if necessary.
- **Call 911.**
- *If medical assistance is urgent, decontamination of the victim may not be practical or required.*
- Evacuate other onsite personnel to a safe place until the SSHO determines that it is safe to resume work
- The senior person present will notify the SSHO and superintendent and advise them of the incident and the steps taken to prevent recurrence.
- Submit a written report on the incident to the contracting officer or representative within 24 hours. The report will be made part of the final closure file.
- Accident reporting records and investigative reports will be maintained at the site office and ENGEO's corporate office as part of the Department of Labor record keeping requirements.

Following any emergency response, an evaluation of procedures will be performed. The evaluation should include cause and proposed remedy for subsequent incident prevention. Should an emergency situation develop the site superintendent will notify work site personnel by hand held radio. Work activities shall be stopped if necessary.

10.6.2 Emergency Telephone Numbers

The universal emergency response number is 911. When 911 is dialed, a public safety answering service will ascertain the type of assistance needed and quickly summon the appropriate emergency service (Fire Department, Police Department, emergency medical or paramedics, ambulance, etc.) to the site.

10.7 COMMUNITY ALERT PROGRAM

The universal emergency response number is 911. When 911 is dialed, a public safety answering service will ascertain the type of assistance needed and quickly summon the appropriate local and/or municipal emergency service (Fire Department, Policy Department, emergency medical or paramedics, ambulance, etc.) to the site.

10.8 PROCEDURES FOR INCIDENT REPORTING

In the event that an incident such as an explosion or fire, or a spill or release of toxic material occurs during the course of the project, the appropriate government agencies will immediately notified. Kiewit/Manson will notify Cal/OSHA, EPA, and the contractor/subcontractor supervisor(s). A written notification shall be forwarded to the contracting officer within 24 hours. The report should include the following items:

- Name, organization, telephone number, and location.
- Name and title of the person(s) reporting.
- Date and time of the incident.
- Location of the incident, i.e. site location, facility name.
- Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident.
- Cause of the incident, if known.
- Casualties (fatalities, disabling injuries).
- Details of any existing chemical hazard or contamination.
- Estimated property damage, if applicable.
- Nature of damage, effect on contract schedule.

11.0 REPORTING

11.1 LOGS, REPORTS, AND RECORDKEEPING

The following logs, reports, and records will be developed, retained, and submitted to the contracting officer when requested:

- Training logs (site specific and visitor)
- Daily inspection logs
- Equipment Safety and Maintenance Logs
- Employee/visitor register (Site Control Log)
- Environmental and personal exposure monitoring/sampling results