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TECHNICAL MEMORANDUM

To:	David Gibson, San Diego Regional Water Quality Control Board	**Date:**	March 28, 2014
From:	Chris Osuch, Adam Gale, and Elizabeth Appy, Anchor QEA	**Project:**	131003-01.02
Cc:	Michael Chee, National Steel and Shipbuilding Company Michael Palmer, de maximis, inc. David Templeton and Michael Whelan, Anchor QEA 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: March 17 to 22, 2014		

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 and sand placement operations in order to comply with the Waste Discharge Requirements and Section 401 Water Quality Certification (WDR/WQC; Water Board 2013). Anchor QEA 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 March 17 and 22, 2014. During this week, monitoring was conducted on March 17. 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 Horiba U52 multi-probe sonde. Monitoring was performed at the reference station, two early warning stations, and four compliance stations. The reference station is located 1,000 feet from the remedial footprint in the direction of the ocean (Figure 1). Early warning and compliance stations are located 250 and 500 feet from the construction area, respectively. The general layout of early warning and compliance monitoring locations for Sediment Management Unit (SMU)-2 are shown on Figure 2; however, actual locations were positioned in the field relative to the construction area.[1]

A summary of monitoring results during sand placement is presented in Table 1. Concentrations of pH were elevated slightly above compliance criteria at all stations. Calibration logs were checked, and the meter appeared to be working properly. Concentrations were consistent with the reference station; therefore, elevated concentrations were not attributed to sand placement operations. All other compliance criteria were met. No visual evidence of discoloration, turbidity, or surface pollution was observed. The silt curtain was in place, and no damage, dislocation, or gaps were observed during the monitoring.

REFERENCES

Anchor QEA, 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.

[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.

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.

TABLE

Table 1

Water Quality Monitoring Results During Material Placement - March 17 through 22, 2014

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
3/17/2014	12:32:00	Reference	P-BG-140317	32.69163	-117.15029	8.5	9.1[2]	1.5	No	No	No
3/17/2014	12:56:10	Early Warning	P-EWN-140317	32.68924	-117.14058	7.9	9.1[2]	1.1	No	No	No
3/17/2014	13:03:16	Compliance	P-CNN-140317	32.68938	-117.14191	8.1	9.1[2]	1.5	No	No	No
3/17/2014	13:08:09	Compliance	P-CON-140317	32.68829	-117.14146	8.0	9.1[2]	1.7	No	No	No
3/17/2014	13:13:43	Early Warning	P-EWS-140317	32.68859	-117.13919	9.4	9.2[2]	2.5[3]	No	No	No
3/17/2014	13:17:17	Compliance	P-CNS-140317	32.68790	-117.13855	8.3	9.1[2]	0.0	No	No	No
3/17/2014	13:22:39	Compliance	P-COS-140317	32.68775	-117.13960	8.1	9.1[2]	1.6	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 units 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 Latitude and longitude coordinates in decimal degrees, North American Datum 1983 (NAD83)

2 Early warning, compliance, and reference stations all exceeded receiving water limitation compliance criteria for pH. Concentrations were consistent with the reference station and therefore not attributed to sand placement operations.

3 Early warning station results exceeded receiving water limitation compliance criteria for turbidity. These results were used as an early indicator of a potential water quality issue. Compliance stations met criteria; therefore, compliance criteria were not exceeded.

FIGURES

SOURCE: Aerial from ESRI base maps. Upland topography from Digital Mapping Inc., dated 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'

0 350
Scale in Feet

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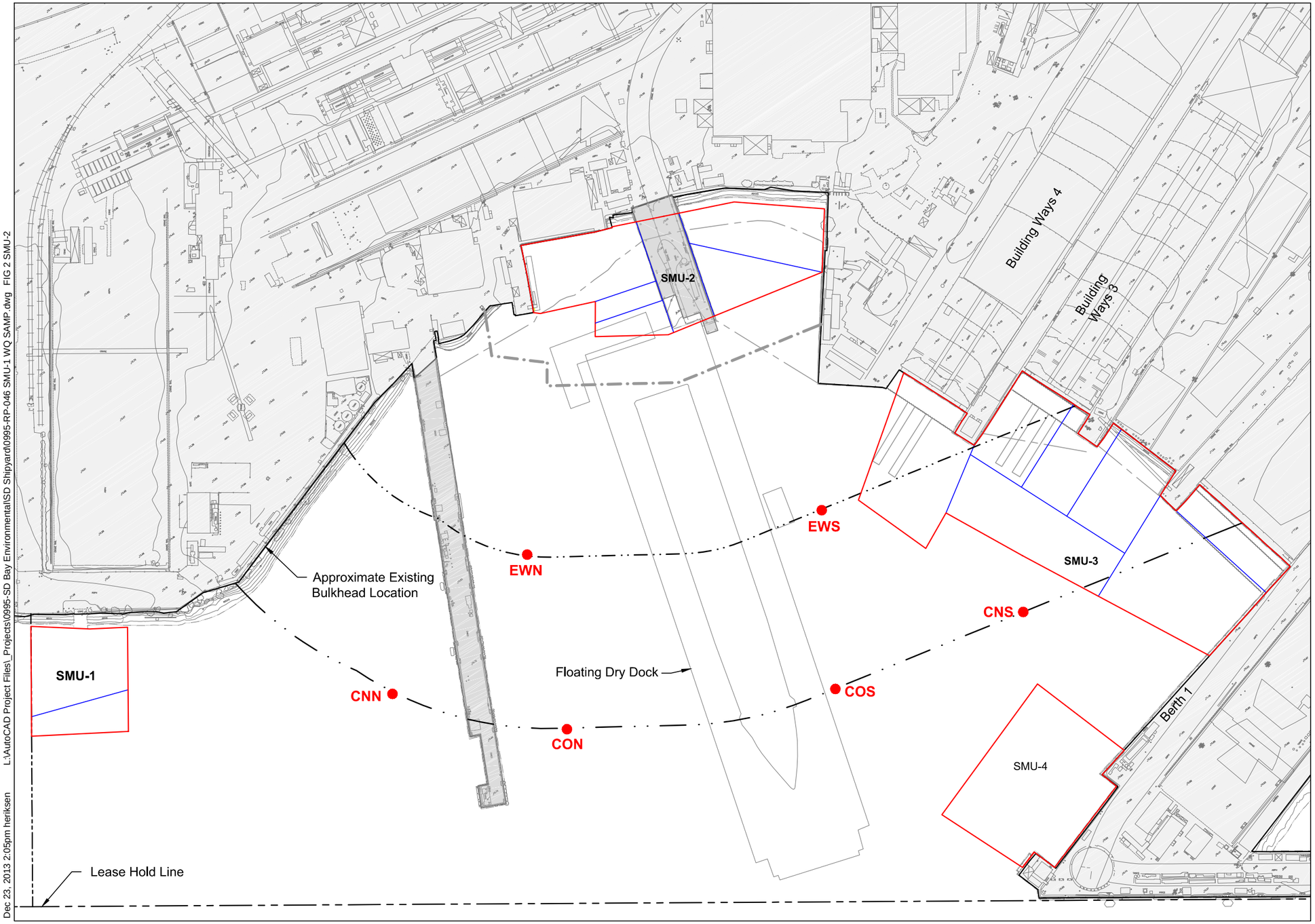
Figure 1
Water Quality Reference Sampling Location
San Diego Shipyard Sediment Site - South Shipyard



LEGEND:

- Remediation Boundary
- Sub-SMU Boundary
- 250 ft from Construction Area
- 500 ft from Construction Area
- XXX ● 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

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

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

0 150
Scale in Feet

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Figure 2
General Layout of Water Quality Sampling Locations for SMU-2
San Diego Shipyard Sediment Site - South Shipyard