

TECHNICAL MEMORANDUM

To: David Gibson, San Diego Regional Water Quality Control Board

Date: October 14, 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) Weekly Water Column Monitoring Report: September 30 to October 4, 2013

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). 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.

Weekly monitoring reports are required in accordance with Mitigation Measure (MM) 4.2.4 of the Mitigation Monitoring and Reporting Program (MMRP; Water Board 2012b) and Appendix C of the Remedial Action Plan (Anchor QEA 2012). This technical memorandum summarizes results of water column monitoring between September 30 and October 4, 2013. During this week, monitoring was conducted on September 30 and October 1. Pre-construction monitoring was conducted on September 27 to provide baseline water quality data. Baseline data are also summarized herein. Water quality monitoring included dissolved oxygen (DO), pH, turbidity, and visual observations.

WATER QUALITY MONITORING RESULTS

DO, pH, and turbidity were measured 10 feet below the surface at each station using a Hydrolab MS5 multi-probe sonde. Baseline monitoring was performed at the reference station and 10 locations spatially distributed throughout the Site (Figures 1 and 2, respectively). The reference station was located 1,000 feet from the remedial footprint in the direction of the ocean. During dredging, monitoring was performed at the reference station, two early warning stations, and four compliance stations. Early warning and compliance stations were located 250 feet and 500 feet from the construction area, respectively. The general layout of early warning and compliance monitoring locations for Sediment Management Unit (SMU)-4 are shown on Figure 3; however, actual locations were positioned in the field relative to the construction area.¹

A summary of baseline monitoring results is presented in Table 1. A summary of monitoring results during dredging is presented in Table 2. During dredging, DO, pH, and turbidity results at each compliance station were compared to receiving water limitation compliance criteria. DO concentrations at all sampling locations ranged from 6.6 to 7.5 milligrams per liter (mg/L). Concentrations of pH at all sampling locations ranged from 7.9 to 8.0. Turbidity concentrations at all sampling locations ranged from 0.6 and 2.8 Nephelometric Turbidity Units (NTUs). Compliance criteria were not exceeded. No visual evidence of discoloration, turbidity, or surface pollution was observed. The double silt curtain was in place and no damage, dislocation, or gaps were observed.

¹ 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.

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.

TABLES

Table 1
Baseline Water Quality Monitoring Results

Date	Time	Station Type	Station ID	Latitude ¹	Longitude ¹	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

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

Table 2
Water Quality Monitoring Results During Dredging - September 30 through October 4, 2013

Date	Time	Station Type	Station ID	Latitude ¹	Longitude ¹	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 ²	No	No	No
9/30/2013	14:14:50	Reference	D-BG-130930	32.69161	-117.15027	7.1	8.0	1.1 ³	No	No	No
9/30/2013	14:30:50	Compliance	D-CON-130930	32.68883	-117.14065	7.2	8.0	0.9 ³	No	No	No
9/30/2013	14:42:29	Compliance	D-COS-130930	32.68769	-117.14112	7.5	8.0	1.5 ²	No	No	No
9/30/2013	14:50:48	Compliance	D-COS-130930	32.68766	-117.14120	7.4	8.0	1.2 ³	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
10/1/2013	12:51:58	Reference	D-BG-131001	32.69169	-117.15039	7.0	8.0	1.7	No	No	No
10/1/2013	13:17:52	Early Warning	D-EWS-131001	32.68691	-117.14014	7.1	8.0	1.6	No	No	No
10/1/2013	13:30:36	Early Warning	D-EWN-1001	32.68851	-117.13930	6.7	8.0	0.8	No	No	No
10/1/2013	13:39:06	Compliance	D-CNN-131001	32.68904	-117.13918	6.7	8.0	0.7	No	No	No
10/1/2013	13:55:42	Compliance	D-CON=131001	32.68914	-117.14016	7.0	8.0	1.7	No	No	No
10/1/2013	14:04:53	Compliance	D-COS-131001	32.68786	-117.14087	7.1	8.0	1.6	No	No	No
10/1/2013	14:34:48	Compliance	D-CNS-131001	32.68595	-117.14001	7.2	8.0	2.6 ²	No	No	No
10/1/2013	14:54:39	Reference	D-BG-131001	32.69180	-117.15039	7.0	8.0	2.8 ³	No	No	No
10/1/2013	15:06:42	Compliance	D-CNS-131001	32.68596	-117.13991	7.3	8.0	2.8 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 turbidity from 0 to 50 NTU).

DO = dissolved oxygen

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Units

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

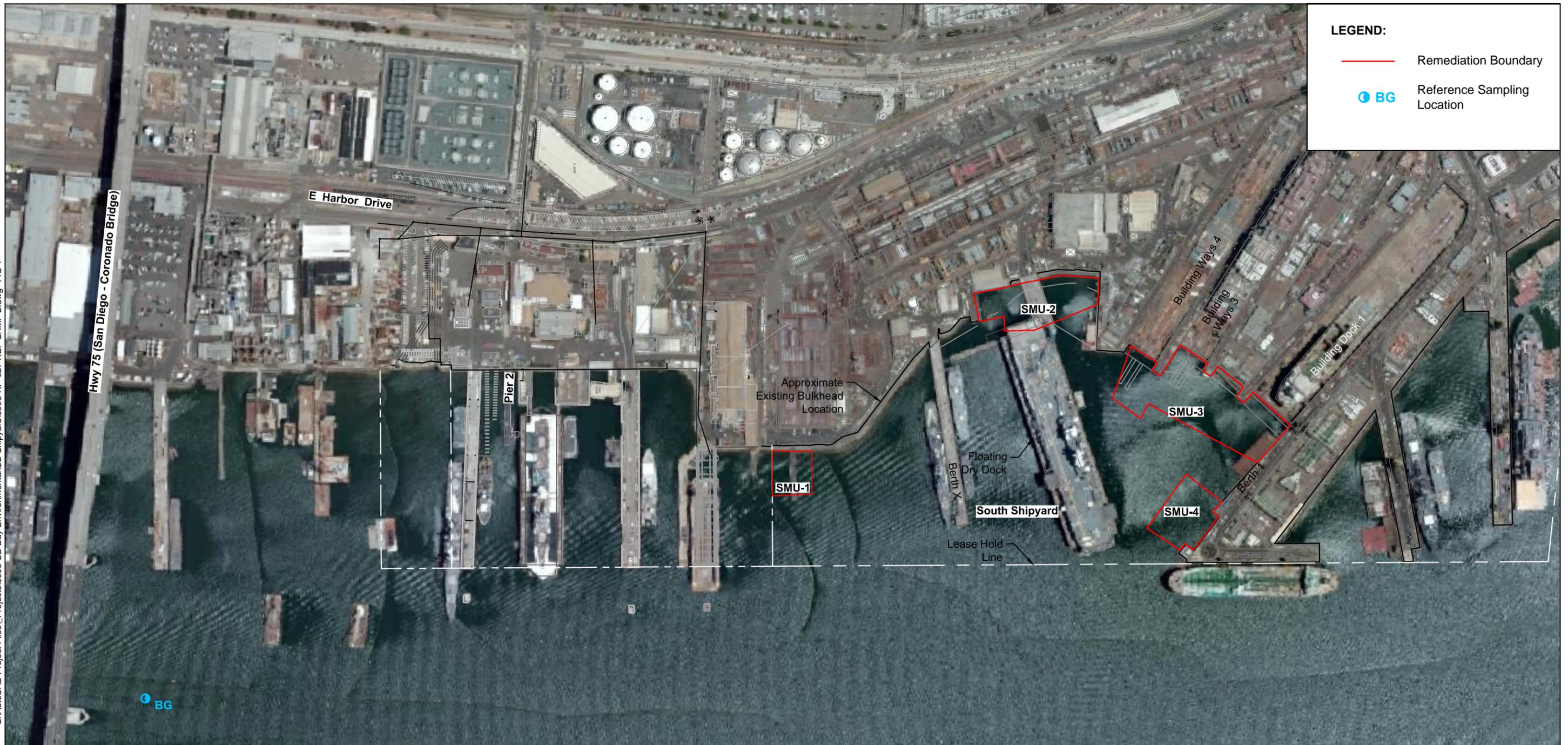
² Compliance station potentially exceeds receiving water limitation compliance criteria. Upon further investigation, potential exceedances were not confirmed.

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.

FIGURES

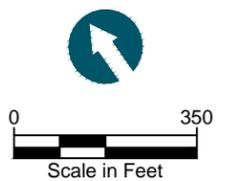
L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-027 REF SAMP 2.dwg FIG 1

Oct 14, 2013 2:36pm mpraischmer



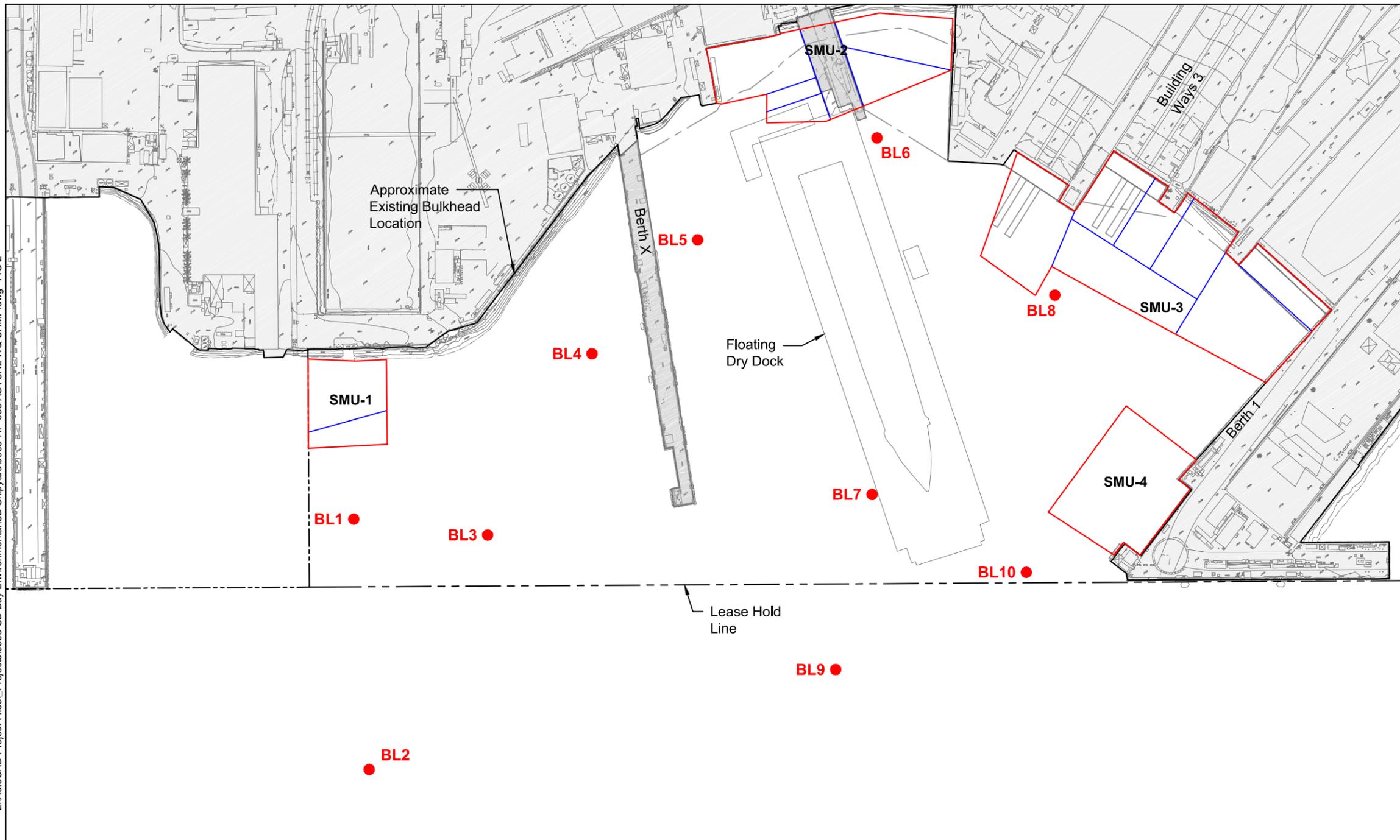
SOURCE: Aerial from ESRI base maps. Upland topography from Digital Mapping Inc., September, 2009 and supplemented by Environmental Data Solutions survey dated April 13, 2013.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83, U.S. Feet.

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



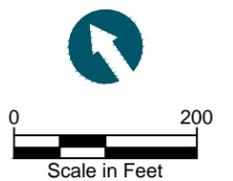
L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-038 ACTUAL WQ SAMP.dwg FIG 2

Oct 11, 2013 12:08pm mpratschner

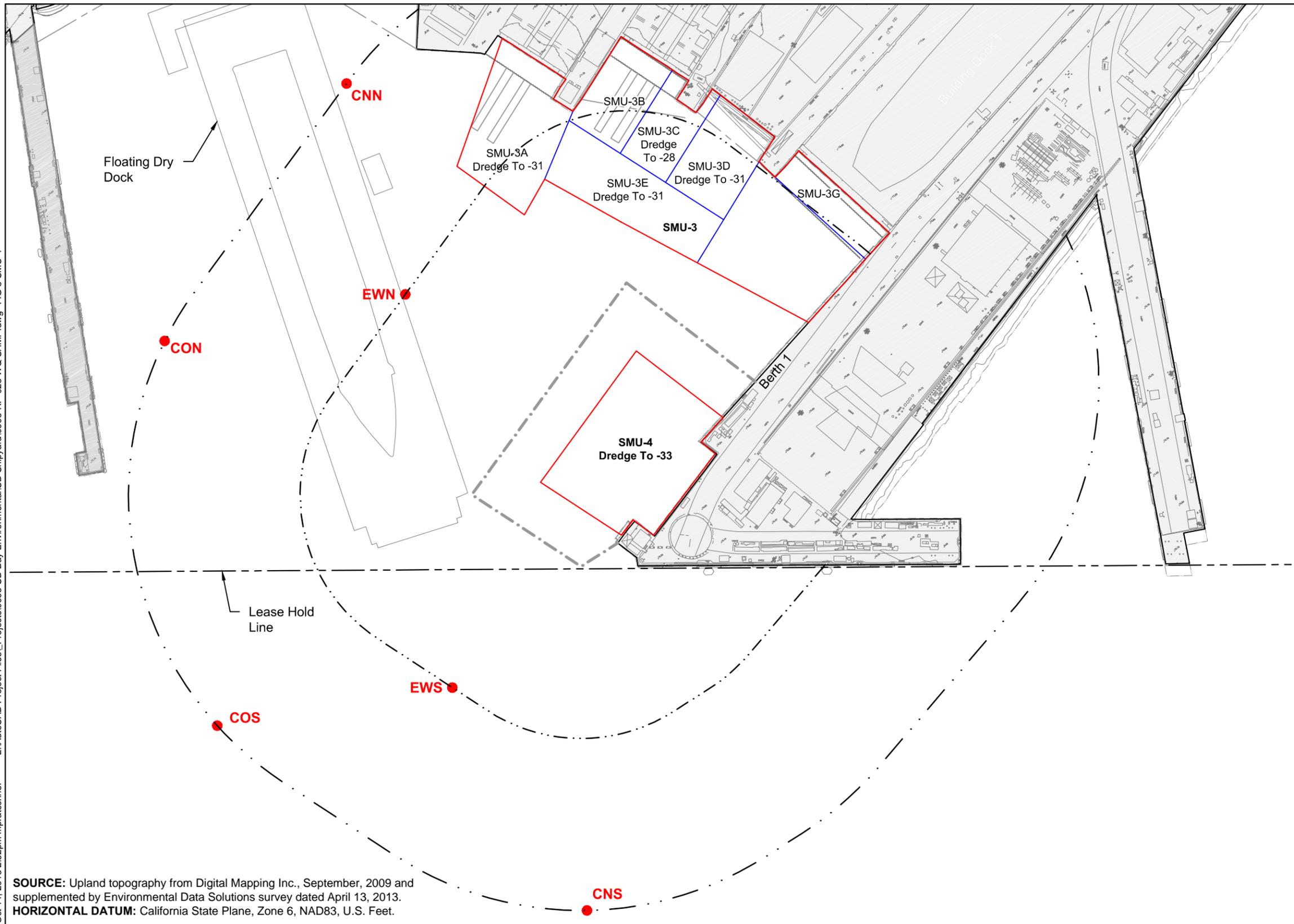


- LEGEND:**
- Remediation Boundary
 - Sub-SMU Boundary
 - BL# Baseline Sampling Location

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.



L:\AutoCAD Project Files\Projects\0995-SD Bay Environmental\SD Shipyard\0995-RP-023 WQ SAMP.dwg FIG 3 SMU-4
 Oct 14, 2013 2:52pm 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.

