

## San Diego Bay Environmental Restoration Fund – South

450 Montbrook Lane  
Knoxville, TN 37919  
Phone: (865) 691-5052

VIA Email and US Mail

October 16, 2013

David Gibson  
San Diego Regional Water Quality Control Board  
2375 Northside Drive, Suite 100  
San Diego, CA 92108-2700

Re: September 2013, Monthly Water Column Monitoring Report Submittal  
San Diego Shipyard Sediment Site – South Shipyard  
Place ID 794466, Order No. R9-2013-0093

To Mr. Gibson:

The September 2013 Monthly Water Column Monitoring Report is being submitted to the San Diego Regional Water Quality Control Board by the San Diego Bay Environmental Restoration Fund – South (Attached).

Should there be any questions regarding this Monthly Report, please do not hesitate to contact me at 619-546-8377 ext. 103 or at [mpalmer@demaximis.com](mailto:mpalmer@demaximis.com).

Sincerely,



Mike Palmer  
Project Coordinator

Attachment: San Diego Shipyard Sediment Site – South Shipyard (Place ID 794466, Order No. R9-2013-0093) Monthly Water Column Monitoring Report: September 2013

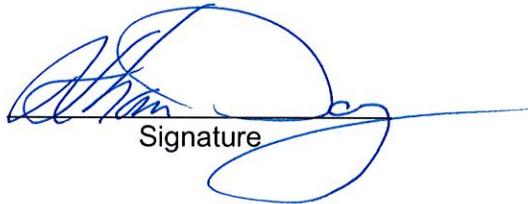
cc: Mike Chee, NASSCO (Via Email)  
David Templeton, Anchor QEA (Via Email)  
Chad Carpenter, R. E. Staite Engineering (Via Email)

Re: September 2013, Monthly Water Column Monitoring Report Submittal  
San Diego Shipyard Sediment Site – South Shipyard  
Place ID 794466, Order No. R9-2013-0093

**CERTIFICATION STATEMENT**

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

R. Thomas Dorsey



Signature

10/16/2013

## TECHNICAL MEMORANDUM

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**To:** David Gibson, San Diego Regional Water Quality Control Board      **Date:** October 15, 2013

**From:** Chris Osuch, Adam Gale, and Elizabeth Appy, Anchor QEA, L.P.      **Project:** 131003-01.02

**Cc:** Michael Chee, National Steel and Shipbuilding Company  
Michael Palmer, de maximis, inc.  
David Templeton and Michael Whelan, P.E., Anchor QEA, L.P.  
Robert Smith, U.S. Army Corps of Engineers

**Re:** San Diego Shipyard Sediment Site – South Shipyard (Place ID 794466, Order No. R9-2013-0093) Monthly Water Column Monitoring Report: September 2013

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### INTRODUCTION

The San Diego Bay Environmental Restoration Fund – South (South Trust) is remediating contaminated sediments at the South Shipyard portion of the San Diego Shipyard Sediment Site (Site). Remediation is required to comply with Cleanup and Abatement Order (CAO) No. R9-2012-0024 issued by the San Diego Regional Water Quality Control Board (Water Board 2012a). Sediment is being dredged from the South Shipyard and if suitable, dredged material will be disposed of at the Otay Landfill. Water column monitoring must be conducted during dredging operations in order to comply with Waste Discharge Requirements and Section 401 Water Quality Certification (WDR/WQC; Water Board 2013). Anchor QEA, L.P., was contracted by the South Trust to conduct this water column monitoring.

This technical memorandum summarizes dredging operations and results of water column monitoring during September 2013. Pre-construction monitoring was conducted on September 27 to provide baseline water quality data. Monitoring during dredging was conducted on September 30. Monitoring was performed in accordance with the WDR/WQC (Water Board 2013) Section VIII(A) and Appendix C of the Remedial Action Plan (RAP; Anchor QEA 2012). Water quality monitoring included dissolved oxygen (DO), pH, turbidity, and visual observations.

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In addition to the manual water quality monitoring conducted by Anchor QEA, an automatic monitoring system was set up and monitored by Tierra Data, Inc. (TDI) in accordance with the Mitigation Monitoring and Reporting Program (MMRP; Water Board 2012b). Automatic monitoring buoys were installed by TDI on September 26, 2013, prior to commencing dredging. Buoys are located at the reference station and two early warning stations. The reference station is located 1,000 feet from the remedial footprint in the direction of the ocean. Early warning stations are located 250 feet from the construction area;<sup>1</sup> however, it was necessary to slightly adjust this distance to allow for vessel traffic, including barge and tug access. Automatic monitoring is intended to alert the contractor if early warning triggers are achieved during dredging so that additional dredging best management practices (BMPs) can be implemented to prevent an exceedance at the compliance boundary. Automatic monitoring data are not presented in this technical memorandum but are available at <http://www.wqdata.com/webdblink/buoys.php>. Although there are three buoys on-site collecting data, the website map currently (as of October 14, 2013) shows two buoy locations as green dots—SD Bay and South Trust. Clicking on the green dots allows data for each location to be displayed. The SD Bay location contains turbidity, pH, and DO data for the reference location. The South Trust location contains two sets of turbidity, pH, and DO data, one for each early warning station. The website will be reconfigured to show three buoy locations (i.e., Reference, Early Warning North, and Early Warning South) once a piece of equipment is repaired, which is expected to occur between October 17 and 24.

## **DREDGE VOLUMES AND LOCATIONS**

In September, 1,000 cubic yards (cy) of sediment was dredged from within Sediment Management Unit (SMU)-4 (Figure 1). All sediment is currently stored in material barges and planned for disposal at Otay Landfill. A summary of daily dredge volumes, locations from which sediment was removed, and final disposal locations is presented in Table 1. Waste manifests will be provided as they are available.

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<sup>1</sup> The construction area is defined as the area occupied by the dredging barge, sediment scow, sand and rock placement equipment, demolition work equipment, silt curtains, and other work.

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## **WATER QUALITY MONITORING RESULTS**

This section describes water quality monitoring results, including sampling locations, water column measurements, and visual observations.

### **Sampling Locations**

Baseline monitoring was performed at the reference station and 10 locations spatially distributed throughout the Site (Figures 2 and 3, respectively). The reference station was located 1,000 feet from the remedial footprint in the direction of the ocean and beyond the influence of construction activities. Latitude and longitude coordinates for each baseline monitoring location are presented in Table 2.

During dredging, monitoring was performed at seven stations, including the reference station, two early warning stations, and four compliance stations. With the exception of the reference location, stations were positioned relative to the construction area. Early warning stations were each located 250 feet from the construction area, while compliance stations were each located 500 feet from the construction area. The general layout of early warning and compliance monitoring locations for SMU-4 are shown on Figure 4; however, actual locations were positioned in the field relative to the construction area. Latitude and longitude coordinates for each monitoring location during dredging are presented in Table 3.

### **Water Column Measurements**

DO, pH, and turbidity were measured 10 feet below the surface at each station using a Hydrolab MS5 multi-probe sonde. Instruments were calibrated prior to sampling according to the manufacturer's recommendations. The Hydrolab calibration worksheets for each sampling event are provided in Attachment A. Water quality sample forms are provided in Attachment B. A summary of baseline monitoring results is presented in Table 2. A summary of monitoring results during dredging is presented in Table 3.

During dredging, DO, pH, and turbidity results at each compliance station were compared to receiving water limitation compliance criteria. DO and pH concentrations were similar to the reference station and met compliance criteria. On September 30, 2013, turbidity concentrations at two stations were more than 20 percent greater than the reference, indicating potential exceedances, but upon further investigation, exceedances were not

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confirmed. In accordance with procedures described in the WDR/WQC (Water Board 2013) and Remediation Monitoring Plan (Appendix C of Anchor QEA 2012), visual evidence was evaluated and then measurements were re-taken at the reference station and compliance stations to confirm the exceedance. No visual evidence of discoloration, turbidity, or surface pollution was observed at either station. The double silt curtain was in place and no damage, dislocation, or gaps were observed. Turbidity was re-taken, and concentrations were within 20 percent of the reference; therefore, compliance criteria were met and no confirmed exceedances occurred.

Turbidity values were very low at all stations during dredging, with concentrations ranging from 0.6 to 1.7 Nephelometric Turbidity Units (NTU). With values this low, variability is expected to be higher; therefore, a small difference in turbidity due to natural variability may result in a 20 percent exceedance of the reference station. Potential exceedances observed at these compliance stations are believed to be the result of natural variability, which was increased due to very low turbidity concentrations.

### **Visual Observations**

Visual observations are summarized in Tables 2 and 3. No odors or visual evidence of discoloration, turbidity, or surface pollution was observed at any station. The double silt curtain was in place during all dredging operations and no damage, dislocation, or gaps were observed.

Visual monitoring of turbidity inside and outside the silt curtains was performed in concert with water quality parameter monitoring. Attachment C provides site photographs of the silt curtains that visualize typical conditions during construction, showing an attenuation of the turbidity plume inside the two silt curtains. These visual observations are consistent with the results presented in this technical memorandum.

### **SUMMARY OF NON-COMPLIANCE**

Based on the results of water quality monitoring, there were no incidents of non-compliance during September 2013.

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## **PERSONS CONTRIBUTING TO THIS REPORT**

Names, affiliations, and qualifications of the persons contributing to this technical memorandum are summarized in Table 4.

## **REFERENCES**

Anchor QEA, L.P., 2012. *Remedial Action Plan*. San Diego Shipyard Sediment Site. Revised October 2012.

Water Board (San Diego Regional Water Quality Control Board), 2012a. Cleanup and Abatement Order R9-2012-0024 for the Shipyard Sediment Site. Issued March 14, 2012.

Water Board, 2012b. Mitigation Monitoring and Reporting Program for the Shipyard Sediment Remediation Project Environmental Impact Report (SCH#2009111098). Issued on March 14, 2012.

Water Board, 2013. Waste Discharge Requirements for San Diego Shipyard Sediment Remediation Project, San Diego Bay, San Diego, California. Order No. R9-2013-0093. Issued on July 10, 2013.

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# TABLES

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**Table 1**  
**Dredge Volumes, Dredging Locations, and Final Disposal Locations**  
**for September 2013**

<b>Date</b>	<b>Dredge Volume (cy)</b>	<b>Dredging Location</b>	<b>Final Disposal Location</b>
9/30/2013	1,000	SMU-4	Pending solidification
<b>Total</b>	<b>1,000</b>	-	-

Notes:

cy = cubic yard

SMU = Sediment Management Unit

**Table 2**  
**Baseline Water Quality Monitoring Results**

Date	Time	Station Type	Station ID	Latitude <sup>1</sup>	Longitude <sup>1</sup>	Water Quality Measurements			Visual Observations		
						DO (mg/L)	pH	Turbidity (NTU)	Odor	Presence of Surface Pollution	Discoloration or Turbidity
9/27/2013	11:47:32	Reference	PRE-BG-130927	32.69161	-117.15031	7.1	8.1	2.4	No	No	No
9/27/2013	12:07:39	Shipyard Site	PRE-BL1-130927	32.68947	-117.14301	6.4	8.0	1.5	No	No	No
9/27/2013	12:13:45	Shipyard Site	PRE-BL2-130927	32.68840	-117.14374	6.6	8.1	1.5	No	No	No
9/27/2013	12:32:24	Shipyard Site	PRE-BL3-130927	32.68904	-117.14241	6.5	8.0	1.5	No	No	No
9/27/2013	12:37:11	Shipyard Site	PRE-BL4-130927	32.68950	-117.14132	6.7	8.1	1.7	No	No	No
9/27/2013	12:42:15	Shipyard Site	PRE-BL5-130927	32.68968	-117.14043	6.7	8.1	1.5	No	No	No
9/27/2013	12:53:44	Shipyard Site	PRE-BL6-130927	32.68961	-117.13924	6.9	8.1	1.0	No	No	No
9/27/2013	13:04:45	Shipyard Site	PRE-BL7-130927	32.68816	-117.14041	6.9	8.1	1.9	No	No	No
9/27/2013	12:58:21	Shipyard Site	PRE-BL8-130927	32.68848	-117.13888	6.9	8.1	1.1	No	No	No
9/27/2013	13:15:13	Shipyard Site	PRE-BL9-130927	32.68754	-117.14115	6.9	8.1	2.6	No	No	No
9/27/2013	13:40:15	Shipyard Site	PRE-BL10-130927	32.68742	-117.13991	7.2	8.1	1.8	No	No	No

Notes:

DO = dissolved oxygen

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Units

<sup>1</sup> California State Plane, Zone 6, North American Datum 1983 (NAD83)

**Table 3**  
**Water Quality Monitoring Results During Dredging - September 2013**

Date	Time	Station Type	Station ID	Latitude <sup>1</sup>	Longitude <sup>1</sup>	Water Quality Measurements			Visual Observations		
						DO (mg/L)	pH	Turbidity (NTU)	Odor	Presence of Surface Pollution	Discoloration or Turbidity
9/30/2013	12:36:34	Reference	D-BG-130930	32.69167	-117.15029	7.0	7.9	1.1	No	No	No
9/30/2013	13:06:56	Early Warning	D-EWS-130930	32.68655	-117.13959	7.1	8.0	1.4	No	No	No
9/30/2013	13:21:45	Early Warning	D-EWN-130930	32.68833	-117.13960	6.7	7.9	1.0	No	No	No
9/30/2013	13:29:03	Compliance	D-CNN-130930	32.68911	-117.13921	6.6	7.9	0.6	No	No	No
9/30/2013	13:48:56	Compliance	D-CON-130930	32.68884	-117.14059	7.2	8.0	1.7 <sup>2</sup>	No	No	No
9/30/2013	14:14:50	Reference	D-BG-130930	32.69161	-117.15027	7.1	8.0	1.1 <sup>3</sup>	No	No	No
9/30/2013	14:30:50	Compliance	D-CON-130930	32.68883	-117.14065	7.2	8.0	0.9 <sup>3</sup>	No	No	No
9/30/2013	14:42:29	Compliance	D-COS-130930	32.68769	-117.14112	7.5	8.0	1.5 <sup>2</sup>	No	No	No
9/30/2013	14:50:48	Compliance	D-COS-130930	32.68766	-117.14120	7.4	8.0	1.2 <sup>3</sup>	No	No	No
9/30/2013	15:04:26	Compliance	D-CNS-130930	32.68592	-117.14018	7.4	8.0	1.3	No	No	No

Notes:

Receiving water limitation compliance criteria: DO shall not be depressed more than 10 percent from the reference (BG); pH shall not be changed more than 0.2 unit from reference (BG); pH shall not be depressed below 7.0 nor raised above 9.0; turbidity must not exceed 20 percent of reference (BG; if natural

DO = dissolved oxygen

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Units

1 California State Plane, Zone 6, North American Datum 1983 (NAD83)

2 Compliance station potentially exceeds receiving water limitation compliance criteria. Upon further investigation, potential exceedances were not confirmed.

3 Measurements were re-taken at the reference station and compliance stations to confirm the exceedance. Turbidity concentrations were within 20 percent of the reference; therefore, compliance criteria were met.

**Table 4**  
**Persons Contributing to this Report**

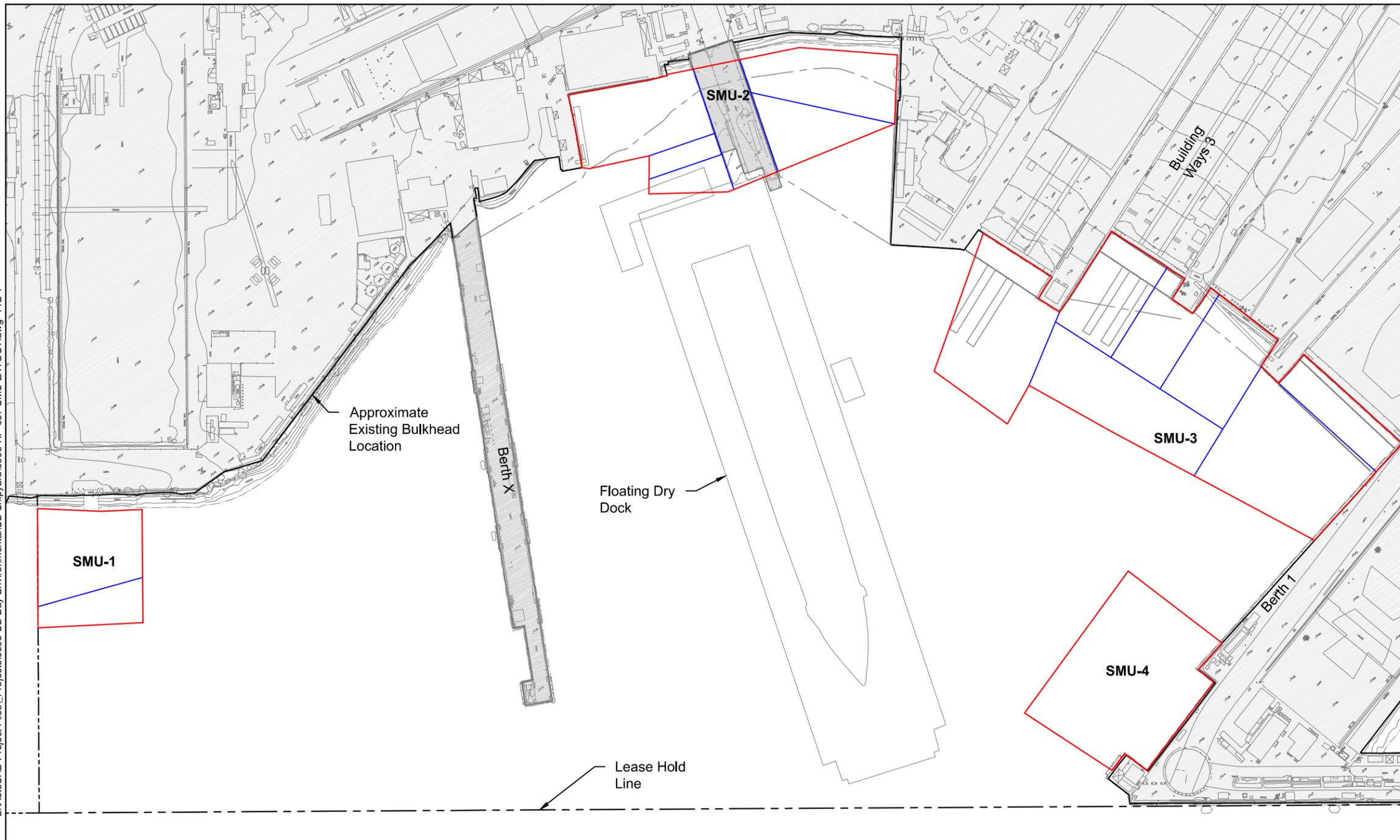
Name	Title	Affiliation	Qualifications
Chris Osuch	Senior Scientist	Anchor QEA	University of California, Santa Barbara, B.A., Environmental Studies, 1998 Environmental scientist with more than 14 years of professional experience Experienced with collecting and measuring water quality parameters
Adam Gale	Senior Planner	Anchor QEA	University of Washington, Certificate Program in Geographic Information Systems, 2007; California Polytechnic State University, San Luis Obispo, B.S., Ecology and Systematic Biology, 2004 Planner with more than 8 years of professional experience Experienced with implementing water quality monitoring programs for remediation projects
Elizabeth Appy	Managing Scientist	Anchor QEA	Colby College, B.A., Biology, 1994; Oregon State University, M.S., Marine Resource Management, 2000 Managing scientist with more than 15 years of professional experience Experienced with implementing water quality monitoring programs for remediation projects

# FIGURES

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L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-037 SMU LAYOUT.dwg FIG 1

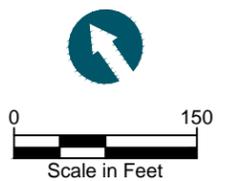
Oct 03, 2013 1:15pm mpraischner



**LEGEND:**

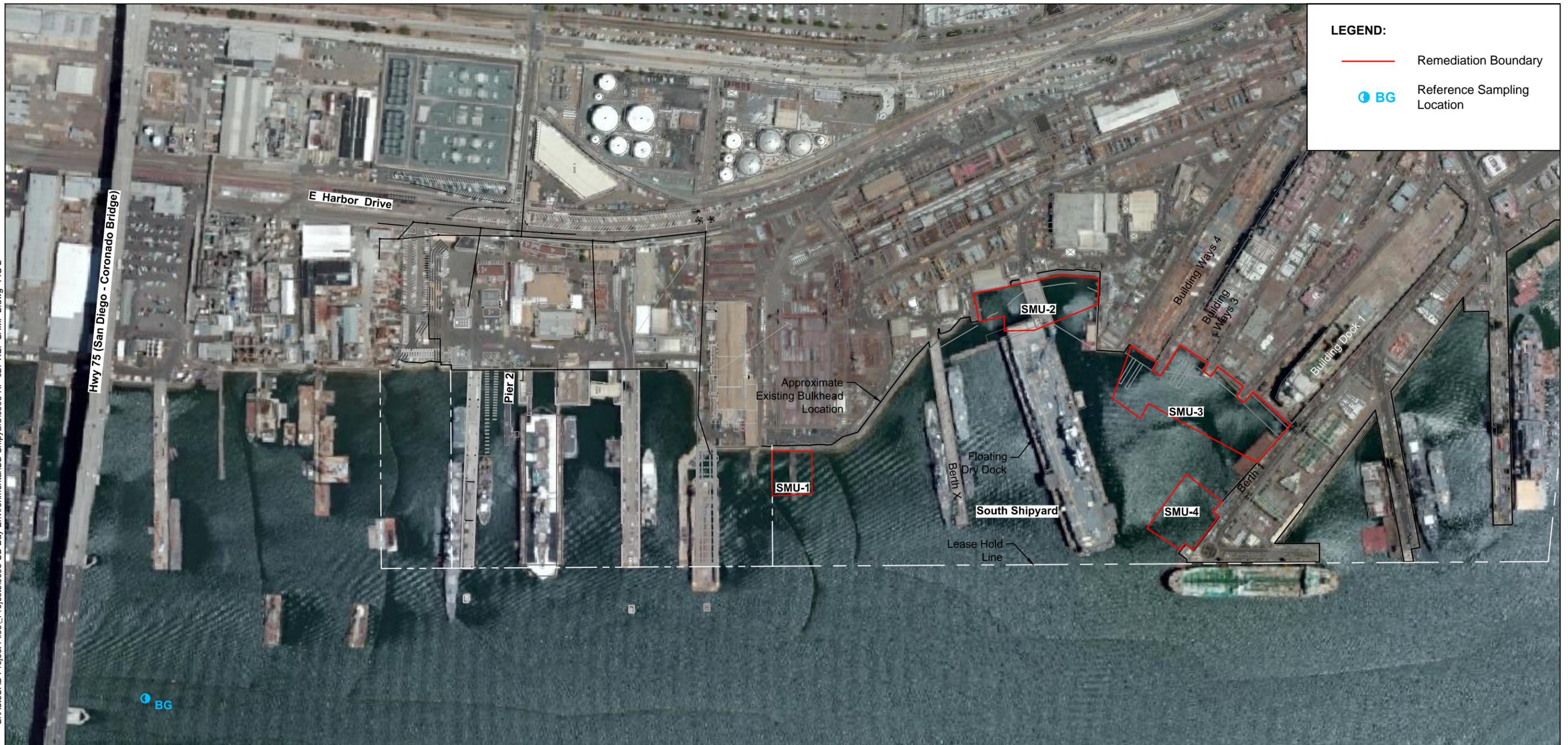
- Remediation Boundary
- Sub-SMU Boundary

**SOURCE:** Upland topography from Digital Mapping Inc., September, 2009 and supplemented by Environmental Data Solutions survey dated April 13, 2013.  
**HORIZONTAL DATUM:** California State Plane, Zone 6,, NAD83, U.S. Feet.



L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-027 REF SAMP 2.dwg FIG 2

Oct 14, 2013 2:38pm mpraischmer



**LEGEND:**

- Remediation Boundary
- BG Reference Sampling Location

**SOURCE:** Aerial from ESRI base maps. Upland topography from Digital Mapping Inc., September, 2009 and supplemented by Environmental Data Solutions survey dated April 13, 2013.  
**HORIZONTAL DATUM:** California State Plane, Zone 6, NAD83, U.S. Feet.

**Notes:**  
 Reference Sampling Location BG  
 Latitude: 32° 41.4970'  
 Longitude: 117° 09.0185'

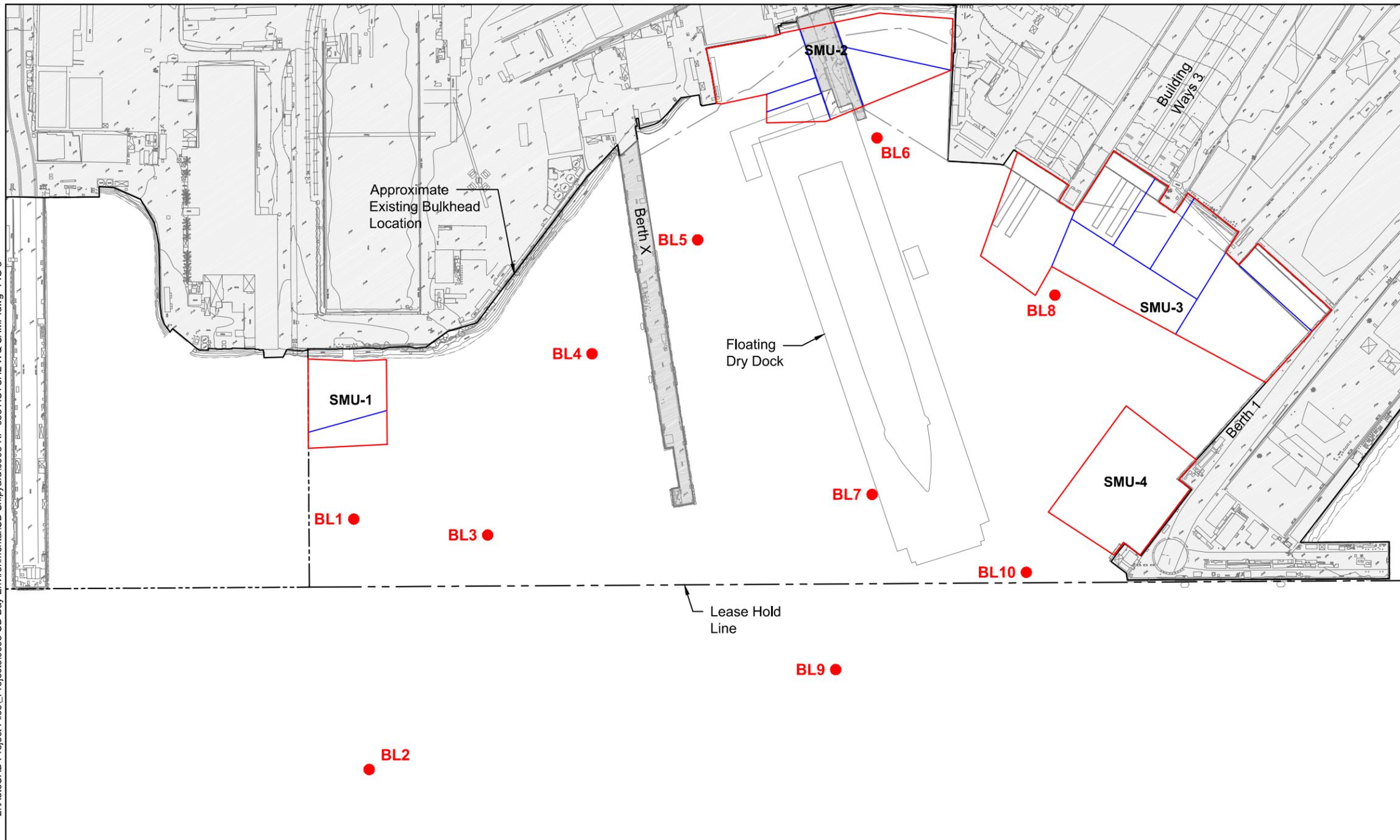
A north arrow pointing towards the top right of the map. Below it is a scale bar showing a distance of 350 feet, with a 0 mark at the start.



**Figure 2**  
 Water Quality Reference Sampling Location  
 San Diego Shipyard Sediment Site - South Shipyard

L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-038 ACTUAL WQ SAMP.dwg FIG 3

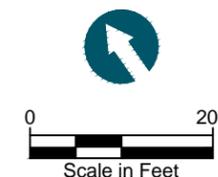
Oct 11, 2013 2:53pm mpraischner



**LEGEND:**

- Remediation Boundary
- Sub-SMU Boundary
- BL# Baseline Sampling Location

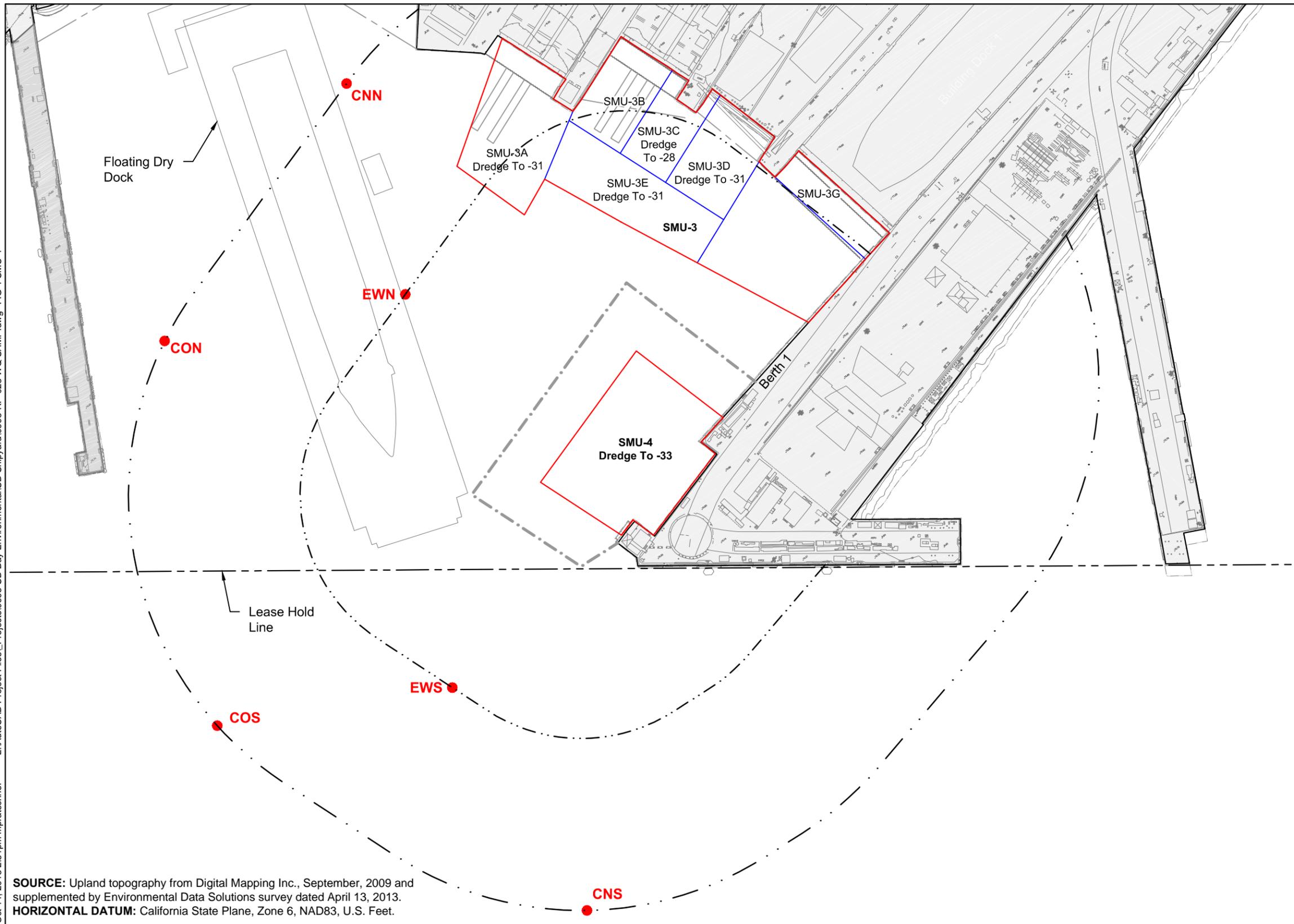
**SOURCE:** Upland topography from Digital Mapping Inc., September, 2009 and supplemented by Environmental Data Solutions survey dated April 13, 2013.  
**HORIZONTAL DATUM:** California State Plane, Zone 6,, NAD83, U.S. Feet.



**Figure 3**  
 Baseline Water Quality Sampling Locations  
 San Diego Shipyard Sediment Site - South Shipyard

L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-023 WQ SAMP.dwg FIG 4 SMU-4

Oct 14, 2013 2:51pm mpratschner

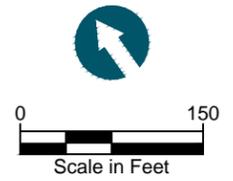


**SOURCE:** Upland topography from Digital Mapping Inc., September, 2009 and supplemented by Environmental Data Solutions survey dated April 13, 2013.  
**HORIZONTAL DATUM:** California State Plane, Zone 6, NAD83, U.S. Feet.

**LEGEND:**

	Remediation Boundary
	Sub-SMU Boundary
	250' from Construction Area
	500' from Construction Area
	CNS ● Sampling Location
	Silt Curtain
EWN	Early Warning North
EWS	Early Warning South
CNN	Compliance Nearshore North
CNS	Compliance Nearshore South
CON	Compliance Offshore North
COS	Compliance Offshore North

**NOTE:**  
 Actual sampling locations determined in the field based on the location of the construction area.



ATTACHMENT A  
CALIBRATION LOGS

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HYDROLAB CALIBRATION WORKSHEET

PROJECT(S): SD Shipyards

PROJECT #: 131003-01.02

REMINDER: ALLOW TWO MINUTES WARMUP BEFORE CALIBRATION OR USE.

Calib by:	Date	Time (24 Hr)	DO				pH					REDOX		
			Temp. (°C)	BP (mm Hg)	Initial DO (mg/L)	Final DO (mg/L)	Initial pH 7.0	Final pH 7.0	Temp. (°C)	Initial pH:10	Final pH:10	Initial (mV)	Final (mV)	Temp. (°C)
DF	9.27.13	0500	23.7	753.3	8.4	8.3	7.07	7.0	23.6	10.2	10.02			

Calib by:	Date	Time (24 Hr)	CONDUCTIVITY				TURBIDITY					
			Initial 0 µs/cm	Final 0 µs/cm	Temp. (°C)	Initial 1412 µs/cm	Final 1412 µs/cm	Initial 0 NTU	Final 0 NTU	Temp. (°C)	Initial 40 NTU	Final 40 NTU
DF	9.27.13	0500	0.3	0.0	21.7	1410	1412	0.0	0.0	23.7	41.3	40.0

Dissolved Oxygen Method (circle one):

Air Saturated Water Winkler Titration

Source of Barometric Pressure Surveyor

Turb. (40 NTU)

Lot # A2326 Exp. 11/14

Turbidity Std (40.1 NTU)

Lot# A3003 Exp. Date: 12/14

Conductivity Stds: Calibration: 1412 µs/cm

Lot # A2340 Exp. Date: 12/13

Verification: \_\_\_\_\_ µs/cm

Lot # A3046 Exp. Date: \_\_\_\_\_

pH Buffers:

pH 7.0 Lot # A3046 Exp. Date: 2/15

pH 10 Lot# A3042 Exp. Date: 2/14

pH 4 Lot# A3042 Exp. Date: 2/17 4.5 @ 20.9  
4.01

Redox Standard:

428 mV ± @ 25 °C (Zobell's)

Lot# \_\_\_\_\_ Exp. Date: \_\_\_\_\_

NOTES:

HYDROLAB CALIBRATION WORKSHEET

PROJECT(S): \_\_\_\_\_

PROJECT #: 131003-01.02

REMINDER: ALLOW TWO MINUTES WARMUP BEFORE CALIBRATION OR USE.

			DO				pH					REDOX		
Calib by:	Date	Time (24 Hr)	Temp. (°C)	BP (mm Hg)	Initial DO (mg/L)	Final DO (mg/L)	Initial pH 7.0	Final pH 7.0	Temp. (°C)	Initial pH:10	Final pH:10	Initial (mV)	Final (mV)	Temp. (°C)
DF	0930.13	0630	26.3	776.4	8.4	8.2	7.0	6.99	25.7	10.2	10.01	—	—	—

			CONDUCTIVITY					TURBIDITY				
Calib by:	Date	Time (24 Hr)	Initial 0 µs/cm	Final 0 µs/cm	Temp. (°C)	Initial 1412 µs/cm	Final 1412 µs/cm	Initial 0 NTU	Final 0 NTU	Temp. (°C)	Initial 40 NTU	Final 40 NTU
DF	093013	0630	0.1	0.0	22.5	1413	1412	1.0	0.0	26.2	40.3	40.0

Dissolved Oxygen Method (circle one):

Air Saturated Water Winkler Titration

Source of Barometric Pressure Surveyor

Turb. (40 NTU)

Lot # A2326 Exp. 11/14

Turbidity Std (40.1 NTU)

Lot# A3003 Exp. Date: 12/14

Conductivity Stds:

Calibration: 1412 µs/cm

Lot # A2340

Exp. Date: 12/13

Verification: \_\_\_\_\_

\_\_\_\_\_ µs/cm

Lot # \_\_\_\_\_

Exp. Date: \_\_\_\_\_

pH Buffers:

pH 7.0 Lot # A3046

Exp. Date: 2/15

pH 10 Lot# A3042

Exp. Date: 2/14

pH 4 Lot# A3042

Exp. Date: 2/17

4.1 @ 22.0  
4.0

Redox Standard:

428 mV ± @ 25 °C (Zobell's)

Lot# \_\_\_\_\_

Exp. Date: \_\_\_\_\_

NOTES:

**ATTACHMENT B**  
**WATER QUALITY SAMPLE FORMS**

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27201 Puerta Real, Suite 350  
 Mission Viejo, California 92691  
 Phone 949.347.2780  
 www.anchorqea.com

### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BG-130927			Water Depth (ft): 3e.7	
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 29.814"		Longitude/Easting: 117° 09' 01.110"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
11:47:32	10	7.1	8.1	2.4
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y/ <u>N</u>		Photograph(s) Taken: <u>Y</u> N 2 of water only		
Discoloration or Turbidity: Y/ <u>N</u>		Recorded by: BG		
Comments:  BAE "Do Not Cross" boom blocked us from target location.				



27201 Puerta Real, Suite 350  
 Mission Viejo, California 92691  
 Phone 949.347.2780  
 www.anchorqea.com

### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BLI-130927			Water Depth (ft): 33.4	
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 22.092"		Longitude/Easting: 117° 08' 34.836"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:07:39	10	6.4	8.0	1.5
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y <u>(N)</u>			Photograph(s) Taken: Y <u>(N)</u>	
Discoloration or Turbidity: Y <u>(N)</u>			Recorded by: BG	
Comments:  BAE boom blocked us from target location				



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 Phone 949.347.2780  
 www.anchorqea.com

### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BL2-130927			Water Depth (ft): 35.7	
Coordinates				
Latitude/Northing: 32° 41' 18.228"		Longitude/Easting: 117° 08' 37.452"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:13:45	10	6.6	8.1	1.5
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: BG	
Comments:  BAE boom blocked us from target location				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BL3- <del>89</del> <sup>BG</sup> 130927			Water Depth (ft): 26.9	
Coordinates				
Latitude/Northing: 32° 41' 20.544"		Longitude/Easting: 117° 08' 32.664"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:32:24	10	6.5	8.0	1.5
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <input checked="" type="radio"/> Flood / <input type="radio"/> Ebb / <input type="radio"/> Slack	
Station ID: PRE-BL4-130927		Water Depth (ft):		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 22.182"		Longitude/Easting: 117° 08' 28.746"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:37:11	10	6.7	8.1	1.7
Odor: <input checked="" type="radio"/> none <input type="radio"/> slight <input type="radio"/> moderate <input type="radio"/> strong <input type="radio"/> H <sub>2</sub> S <input type="radio"/> petroleum <input type="radio"/> septic				
Presence of Surface Pollution: Y/ <input checked="" type="radio"/> N		Photograph(s) Taken: Y/ <input checked="" type="radio"/> N		
Discoloration or Turbidity: Y/ <input checked="" type="radio"/> N		Recorded by: BG		
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BLS-130927		Water Depth (ft): 36.3		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 22.848"		Longitude/Easting: 117° 08' 25.566"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:42:15	10	6.7	8.1	1.5
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y / <u>(N)</u>			Photograph(s) Taken: Y / <u>(N)</u>	
Discoloration or Turbidity: Y / <u>(N)</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BL6-130927		Water Depth (ft): 36.7		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 22.602"		Longitude/Easting: 117° 08' 21.274"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:53:44	10	6.9	8.1	1.0
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: <u>Y</u> /N   Sticks			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> Ebb / Slack	
Station ID: PRE-BL7- <sup>86</sup> 130927		Water Depth (ft): 45.2		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 17.382"		Longitude/Easting: 117° 08' 25.482"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:04:45	10	6.9	8.1	1.9
Odor: <u>none</u> slight moderate strong H <sub>2</sub> S petroleum septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BL8-130927		Water Depth (ft): 31.1		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 18.510"		Longitude/Easting: 117° 08' 19.956"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:58:21	10	6.9	8.1	1.1
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> Ebb / Slack	
Station ID: PRE-BL9-130927		Water Depth (ft): 36.9		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 15.132"		Longitude/Easting: 117° 08' 28.128"		
Weather and Wind Conditions: Sunny, mod. wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:15:13	10	6.9	8.1	2.0
Odor: <u>none</u> slight moderate strong H <sub>2</sub> S petroleum septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: DF, BG, AG		Date: 09.27.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: PRE-BL10-130927		Water Depth (ft): 33.3		
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 14.712"		Longitude/Easting: 117° 08' 23.658"		
Weather and Wind Conditions: Sunny, light wind				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:40:15	10	7.2	8.1	1.8
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y / <u>N</u>			Photograph(s) Taken: Y / <u>N</u>	
Discoloration or Turbidity: Y / <u>N</u>			Recorded by: BG	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: <sup>14:14</sup> Flood / <sup>12:36</sup> Ebb / Slack	
Station ID: D-BG-130930			Water Depth (ft): 35.6 / 36.1	
Coordinates				
Latitude/Northing: 32° 41' 30.012"		Longitude/Easting: 117° 09' 01.038"		
Weather and Wind Conditions: Sunny, light wind from W				
Predominant Current Direction: <sup>12:36</sup> NW / <sup>14:14</sup> SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
12:36:34	10	7.0	7.9	1.1
14:14:50	10	7.1	8.0	1.1
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y / <u>N</u>			Photograph(s) Taken: Y / <u>N</u>	
Discoloration or Turbidity: Y / <u>N</u>			Recorded by: CO	
Comments: Due to slight turbidity exceedance @ Station CON, re-took measurements @ reference to confirm conditions have not changed. Second set of measurements were performed during a flood tide. Lat: 32° 41' 29.790" Long: 117° 09' 00.960" Measurements similar to previous attempt.				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: Flood ( <input checked="" type="radio"/> Ebb) Slack	
Station ID: D-EWS-130930			Water Depth (ft): 34.3	
Coordinates				
Latitude/Northing: 32° 41' 11.592"		Longitude/Easting: 117° 08' 22.530"		
Weather and Wind Conditions: Sunny w/ light wind from the W				
Predominant Current Direction: NW				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:06:56	10	7.1	8.0	1.4
Odor: <input checked="" type="radio"/> none    slight    moderate    strong    H <sub>2</sub> S    petroleum    septic				
Presence of Surface Pollution: Y <input checked="" type="radio"/> N			Photograph(s) Taken: Y <input checked="" type="radio"/> N	
Discoloration or Turbidity: Y <input checked="" type="radio"/> N			Recorded by: CO	
Comments: Turbidity slightly more than 20% above reference. No turbidity or discoloration at station. It should be noted that turbidity is within 20% of southern reference station which is upcurrent of dredge area. Does not appear to be due to dredging; therefore, no action taken. Will check compliance stations.				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: <u>Flood</u> Ebb / Slack	
Station ID: D-EWN-130930			Water Depth (ft): 53.0	
Coordinates				
Latitude/Northing: 32° 41' 17.988"		Longitude/Easting: 117° 08' 22.566"		
Weather and Wind Conditions: Sunny w/ light wind from W				
Predominant Current Direction: SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:21:45	10	6.7	7.9	1.0
Odor: <u>none</u> slight moderate strong H <sub>2</sub> S petroleum septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: CO	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: D-CNN-130930			Water Depth (ft): 39.9	
<b>Coordinates</b>				
Latitude/Northing: 32° 41' 20.784"		Longitude/Easting: 117° 08' 21.156"		
Weather and Wind Conditions: Sunny w/ light wind from W				
Predominant Current Direction: SE				
<b>Field Parameters</b>				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:29:03	10	6.6	7.9	0.6
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: CO	
Comments:				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: D-CON-130930			Water Depth (ft): <u>3.3</u> / 32.8	
Coordinates				
Latitude/Northing: 32° 41' 19.806"		Longitude/Easting: 117° 08' 26.118"		
Weather and Wind Conditions: Sunny w/ light wind from W				
Predominant Current Direction: SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
13:48:56	10	7.2	8.0	1.7
14:30:50	10	7.2	8.0	0.9
Odor: <u>none</u> slight moderate strong H <sub>2</sub> S petroleum septic				
Presence of Surface Pollution: Y / <u>N</u>			Photograph(s) Taken: Y / <u>N</u>	
Discoloration or Turbidity: Y / <u>N</u>			Recorded by: CO	
Comments: Slight turbidity exceedance. No discoloration or visible turbidity. Will retake measurement at reference station and then retake at this station to confirm exceedance. Also notified Resident Engineer.  Attempt 2: Lat: 32° 41' 19.782" Long: 117° 08' 26.352" Turbidity dropped to 0.9 NTU when measurement re-taken. Reference station was consistent w/ previous measurement (1.1 NTU). Turbidity within 20% and confirmed not to be an exceedance.				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: <u>Flood</u> Ebb / Slack	
Station ID: D-COS-130930			Water Depth (ft): 34.4/34.6	
Coordinates				
Latitude/Northing: 32° 41' 15.696"		Longitude/Easting: 117° 08' 28.044"		
Weather and Wind Conditions: Sunny w/ light wind from W				
Predominant Current Direction: SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
14:42:29	10	7.5	8.0	1.5
14:50:48	10	7.4	8.0	1.2
Odor: <u>none</u> slight moderate strong H <sub>2</sub> S petroleum septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: CO	
Comments: Turbidity slightly more than 20% above the reference. No discoloration or surface pollution. Station upcurrent of dredging and does not appear to be a result of dredging. Will retake measurement at this station. Turbidity at reference station was already confirmed and did not change.  Turbidity re-taken and within 20% of reference. Appears to have been natural variability.  Lat: 32° 41' 15.582" Long: 117° 08' 28.302"				



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### Water Quality Sample Form

Project Name: San Diego Shipyard Sediment Site		Project Number: 131003-01.02		
Field Personnel: CO, DF		Date: 09.30.13	Tide: <u>Flood</u> / Ebb / Slack	
Station ID: D-CNS-130930			Water Depth (ft): 35.4	
Coordinates				
Latitude/Northing: 32° 41' 09.300"		Longitude/Easting: 117° 08' 24.642"		
Weather and Wind Conditions: Sunny w/ light wind from W				
Predominant Current Direction: SE				
Field Parameters				
Sample Time (hh:mm:ss)	Sample Depth (ft)	DO (mg/L)	pH	Turbidity (NTU)
15:04:26	10	7.4	8.0	1.3
Odor: <u>none</u> slight   moderate   strong   H <sub>2</sub> S   petroleum   septic				
Presence of Surface Pollution: Y/ <u>N</u>			Photograph(s) Taken: Y/ <u>N</u>	
Discoloration or Turbidity: Y/ <u>N</u>			Recorded by: CO	
Comments:				

ATTACHMENT C  
PHOTOGRAPHS

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Photographs were taken on October 1, 2013. Camera privileges were not cleared with security during monitoring on September 30.



**View northwest of silt curtains at SMU-4, October 1, 2013**



**View north of silt curtains at SMU-4, October 1, 2013**



**View northeast of silt curtains at SMU-4, October 1, 2013**