

LABORATORY COMMUNICATION PLAN

TERMINAL 4 PHASE I REMOVAL ACTION PORT OF PORTLAND, PORTLAND OREGON

Prepared for

Port of Portland
Portland, Oregon

Prepared by

Anchor Environmental, L.L.C.
6650 SW Redwood Lane, Suite 333
Portland, Oregon 97224

August 2008



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1 INTRODUCTION

This document summarizes the plan for communication and reporting of analytical results between the U.S. Environmental Protection Agency (USEPA); Anchor Environmental, L.L.C. (Anchor); Analytical Resources, Incorporated (ARI); and Apex Laboratories (Apex) during the upcoming Port of Portland (Port) Terminal 4 Phase I Removal Action project.

1.1 Purpose

The objective of water quality monitoring during Phase I Removal Action construction activities is to confirm that water quality criteria are met, or to ensure approval to allow temporary exceedances of water quality standards during any construction activity that may affect the water column. This plan was requested by USEPA to ensure that project-specific turnaround times for reporting of analytical results will be achieved throughout the project.

1.2 Water Quality Monitoring Overview

Water quality monitoring will occur during the following in-water construction activities:

- Berth 411 “Plus” dredging (Slip 3 and Berth 414)
- Berth 411 sand layer placement
- Capping in Slip 3
- Berth 410 dredging
- Transport and transfer of materials from barge to upland transport at an upland transfer facility
- Wheeler Bay shoreline stabilization

Appendix B of the Phase I Design Analysis Report (Anchor 2008) details the water quality monitoring activities and protections that will be implemented during the Phase I Removal Action to minimize adverse impacts to water quality during Phase I capping and dredging operations.

The parameters to be monitored are total suspended solids (TSS); dissolved cadmium, lead, and zinc; and polynuclear aromatic hydrocarbons (PAHs). Samples will be collected daily for the Tier I schedule and once per week for the Tier II schedule (see Appendix B of Anchor 2008 for criteria for tiered collection).

One hundred and fifty (150) chemistry samples are estimated during the anticipated 7-week duration of the in-water portion of the project, assuming, at a minimum, that chemical analysis will follow the Tier I schedule for the entire 7 weeks (i.e., three discrete samples from the compliance boundary station with the highest turbidity readings and three discrete samples from the background station, for a total of six analyses per day, for an estimated 25 days of monitoring). The expected number of samples that may be generated each day following the Tier I schedule would be six, assuming only one construction activity will be occurring at any one time. For the purposes of this plan, it is conservatively assumed that a Tier I schedule will be followed throughout the project.

2 PROJECT ORGANIZATION AND RESPONSIBILITIES

2.1 USEPA

USEPA's responsibilities include:

- Identifying a primary and secondary USEPA project manager.
- Ensuring the primary or secondary USEPA contacts are available when results or updates on data are expected. Contingent response actions may need to be determined immediately.

2.2 Port

The Port's responsibilities include:

- Coordinating and communicating regularly with USEPA.
- Notifying USEPA of deviations from the requirements listed in the Laboratory Communication Plan, Water Quality Monitoring Plan, and Water Quality Monitoring and Compliance Conditions Plan (WQMCCP).

2.3 Anchor

Anchor's responsibilities include:

- Managing the analytical laboratories and the reporting of results on behalf of the Port.
- Identifying a project manager, laboratory communication designee, and an alternate designee.
- Attending a project kick-off meeting.

-
- Providing a copy of the WQMCCP to the laboratories to aid in their understanding of the actions thresholds for the project, and to aid in their early reporting regarding whether sample concentrations are above these thresholds.
 - Communicating with the laboratory project managers daily in a status phone call as to sample status, issues encountered, and sample loading concerns, as well as any other pertinent project concerns.
 - Conducting a daily status meeting after the laboratory status meeting and receipt of sample data for that day. During the status meeting, the Anchor project manager and Anchor designee will review current sampling status to laboratories, data status, analytical issues (if necessary), and quality assurance/quality control (QA/QC) issues (if necessary).

2.4 Primary Laboratory (ARI)

ARI's responsibilities include:

- Identifying a laboratory project manager and an alternate designee.
- Attending a project kick-off meeting.
- Dedicating one primary and one back-up instrument and chemist to perform each analysis type.
- Analyzing samples according to the specifications in the project Quality Assurance Project Plan (QAPP; Appendix I of Anchor 2008).
- Communicating with the Anchor designee daily in a status phone call as to sample status, issues encountered, and sample loading concerns, as well as any other pertinent project concerns.
- Providing primary and contingent procedures to deal with out-of-control data that could have bias on the data prior to project initiation. More complex issues will be dealt with on a daily basis by the laboratories and Anchor designee.
- Identifying cleanup procedures prior to the start of the project, which will allow the chemist to perform the approved cleanup procedures as they occur under normal foreseeable circumstances (e.g., internal standard problems, matrix effects), rather than wait.

2.5 Secondary Laboratory (Apex)

Apex's responsibilities include all of the same responsibilities as the primary laboratory, other than dedicating one primary and one back-up instrument and chemist to perform each analysis type.

2.6 Key Staff

Contact information for key staff (and secondary contacts) identified by USEPA, Anchor, ARI, and Apex is provided in Table 1.

3 TURNAROUND TIMES AND REPORTING SPECIFICATIONS

Preliminary, unvalidated laboratory chemical analytical results (TSS, target metals, and PAHs) will be reported to USEPA no more than 3 days (72 hours) following sample receipt by the laboratory. Any change between preliminary results and final results will be reported as soon as possible. USEPA will be informed and updated daily on the status of the data during a daily status call. These reporting timelines will apply to samples collected on both weekdays and weekends.

In addition, Anchor will report to USEPA when detections have been made, as well as information on calibrations that have been exceeded. This information can be useful in approximating a chemistry "hit" that can be used to begin to trigger low cost best management practices (BMPs) while awaiting quantitative laboratory confirmation. The laboratories will notify the Anchor designee at the earliest possible time of identification of significant high concentration results in water quality samples that are expected to be clean.

3.1 Plan for Meeting Project Turnaround Times

ARI, as the primary laboratory, will dedicate one primary and one back-up instrument and chemist to perform each analysis type to facilitate meeting the project turnaround times. Figure 1 provides a flowchart illustrating the laboratory communication plan for meeting turnaround times, beginning with an assessment of laboratory capacity. At the time of collection of samples in the field, the Anchor designee will contact ARI to determine if the laboratory has the capacity to handle the collected samples. The samples will be transported to ARI unless they do not have the capacity to handle the samples. If this happens, the samples will be transported to Apex. Daily status calls will be held between

Anchor, ARI, and Apex to determine the status of analyses and if any issues have arisen that will affect the laboratory's ability to meet the specified turnaround time. If, during the meeting, it is determined that ARI is not meeting its goals, Apex will be utilized until ARI is on track again. Anchor and ARI will discuss the reason for delayed sample results, if any, and a path forward for continuing the analyses. This information will be reviewed with USEPA during the daily status call.

Additionally, any instrument malfunctions must be communicated to the Anchor project manager or their designee on the day they occur. This will allow for Apex to receive samples the same day that they are taken. Any QA/QC issues will be brought to the attention of the Anchor project manager on the day they occur so that resolution can be made the same day, preventing the delay of sample processing.

3.2 Sample Handling and Transport

Once samples have been collected, they will be transported to the laboratory by a courier service. The Anchor designee will contact ARI (or Apex) when it is known that there will be samples to be picked up by the courier service at the field site. Samples will be transported such that they arrive at the laboratory within 14 hours of the time of sampling.

For weekend sample receipt, the laboratories will identify a phone number and person(s) responsible for receiving the samples, logging in the samples, and communicating any log-in issues. This will prevent log-in delays during the off-hour shifts. The Anchor designee will be responsible for following up with the laboratory on the daily sample receipts.

4 REPORTING

Prior to release, data will be reviewed by the analyst to verify initial calibration, continuing calibrations, tunes, internal standards, surrogates, and compliance of the Method Blank and Laboratory Control sample. If all QC requirements pass and the Laboratory Manager or Laboratory Supervisor is in attendance, the data will be reviewed by the Laboratory Manager or Laboratory Supervisor, released to the Laboratory Information Management System (LIMS), printed, and signed before distribution to USEPA.

There may be occasions where a data reviewer may not always be available within a reasonable timeframe. In those circumstances, assuming the QC requirements pass, USEPA will occasionally accept receiving the data in a preliminary format with information that the QC requirements were met and that a final review is still required and will be forwarded as soon as reasonably practical.

Results compared against applicable water quality criteria will be reported to the Anchor project manager or designee within 72 hours of sample receipt via email (Adobe PDF or Microsoft Excel format). The template for reporting the results is described below in Section 4.1.1. Occasional unreviewed data will be accepted as preliminary results. A final review must occur within a timeframe that is reasonably practical, and reviewed results reported to Anchor. The data will be forwarded to USEPA immediately.

4.1 Submittals

Field parameter data will be collected by Anchor and recorded in the field on water quality monitoring forms. Additional data will be reported by the analytical laboratories. All data will be reported as described below.

4.1.1 Daily Reporting

Field and laboratory sampling results, including any exceedances of the water quality criteria specified in Section 2.6 and Table 2 of Anchor 2008, Appendix B, will be reported verbally or by email to USEPA on a daily basis. A Daily Reporting Template for Field Parameters that will be utilized by Anchor is provided as Attachment A. A Daily Reporting Template for Analytical Parameters that will be utilized by the laboratories and Anchor is provided as Attachment B.

4.1.2 Weekly Reporting

The daily reports will be compiled into a summary report that will be provided to USEPA on a weekly basis.

4.1.3 Follow-up Reporting

Follow-up reports related to any pending data or data that has been updated will be provided along with the daily reporting schedule.

5 SAMPLING AND REPORTING SCHEDULE

See Figure 2 for a schedule that depicts the expected sampling days when construction activity is expected to be monitored, as well as which days data are expected to be reported. Sampling and reporting activity will occur on weekend days.

6 REFERENCES

Anchor. 2008. Final Design Analysis Report: Terminal 4 Phase I Removal Action. Prepared for the Port of Portland by Anchor Environmental, L.L.C. June 2008.

ATTACHMENTS

**Table 1
Contact Information for Key Staff**

Role	Company	Contact	Address	Cell	Office	Email
USEPA Project Manager	USEPA	Sean Sheldrake	1200 Sixth Avenue Suite 900 M/S ECL-115 Seattle, WA 98101	Note ¹	(206) 553-1220	Sheldrake.Sean@epamail.epa.gov
USEPA Project Manager – Secondary contact	USEPA	To Be Determined	To Be Determined	To Be Determined	To Be Determined	To Be Determined
Anchor Project Manager	Anchor Environmental, L.L.C.	Ben Hung	6650 SW Redwood Lane Suite 333 Portland, OR 97224	(971) 678-2100	(503) 670-1108 Ext. 21	bhung@anchorenv.com
Anchor Project Manager – Secondary contact	Anchor Environmental, L.L.C.	Elizabeth Appy	6650 SW Redwood Lane Suite 333 Portland, OR 97224	(503) 460-7504	(503) 670-1108 Ext. 22	eappy@anchorenv.com
Anchor Designee	Anchor Environmental, L.L.C.	Julie Fox	6650 SW Redwood Lane Suite 333 Portland, OR 97224	--	(503) 670-1108 Ext. 20	jfox@anchorenv.com
Q.A. Manager	Anchor Environmental, L.L.C.	Delaney Peterson	1423 Third Avenue Suite 300 Seattle, WA 98101	--	(206) 287-9130	dpeterson@anchorenv.com
Q.A. Manager – Secondary contact	Anchor Environmental, L.L.C.	Joy Dunay	1423 Third Avenue Suite 300 Seattle, WA 98101	(206) 909-0776	(206) 287-9130	jdunay@anchorenv.com
Anchor Database	Anchor Environmental, L.L.C.	Lisa Allen	1423 Third Avenue Suite 300 Seattle, WA 98101	--	(206) 287-9130	lallen@anchorenv.com
Primary Laboratory	Analytical Resources, Inc.	Sue Dunnihoo	4611 South 134 th Place Suite 100 Tukwila, WA 98168	(425) 273-3536	(206) 695-6200	sue@arilabs.com
Primary Laboratory – Secondary contact	Analytical Resources, Inc.	Kelly Bottem	4611 South 134 th Place Suite 100 Tukwila, WA 98168	--	(206) 695-6200	Kelly@arilabs.com
Primary Laboratory – Sample receiving	Analytical Resources, Inc.	Brian Kagel	4611 South 134 th Place Suite 100 Tukwila, WA 98168	(360) 970-8866	(206) 695-6200	sue@arilabs.com

**Table 1
Contact Information for Key Staff**

Role	Company	Contact	Address	Cell	Office	Email
Secondary Laboratory	Apex Laboratories, LLC	Darwin Thomas	12232 SW Garden Place Tigard, OR 97223	(503) 970-5500	(503) 718-2323	dthomas@apex-labs.com
Secondary Laboratory – Secondary contact	Apex Laboratories, LLC	Philip Nerenberg	12232 SW Garden Place Tigard, OR 97223	(503) 523-6123	(503) 718-2323	PNerenberg@Apex-Labs.com
Secondary Laboratory – Sample receiving	Apex Laboratories, LLC	Darwin Thomas	12232 SW Garden Place Tigard, OR 97223	(503) 970-5500	(503) 718-2323	dthomas@apex-labs.com

Note:

1. Sean Sheldrake's cell phone number will be provided to key staff for use when reporting water quality exceedances.

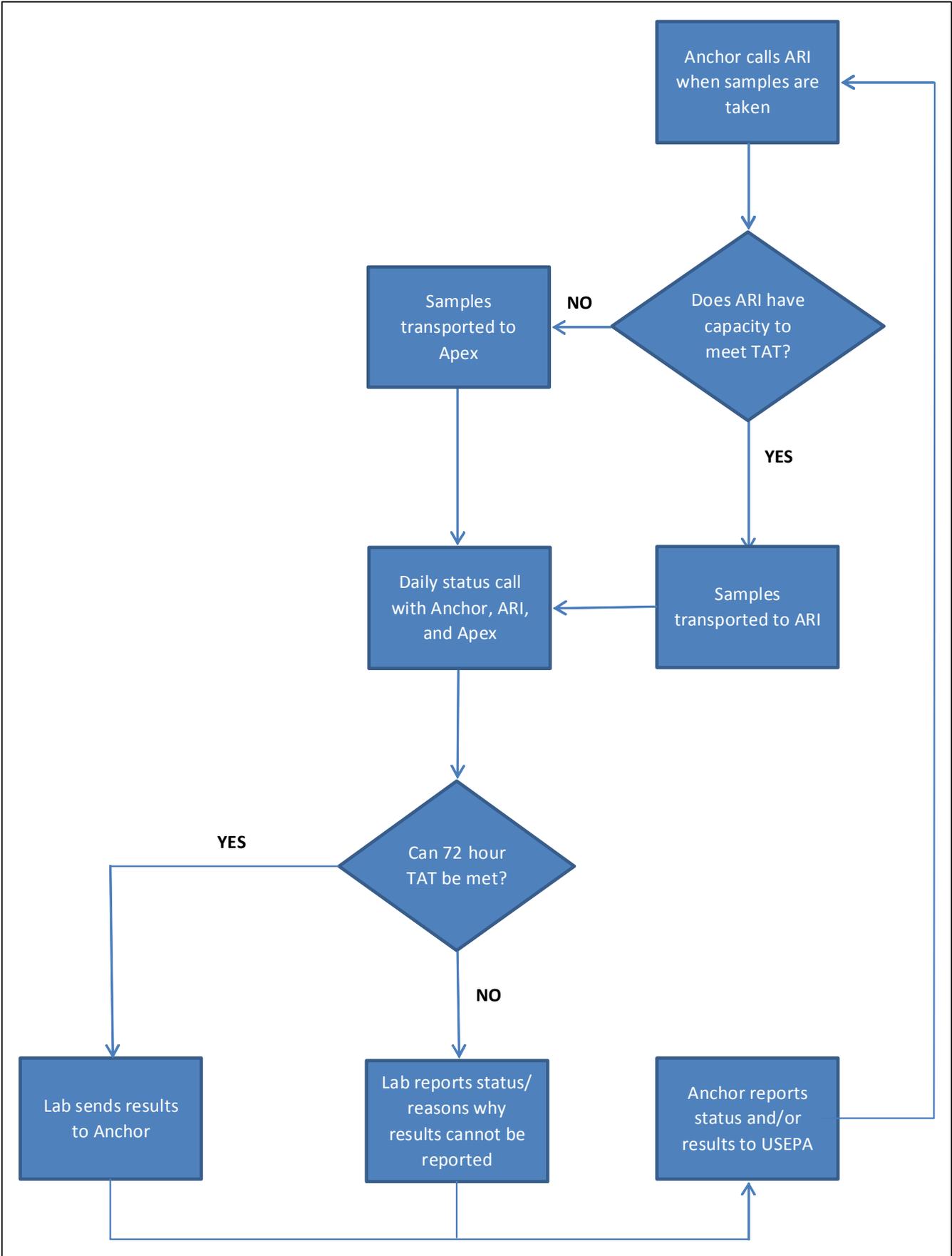


Figure 1
 Laboratory Communication and Reporting Flow Chart
 Terminal 4 Phase I Removal Action – Laboratory Communication Plan
 Portland, Oregon

Sampling and Reporting Field Schedule for Port of Portland Terminal 4 Phase I Removal Action

Sun		Monday		Tuesday		Wednesday		Thursday		Friday		Sat	
3		4		5		6		7		8		9	
August													
10		11	Dredge B414	12	Dredge Center Square	13		14		15		16	
		Sampling Scheduled		Sampling Scheduled				Expect results from 8/11 sampling		Expect results from 8/12 sampling			
17		18		19	Dredge B411	20	Dredge B411	21	Dredge B411 Clean-up	22	Dredge B411	23	Dredge B411
		Water and Soil Sampling Scheduled		Sampling Scheduled		Sampling Scheduled		Sampling Scheduled Expect Water and Soil results from 8/18 sampling		Sampling Scheduled Expect results from 8/19 sampling		Sampling Scheduled Expect results from 8/20 sampling	
24	Dredge B411	25	Dredge B411	26	Dredge B411 AM Survey PM	27	B411 Analysis	28	Dredge B411 Clean-up	29		30	
Sampling Scheduled Expect results from 8/21 sampling		Sampling Scheduled Expect results from 8/22 sampling		Sampling Scheduled Expect results from 8/23 sampling		Expect results from 8/24 sampling		Sampling Scheduled Expect results from 8/25 sampling		Expect results from 8/26 sampling			
31		1		2		3		4	Sand Layer	5	Sand Layer	6	Dredge B410
Expect results from 8/28 sampling		September						Sampling Scheduled		Sampling Scheduled		Sampling Scheduled	
7	Dredge B410	8	Dredge B410	9	Slip 3 Cap (Base)	10	Slip 3 Cap Survey	11	Slip 3 Cap (Armor)	12	Slip 3 Cap (Armor)	13	Slip 3 Cap Survey
Sampling Scheduled Expect results from 9/4 sampling		Sampling Scheduled Expect results from 9/5 sampling		Sampling Scheduled Expect results from 9/6 sampling		Expect results from 9/7 sampling		Sampling Scheduled Expect results from 9/8 sampling		Sampling Scheduled Expect results from 9/9 sampling		Sampling Scheduled	
14		15		16	Dredge B410	17	Dredge B410	18	Dredge B410	19	Dredge B410	20	Dredge B410
Sampling Scheduled Expect results from 9/11 sampling		Sampling Scheduled Expect results from 9/12 sampling		Sampling Scheduled Expect results from 9/13 sampling		Sampling Scheduled Expect results from 9/14 sampling		Sampling Scheduled Expect results from 9/15 sampling		Sampling Scheduled Expect results from 9/16 sampling		Sampling Scheduled Expect results from 9/17 sampling	
21		22		23		24	B410 Survey	25	B410 Analysis	26	Dredge B410 Clean-up	27	
Expect results from 9/18 sampling		Expect results from 9/19 sampling		Expect results from 9/20 sampling						Sampling Scheduled			
28		29		30		1		2		3		4	
		Expect results from 9/26 sampling		Soil Sampling Scheduled		October				Expect results from 9/30 Soil sampling			

Attachment A
Daily Reporting Template for Field Parameters

Date: _____					
Time: _____					
Construction Activity: _____					
Round of Sampling for Day (eg., 1st of 3 events): _____					
Additional Comments: _____					
Water Velocity (fps) _____					
Station ID: Background					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: Early Warning					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: North					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: Middle					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: South					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: Turbidity -- Early Warning					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: Turbidity -- North					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: Turbidity -- Middle					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					
Station ID: Turbidity -- South					
Water Depth (ft)		Parameters			
Depth to Bottom		DO (mg/L)	Temp (°C)	Turb. (NTU)	pH
Depth 1					
Depth 2					
Depth 3					

Notes:

If turbidity criteria are not exceeded at the monitoring locations 100 meters from the center of the construction activity, then field parameter monitoring of turbidity 100 meters from the harbor line will not be performed or reported.

_____ results may trigger response actions if deemed to have been caused by construction activities.

Trigger:

- Water Velocity (fps) 1.0 fps or higher
- DO (mg/L) < 6.5 modify operations; < 6.0 cease operations
- Turbidity (NTU) > 5 NTU over background (where background < 50 NTU) or 10% over background (where background > 50 NTU); > 50 NTU over background, cease operations
- pH (Standard Units) < 6.5 or > 8.5

Attachment B
Daily Reporting Template for Laboratory Parameters

Date: 										
Time: _____										
On-Time Result or Update: _____										
Construction Activity: _____										
Round of Sampling for Day (eg., 1st of 3 events): _____										
Additional Comments: _____										
Sample I.D.:										
Parameter	Units	Acute Criterion	Chronic Criterion	Highest Background*	Background Location			Construction Location		
					Top	Middle	Bottom	Top	Middle	Bottom
Conventional Parameters										
Total Suspended Solids (TSS)	mg/L	--	--	TBD						
Metals^[6]										
Cadmium	µg/L	0.5	0.09	TBD						
Lead	µg/L	14	0.54	TBD						
Zinc	µg/L	36	36	TBD						
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	µg/L	807	194	TBD						
Acenaphthylene	µg/L	1277	307	TBD						
Acenaphthene	µg/L	233	56	TBD						
Fluorene	µg/L	162	39	TBD						
Phenanthrene	µg/L	79	19	TBD						
Anthracene	µg/L	87	21	TBD						
Fluoranthene	µg/L	30	7.1	TBD						
Pyrene	µg/L	42	10	TBD						
Benzo(a)anthracene	µg/L	9.2	2.2	TBD						
Chrysene	µg/L	8.3	2.0	TBD						
Benzo(b)fluoranthene	µg/L	2.8	0.68	TBD						
Benzo(k)fluoranthene	µg/L	2.7	0.64	TBD						
Benzo(a)pyrene	µg/L	4.0	0.96	TBD						
Indeno(1,2,3-cd)pyrene	µg/L	1.2	0.28	TBD						
Dibenzo(a,h)anthracene	µg/L	1.2	0.28	TBD						
Benzo(g,h,i)perylene	µg/L	1.8	0.44	TBD						

Notes:

N/AV - Result not yet available

ND - Non Detect

J - Not within quality control limits, estimated data

Above chronic criterion and background (and data not yet qualified)

Above acute criterion and background (and data not yet qualified)

* Value is the 90th percentile background value calculated during pre-construction, or the value of the highest background sample taken on the same day (whichever is higher).