SEDIMENT CHARACTERIZATION REPORT

SKAGWAY ORE DOCK AND SMALL BOAT HARBOR DREDGING

GATEWAY INTERMODAL DOCK RECONSTRUCTION PROJECT AND LEGACY HARBOR CONTAMINANT MITIGATION PROGRAM

Prepared for

Alaska Department of Environmental Conservation

U.S. Environmental Protection Agency

U.S. Army Corps of Engineers

On Behalf Of

Municipality of Skagway, Alaska

Prepared by

Anchor QEA, LLC

645 G Street, #821

Anchorage, Alaska 99501

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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
µg/kg	microgram per kilogram
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AET	Apparent Effects Threshold
AIDEA	Alaska Industrial Development and Export Authority
bgs	below ground surface
BODR	Basis of Design Report
CCC	criterion chronic concentration
CFR	Code of Federal Regulations
CMC	criterion maximum concentration
COC	chain-of-custody
DMMP	Dredged Material Management Program
DMMU	dredged material management unit
DQO	data quality objective
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
Gateway SAP	ADEC-approved Sampling and Analysis Plan (Anchor QEA 2014)
GRO	gasoline range organics
H:V	horizontal to vertical
HPAH	high-molecular-weight polycyclic aromatic hydrocarbon
IDW	investigation-derived waste
mg/kg	milligram per kilogram
MOS	Municipality of Skagway
NRWQC	National Recommended Water Quality Criteria
ng/kg	nanogram per kilogram
Ore Dock	Skagway Ore Dock
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
Project	Gateway Intermodal Dock Redevelopment Reconstruction Project and Legacy Harbor Contaminant Mitigation Program in Skagway, Alaska

QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RRO	residual range organics
SAP	Sampling and Analysis Plan
SBH	Small Boat Harbor
SBLT	Sequential Batch Leachate Test
SCO	Sediment Cleanup Objective
SMS	Sediment Management Standards
SOT	Skagway Ore Terminal
SVOC	semivolatile organic compound
TAqH	total aqueous hydrocarbon
TBT	tributyltin
TCLP	Toxicity Characteristic Leaching Procedure
TEL	threshold effects level
TEQ	toxic equivalents
TIC	total inorganic carbon
TOC	total organic carbon
TS	total solids
TVS	total volatile solids
Upland SAP	ADEC-approved SOT Uplands Sampling and Analysis Plan for Coordinated Gateway Programming ’23 (Gubala 2015)
WAC	Washington Administrative Code

1 INTRODUCTION

This Sediment Characterization Report describes the sediment sampling and analysis activities completed in support of planned remedial dredging as part of the Gateway Intermodal Dock Redevelopment Reconstruction Project and Legacy Harbor Contaminant Mitigation Program in Skagway, Alaska (Project). In addition, this report presents the results of sediment sampling associated with the nearby Small Boat Harbor (SBH) and upland soil sampling and analysis completed at the adjacent Skagway Ore Terminal (SOT). The following three adjacent areas were included as part of the sampling program: 1) the sediment area offshore of the Skagway Ore Dock (Ore Dock); 2) the SBH; and 3) the SOT uplands (Figure 1). The Ore Dock, SBH, and SOT uplands are owned by the Municipality of Skagway (MOS); the SOT uplands are leased by the Alaska Industrial Development and Export Authority (AIDEA).

Anchor QEA conducted subsurface sediment sampling at the Ore Dock and SBH in January 2015 on behalf of the MOS. The objectives of the Ore Dock investigation were to provide data to evaluate the nature and extent of legacy contamination, provide data to develop a remedial plan to address sediment contamination through dredging at the Ore Dock, and determine the suitability of dredge material for beneficial reuse as fill during future construction of the Project wharf structure or at another location in Skagway. The extent of remedial dredging at the Ore Dock is driven by the presence of contamination and Project redevelopment requirements. The Alaska Department of Environmental Conservation (ADEC)-approved Sampling and Analysis Plan (Gateway SAP; Anchor QEA 2014) presented dredged material management units (DMMUs; i.e., DMMUs 1 to 5; Figures 2a to 2c) that were developed to cover the theoretical maximum extent of dredging considered prior to data collection. Based on the results of Ore Dock sediment analyses (i.e., of discrete sample intervals), the Ore Dock dredge area has been significantly reduced to include only those areas that are impacted by metals and/or polycyclic aromatic hydrocarbons (PAHs; further described in Section 4). The Ore Dock DMMU composite samples described in subsequent sections of the report reflect the original DMMUs described in the Gateway SAP, and are only partially representative of the remedial dredge units being developed as part of the remedial design to be presented in the forthcoming Project Basis of Design Report (BODR).

The purpose of the SBH investigation was to support potential dredging in the SBH that will allow for expanded access for vessels, meet moorage needs, and generate wharf fill material, if needed. Sediment to be dredged at the Ore Dock and SBH are not proposed for unconfined open-water disposal. Ore Dock and SBH sediment were sampled and analyzed in accordance with the Gateway SAP (Anchor QEA 2014).

As an add-on to the ADEC-approved Gateway SAP (Anchor QEA 2014), the MOS and AIDEA requested sampling and analysis of soils from the SOT uplands in order to provide additional environmental and geotechnical information to support expansion of the Ore Terminal infrastructure, and to support environmental considerations of the engineering design such as materials handling, storage, and disposal. Upland soil sampling and analyses were completed by Anchor QEA and Hart Crowser, concurrent with the Gateway SAP, in accordance with the ADEC-approved SOT Uplands Sampling and Analysis Plan for Coordinated Gateway Programming '23 (Upland SAP; Gubala 2015).

1.1 Skagway Ore Dock Sediment Investigation Overview

Legacy contamination resulting from historical SOT operations has been identified in the Ore Dock area and includes metals (primarily lead and zinc) and PAH-impacted sediment (Gubala 2007, 2011, and 2013; Tetra Tech 2008; ADEC 2011). Sampling and analysis of Ore Dock sediment was conducted to evaluate the horizontal and vertical extents of legacy contamination, provide data to design a remedial dredge prism, and provide input for assessing the suitability of dredge sediment for potential reuse as fill material associated with site redevelopment.

The Ore Dock sediment investigation included collection of discrete (e.g., 2-foot) and composite (e.g., 4-foot) samples from multiple depth intervals throughout the Ore Dock basin (i.e., SOD-01 to SOD-20; Figure 2a). Sediment samples were analyzed for priority pollutant metals and PAHs. Select composite samples were also analyzed for bulk tributyltin (TBT), polychlorinated biphenyl (PCB) Aroclors, and dioxin/furans. Sample collection methods are discussed in Section 2; Ore Dock sediment results are presented in Section 3.

Leachability testing of select Ore Dock samples was conducted to evaluate dredged material disposal options. Using preliminary Ore Dock testing results, representative sample composites from the proposed dredge prism were selected for leachability testing. Three leachability tests were conducted on the composite samples to determine the potential for leaching of metals and/or PAHs after placement in different hydrologic regimes and cycles. The results of leachability, chemical, and physical testing will be used together to inform the ultimate management of dredged sediments, including the potential reuse of these materials as fill and/or suitability for upland disposal locally or in a permitted landfill. Open-water disposal is not proposed and therefore no biological testing was conducted. Leachability testing methods and results are presented in Section 5; sediment management and disposal recommendations are summarized in Section 6.

1.2 Skagway Small Boat Harbor Sediment Investigation Overview

The investigation at the SBH was conducted to support potential dredging in the SBH that would provide expanded access for vessels, meet moorage needs, and generate additional Project wharf fill material, if needed. SBH sediments also were investigated for potential contamination associated with a historical buried military fuel line.

The SBH sediment investigation included collection of discrete and composite samples from 12 locations within the proposed SBH dredge prism. Composite samples were analyzed for grain size, total solids (TS), total volatile solids (TVS), priority pollutant metals, barium, iron, PAHs, semi volatile organic compounds (SVOCs), diesel range organics (DRO), and residual range organics (RRO). Select discrete samples adjacent and/or downgradient of a historical military fuel line were analyzed for DRO, RRO, and gasoline range organics (GRO). Sample collection methods are discussed in Section 2; SBH sediment results are presented in Section 3.

Due to recent updates to the overall Project elements, no dredging is currently planned in the SBH; however, the data may influence future development decisions.

1.3 Skagway Ore Terminal Upland Investigation Overview

The soil investigation in the SOT uplands was conducted to acquire geotechnical and environmental data from the upland property at the SOT concurrent with the characterization of adjacent Ore Dock sediments. The upland sampling program was designed to provide geotechnical and environmental information to support the expansion of the SOT infrastructure, and assist with evaluation of materials handling, storage, and disposal. The methods and results of environmental soil sample collection and analysis are described in Sections 2 and 3, respectively. The results of geotechnical sampling and analyses are not included in this report; those analyses were conducted by Hart Crowser and will be presented under separate cover.

2 SAMPLE COLLECTION AND PROCESSING

This section summarizes sample collection methods and processing procedures for the Ore Dock, SBH, and SOT upland areas, and summarizes deviations from the approved SAP documents.

2.1 Sediment Core Collection

Sediment cores were collected and processed in accordance with the approved Gateway SAP (Anchor QEA 2014). Station coordinates and mudline and/or ground surface measurements were collected and recorded prior to each core collection attempt.

2.1.1 Ore Dock

Twenty sediment core locations were sampled in the Ore Dock area (i.e., SOD-01 to SOD-20; Figure 2a) between January 17 and 26, 2015. Sediment cores were collected using a barge-mounted sonic drill rig with a 4-inch inner-diameter steel core barrel. A steel catcher (drill shoe) was used at each station to retain sediment in the core tube during retrieval. For each attempt, cores were sonic-driven to 15 feet below the mudline (full penetration) prior to retrieval in 5-foot sections. Once retrieved, the drillers measured the recovery of sediment in each core tube section and Anchor QEA field personnel recorded that measurement on the core collection log (see Appendix A), along with any other observations during drilling or retrieval.

Core tube sediments from acceptable cores were extruded (using high-frequency sonic vibration) into dedicated disposable plastic liner sleeves, typically in 2- to 5-foot increments, for processing on the barge. In some instances, extrusion of core tube sediments into the plastic sleeves resulted in a slightly shorter total core length for processing; in these cases, the recovery measured upon initial extraction (i.e., before extrusion) is used as the total recovery length. All rejected core tube material and investigation-derived waste (IDW) from accepted cores was captured in 55-gallon drums and labeled for future disposal. The core tube barrels were decontaminated between core collection attempts and stations.

A summary of Ore Dock station coordinates, mudline elevations, core penetration depths, and recovery percentages is presented in Table 1. The target penetration of 15 feet below the

mudline was achieved at all Ore Dock locations. Core recovery ranged from 80% to 100%; 11 locations (out of 20 total) had core recoveries greater than 90%. Ore Dock daily logs, sediment core collection logs, and core processing logs are included in Appendix A. Photographs of Ore Dock sediment core samples are included in Appendix B.

2.1.2 Small Boat Harbor

Twelve sediment core locations were collected at the SBH (i.e., SBH-01 to SBH-12, Figure 3) between January 2 and 29, 2015. Sediment cores were collected using a sonic drill rig with a 4-inch inner-diameter steel core barrel. Four offshore locations (SBH-01, -04, -07, and -10) were collected from a barge; the remaining eight locations (SBH-02, -03, -05, -06, -08, -09, -11, and -12) were collected from a land-based drill rig while accessible during low tide conditions. Though several of the land-based SBH sample locations were collected above mean higher high water (+16.7 feet mean lower low water), all samples from the SBH are considered sediment samples in this report as they are proposed for dredging to expand marine waters.

A steel catcher (drill shoe) was used at each station to retain sediment in the core tube during retrieval. For each attempt, cores were sonic-driven to the target penetration depth (or elevation) in 5- to 15-foot increments. For all stations accessed and drilled from land, steel casing was advanced over the core tube barrel prior to retrieving the core tube barrel from the cased hole. Once retrieved, the recovery of sediment in the core tube was measured and recorded by Anchor QEA field personnel on the core collection log (Appendix A), along with any other observations during drilling or retrieval.

If accepted, core tube sediments were extruded (using high-frequency sonic vibration) into dedicated disposable plastic liner sleeves, typically in 2- to 5-foot increments, for processing on the barge (for offshore locations) or on land (for upland-accessed locations). All rejected core tube material and IDW from accepted cores was captured in 55-gallon drums and labeled for future disposal. The core tube barrels were decontaminated between core collection attempts and stations.

A summary of SBH station coordinates, mudline elevations, core penetration depths, and recovery percentages is presented in Table 2. Target penetration depths or elevations were achieved at all 12 SBH locations. Recovery was 100% at all SBH locations. SBH daily logs, sediment core collection/boring logs, and core processing logs are included in Appendix A. Photographs of sediment core samples are included in Appendix B.

2.2 Sediment Core Processing and Handling Procedures

In accordance with the Gateway SAP (Anchor QEA 2014), DMMU composite samples were collected at the Ore Dock and SBH and submitted for analysis. Tables 3 and 4 summarize the compositing scheme for Ore Dock and SBH DMMU composite samples, respectively. Tables 5 and 6 include summaries of the analytical testing completed for each Ore Dock and SBH composite sample, respectively.

Storage, chain-of-custody (COC), and shipping procedures for all Ore Dock and SBH samples adhered to the protocols outlined in the Gateway SAP (Anchor QEA 2014). COC forms and shipping airbills were used to track custody and transfer of samples to the analytical laboratories. Copies of all COC forms and shipping airbills are included in Appendix C.

2.2.1 Ore Dock

Core processing at the Ore Dock included collection of discrete samples (e.g., 2- to 4-foot intervals from each location) and DMMU composite samples (e.g., 4-foot intervals composited from multiple locations; Table 3). In accordance with the Gateway SAP (Anchor QEA 2014), discrete sample intervals were selected in the field based on observations and the interpretation of sediment lithologies encountered at depth. Representative sediment samples were taken directly from the selected depth interval. Prior to homogenization, discrete archive samples were collected for potential leachability testing. Following collection of leachability archive samples, cores were logged and photographed (see Appendices A and B, respectively). Discrete samples were then homogenized and placed into laboratory-provided sample containers. To create DMMU composites, a proportionate volume of the homogenized sediment from each sample location was combined, homogenized, and placed into sample containers (Table 3). Samples were immediately stored in coolers with ice for transport to the analytical laboratory.

Discrete Ore Dock sediment samples were analyzed for 13 priority pollutant metals including iron and barium, PAHs, TS, total organic carbon (TOC), total inorganic carbon (TIC) and total sulfur (Table 5). Ore Dock DMMU composite samples were analyzed for 13 priority pollutant metals including iron and barium, PAHs, TS, TOC, grain size, as well as select composite testing of bulk TBT, PCB Aroclors, and dioxin/furans (Table 3).

2.2.2 Small Boat Harbor

Core processing at the SBH also included collection of DMMU composite and discrete samples, as summarized in Tables 4 and 6, respectively. SBH sample intervals were selected based on the depth intervals and/or elevations prescribed in the Gateway SAP (Anchor QEA 2014) and modified as needed based on lithologic observations. Sediment samples were taken directly from the selected depth interval. Prior to homogenization, discrete samples were collected for GRO analysis. Following collection of GRO samples, cores were logged and photographed (see Appendices A and B, respectively). Discrete samples were then homogenized and placed into laboratory-provided sample containers for further DMMU compositing. Samples were immediately stored in coolers with ice for transport to the analytical laboratory.

Discrete SBH samples were submitted for analysis of GRO, RRO, and DRO (Table 6 and Figure 3). SBH DMMU composites were submitted for analysis of the 13 priority pollutant metals including iron and barium, SVOCs, PAHs, DRO, RRO, TS, TVS, grain size, and select composite testing for PCB Aroclors and dioxin/furans (Table 4).

2.3 Upland Soil Sample Collection and Processing

Seven soil boring locations (G03 to G08 and G10) were collected in the SOT uplands between January 23 and 24, 2015, as shown in Figure 4. Hart Crowser field personnel collected, homogenized, and logged all upland soil samples, then relinquished custody to Anchor QEA field personnel for sample storage (on ice) and transport to the analytical laboratory. Upland soil borings were drilled by a hollow stem auger and sampled using a steel, 2-inch inner-diameter, 2-foot-long Dames and Moore split spoon sampler (California sampler). Upland

soil station coordinates, ground surface elevations, total boring depths, soil sampling depths, and recoveries are summarized in Table 7.

Split spoon samples were collected continuously from the ground surface to the target penetration depth (0 to 6 feet below ground surface [bgs], Table 7). At each location, samples were collected and homogenized from two intervals: 0 to 2 feet bgs and 4 to 6 feet bgs, and placed into laboratory-provided sample containers. Samples were analyzed for TS, Resource Conservation and Recovery Act (RCRA) metals, PAHs, GRO, RRO, and DRO as detailed in Table 7. Boring logs are included in Appendix A. Soil boring location photographs are available in Appendix B. Samples were immediately stored in coolers with ice. Copies of all COC forms are included in Appendix C.

2.4 Deviations from the Gateway and Upland SAPs

This section summarizes deviations from the Gateway SAP (Anchor QEA 2014) and Upland SAP (Gubala 2015). Deviations from the approved SAP documents resulted in a change or update to sample collection and/or processing procedures, where needed, based on sampling limitations and conditions encountered in the field.

2.4.1 Ore Dock

Ore Dock sampling deviations from the Gateway SAP (Anchor QEA 2014) are as follows:

- Sampling was conducted in January 2015 (not in October or November 2014) due to Project schedule delays.
- Drilling services were provided by Cascade Drilling, not Denali Drilling.
- Cores were advanced in 15-foot sections (instead of 5- to 10-foot sections) due to field conditions.
- No core tube casing was used during core extraction as cores were advanced the full 15 feet during the initial drive.
- SOD-02 was composited from two core attempts immediately adjacent to each other at SOD-02. The first attempt had 100% recovery and was accepted. During processing (i.e., after extrusion), the 0- to 5-foot depth interval was too wet to discretely sample. A second core was drilled adjacent to the first attempt for just the 0- to 5-foot depth interval to supplement the first core attempt. Three out of 5 feet

were recovered in the second coring attempt due to soft drilling conditions, and the bottom 2 feet were lost out of the base of the 5-foot-long core tube barrel during retrieval. Because of these conditions, the 3- to 5-foot depth interval at this location was not collected or sampled. The 0- to 3-foot depth interval from the second core attempt was processed and sampled for SOD-02 in conjunction with the 5- to 15-foot intervals from the first attempt. This deviation was due to difficulty achieving adequate recovery in the upper 5 feet of material at SOD-02 as a result of very soft sediment during sampling. This discrepancy (and void) is also noted on the core collection and processing logs in Appendix A.

- The vertical elevation of the mudline at each sediment sampling location was measured using a lead line instead of fathometer.
- Samples were recorded on an Anchor QEA COC, not a laboratory-provided COC.
- Based on lithologic observations, some discrete samples were collected from 1.5- to 3.5-foot-long segments (e.g., SOD-02), instead of 2- to 4-foot segments.
- At some Ore Dock locations, discrete 4-foot archive samples were not collected due to the presence of coarse-grained (very gravelly) sediments, which cannot be analyzed by the laboratory.

2.4.2 Small Boat Harbor

SBH sampling deviations from the Gateway SAP (Anchor QEA 2014) are as follows:

- All locations were collected using a sonic drill rig rather than an auger drill rig due to field conditions and safety considerations at the time of drilling.
- Mudline elevations at the four offshore sediment sampling locations were measured using a lead line instead of fathometer.
- The SBH-DMMU-4 composite sample did not include material from station SBH-05. At the time of sampling, Anchor QEA reviewed the location and depth interval of the SBH-05 sample and determined that the prescribed sample interval at this station did not fall within the boundaries of DMMU-4, and therefore should not be included in the DMMU-4 composite sample.
- Cascade Drilling provided the drilling services, not Denali Drilling.
- Samples were recorded on an Anchor QEA COC, not a laboratory-provided COC.

2.4.3 Upland Ore Terminal

SOT uplands sampling deviations from the Upland SAP (Gubala 2015) are as follows:

- Seven environmental soil borings were collected (instead of six); this deviation was based on personal communication between Dr. Chad Gubala (on behalf of AIDEA and the MOS) and Julia Fitts of Anchor QEA.
- Station G09 was not completed, and station G10 was added to the sampling program; this deviation was based on personal communication between Dr. Chad Gubala (on behalf of AIDEA and the MOS) and Julia Fitts of Anchor QEA.
- No photographs were collected of upland soil samples; sample locations G03 to G08 and G10 were photographed by Hart Crowser field personnel and are included in Appendix B.
- A photoionization detector was not used to determine analytical testing scheme for each sample, instead, all samples were submitted for GRO, DRO, and RRO (personal communication between Dr. Chad Gubala, and Sally Schlicting of ADEC).

3 PHYSICAL AND CHEMICAL TESTING RESULTS

This section summarizes chemical results by sampling area, including the Ore Dock, SBH, and SOT uplands. Summaries of analytical testing parameters for Ore Dock, SBH, and SOT upland samples are provided in Tables 5, 6, and 7, respectively. A discussion of sediment and soil quality for each site area is provided in the following subsections.

Supporting documentation for sample shipment, analytical testing, and data validation is provided in Appendices C through E. Sample COC forms are included in Appendix C, laboratory analytical reports (e.g., including method detection limits and raw data) are included in Appendix D, and data quality assurance/quality control (QA/QC) records and validation reports are included in Appendix E.

3.1 Sediment Screening Levels

Based on the 2011 Total Maximum Daily Load study for Skagway Harbor, the designated use of the harbor is for water supply and the growth and propagation of fish, shellfish, other aquatic life, and wildlife (per 18 Alaska Administrative Code [AAC] 70.020; ADEC 2011).

To date, ADEC has not adopted numeric sediment quality standards for the evaluation of impacts to aquatic life. However, ADEC Contaminated Sites Remediation Program has issued the technical memorandum *Sediment Quality Guidelines* (ADEC 2013), which recommends using the threshold effects levels (TELs; i.e., MacDonald et al. 1996) as sediment screening criteria. As such, sediment data from the Ore Dock and SBH were screened against the marine sediment quality TELs (MacDonald et al. 1996). The TELs are conservative estimates of the potential threshold concentrations (i.e., of isolated contaminants) where toxic effects may occur in benthic species based on a national estuarine database generated from many different marine environments (e.g., Florida coastal waters), many of which are quite dissimilar to Alaska's marine conditions. Based on preliminary TEL screening of upper sediment sample intervals, deeper archive samples from the Ore Dock and SBH were analyzed (where exceedances above TELs were present in discrete samples) to determine the vertical extent of potential contamination. Because they are considered conservative, the TELs were used solely as screening levels for sediment quality to identify potential impacts from metals and/or PAHs, and to trigger additional analytical testing (i.e.,

of archived samples). TELs were not used to define cleanup levels for the Ore Dock and SBH sediments.

The Sediment Cleanup Objectives (SCOs) were selected as cleanup levels for the Ore Dock and SBH sediments. The SCOs are conservative marine sediment cleanup levels from the Washington Sediment Management Standards (SMS; Chapter 173-204 Washington Administrative Code [WAC], 2013 revision). The SCO is a long-term sediment quality goal and represents the lower end of the range of chemical concentrations used to establish a sediment cleanup level (WAC 173-204-560(3)). The SCOs are based on the marine dry weight Apparent Effects Thresholds (AETs) that represent the lowest concentration at which toxic effects are observed for benthic communities relevant to Puget Sound (Barrick 1988). The SCOs are identical to the AETs, except for hydrophobic organic contaminants, which are based on carbon-normalized values. For these contaminants, carbon-normalized thresholds are thought to generally provide a better estimate of benthic toxicity than dry-weight values. However, the Sediment Cleanup User's Manual II (SCUM II) Guidance (Washington State Department of Ecology 2015; WAC 173-204) recommends using the dry weight AETs rather than carbon-normalized values as the SCOs when TOC is outside typical ranges (i.e., below 0.5%). TOC levels were measured as low for the Ore Dock and SBH sediment samples (i.e., below 0.5%). The Puget Sound Dredged Material Management Program (DMMP) also uses the AETs to evaluate suitability for open-water disposal of dredged sediment and the SCO to evaluate compliance with the SMS anti-degradation policy (WAC 173-204-120). Therefore, the SCOs (which are equivalent to the AETs in low TOC sediment) were selected as appropriate and relevant cleanup level goals for this Project.

3.2 Subsurface Sediment Results: Ore Dock

Results of physical and chemical analyses of discrete samples (Section 3.2.1) and DMMU composite samples (Section 3.2.2) for the Ore Dock are presented in Tables 8 through 12. Visual observations and analytical results are also discussed below.

3.2.1 Ore Dock Sediment Quality

3.2.1.1 Physical and Conventional Parameters

The sediment lithologies observed at the Ore Dock are consistent with those expected for a high-energy fluvial and tidal environment. Grain size results for Ore Dock sediments are included in Table 8. Based on grain size testing results, the sediment lithology present in the top 4 feet throughout the Ore Dock area is typically gravelly sand, with 29% to 37% gravel content, 55% to 60% sand (fine to coarse), and 6% to 7% fines. In a few cases (e.g., at SOD-02 and SOD-03), a higher percentage of fines (15% to 63%) are present in sediments at 0 to 4 feet below the mudline; in those cases, the lithology is more representative of a silty sand with few gravels. The typical Ore Dock sediment lithology observed at 4 to 12 feet below the mudline is characterized by a very gravelly sand, with an average of 36% to 39% gravel content, 50% to 60% sand content (typically coarse), and 3% to 5% fines. In one sample (SOD-02), the gravel content at the 8- to 12-foot depth interval reaches 76%, classifying that material as sandy gravel. Overall, fines content is typically low throughout the Ore Dock area, most sediments are sand and gravel, and grain sizes are coarser at greater depth below the mudline. Some sediment samples also contained trace to occasional shell fragments and organics (e.g., wood fibers and sticks).

TOC and total solids results are presented in Table 9. The TOC levels for Ore Dock area sediments are low for marine sediments, ranging from 0.005% to 0.67%. Total solids levels for Ore Dock samples ranges from 72% to 92.8%.

3.2.1.2 Metals

Metals concentrations exceeded the SCOs in 4 out of the 20 sample locations in the Ore Dock (Table 9). The four locations that had metals exceedances of SCOs (SOD-01, SOD-02, SOD-03, and SOD-05) are in the immediate vicinity of the former Ore Dock conveyor (Figure 5). Lead and zinc concentrations exceed the SCOs at SOD-01, SOD-02, SOD-03, and SOD-05. Mercury concentrations exceed the SCO at SOD-01, SOD-02, and SOD-03. Cadmium levels exceed the SCO at SOD-01 and SOD-02, and the silver SCO is exceeded at SOD-01. All metals exceedances are found in samples collected from the upper 2.5-foot depth interval; the only exception is for SOD-02, where exceedances (of lead, mercury, and zinc) extended

to 8.5 feet below the mudline. Samples with metals concentrations below the SCOs (i.e., that bound the vertical extent of metals impacts) were identified at all Ore Dock locations.

3.2.1.3 Polycyclic Aromatic Hydrocarbons

Only two discrete Ore Dock samples (SOD-02-0-3 and SOD-02-5-6.5) have concentrations that exceed the SCOs for PAHs (Table 9). In each of these samples, both from station SOD-02, chrysene and pyrene exceed the SCOs. For sample SOD-02-5-6.5 (collected from 5 to 6.5 feet below the mudline), SCO exceedances also include benzo(a)anthracene, total benzofluoranthenes, and total high-molecular-weight PAHs (HPAHs). The above SCO exceedances for PAHs occur in the top 6.5 feet below the mudline, and are only found at a single Ore Dock location (SOD-02). Notably, these samples from station SOD-02 are also higher in TOC (0.49% to 0.67%) and are finer grained (more silty, fewer gravels) when compared to other Ore Dock samples collected from the same depth interval. Samples with PAH concentrations below the SCOs (i.e., that bound the vertical extent of PAH impacts) were identified at all Ore Dock locations.

3.2.2 Ore Dock DMMU Composite Samples

In accordance with the Gateway SAP (Anchor QEA 2014), five surface DMMU composite samples and ten subsurface DMMU samples were composited from the 20 Ore Dock core locations (Figures 2a through 2c). The Ore Dock DMMU boundaries and composite samples identified in the Gateway SAP were based on historical sediment data and the maximum potential dredge volume for the Ore Dock; the remedial dredge area and associated dredge units for the Ore Dock have since been refined (largely reduced) based on the results of discrete sample testing (Section 3.2.1; Figures 7a through 7f). Table 3 includes a summary of the Ore Dock DMMU sample compositing scheme; the results of composite analyses are discussed below.

3.2.2.1 Metals

Metals results for Ore Dock DMMU composite samples are presented in Table 10. Concentrations exceed the SCO for zinc (410 milligrams per kilogram [mg/kg]) in three Ore Dock composite samples, SOD-DMMU-1-0-4 (composite of DMMU 1, from 0 to 4 feet below the mudline), SOD-DMMU-6-4-8 (composite of DMMU 6, from 4 to 8 feet below the

mudline), and SOD-DMMU-56-4-8 (the field duplicate of SOD-DMMU-6-4-8). SOD-DMMU-1-0-4 is the only sample to also exceed the SCOs for lead (450 mg/kg), mercury (0.41 mg/kg), and cadmium (5.1 mg/kg). All other DMMU composite samples have metals concentrations below the SCOs.

3.2.2.2 Polycyclic Aromatic Hydrocarbons

PAH results for Ore Dock DMMU composite samples are presented in Table 10. PAH levels in all Ore Dock composite samples are below the SCOs. For composite samples, detected total HPAH concentrations range from 9.43 micrograms per kilogram (µg/kg) (SOD-DMMU-10-4-8) to 2,661 µg/kg (SOD-DMMU-6-4-8) and total LPAH concentrations range from 10.18 µg/kg (SOD-DMMU-11-8-12) to 287.6 µg/kg (SOD-DMMU-6-4-8). PAHs were not detected above laboratory reporting limits in 7 out of the 17 composite samples (i.e., for composites from DMMUs 7, 8, 9, 12, 13, 14, and 15).

3.2.2.3 Tributyltin

TBT results for the Ore Dock are presented in Table 11. Composite samples from four surface DMMUs (1, 2, 3, and 5) were analyzed for bulk TBT. Concentrations ranged from 3.1 to 37 µg/kg, with the exception of one outlier from sample SOD-DMMU-2-0-4 (the composite from DMMU 2 from 0 to 4 feet below the mudline), which has a TBT concentration of 11,000 µg/kg. Due to the anomalously high TBT result detected in the DMMU 2 composite sample, and the possibility of a laboratory error with analysis of this sample (the laboratory matrix spike duplicate for the same sample was non-detect), sample SOD-DMMU-2-0-4 was reanalyzed for TBT. In addition, each of the parent samples that were composited to form sample SOD-DMMU-2-0-4 composite (i.e., the 0- to 4-foot depth samples from SOD-04, -05, -06, -07, and -08) were analyzed for TBT. The reanalyzed result for the DMMU 2 composite (which had an original concentration of 11,000 µg/kg) was 2.4 µg/kg. The parent samples from DMMU 2 have low concentrations. SOD-04 COMP has a TBT concentration of 140 µg/kg. SOD-05 COMP and SOD-06 COMP have TBT concentrations of 2 and 14 µg/kg, respectively. Samples SOD-07 COMP and SOD-08 COMP are non-detect for TBT.

3.2.2.4 PCB Aroclors and Dioxins/Furans

PCB Aroclors and dioxin/furans data for the Ore Dock are presented in Table 12. A single composite sample (SOD-DMMU-1-5) of the five surface DMMUs (DMMUs 1 to 5 from 0 to 4 feet below the mudline, as originally proposed in the Gateway SAP; Anchor QEA 2014) was collected and analyzed for dioxin/furans and PCB Aroclors. That sample, along with a field duplicate, have total PCB Aroclors concentrations of 2.7 and 16 µg/kg, respectively; both results are below the SCO for total PCB Aroclors (130 µg/kg, dry weight). Dioxin/furan results are also low; the parent sample has a total dioxin/furan toxic equivalents (TEQ) concentration of 0.468 nanogram per kilogram (ng/kg); the field duplicate result for that sample is comparable (0.476 ng/kg). Currently, there are no SCOs developed for dioxin/furans; however, the DMMP implemented interim guidelines for interpreting dioxin data (i.e., for non-dispersive and dispersive Puget Sound open-water disposal sites) on December 6, 2010; the DMMP dioxin/furan limits are 4 ng/kg TEQ and 10 ng/kg TEQ. The dioxin data from samples collected within the Ore Dock are below both of these interim DMMP thresholds.

3.3 Subsurface Sediment Results: Small Boat Harbor

Two surface DMMUs (SBH-DMMU-1 and SBH-DMMU-2) and three subsurface DMMUs SBH-DMMU-03, -04, and 05) were composited from the 12 SBH core locations (SBH-01 to SBH-12; Figure 6) per the Gateway SAP (Anchor QEA 2014). Table 4 presents a summary of the DMMU sample compositing scheme. In addition, several discrete samples were collected from SBH locations that are downgradient of the historical buried military fuel line (i.e., SBH-8, -9, -10, -11, and -12; Figure 6). Results of physical and chemical analyses of discrete and composite samples for the SBH are summarized below, and presented in Tables 13 through 16.

3.3.1.1 Physical and Conventional Parameters

The sediment lithologies observed at the SBH are consistent with those expected for a high-energy fluvial and tidal environment. One composite sample from each SBH DMMU was analyzed for grain size (Table 13). Based on grain size testing results, the sediment lithology present in the top 4 feet throughout the SBH study area is typically a very sandy gravel, with 40% to 62% gravel content, 31% to 57% sand (fine to coarse), and 3% to 7% fines. The

typical sediment lithology observed below 4 feet (to approximately 25 feet below the mudline/ground surface) at the SBH study area is also consistent with a very sandy gravel, with 36% to 62% gravel content, 32% to 60% sand (fine to coarse), and 2% to 8% fines. Discrete samples from 5 of the 12 SBH locations (SBH-8, -9, -10, -11, and -12) were analyzed for total solids; results range from 74.7% to 97% (Table 14).

3.3.1.2 Petroleum Hydrocarbons

In accordance with the Gateway SAP (Anchor QEA 2014), discrete samples from the five SBH locations downgradient of the historical buried military fuel line (i.e., SBH-8, -9, -10, -11, and -12; Figure 6) were analyzed for petroleum hydrocarbons, including GRO, DRO, and RRO. Composite samples from each DMMU (i.e., DMMUs 1 to 5) were also analyzed for DRO and RRO. Samples results for GRO, DRO, and RRO are presented in Table 14.

GRO was not detected in any analyzed samples. DRO was detected in four samples, all from the 0- to 4-foot depth interval, at stations SBH-10 and SBH-12 and in composites for surficial DMMUs 1 and 2. For these samples, DRO concentrations range from 7.07 to 24.5 mg/kg. RRO was detected in all analyzed samples, with the exception of sample SBH-08-0-4. RRO concentrations range from 7.04 mg/kg (for downgradient sample SBH-09-4-18.3) to 96.8 mg/kg (for downgradient sample SBH-12-0-4). No petroleum-like sheens were observed at the SBH during sampling.

There are currently no promulgated SCOs for GRO, DRO, or RRO. When compared to the Alaska State cleanup levels for soil (18 AAC 75.34[d]; Table B-2, over 40-inch zone, ingestion), SBH sediment samples collected downgradient of the historically buried military fuel pipeline are well below the soil thresholds for GRO, DRO, and RRO (1,400 mg/kg for GRO, 8,250 mg/kg for DRO, and 8,300 mg/kg for RRO).

3.3.1.3 Metals

All DMMU composite samples (i.e., from DMMUs 1 to 5) from the SBH were analyzed for priority pollutant metals (including barium and iron; Table 15). All metals concentrations from SBH samples are below the TELs and SCOs. The highest metals concentrations are present in the composite sample and field duplicate from DMMU 2 (collected from 0 to 4 feet

bgs). In those samples, the detected metals include arsenic (1.21 mg/kg), barium (142 mg/kg), cadmium (0.0621 mg/kg), chromium (8.13 mg/kg), lead (14.5 mg/kg), iron (15,100 mg/kg), mercury (0.0538 mg/kg), nickel (4.42 mg/kg), thallium (0.121 mg/kg), and zinc (45.4 mg/kg). Antimony, selenium, and silver were not detected.

3.3.1.4 Polycyclic Aromatic Hydrocarbons

All DMMU composite samples (i.e., from DMMUs 1 to 5) from the SBH were analyzed for PAHs (see Table 15). All PAH concentrations from SBH samples are below the TELs and SCOs. PAHs were detected in three out of seven composite samples, including the composite from DMMU 4 and the composite and field duplicate samples from DMMU 2. Total HPAH levels range from 6.27 µg/kg (SBH-DMMU-4) to 44.88 µg/kg (SBH-DMMU-52-0-4). LPAHs were only detected in the DMMU 2 composite sample (5.96 µg/kg).

3.3.1.5 Semivolatile Organic Compounds

All SBH DMMU composite samples (i.e., from DMMUs 1 to 5) were analyzed for SVOCs (see Table 15). All SVOCs, with the exception of bis(2-ethylhexyl)phthalate, were non-detect in SBH samples. Bis(2-ethylhexyl)phthalate concentrations (detected at 103 to 108 µg/kg in four samples) are all below the TELs and SCOs. Several non-detect SVOCs (e.g., 1,2,4-trichlorobenzene, benzoic acid, 2-methylphenol, etc.) have reporting limits that exceed one or more screening criteria; these results, most of which are for PAHs, are analyzed at lower levels and are reported under the PAH section.

3.3.1.6 PCB Aroclors and Dioxins/Furans

One composite sample (SBH-DMMU-1-5) of the five SBH DMMUs (DMMUs 1 to 5) was collected and analyzed for dioxin/furans and PCB Aroclors (Table 16). That sample was non-detect for PCB Aroclors (at a reporting limit of 14 µg/kg) and has a total dioxin/furan TEQ (U=0) concentration of 0.345 ng/kg. Neither result exceeds available screening criteria.

3.4 Soil Results: Upland Ore Terminal

Seven soil locations were sampled at the SOT uplands (G03 to G08 and G10; Figure 4). Discrete samples were collected from each station at intervals from 0 to 2 feet bgs and 4 to

6 feet bgs. Soil samples were analyzed for total solids, RCRA metals, PAHs, DRO, GRO, and RRO. The results of analytical testing are summarized in the subsections below, and are presented in Table 17.

3.4.1 Soil Screening Levels

SOT uplands soil data are screened to Alaska State soil cleanup levels in accordance with 18 AAC 75.340. Based on a mean annual precipitation exceeding 40 inches in Skagway and the potential for exposure of SOT site workers to site soils, the method two direct contact/ingestion soil cleanup levels (e.g., for the over 40-inch zone) presented in Table B1 (for metals and PAHs; 18 AAC 75.341(c)) and Table B2 (for TPH; 18 AAC 75.341(d)) were selected as appropriately conservative site screening levels.

3.4.2 Conventional Parameters

Soil samples collected from the SOT uplands consisted of sand and gravel, with minor amounts of fines, and trace cobbles and boulders. Some samples also contained trace amounts of shell fragments and wood debris. Total solids results for upland soil samples range from 91.9% to 98.6% (Table 17).

3.4.3 Metals

All upland SOT soil samples were analyzed for RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver; Table 17). Arsenic was detected in all samples except for G05 at 4 to 6 feet bgs; detected arsenic concentrations range from 0.357 to 2.03 mg/kg and are all below the Method Two direct contact soil screening level (3.7 mg/kg) for arsenic. Barium was detected in all samples; concentrations range from 106 to 225 mg/kg. All are below the soil screening level (16,600 mg/kg). Cadmium was detected in all samples except for G03 at 0 to 2 feet bgs; detected cadmium concentrations range from 0.126 to 0.701 mg/kg and are all below the soil screening level (65 mg/kg). Chromium was detected in all samples, with concentrations ranging from 4.68 to 18.5 mg/kg for chromium. Chromium concentrations are all below the soil screening level (250 mg/kg). Lead was detected in all samples, with concentrations ranging from 4.46 to 1,030 mg/kg. One sample (G-8-0-2; 1,303 mg/kg) exceeded the soil screening level for lead (250 mg/kg); all other samples are below the screening level. Mercury was detected in all but one sample (G03 at

0 to 2 feet bgs); detected mercury concentrations range from 0.017 to 0.85 mg/kg and are all below the soil screening level (25 mg/kg). The highest mercury concentration (0.85 mg/kg) was detected in the 0- to 2-foot interval sample at station G08. Selenium was not detected in any SOT upland soil samples. Silver was detected in seven samples, with concentrations ranging from 0.0679 to 1.04 mg/kg, all below the soil screening level (410 mg/kg).

3.4.4 Polycyclic Aromatic Hydrocarbons

All upland SOT soil samples were analyzed for PAHs; results are presented in Table 17. PAHs were detected in 10 of the 14 SOT upland soil samples. All PAH concentrations are below the soil screening levels (see Section 3.4.1 and Table 17). Naphthalene was detected in three samples (G07 at 4 to 6 feet bgs; G08 at 0 to 2 feet bgs, and G10 at 0 to 2 feet bgs); naphthalene concentrations range from 1.62 to 16.3 µg/kg. Total carcinogenic PAHs (cPAHs; TEQ, U=0) results range from 0.0251 µg/kg (at station G10; 4 to 6 feet bgs) to 45.05 µg/kg (at station G08; 0 to 2 feet bgs).

3.4.5 Petroleum Hydrocarbons

All upland SOT soil samples were analyzed for GRO, DRO, and RRO; results are all below site screening levels for soil (see Section 3.4.1) and are presented in Table 17. GRO was not detected in SOT upland soil samples. DRO was detected in nine samples with concentrations ranging from 8.33 mg/kg (at G07; 0 to 2 feet bgs) to 141 mg/kg (at G08; 4 to 6 feet bgs). RRO was detected in four samples, with concentrations ranging from 60.4 mg/kg (at G06; 0 to 2 feet bgs) to 1,740 mg/kg (at G08; 4 to 6 feet bgs).

3.5 Data Quality Assessment

This section provides information on data quality, including field and laboratory QC measures, data validation findings, and data completeness.

3.5.1 Field Data Quality

Field data QA measures outlined in the Gateway SAP (Anchor QEA 2014) were followed, with a few exceptions as noted in the following sections.

3.5.1.1 Storage, Sample Preservation, and Holding Times

All samples arrived at the laboratory within temperature requirement of 4 degrees Celsius (°C) ±2°C, with a few exceptions. Several coolers were received at a temperature less than 2°C, but no samples were received frozen or containing ice crystals so data were not affected. All samples were appropriately preserved and analyzed within holding times, with the exceptions of TVS in the SBH composite samples due to a laboratory error, and pH and nitrate in the seawater sample. Results were qualified during validation to indicate that they are estimated and approved for data use.

3.5.1.2 Field Quality Control Samples

Field QA samples required by the Gateway SAP include field duplicates and rinsate blanks (Anchor QEA 2014). Trip blanks were included in coolers containing samples for GRO analysis. GRO was not detected in the trip blanks. One equipment rinsate blank sample was collected from decontaminated sonic drilling core tubes for each sediment sampling area (i.e., one at the Ore Dock and one at the SBH). Chromium was detected at low levels in both samples, but sample results were significantly greater than the blank results and data were not affected. Thirteen field replicates were also submitted with sediment samples to confirm adequate homogenization of samples and precision of analysis. Results of the field replicates are included in the data validation reports in Appendix E, and indicate that field precision is adequate.

3.5.2 Analytical Data Quality

Data quality objectives (DQOs) and QA procedures are provided in the Gateway SAP (Anchor QEA 2014). Data packages were validated by Laboratory Data Consultants in Carlsbad, California. Data validation reports are provided in Appendix E. All data qualifiers applied to the data during final validation have been incorporated into the database for this Project. Most data were considered useable as reported or as qualified. Data qualifiers assigned during data validation include the following:

- "J" indicates that the associated numerical value is an estimated concentration
- "U" indicates a reporting limit below which the analyte was not detected
- "UJ" indicates an approximate reporting limit below which the analyte was not detected

No data were rejected as a result of the validation process. Certain data were qualified as estimated values for a particular analysis based on a specified protocol or technical advisory, as stated in the data validation reports.

Overall, reporting limits were deemed acceptable to meet Project objectives. Reporting limits for undetected results usually met, or were below, the SCOs/AETs. There were some instances of SVOC reporting limits above the SCO/AET, but Gateway SAP target quantitation limits were met (Anchor QEA 2014). Several SVOC and PAH reporting limits were elevated due to matrix interference.

3.5.3 Data Completeness

Data completeness for sediment characterization includes collection of required samples in the field and laboratory analysis for target chemicals as outlined in the Gateway SAP (Anchor QEA 2014).

Laboratory data completeness was measured by percentage of results reported by the analytical laboratory. Data completeness levels were set at 95% for all parameters, according to DQOs specified in the Gateway SAP (Anchor QEA 2014). Since no data were rejected during validation, DQOs were met with 100% completeness.

3.6 Deviations from the Gateway SAP

Field duplicates were collected at a 10% frequency with the exceptions of metals, PAHs, and TOC, which were collected at a 7% frequency.

4 SEDIMENT AND SOIL CHARACTERIZATION SUMMARY

The primary objectives of the Ore Dock sediment investigation were to provide data to evaluate the nature and extent of legacy contamination and provide data for developing a remedial plan to address contamination through dredging. Based on the results of the Ore Dock sediment investigation, sediment impacts are typically observed in the top 4 feet (i.e., below the mudline), are concentrated in the area adjacent to the former Ore Dock conveyor system (e.g., SOD-01, -02, and -03; Figure 5), and include elevated levels of metals (primarily cadmium, lead, mercury, and zinc) and HPAHs. To address these impacts, a preliminary remedial dredge footprint (Figure 7a) was developed to remove all sampled sediments with metals and/or PAH concentrations exceeding the SCOs. The horizontal extent of the dredge area is based on the midpoint between samples above the SCO and nearby samples without any SCO exceedances. The vertical extent of the dredge area was established below the deepest extent of any sample interval exceeding the SCO.

Samples with detected concentrations of TBT were not included in the remediation footprint based on the following rationale:

- Cleanup levels for Ore Dock sediment are defined as the SCOs; there are no promulgated SCO criteria for bulk TBT due to uncertainty in toxicity levels in literature and site-specific studies in Puget Sound.
- The sample from SOD-04 with the highest TBT concentration (140 µg/kg) in the re-analysis was collected from the upper 4 feet of sediment. This depth range is not representative of risk to benthic invertebrates present in the bioactive zone (the bioactive zone is typically considered the upper 10 cm).
- It is possible that a chip of vessel hull paint within the composite sample from DMMU-2 may have biased the original TBT result for that composite sample (11,000 µg/kg), as the reanalyzed result was 2.4 µg/kg.
- There is no correlation between TBT and elevated metals (e.g., lead and zinc) or PAH concentrations at the Ore Dock; metals and PAH concentrations for all analyzed discrete samples at SOD-04 (location with TBT result of 140 µg/kg) are well below the SCOs.

Since it is unclear whether surface sediment TBT concentrations at SOD-04 actually represent an elevated risk to benthic invertebrates, no remedial dredging of the area surrounding SOD-04 is currently proposed.

The current estimated dredge volume, including a 1-foot payable overdredge and exterior side slopes, is approximately 17,300 cubic yards. Exterior side slopes include a 2 horizontal to 1 vertical (2H:1V) slope toward the SOT and 2.5H:1V daylight slopes elsewhere. The extent of dredging, including the inclusion and grade of slopes, will be refined during design and presented in a forthcoming Project BODR.

The purpose of the SBH investigation was to support planned dredging in the SBH that would provide expanded access for vessels, meet moorage needs, and generate additional wharf fill material; however, at the time of this report, no dredging is currently planned at the SBH. All samples from the SBH are below SCOs. Select SBH sediment samples were also investigated for potential impacts from a historically buried military fuel pipeline; SBH samples collected downgradient of this area are non-detect for GRO, contain low levels (i.e., all below 100 mg/kg and most below 30 mg/kg) of DRO and RRO, and did not have visible sheens during sampling. Additional evaluation of these sediment data may be conducted in the future depending on future dredging needs in the SBH.

As an add-on to the ADEC-approved Gateway SAP (Anchor QEA 2014), the MOS and AIDEA requested sampling and analysis of soils from the SOT uplands in order to provide additional environmental and geotechnical information to support potential expansion of the Ore Terminal infrastructure, and to support environmental considerations of the engineering design such as materials handling, storage, and disposal. SOT upland soil results detected low levels of metals (primarily arsenic, cadmium, lead, and mercury), cPAHs, DRO, and RRO at both surface (0 to 2 feet bgs) and shallow subsurface (4 to 6 feet bgs) sample intervals. Metals, PAH, and TPH concentrations for all samples (except one; G-8-0-2) are below soil screening levels. Sample G-8-0-2 (from 0 to 2 feet bgs) has a lead concentration (1,030 mg/kg) above the soil screening level (400 mg/kg). Additional evaluation of these soil data may be conducted in the future depending on the location and specific concentrations of any upland expansion activities and ultimate soil relocation/disposal activities.

5 LEACHABILITY TESTING AND RESULTS

Leachability testing was conducted to evaluate the potential release of metals and PAHs from sediment under conditions intended to represent anticipated disposal options. Representative sample composites from the proposed dredge prism were selected for the leachability tests. Results from the leachability testing, in combination with bulk sediment chemistry and physical sediment characteristics will be used to inform decisions regarding the ultimate management of dredged sediments, including the potential for beneficial reuse of these materials as fill as part of the Project, and suitability of the remaining sediment for local upland reuse or disposal in a permitted landfill.

5.1 Leachability Testing

Leachability testing was conducted on four composite sediment samples representative of each of the proposed Ore Dock area dredge units (Figure 7a). The leachability sample composites and testing approach are summarized in Tables 18 and 19, respectively. Composites consisted of homogenization of discrete intervals from SOD-01, -02, -03, and -05. Homogenization was performed in the Anchor QEA Environmental Geochemistry Laboratory in Portland, Oregon, under a nitrogen atmosphere. The discrete intervals had been preserved and stored frozen prior to leachability testing.

Composite samples were analyzed using the Sequential Batch Leachate Test (SBLT) and Toxicity Characteristic Leaching Procedure (TCLP), as summarized in Table 19. Three tests were performed for each sample: 1) SBLT with distilled water (proxy for freshwater); 2) SBLT with synthetic seawater; and 3) TCLP. SBLT analysis with synthetic seawater was intended to represent the leachability potential of materials reused as Project backfill in the marine intertidal environment (with regular tidal exchange). The SBLT analysis completed with freshwater was intended to represent the leachability potential of materials reused in upland fill situations, with periodic exposure to stormwater or groundwater infiltration. TCLP analysis was used to determine the toxicity characteristics of dredge material and their classification for upland landfill disposal.

In accordance with the Gateway SAP (Anchor QEA 2014), a sample of site seawater was collected and analyzed concurrent with sediment characterization. Results of the site

seawater analyses (Table 20) were used to prepare synthetic seawater for the SBLT analysis that was intended to represent placement of material in the marine environment. Synthetic site seawater was generated by dissolving salts in distilled water to the concentrations reported for sodium, magnesium, calcium, and sulfate, and adjusting to the measured pH with sodium hydroxide.

SBLT was performed in accordance with Anchor QEA's Standard Operating Procedure – Sequential Batch Leachate Test (Appendix F), which is consistent with the U.S. Army Corps of Engineers Testing Manual (USACE 2003). Eight samples were analyzed for each SBLT scenario (i.e., freshwater and seawater): four using the parent composite samples (SOD-01, -02, -03, and -05) and a laboratory duplicate of each parent sample (SOD-51, -52, -53, and -55; Tables 21 and 22). Samples were analyzed sequentially in four batch cycles for both freshwater and seawater tests.

As part of each analysis, sediment samples were mixed with the test solution (i.e., freshwater or synthetic seawater) at a liquid-to-solid ratio of 4. Next, sediment samples and the generated solution were agitated on a shaker table, such that the sediment material remained in suspension for approximately 24 hours, at which time the elutriate for laboratory analysis was separated from the sediment by centrifugation. This process was then repeated for three subsequent 24-hour periods to provide a total of four sequential batches of elutriate water for chemical analysis. Elutriate (i.e., leachate) from the parent SBLT samples were submitted to Apex Laboratory for analysis of total and dissolved priority pollutant metals (including iron and barium) and PAHs. Duplicate SBLT samples were analyzed for total priority pollutant metals (including iron and barium) and PAHs.

TCLP was performed by Apex Laboratory according to U.S. Environmental Protection Agency (EPA) Method 1311. TCLP and SBLT results are summarized in Section 5.3.

5.2 Elutriate Screening Levels: Alaska Marine Water Quality Criteria and EPA Freshwater Quality Criteria

Based on the 2011 Total Maximum Daily Load study completed for Skagway Harbor, the designated uses of the harbor include water supply and the growth and propagation of fish,

shellfish, other aquatic life, and wildlife (per 18 AAC 70.020(b)(23); ADEC 2011). Sediment elutriate samples generated through the marine water SBLT are intended to measure the potential for dredged sediments to leach metals or PAHs to Skagway Harbor surface waters. According to Alaska water quality regulations, the concentrations of substances in water may not exceed the numeric criteria for aquatic life for marine water and human health for consumption of aquatic organisms as set forth in the *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* (Alaska Water Quality Manual; ADEC 2008). To determine whether dredged materials from the Ore Dock would be suitable for beneficial reuse as fill in a marine environment in Skagway, Ore Dock SBLT dissolved seawater elutriate data were screened to both acute (criterion maximum concentration; CMC) and chronic (criterion chronic concentration; CCC) criteria for marine waters from the Alaska Water Quality Manual.

Sediment elutriate samples generated through the freshwater SBLT are intended to be representative of either stormwater or groundwater that could come in contact with the sediment if it were placed in the upland environment locally in Skagway. No specific placement area or location has been identified to date, so the results of the test are intended to provide a conservative estimate of leachate from the Ore Dock sediment reused as fill. To determine whether the dredged materials would be suitable for beneficial reuse as an upland fill, the freshwater dissolved elutriate data were screened to both acute (CMC) and chronic (CCC) Aquatic Life criteria for freshwater from EPA's National Recommended Water Quality Criteria (NRWQC; Clean Water Act § 304[a]).

To determine the appropriate waste disposal classification of the dredged material from the Ore Dock in a permitted upland landfill, TCLP results are screened to federal RCRA thresholds (40 Code of Federal Regulations [CFR] § 261.24).

5.3 Leachability Results

Results of SBLT and TCLP analyses are presented in Tables 21 through 23. Freshwater and seawater elutriates from each of the four batch tests per sample were analyzed for total and dissolved metals and PAHs. Sediment samples were analyzed for total metals and PAHs, TCLP metals, and TCLP PAHs.

5.3.1 Seawater SBLT Results

All seawater SBLT batch tests (i.e., from SOD-01, -02, -03, and -05) from the Ore Dock were analyzed for priority pollutant metals (including barium and iron; Table 21). Results for each seawater batch cycle were compared to the Alaska's acute (CMC) and chronic (CCC) marine water criteria (ADEC 2008). Lead concentrations from all sample batches exceed the chronic marine criteria (8.1 µg/L). Lead concentrations exceed the acute marine criteria (210 µg/L) in all batches of SOD-01S and in batch 4 of SOD-05S. Copper concentrations exceed the acute marine criteria in batches 1, 3, and 4 of SOD-01S and -03S; batches 3 and 4 of SOD-02S; and batches 2, 3, and 4 of SOD-05S. Nickel exceeds the chronic marine criteria (8.2 µg/L) in batches 3 and 4 of SOD-01S and -03S, and batch 4 of SOD-02S and -05S. In samples with marine criteria exceedances, the maximum detected metal concentrations are 669 µg/L for lead, 22.6 µg/L for copper, and 13 µg/L for nickel. Antimony, arsenic, barium, chromium, iron, selenium, and zinc were detected in one or more seawater SBLT batch tests, but below Alaska's marine criteria. Cadmium, mercury, and silver were not detected above laboratory reporting limits. Apex Laboratory reported elevated detection limits in seawater samples due to notable matrix interference, which may have impacted results.

Duplicates of each parent sample were analyzed for QA/QC purposes. Seawater elutriate results from the laboratory duplicate samples (i.e., SOD-51S, -52S, -53S, and 54S) were consistent with those of the parent samples, with the exception of SOD-52S; batch 4 of that duplicate sample has total metal concentrations of iron, lead, and zinc that are significantly lower than those of the parent sample (SOD-02S). In addition, batch 4 of duplicate sample SOD-55S had total iron and zinc concentrations below those of the parent sample (SOD-05S).

All seawater SBLT parent and laboratory duplicate batch test elutriates (i.e., for samples SOD-01S, -02S, -03S, and -05S) were analyzed for total metals and PAHs (see Table 22). Total metals and PAHs were detected in all batch cycles. Total aqueous hydrocarbons (TAqH) concentrations range from 0.4 µg/L (in sample SOD-05S, batch 4) to 5.2 µg/L (in sample SOD-01S, batch 2). TAqH results did not exceed available Alaska screening criteria (15 µg/L; 18 AAC 20.070).

5.3.2 Freshwater SBLT Results

All freshwater SBLT batch tests from the Ore Dock (i.e., from SOD-01, -02, -03, and -05) were analyzed for dissolved priority pollutant metals (including barium and iron; Table 21). In general, lead exceeded the acute and chronic criteria for the majority of the samples, with exceedances for copper, iron, zinc, selenium, and cadmium in some samples. Lead concentrations exceed the acute water quality criteria (65 µg/L) in all batches of sample SOD-01F, and batches 2, 3, and 4 of samples SOD-02F, -03, and -05F. Copper concentrations exceed the acute water quality criteria (2.337 µg/L) in batch 1 of SOD-01F; batches 2, 3, and 4 of SOD-02F; batches 2 and 3 of SOD-03F; and batches 1, 2, and 3 of SOD-05F. In samples with lead and copper exceedances, lead concentrations range from 17.2 to 1,360 µg/L, and copper concentrations range from 1.21 to 97.8 µg/L. Zinc concentrations exceed the acute water quality criteria (120 µg/L) in batches 3 and 4 of SOD-02F and batch 3 of SOD-03F. The chronic freshwater criteria for iron (1,000 µg/L) was exceeded in five samples, selenium (5 µg/L) was exceeded in four samples, and cadmium (0.25 µg/L) was exceeded in three samples from different batches of SOD-02F, -03F, and -05F. Antimony, arsenic, barium, chromium, mercury, nickel, and silver were detected in at least one batch test, but at concentrations below chronic freshwater criteria.

Duplicates of each parent sample were run for quality QA/QC purposes. All freshwater elutriate results from the laboratory duplicate samples (i.e., for SOD-51S, -52S, -53S, -54S, and -55S) are consistent with those of the parent samples.

All freshwater SBLT batch test elutriates (i.e., from SOD-01F, -02F, -03F, and -05F) were also analyzed for total metals and PAHs (Table 21). Total metals and PAHs were detected in all freshwater batch cycles. In general, total metals and PAHs concentrations increased in each successive batch cycle on one to three orders of magnitude. TAqH concentrations range from 1.4 µg/L (in sample SOD-05F, batch 4) to 28.0 µg/L (in sample SOD-02F, batch 4). TAqH results exceed available Alaska freshwater screening criteria (15 µg/L; 18 AAC 20.070) in batches 3 and 4 of SOD-02F and -52F; all other samples are below the Alaska criteria for TAqH.

5.3.3 TCLP Results

Four composite sediment samples (from stations SOD-01, -02, -03, and -05) were analyzed for TCLP metals and PAHs (Table 23). TCLP results are compared to the federal thresholds (i.e., the Maximum Concentration of Contaminants for the Toxicity Characteristic; 40 CFR § 261.24). All lead concentrations exceed the federal threshold (5.0 mg/L); lead concentrations range from 5.12 mg/L (SOD-05) to 27.8 mg/L (SOD-01). Barium, iron, and zinc were also detected in all four sediment samples, but are below the available federal thresholds (i.e., in 40 CFR § 261.24).

The PAHs fluoranthene, phenanthrene, and pyrene were detected in all four sediment samples. In those samples, the maximum detected PAH concentrations are 0.00106 µg/L for fluoranthene, 0.000882 µg/L for phenanthrene, and 0.00348 µg/L for pyrene. Fluorene and anthracene were also detected in SOD-02. All other PAHs were non-detect.

6 SEDIMENT MANAGEMENT AND DISPOSAL RECOMMENDATIONS

Leachability testing was conducted to provide input for dredge material disposal evaluations. Using Ore Dock bulk chemistry results, representative sample composites from the proposed dredge prism (Figure 7a) were selected for leachability testing to determine their potential for leaching of metals and/or PAHs after removal. The results of the leachability testing are summarized in Section 5. Considerations for the management decisions of dredged sediment from the Ore Dock area, including the potential beneficial reuse of these materials as Project fill, the suitability for reuse as upland fill locally, or disposal in a permitted landfill, are described in this section. The following recommendations and suitability determinations are preliminary based on the current project understanding and available data, and are subject to change based on potential treatment of the dredged material and further discussion with structural and geotechnical engineers, the MOS, and regulatory agencies. Additional dredge material handling and disposal requirements will be discussed in the Project BODR.

6.1 In-water Reuse

The results of SBLT seawater analysis of Ore Dock composite samples are presented in Table 22. SBLT seawater results from composite Ore Dock samples within the proposed dredge footprint (i.e., from stations SOD-01, -02, -03, and -05) were screened to Alaska aquatic life marine water quality criteria for both acute and chronic exposure scenarios (18 AAC 070.020) to provide data regarding the suitability of dredge materials from the Ore Dock for reuse as fill in a marine environment. Based on this screening, several of the Ore Dock composite samples exceed both the acute and chronic marine criteria for lead. Based on these results, dredge materials from the Ore Dock area are not recommended for direct placement as fill in the marine environment in their current state, as the anticipated elutriate from the fill would likely exceed Alaska marine surface water standards.

Treatment of dredge materials has the potential to reduce the leachability of lead to levels below the appropriate marine criteria. Treatability of dredge material composites will be coordinated with the agencies and evaluated as part of a future Treatability Study.

6.2 Upland Reuse

The results of SBLT freshwater analysis of Ore Dock composite samples are presented in Table 21. SBLT freshwater results from composite Ore Dock samples within the proposed dredge footprint (i.e., from stations SOD-01, -02, -03, and -05) were screened to EPA's NRWQC for aquatic life (both acute and chronic freshwater exposure scenarios) to provide data regarding the suitability of dredge materials from the Ore Dock for reuse as upland fill in Skagway. Based on this screening, several of the Ore Dock composite samples exceeded both the acute and chronic freshwater criteria for lead. Based on these results, dredge materials from the Ore Dock area are not recommended for direct placement as upland fill that would be exposed to freshwater sources (i.e., stormwater, groundwater, or surface water) in their current state, as the anticipated elutriate from the fill would likely exceed EPA freshwater criteria (i.e., from Clean Water Act § 304[a]).

Treatment of dredge materials has the potential to reduce the leachability of lead to levels below the appropriate freshwater criteria. Treatability of dredge material composites will be coordinated with the agencies and evaluated as part of a future Treatability Study.

6.3 Upland Disposal

The results of TCLP analysis of Ore Dock composite samples are presented in Table 23. TCLP results from composite Ore Dock samples within the proposed dredge footprint (i.e., from stations SOD-01, -02, -03, and -05) were screened to federal RCRA criteria (40 CFR § 261.24) to characterize the dredge materials from the Ore Dock for potential disposal in a permitted upland landfill. Based on this screening, all four of the Ore Dock composite samples exceed the federal threshold for lead (5.0 mg/L) and would be characterized as hazardous waste upon dredging and shipment to a landfill. Based on the designation as hazardous waste, untreated dredged materials from the Ore Dock area in their current state would require disposal at a Subtitle C landfill in Oregon. To our knowledge, there are no Subtitle C landfills available in Alaska or Washington that could accept this material. Similar to the other reuse scenarios, treatment of the dredged materials on site has the potential to reduce the TCLP results to below the federal thresholds.

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TABLES

Table 1
Sediment Sampling Summary: Ore Dock

Station ID	Coordinates[1]		Tide Elevation[2] (feet, MLLW)	Water Depth (Leadline[3]) (feet, MLLW)	Mudline Elevation: Leadline (feet, MLLW)	Mudline Elevation: Surveyed[4] (feet, MLLW)	Penetration Depth (feet)	Recovery (feet)	Recovery Percentage
	Northing	Easting							
SOD-01	2785863	2376730	3.9	-44.8	-40.9	-36.9	15.0	12.5	83.3
SOD-02	2785996	2376888	7.5	-42.0	-34.5	-38.3	15.0	13.0	86.7
SOD-03	2785900	2376845	6.6	-51.5	-44.9	-40.1	15.0	13.0	86.7
SOD-04	2785745	2376701	18.1	-59.0	-40.9	-40.9	15.0	15.0	100
SOD-05	2785788	2376812	13.2	-53.3	-40.1	-40.1	15.0	15.0	100
SOD-06	2786041	2376989	3.4	-43.0	-39.6	-39.4	15.0	12.5	83.3
SOD-07	2785931	2376958	0.0	-41.0	-41.0	-40.0	15.0	15.0	100
SOD-08	2785847	2376931	8.0	-48.0	-40.0	-39.7	15.0	12.0	80.0
SOD-09	2785500	2376404	3.4	-45.0	-41.6	-41.5	15.0	12.5	83.3
SOD-10	2785632	2376516	10.8	-52.5	-41.7	-39.8	15.0	15.0	100
SOD-11	2785551	2376652	8.0	-50.0	-42.0	-41.6	15.0	13.0	86.7
SOD-12	2785471	2376745	14.7	-57.2	-42.5	-39.3	15.0	15.0	100
SOD-13	2785653	2376802	7.2	-51.0	-43.8	-39.9	15.0	12.5	83.3
SOD-14	2785653	2376942	15.5	-59.7	-44.2	-41.1	15.0	15.0	100
SOD-15	2785797	2377094	19.9	-59.3	-39.4	-38.1	15.0	15.0	100
SOD-16	2785950	2377089	19.1	-63.0	-43.9	-42.7	15.0	15.0	100
SOD-17	2786229	2377177	4.1	-42.0	-37.9	-36.8	15.0	14.0	93.3
SOD-18	2786156	2377175	3.3	-43.4	-40.1	-40.0	15.0	13.0	86.7
SOD-19	2786218	2377285	17.2	-55.0	-37.8	-37.1	15.0	15.0	100
SOD-20	2786046	2377353	15.9	-51.0	-35.1	-36.0	15.0	14.0	93.3

Notes:

1. Horizontal datum: Alaska State Plane, NAD 1983, Zone 1, U.S. Survey Feet.
2. Tide elevations from NOAA Tides and Current, Skagway, Alaska (Station ID: 9452400).
3. Leadline depths measured from barge during sample collection.
4. Bathymetric multibeam survey conducted by TerraSond on October 28, 2014.

Multibeam bathymetry measurements (of the mudline elevation) were used to develop report cross-sections.

MLLW = mean lower low water

Table 2
Sediment Sampling Summary: Small Boat Harbor

Station ID	Coordinates[1]		Tide Elevation (feet, MLLW)[2]	Water Depth (Leadline) (feet, MLLW)	Mudline/Ground Surface Elevation (feet, MLLW)	Penetration Depth (feet)	Recovery (feet)	Recovery Percentage
	Northing	Easting						
SBH-01*	2785912	2378145	13.0	-23.3	-10.3	30.0	30.0	100
SBH-02	2785990	2378213	--	--	+15.75	35.0	35.0	100
SBH-03	2786069	2378282	--	--	+18.9	35.0	35.0	100
SBH-04*	2785855	2378214	1.7	-12.5	-10.85	30.0	30.0	100
SBH-05	2785932	2378274	--	--	+17.05	40.0	40.0	100
SBH-06	2786013	2378334	--	--	+18.2	35.0	35.0	100
SBH-07*	2785792	2378261	8.8	-23.1	-14.3	35.0	35.0	100
SBH-08	2785885	2378311	--	--	+16.5	35.0	35.0	100
SBH-09	2785961	2378385	--	--	+18.3	35.0	35.0	100
SBH-10*	2785725	2378337	8.0	-10.0	-2.0	25.0	25.0	100
SBH-11	2785836	2378347	--	--	+8.0	30.0	30.0	100
SBH-12	2785910	2378405	--	--	+17.4	30.0	30.0	100

Notes:

1. Horizontal datum: Alaska State Plane, NAD 1983, Zone 1, U.S. Survey Feet.

2. Actual tidal elevations were determined using the NOAA tide gage located in Skagway (Number 9452400).

*SBH elevations were collected from offshore locations using a leadline. The remaining upland station elevations were determined with a survey rod using tidal elevations during time of sampling.

MLLW = mean lower low water

Table 3
Compositing and Testing Summary: Ore Dock Sediment

DMMU No.[1]	Composite Sample ID	Depth Interval (below mudline)	Composited Ore Dock Cores (SOD-)	Testing
Surface DMMUs				
1	SOD-DMMU-1	0 - 4 feet	01, 02, 03	PAHs, Metals, TS, TOC, GS, TBT
2	SOD-DMMU-2	0 - 4 feet	04, 05, 06, 07, 08	PAHs, Metals, TS, TOC, GS, TBT
3	SOD-DMMU-3	0 - 4 feet	09, 10, 11, 12	PAHs, Metals, TS, TOC, GS, TBT
4	SOD-DMMU-4	0 - 4 feet	13, 14, 15, 16	PAHs, Metals, TS, TOC, GS
5	SOD-DMMU-5	0 - 4 feet	17, 18, 19, 20	PAHs, Metals, TS, TOC, GS, TBT
	SOD-DMMU-55	0 - 4 feet	17, 18, 19, 20	PAHs, Metals, TS, TOC, TBT
1, 2, 3, 4, 5	SOD-DMMU-1-5	Single composite of DMMUs 1, 2, 3, 4, and 5		Dioxins/furans, PCB Aroclors, TS
	SOD-DMMU-51-5	*Field duplicate of above sample*		Dioxins/furans, PCB Aroclors, TS
Subsurface DMMUs				
6	SOD-DMMU-6	4 - 8 feet	01, 02, 03	PAHs, Metals, TS, TOC, GS
	SOD-DMMU-56	4 - 8 feet	01, 02, 03	PAHs, Metals, TS, TOC
7	SOD-DMMU-7	4 - 8 feet	04, 05, 06, 07, 08	PAHs, Metals, TS, TOC, GS
8	SOD-DMMU-8	4 - 8 feet	09, 10, 11, 12	PAHs, Metals, TS, TOC, GS
9	SOD-DMMU-9	4 - 8 feet	13, 14, 15, 16	PAHs, Metals, TS, TOC, GS
10	SOD-DMMU-10	4 - 8 feet	17, 18, 19, 20	PAHs, Metals, TS, TOC, GS
11	SOD-DMMU-11	8 - 12 feet	01, 02, 03	PAHs, Metals, TS, TOC, GS
12	SOD-DMMU-12	8 - 12 feet	04, 05, 06, 07, 08	PAHs, Metals, TS, TOC, GS
13	SOD-DMMU-13	8 - 12 feet	09, 10, 11, 12	PAHs, Metals, TS, TOC, GS
14	SOD-DMMU-14	8 - 12 feet	13, 14, 15, 16	PAHs, Metals, TS, TOC, GS
15	SOD-DMMU-15	8 - 12 feet	17, 18, 19, 20	PAHs, Metals, TS, TOC, GS

Notes:
1. DMMU composites per the approved SAP (Anchor QEA 2014) do not represent the current remedial dredge area.
DMMU = dredged material management unit
GS = grain size
Metals = antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, barium, and iron
MLLW = mean lower low water
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
TBT = tributyltin (bulk)
TOC = total organic carbon
TS = total solids

Table 4
Compositing and Testing Summary: Small Boat Harbor Sediment

DMMU No.	Composite Sample ID	Depth Interval	Composited Small Boat Harbor Borings (SBH-)	Testing
1	SBH-DMMU-1	0 to 4 feet bgs	01, 04, 05, 07	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS, GS
	SBH-DMMU-51	0 to 4 feet bgs	01, 04, 05, 07	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS
2	SBH-DMMU-2	0 to 4 feet bgs	02, 03, 06, 08	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS, GS
	SBH-DMMU-52	0 to 4 feet bgs	02, 03, 06, 08	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS
3	SBH-DMMU-3	4 feet bgs to -14 feet MLLW	01, 04, 07, 10, 11	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS, GS
4	SBH-DMMU-4	4 to 0 feet MLLW	03, 06, 09, 12	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS, GS
5	SBH-DMMU-5	0 to -14 feet MLLW	03, 05, 06, 09, 12	SVOCs, PAHs, Metals, DRO, RRO, TS, TVS, GS
1, 2, 3, 4, 5	SBH-DMMU-1-5	Single composite of DMMUs 1, 2, 3, 4, and 5		Dioxins/furans, PCB Aroclors, TS

Notes:
bgs = below ground surface
DMMU = Dredged Material Management Unit
DRO = diesel range organics
GS = grain size
Metals = antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, barium, and iron
MLLW = mean lower low water
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
RRO = residual range organics
SVOC = semi volatile organic compound
TS = total solids
TVS = total volatile solids

Table 5
Analytical Testing Summary: Ore Dock

Station ID	Sample ID	Sampling Interval (below mudline)	Sediment Chemistry
SOD-01	SOD-01-0-2.5	0-2.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-51-0-2.5	0-2.5 feet	TIC, TOC, Sulfur
	SOD-01-0-4	0-4 feet	GS
	SOD-01-2.5-4.5	2.5-4.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-01-4.5-6.5	4.5-6.5 feet	Metals, PAHs, TOC, TS
	SOD-01-4-8	4-8 feet	GS
	SOD-01-6.5-8.5	6.5-8.5 feet	Metals, PAHs, TOC, TS
	SOD-01-8.5-10.5	8.5-10.5 feet	Metals, PAHs, TOC, TS
	SOD-01-10.5-12.5	10.5-12.5 feet	Metals, PAHs, TOC, TS
SOD-02	SOD-02-0-3	0-3 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-02-5-6.5	5-6.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-02-5-8	5-8 feet	GS
	SOD-02-6.5-8.5	6.5-8.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-02-8.5-10.5	8.5-10.5 feet	Metals, PAHs, TOC, TS
	SOD-02-8-12	8-12 feet	GS
	SOD-02-10.5-12.5	10.5-12.5 feet	Metals, PAHs, TOC, TS
	SOD-02-12.5-15.0	12.5-15 feet	Metals, PAHs, TOC, TS
SOD-03	SOD-03-0-2.5	0-2.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-03-0-4	0-4 feet	GS
	SOD-03-2.5-4.5	2.5-4.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-03-4.5-6.5	4.5-6.5 feet	Metals, PAHs, TOC, TS
	SOD-03-4-8	4-8 feet	GS
	SOD-03-6.5-8.5	6.5-8.5 feet	Metals, PAHs, TOC, TS
	SOD-03-8.5-10.5	8.5-10.5 feet	Metals, PAHs, TOC, TS
	SOD-03-10.5-13	10.5-13 feet	Metals, PAHs, TOC, TS
SOD-04	SOD-04-0-1.5	0-1.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-04-0-4	0-4 feet	GS
	SOD-04-1.5-3.5	1.5-3.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-04-3.5-5.5	3.5-5.5 feet	Metals, PAHs, TOC, TS
	SOD-04-4-8	4-8 feet	GS
	SOD-04 COMP	0-3.5 feet	TBT, TS
SOD-05	SOD-05-0-1.5	0-1.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-05-1.5-3.5	1.5-3.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-05-3.5-5.5	3.5-5.5 feet	Metals, PAHs, TOC, TS
	SOD-05 COMP	0-3.5 feet	TBT, TS
SOD-06	SOD-06-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-06-2-4	2-4 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-06-4-6	4-6 feet	Metals, PAHs, TOC, TS
	SOD-06-6-8	6-8 feet	Metals, PAHs, TOC, TS
	SOD-06 COMP	0-4 feet	TBT, TS
SOD-07	SOD-07-0-1.5	0-1.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-07-1.5-3.5	1.5-3.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-07-3.5-5.5	3.5-5.5 feet	Metals, PAHs, TOC, TS
	SOD-07 COMP	0-3.5 feet	TBT, TS
SOD-08	SOD-08-0-2.5	0-2.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-08-0-4	0-4 feet	GS
	SOD-08-2.5-4.5	2.5-4.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-08-4.5-6.5	4.5-6.5 feet	Metals, PAHs, TOC, TS
	SOD-08-4-8	4-8 feet	GS
	SOD-08-6.5-8.5	6.5-8.5 feet	Metals, PAHs, TOC, TS
	SOD-08 COMP	0-4.5 feet	TBT, TS
SOD-09	SOD-09-0-1.5	0-1.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-09-0-4	0-4 feet	GS
	SOD-09-1.5-3.5	1.5-3.5 feet	Metals, PAHs, TOC, TS
	SOD-09-3.5-5.5	3.5-5.5 feet	Metals, PAHs, TOC, TS
	SOD-09-4-8	4-8 feet	GS
SOD-10	SOD-10-0-2.8	0-2.8 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-10-3-5	3-5 feet	Metals, PAHs, TOC, TS
	SOD-10-5-7	5-7 feet	Metals, PAHs, TOC, TS
SOD-11	SOD-11-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-11-2-4	2-4 feet	Metals, PAHs, TOC, TS
SOD-12	SOD-12-0-1.5	0-1.5 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-12-1.5-3.5	1.5-3.5 feet	Metals, PAHs, TOC, TS
	SOD-12-3.5-5.5	3.5-5.5 feet	Metals, PAHs, TOC, TS
SOD-13	SOD-13-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-13-2-4	2-4 feet	Metals, PAHs, TOC, TS
	SOD-13-4-6	4-6 feet	Metals, PAHs, TOC, TS
SOD-14	SOD-14-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-14-0-4	0-4 feet	GS
	SOD-14-2-4	2-4 feet	Metals, PAHs, TOC, TS
	SOD-14-4-8	4-8 feet	GS
SOD-15	SOD-15-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-15-2-4	2-4 feet	Metals, PAHs, TOC, TS

Table 5
Analytical Testing Summary: Ore Dock

Station ID	Sample ID	Sampling Interval (below mudline)	Sediment Chemistry
SOD-16	SOD-16-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-16-2-4	2-4 feet	Metals, PAHs, TOC, TS
SOD-17	SOD-17-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-17-0-4	0-4 feet	GS
	SOD-17-2-4	2-4 feet	Metals, PAHs, TOC, TS
	SOD-17-4-6	4-6 feet	Metals, PAHs, TOC, TS
	SOD-17-4-8	4-8 feet	GS
SOD-18	SOD-18-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-68-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-18-2-4	2-4 feet	Metals, PAHs, TOC, TS
	SOD-18-4-6	4-6 feet	Metals, PAHs, TOC, TS
SOD-19	SOD-19-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-69-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-19-2-4	2-4 feet	Metals, PAHs, TOC, TS
	SOD-19-4-6	4-6 feet	Metals, PAHs, TOC, TS
SOD-20	SOD-20-0-2	0-2 feet	Metals, PAHs, TIC, TOC, TS, Sulfur
	SOD-20-2-4	2-4 feet	Metals, PAHs, TOC, TS
	SOD-20-4-6	4-6 feet	Metals, PAHs, TOC, TS

Notes:
GS = grain size
Metals = antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, barium, and iron
PAH = polycyclic aromatic hydrocarbon
TBT = tributyltin (ion)
TIC = total inorganic carbon
TOC = total organic carbon
TS = total solids

Table 6
Analytical Testing of Discrete Sediment Samples: Small Boat Harbor

Station ID	Sample ID	Sample Interval (below mudline)	Sediment Chemistry
SBH-08	SBH-08-0-4	0 - 4 feet	DRO, GRO, RRO, TS
	SBH-08-4-16.5	4 - 16.5 feet	DRO, GRO, RRO, TS
SBH-09	SBH-09-0-4	0 - 4 feet	DRO, GRO, RRO, TS
	SBH-09-4-18.3	4 - 18.3 feet	DRO, GRO, RRO, TS
SBH-10	SBH-10-0-4	0 - 4 feet	DRO, GRO, RRO, TS
SBH-11	SBH-11-0-4	0 - 4 feet	DRO, GRO, RRO, TS
	SBH-61-0-4	0 - 4 feet	DRO, GRO, RRO, TS
SBH-12	SBH-12-0-4	0 - 4 feet	DRO, GRO, RRO, TS
	SBH-12-4-17.4	4 - 17.4 feet	DRO, GRO, RRO, TS

Notes:
DRO = diesel range organics
GRO = gasoline range organics
RRO = residual range organics
TS = total solids

Table 7
Soil Sampling Summary: Skagway Ore Terminal Uplands

Station ID	Coordinates[1]		Approximate Ground Surface Elevation (feet)[2]	Sampling Method	Sample Depth (feet bgs)	Testing
	Northing	Easting				
G03	2786560	2377334	28.9	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH
G04	2786634	2377154	30.0	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH
G05	2786321	2376855	29.1	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH
G06	2786069	2376634	29.8	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH
G07	2785483	2376336	28.9	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH
G08	2785913	2376249	28.9	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH
G10	2786539	2376606	30.0	Hollow Stem Auger	0-2	TS, Metals, PAHs, TPH
					4-6	TS, Metals, PAHs, TPH

Notes:

1. Horizontal datum: Alaska State Plane, NAD 1983, Zone 1, U.S. Survey Feet.

2. Vertical datum: Mean Lower Low Water.

bgs = below ground surface

Metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver

PAH = polycyclic aromatic hydrocarbon

TPH = total petroleum hydrocarbons (includes gasoline, diesel, and residual range organics)

TS = total solids

Table 8
Ore Dock Sediment Results: Grain Size

Station ID	Sample ID	Sample Depth (feet)	Gravel (%)	Sand (%)	Total Fines[1] (%)
SOD-01	SOD-01-0-4	0 - 4	**34.3**	**56.5**	**9.2**
SOD-01	SOD-01-4-8	4 - 8	**59.7**	**38.1**	**2.2**
SOD-02	SOD-02-5-8	5 - 8	**17.1**	**54.7**	**28.2**
SOD-02	SOD-02-8-12	8 - 12	**76.3**	**19.9**	**3.8**
SOD-03	SOD-03-0-4	0 - 4	**10.6**	**74.4**	**15**
SOD-03	SOD-03-4-8	4 - 8	**23**	**74.6**	**2.4**
SOD-04	SOD-04-0-4	0 - 4	**26.2**	**69**	**4.8**
SOD-04	SOD-04-4-8	4 - 8	**37.6**	**60**	**2.4**
SOD-08	SOD-08-0-4	0 - 4	**35.8**	**56.4**	**7.8**
SOD-08	SOD-08-4-8	4 - 8	**24.3**	**73.9**	**1.8**
SOD-09	SOD-09-0-4	0 - 4	**41.9**	**52**	**6.1**
SOD-09	SOD-09-4-8	4 - 8	**70.4**	**27.3**	**2.3**
SOD-14	SOD-14-0-4	0 - 4	**49.3**	**47.6**	**3.1**
SOD-14	SOD-14-4-8	4 - 8	**50**	**47**	**3**
SOD-17	SOD-17-0-4	0 - 4	**24.1**	**68**	**7.9**
SOD-17	SOD-17-4-8	4 - 8	**55.7**	**42.2**	**2.1**
SOD-DMMU-1	SOD-DMMU-1-0-4	0 - 4	**37.1**	**51**	**11.9**
SOD-DMMU-2	SOD-DMMU-2-0-4	0 - 4	**40.7**	**55.6**	**3.7**
SOD-DMMU-3	SOD-DMMU-3-0-4	0 - 4	**27**	**67.1**	**5.9**
SOD-DMMU-4	SOD-DMMU-4-0-4	0 - 4	**45.5**	**51.6**	**2.9**
SOD-DMMU-5	SOD-DMMU-5-0-4	0 - 4	**39.3**	**53.3**	**7.4**
SOD-DMMU-6	SOD-DMMU-6-4-8	4 - 8	**36.8**	**60.7**	**2.5**
SOD-DMMU-7	SOD-DMMU-7-4-8	4 - 8	**38.6**	**59.5**	**1.9**
SOD-DMMU-8	SOD-DMMU-8-4-8	4 - 8	**32.5**	**65.1**	**2.4**
SOD-DMMU-9	SOD-DMMU-9-4-8	4 - 8	**43.1**	**52.1**	**4.8**
SOD-DMMU-10	SOD-DMMU-10-4-8	4 - 8	**30.3**	**65.8**	**3.9**
SOD-DMMU-11	SOD-DMMU-11-8-12	8 - 12	**47.9**	**49.7**	**2.4**
SOD-DMMU-12	SOD-DMMU-12-8-12	8 - 12	**41.8**	**51.8**	**6.4**
SOD-DMMU-13	SOD-DMMU-13-8-13	8 - 12	**35.9**	**61.5**	**2.6**
SOD-DMMU-14	SOD-DMMU-14-8-12	8 - 12	**30.1**	**52.7**	**17.2**
SOD-DMMU-15	SOD-DMMU-15-8-12	8 - 12	**42.7**	**52.2**	**5.1**

Notes:

1. Total fines as reported (not calculated).

Bold = Detected result

U = Compound analyzed, but not detected above detection limit

Table 9
Ore Dock Sediment Results: Metals and PAHs

Location ID			SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-02	SOD-02	SOD-02	SOD-02	SOD-02	SOD-02	SOD-03	SOD-03
Sample ID			SOD-01-0-2.5	SOD-01-2.5-4.5	SOD-01-4.5-6.5	SOD-01-6.5-8.5	SOD-01-8.5-10.5	SOD-01-10.5-12.5	SOD-02-0-3.0	SOD-02-5.0-6.5	SOD-02-6.5-8.5	SOD-02-8.5-10.5	SOD-02-10.5-12.5	SOD-02-12.5-15.0	SOD-03-0-2.5	SOD-03-2.5-4.5
Sample Date			01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/26/2015
Depth			0 - 2.5 ft	2.5 - 4.5 ft	4.5 - 6.5 ft	6.5 - 8.5 ft	8.5 - 10.5 ft	10.5 - 12.5 ft	0 - 3 ft	5 - 6.5 ft	6.5 - 8.5 ft	8.5 - 10.5 ft	10.5 - 12.5 ft	12.5 - 15 ft	0 - 2.5 ft	2.5 - 4.5 ft
Sample Type			N	N	N	N	N	N	N	N	N	N	N	N	N	N
X			2376730	2376730	2376730	2376730	2376730	2376730	2376888	2376888	2376888	2376888	2376888	2376888	2376845	2376845
Y			2785863	2785863	2785863	2785863	2785863	2785863	2785996	2785996	2785996	2785996	2785996	2785996	2785900	2785900
Parameter	**TEL**	**SCO (AET)**														
Conventional Parameters (mg/kg)																
Sulfur	--	--	**10800**	**280**	--	--	--	--	**9730**	**4620**	**480**	--	--	--	**670**	**150**
Conventional Parameters (percent)																
Inorganic carbon	--	--	**0.36**	**0.13**	--	--	--	--	**0.09**	**0.88**	**0.03**	--	--	--	**0.41**	**0.04**
Total organic carbon	--	--	**0.19**	**0.02**	0.0316 U	**0.0269 J**	0.0302 U	0.0314 U	**0.49**	**0.67**	**0.07**	**0.0514 J**	**0.0433 J**	**0.0284 J**	**0.31**	**0.03**
Total solids	--	--	**78.1**	**89.5**	**92.3**	**89.5**	**91**	**85.9**	**72**	**73.1**	**81.6**	**92.5**	**92.2**	**87.1**	**80.4**	**88.7**
Metals (mg/kg)																
Antimony	--	--	**3.76**	0.545 U	0.53 U	0.515 U	0.525 U	0.56 U	**0.873 J**	**0.437 J**	0.56 U	0.5 U	0.535 U	0.555 U	0.585 U	0.52 U
Arsenic	7.24	57	**9.67**	0.545 U	0.53 U	**0.369 J**	0.525 U	0.56 U	**8.74**	**4.29**	**2.62**	**1.03**	0.535 U	0.555 U	**1.78**	**0.466 J**
Barium	--	--	**208 J**	**120 J**	**148**	**107**	**91.5 J**	**101**	**350 J**	**272 J**	**163**	**168**	**122**	**132**	**157 J**	**87 J**
Cadmium	0.68	5.1	**16.4**	**0.383**	0.107 U	**0.068 J**	0.105 U	0.113 U	**12.5**	**3.63**	**2.4**	0.1 U	0.107 U	**0.077 J**	**0.754**	**0.154 J**
Chromium	52.3	260	**9.03**	**4.67**	**6.33**	**6.13**	**4.43**	**5.25**	**16.4**	**12.7**	**8.04**	**5.52**	**5.73**	**5.49**	**8.78**	**3.88**
Copper	18.7	390	**244**	**8.61**	**3.82**	**4.1**	**3.4**	**3.92**	**204**	**81.4**	**43.2**	**3.21**	**6.13**	**3.68**	**26.5**	**8.71**
Iron	--	--	**18400**	**10900**	**11600**	**10000**	**8790**	**9780**	**32300**	**23900**	**16300**	**11100**	**10300**	**9870**	**16200**	**9360**
Lead	30.2	450	**10000**	**224**	**13.2**	**3.35**	**2.78**	**3.23**	**5220**	**1590**	**937**	**7.01**	**5.34**	**10.3**	**501**	**165**
Mercury	0.13	0.41	**6.6**	**0.175**	0.0213 U	0.0205 U	0.021 U	0.0225 U	**4.71**	**1.46**	**1.04**	0.02 U	0.0213 U	0.0222 U	**0.42**	**0.0985**
Nickel	15.9	--	**5.91**	**2.59**	**2.75**	**2.42**	**2.23**	**2.45**	**9.04**	**8.18**	**4.09**	**2.55**	**2.41**	**1.88**	**4.72**	**1.96**
Selenium	--	--	**0.568 J**	0.545 U	0.53 U	0.515 U	0.525 U	0.56 U	**1.05 J**	**0.752 J**	**0.405 J**	0.5 U	0.535 U	0.555 U	**0.422 J**	0.52 U
Silver	0.73	6.1	**9.59**	**0.171 J**	0.107 U	0.103 U	0.105 U	0.113 U	**4.93**	**1.68**	**0.881**	0.1 U	0.107 U	0.112 U	**0.374**	**0.0989 J**
Thallium	--	--	**2.18**	**0.138 J**	**0.0981 J**	**0.0825 J**	**0.0694 J**	**0.0799 J**	**0.932**	**0.436**	**0.248**	**0.114 J**	**0.106 J**	**0.11 J**	**0.195 J**	**0.0902 J**
Zinc	124	410	**12300**	**270**	**46.9**	**31.1**	**24.8**	**29.2**	**10400**	**2770**	**1890**	**35.9**	**37**	**43.2**	**557**	**144**
Polycyclic Aromatic Hydrocarbons (µg/kg)																
1-Methylnaphthalene	--	--	3.19 U	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	17.1 U	**11 J**	15.3 U	2.69 U	2.71 U	2.86 U	3.1 U	2.77 U
2-Methylnaphthalene	20.2	670	**2.43 J**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	17.1 U	**20 J**	15.3 U	2.69 U	2.71 U	2.86 U	3.1 U	2.77 U
Acenaphthene	6.71	500	**5.63 J**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	17.1 U	**50.6**	15.3 U	2.69 U	2.71 U	2.86 U	**8.44**	2.77 U
Acenaphthylene	5.87	1300	**5.11 J**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**21.6 J**	**37.7**	15.3 U	2.69 U	2.71 U	2.86 U	**7.16**	2.77 U
Anthracene	46.9	960	**39.6**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**205**	**339**	**34.9**	2.69 U	2.71 U	2.86 U	**44**	**4.76 J**
Benzo(a)anthracene	74.8	1300	**275**	**2.44 J**	2.67 U	2.76 U	2.71 U	2.9 U	**1280**	**1830**	**212**	**1.7 J**	**2.99 J**	**10.5**	**125**	**11.7**
Benzo(a)pyrene	88.8	1600	**152**	**1.7 J**	2.67 U	2.76 U	2.71 U	2.9 U	**657**	**963**	**130**	2.69 U	2.71 U	**4.76 J**	**76.9**	**5.97**
Benzo(b)fluoranthene	--	--	3.19 U	**6.8**	2.67 U	2.76 U	2.71 U	2.9 U	**2490**	**3330**	**430**	**4.69 J**	**4.87 J**	**16.5**	**203**	**19.3**
Benzo(g,h,i)perylene	--	670	**38.9**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**188**	**208**	**32.4**	2.69 U	2.71 U	2.86 U	**24.5**	**2.02 J**
Benzo(k)fluoranthene	--	--	**30.9**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	17.1 U	17 U	15.3 U	2.69 UJ	2.71 UJ	2.86 U	3.1 U	2.77 U
Chrysene	108	1400	**383**	**4.53 J**	2.67 U	2.76 U	2.71 U	2.9 U	**1610**	**2650**	**277**	**1.99 J**	**3.83 J**	**9.78**	**152**	**15.3**
Dibenzo(a,h)anthracene	6.22	230	**20.5**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**87.3**	**101**	**14.2 J**	2.69 U	2.71 U	2.86 U	**7.81**	2.77 U
Fluoranthene	113	1700	**282**	**2.63 J**	2.67 U	2.76 U	2.71 U	2.9 U	**1430**	**1270**	**89**	**3.86 J**	**9.81**	**25.9**	**217**	**19.9**
Fluorene	21.2	540	**28.5**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**117**	**225**	**19 J**	2.69 U	2.71 U	2.86 U	**13.5**	**4.89 J**
Indeno(1,2,3-c,d)pyrene	--	600	**40.5**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**196**	**225**	**36.1**	2.69 U	2.71 U	2.86 U	**25.4**	**2.05 J**
Naphthalene	34.6	2100	3.19 U	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	17.1 U	17 U	15.3 U	2.69 U	2.71 U	2.86 U	3.1 U	2.77 U
Phenanthrene	86.7	1500	**110**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**543**	**752**	**73.7**	**2.68 J**	**3.85 J**	**9.03**	**71.6**	**11.4**
Pyrene	153	2600	**1050**	**15.3**	**1.6 J**	2.76 U	2.71 U	2.9 U	**2650**	**4090**	**327**	**8.25**	**9**	**23.6**	**240**	**15.3**
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	**30.9**	**6.8**	2.67 U	2.76 U	2.71 U	2.9 U	**2490**	**3330**	**430**	**4.69 J**	**4.87 J**	**16.5**	**203**	**19.3**
Total HPAH (SMS) (U = 0)	--	12000	**2272.8**	**33.4 J**	**1.6 J**	2.76 U	2.71 U	2.9 U	**10588.3**	**14667**	**1547.7 J**	**20.49 J**	**30.5 J**	**91.04 J**	**1071.61**	**91.54 J**
Total LPAH (SMS) (U = 0)	--	5200	**188.84 J**	2.76 U	2.67 U	2.76 U	2.71 U	2.9 U	**886.6 J**	**1404.3**	**127.6 J**	**2.68 J**	**3.85 J**	**9.03**	**144.7**	**21.05 J**
Total PAH (17) (U = 0)	1684	--	**2464.07 J**	**33.4 J**	**1.6 J**	2.76 U	2.71 U	2.9 U	**11474.9 J**	**16091.3 J**	**1675.3 J**	**23.17 J**	**34.35 J**	**100.07 J**	**1216.31**	**112.59 J**

Table 9
Ore Dock Sediment Results: Metals and PAHs

Location ID			SOD-03	SOD-03	SOD-03	SOD-03	SOD-04	SOD-04	SOD-04	SOD-05	SOD-05	SOD-05	SOD-06	SOD-06	SOD-06	SOD-06
Sample ID			SOD-03-4.5-6.5	SOD-03-6.5-8.5	SOD-03-8.5-10.5	SOD-03-10.5-13	SOD-04-0-1.5	SOD-04-1.5-3.5	SOD-04-3.5-5.5	SOD-05-0-1.5	SOD-05-1.5-3.5	SOD-05-3.5-5.5	SOD-06-0-2	SOD-06-2-4	SOD-06-4-6	SOD-06-6-8
Sample Date			01/26/2015	01/26/2015	01/26/2015	01/26/2015	01/19/2015	01/19/2015	01/19/2015	01/19/2015	01/19/2015	01/19/2015	01/18/2015	01/18/2015	01/18/2015	01/18/2015
Depth			4.6 - 6.5 ft	6.5 - 8.5 ft	8.5 - 10.5 ft	10.5 - 13 ft	0 - 1.5 ft	1.5 - 3.5 ft	3.5 - 5.5 ft	0 - 1.5 ft	1.5 - 3.5 ft	3.5 - 5.5 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft	6 - 8 ft
Sample Type			N	N	N	N	N	N	N	N	N	N	N	N	N	N
X			2376845	2376845	2376845	2376845	2376701	2376701	2376701	2376812	2376812	2376812	2376989	2376989	2376989	2376989
Y			2785900	2785900	2785900	2785900	2785745	2785745	2785745	2785788	2785788	2785788	2786041	2786041	2786041	2786041
Parameter	**TEL**	**SCO (AET)**														
Conventional Parameters (mg/kg)																
Sulfur	--	--	--	--	--	--	**190**	**130**	--	**480**	**170**	--	**270**	**100**	--	--
Conventional Parameters (percent)																
Inorganic carbon	--	--	--	--	--	--	**0.02**	**0.03**	--	**0.04**	**0.02**	--	**0.44**	0.005 U	--	--
Total organic carbon	--	--	**0.0249 J**	0.0289 U	0.0295 U	0.029 U	**0.06**	**0.03**	**0.0329 J**	**0.04**	**0.01**	**0.0197 J**	**0.1**	**0.02**	**0.0268 J**	0.0283 U
Total solids	--	--	**91.7**	**91.7**	**87.7**	**87**	**79.2**	**85.7**	**83.4**	**85.9**	**88**	**91.8**	**88.1**	**84.5**	**87.1**	**89.2**
Metals (mg/kg)																
Antimony	--	--	0.51 U	0.492 U	0.555 U	0.56 U	0.6 U	0.545 U	0.56 U	0.545 U	0.485 U	0.515 U	0.51 U	0.545 U	0.55 U	0.505 U
Arsenic	7.24	57	0.51 U	**0.883 J**	0.555 U	0.56 U	**0.456 J**	**0.498 J**	**0.378 J**	**1.08 J**	0.485 U	0.515 U	0.51 U	**0.597 J**	0.55 U	0.505 U
Barium	--	--	**108**	**98**	**94.5**	**73.9**	**110 J**	**120 J**	**93.4**	**137 J**	**111 J**	**122**	**116 J**	**127 J**	**109**	**64**
Cadmium	0.68	5.1	**0.21**	**0.454**	**0.202 J**	**0.248**	**0.0754 J**	0.11 U	0.112 U	**0.894**	0.097 U	0.103 U	**0.275**	**0.388**	**0.241**	0.102 U
Chromium	52.3	260	**10.2**	**6.68**	**6.16**	**4.28**	**5.18 J**	**17.7 J**	**5.9**	**8.25 J**	**5.68 J**	**7.64**	**4.89 J**	**6.53 J**	**4.46**	**7.05**
Copper	18.7	390	**4.52**	**4.38**	**3.29**	**3.16**	**4.85**	**5.53**	**8.17**	**18.7**	**3.7**	**3.38**	**4.64**	**12.4**	**5.93**	**4.36**
Iron	--	--	**12200**	**10000**	**9780**	**8210**	**10800**	**12700**	**10600**	**12400**	**11800**	**10900**	**10200**	**13100**	**9390**	**9290**
Lead	30.2	450	**2.34**	**2.86**	**2.36**	**2**	**32.2**	**25.5**	**10.9**	**577**	**12**	**2.49**	**13.1**	**88.1**	**2.83**	**2.24**
Mercury	0.13	0.41	0.0204 U	0.0197 U	0.0222 U	0.0223 U	**0.0254 J**	**0.0179 J**	**0.0139 J**	**0.378**	**0.0146 J**	0.0207 U	**0.0408 J**	**0.122**	0.022 U	0.0203 U
Nickel	15.9	--	**6.12**	**3.66**	**2.28**	**2.51**	**1.99**	**4.91**	**2.44**	**3.79**	**2.52**	**3.77**	**2.22**	**2.83**	**1.97**	**3.29**
Selenium	--	--	0.51 U	0.492 U	0.555 U	0.56 U	0.6 U	0.545 U	0.56 U	0.545 U	0.485 U	0.515 U	0.51 U	0.545 U	0.55 U	0.505 U
Silver	0.73	6.1	0.102 U	0.0985 U	0.111 U	0.112 U	0.12 U	0.11 U	0.112 U	**0.475**	0.097 U	0.103 U	0.102 U	**0.0707 J**	0.11 U	0.102 U
Thallium	--	--	**0.109 J**	**0.0877 J**	**0.0763 J**	0.112 U	**0.0995 J**	**0.0937 J**	**0.0779 J**	**0.169 J**	**0.0852 J**	**0.0884 J**	**0.11 J**	**0.0987 J**	**0.101 J**	**0.069 J**
Zinc	124	410	**33.2**	**30.3**	**28.7**	**27.8**	**80.5**	**70.9**	**42.6**	**698**	**42.5**	**30.9**	**46.5**	**225**	**28.9**	**26.9**
Polycyclic Aromatic Hydrocarbons (µg/kg)																
1-Methylnaphthalene	--	--	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	2.88 U	2.82 U	2.58 U	2.83 U	2.94 U	2.77 U	2.75 U
2-Methylnaphthalene	20.2	670	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	2.88 U	2.82 U	2.58 U	2.83 U	2.94 U	2.77 U	2.75 U
Acenaphthene	6.71	500	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**1.81 J**	2.82 U	2.58 U	2.83 U	**2 J**	2.77 U	2.75 U
Acenaphthylene	5.87	1300	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	2.88 U	2.82 U	2.58 U	2.83 U	2.94 U	2.77 U	2.75 U
Anthracene	46.9	960	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**4.8 J**	2.82 U	2.58 U	2.83 U	**7.86**	2.77 U	2.75 U
Benzo(a)anthracene	74.8	1300	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	**3.87 J**	2.94 U	**37.9**	2.82 U	2.58 U	**2.3 J**	**17.6**	2.77 U	2.75 U
Benzo(a)pyrene	88.8	1600	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	**2.21 J**	2.94 U	**22.2**	2.82 U	2.58 U	2.83 U	**9.61**	2.77 U	2.75 U
Benzo(b)fluoranthene	--	--	2.67 U	2.69 U	2.81 U	2.84 U	**2.14 J**	**6.57**	**2.26 J**	**69.3**	2.82 U	2.58 U	**4.67 J**	**28.4**	2.77 U	2.75 U
Benzo(g,h,i)perylene	--	670	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**6.97**	2.82 U	2.58 U	2.83 U	**3.12 J**	2.77 U	2.75 U
Benzo(k)fluoranthene	--	--	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 UJ	2.88 U	2.82 U	2.58 U	2.83 U	2.94 U	2.77 U	2.75 U
Chrysene	108	1400	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	**6.94**	**1.92 J**	**36.1**	2.82 U	2.58 U	**3.37 J**	**26.4**	2.77 U	2.75 U
Dibenzo(a,h)anthracene	6.22	230	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**2.6 J**	2.82 U	2.58 U	2.83 U	2.94 U	2.77 U	2.75 U
Fluoranthene	113	1700	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	**5.94**	2.94 U	**78.4**	2.82 U	2.58 U	**3.66 J**	**35.8**	2.77 U	2.75 U
Fluorene	21.2	540	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**3.54 J**	2.82 U	2.58 U	2.83 U	**4.69 J**	2.77 U	2.75 U
Indeno(1,2,3-c,d)pyrene	--	600	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**7.24**	2.82 U	2.58 U	2.83 U	**3.2 J**	2.77 U	2.75 U
Naphthalene	34.6	2100	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	2.88 U	2.82 U	2.58 U	2.83 U	2.94 U	2.77 U	2.75 U
Phenanthrene	86.7	1500	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**24.3**	2.82 U	2.58 U	2.83 U	**19.8**	2.77 U	2.75 U
Pyrene	153	2600	2.67 U	2.69 U	2.81 U	2.84 U	**3.23 J**	**3.51 J**	2.94 U	**70.9**	2.82 U	2.58 U	**6**	**37.2**	2.77 U	2.75 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	2.67 U	2.69 U	2.81 U	2.84 U	**2.14 J**	**6.57**	**2.26 J**	**69.3**	2.82 U	2.58 U	**4.67 J**	**28.4**	2.77 U	2.75 U
Total HPAH (SMS) (U = 0)	--	12000	2.67 U	2.69 U	2.81 U	2.84 U	**5.37 J**	**29.04 J**	**4.18 J**	**331.61 J**	2.82 U	2.58 U	**20 J**	**161.33 J**	2.77 U	2.75 U
Total LPAH (SMS) (U = 0)	--	5200	2.67 U	2.69 U	2.81 U	2.84 U	3.09 U	2.86 U	2.94 U	**34.45 J**	2.82 U	2.58 U	2.83 U	**34.35 J**	2.77 U	2.75 U
Total PAH (17) (U = 0)	1684	--	2.67 U	2.69 U	2.81 U	2.84 U	**5.37 J**	**29.04 J**	**4.18 J**	**366.06 J**	2.82 U	2.58 U	**20 J**	**195.68 J**	2.77 U	2.75 U

Table 9
Ore Dock Sediment Results: Metals and PAHs

Location ID			SOD-07	SOD-07	SOD-07	SOD-08	SOD-08	SOD-08	SOD-08	SOD-09	SOD-09	SOD-09	SOD-10	SOD-10	SOD-10	SOD-11
Sample ID			SOD-07-0-1.5	SOD-07-1.5-3.5	SOD-07-3.5-5.5	SOD-08-0-2.5	SOD-08-2.5-4.5	SOD-08-4.5-6.5	SOD-08-6.5-8.5	SOD-09-0-1.5	SOD-09-1.5-3.5	SOD-09-3.5-5.5	SOD-10-0-2.8	SOD-10-3-5	SOD-10-5-7	SOD-11-0-2
Sample Date			01/18/2015	01/18/2015	01/18/2015	01/19/2015	01/19/2015	01/19/2015	01/19/2015	01/20/2015	01/20/2015	01/20/2015	01/17/2015	01/17/2015	01/17/2015	01/20/2015
Depth			0 - 1.5 ft	1.5 - 3.5 ft	3.5 - 5.5 ft	0 - 2.5 ft	2.5 - 4.5 ft	4.5 - 6.5 ft	6.5 - 8.5 ft	0 - 1.5 ft	1.5 - 3.5 ft	3.5 - 5.5 ft	0 - 2.8 ft	3 - 5 ft	5 - 7 ft	0 - 2 ft
Sample Type			N	N	N	N	N	N	N	N	N	N	N	N	N	N
X			2376958	2376958	2376958	2376931	2376931	2376931	2376931	2376404	2376404	2376404	2376516	2376516	2376516	2376652
Y			2785931	2785931	2785931	2785847	2785847	2785847	2785847	2785500	2785500	2785500	2785632	2785632	2785632	2785551
Parameter	**TEL**	**SCO (AET)**														
Conventional Parameters (mg/kg)																
Sulfur	--	--	**340**	**120**	--	**460**	**120**	--	--	**580**	--	--	**540**	--	--	**80**
Conventional Parameters (percent)																
Inorganic carbon	--	--	**0.05**	**0.03**	--	**0.03**	**0.02**	--	--	**0.03**	--	--	**0.32**	--	--	**0.03**
Total organic carbon	--	--	**0.02**	**0.01**	**0.0758**	**0.04**	**0.02**	**0.0238 J**	**0.0453 J**	**0.11**	0.0309 U	0.0311 U	**0.19**	**0.125**	**0.0271 J**	**0.02**
Total solids	--	--	**87.9**	**85.9**	**83.7**	**86.6**	**89.1**	**87.3**	**85.3**	**78.1**	**90.7**	**90.8**	**78**	**82.6**	**85.2**	**87**
Metals (mg/kg)																
Antimony	--	--	0.498 U	0.53 U	0.515 U	0.54 U	0.545 U	0.535 U	0.57 U	0.595 U	0.515 U	0.52 U	0.625 U	0.498 U	0.57 U	0.555 U
Arsenic	7.24	57	**0.411 J**	0.53 U	**0.381 J**	**1.04 J**	0.545 U	0.535 U	0.57 U	**0.996 J**	**0.319 J**	0.52 U	**0.868 J**	**0.469 J**	0.57 U	**1.27**
Barium	--	--	**151 J**	**104 J**	**80**	**133 J**	**139 J**	**81.1**	**161**	**152 J**	**91.3**	**97.7**	**130 J**	**90.3**	**109**	**123 J**
Cadmium	0.68	5.1	**0.305**	0.106 U	**0.0643 J**	**0.134 J**	0.109 U	0.107 U	0.114 U	**0.546**	0.102 U	0.103 U	**0.145 J**	**0.091 J**	0.114 U	0.111 U
Chromium	52.3	260	**10 J**	**5 J**	**4.38**	**12.9 J**	**6.11 J**	**5.65**	**7.36**	**7.81 J**	**7.05**	**3.78**	**7.18 J**	**3.82**	**4.73**	**5.27 J**
Copper	18.7	390	**9.18**	**3.68**	**4.55**	**6.9**	**4.49**	**3.49**	**5.21**	**15**	**4.47**	**3.49**	**8.93**	**4.83**	**3.95**	**2.96**
Iron	--	--	**13200**	**9900**	**10200**	**15600**	**11700**	**9800**	**13900**	**14600**	**11300**	**9060**	**13300**	**8910**	**9610**	**13100**
Lead	30.2	450	**95.2**	**2.06**	**3.82**	**31.1**	**2.46**	**2.73**	**2.81**	**192**	**3.12**	**3.12**	**47.3**	**28.2**	**2.3**	**3.36**
Mercury	0.13	0.41	**0.118**	0.0211 U	0.0206 U	**0.0361 J**	0.0217 U	0.0214 U	0.0227 U	**0.248**	0.0205 U	0.0208 U	**0.0415 J**	**0.0247 J**	0.0227 U	0.0222 U
Nickel	15.9	--	**5.27**	**2.81**	**2.76**	**9.91**	**2.86**	**2.58**	**4.08**	**3.74**	**3.35**	**1.76**	**3.47**	**2.37**	**2.56**	**2.92**
Selenium	--	--	0.498 U	0.53 U	0.515 U	0.54 U	0.545 U	0.535 U	0.57 U	0.595 U	0.515 U	0.52 U	0.625 U	0.498 U	0.57 U	0.555 U
Silver	0.73	6.1	**0.0659 J**	0.106 U	0.103 U	0.109 U	0.109 U	0.107 U	0.114 U	**0.169 J**	0.102 U	0.103 U	0.125 U	0.0995 U	0.114 U	0.111 U
Thallium	--	--	**0.0947 J**	**0.0823 J**	**0.0668 J**	**0.11 J**	**0.0841 J**	**0.0741 J**	**0.11 J**	**0.135 J**	**0.0817 J**	**0.0747 J**	**0.102 J**	**0.0731 J**	**0.0893 J**	**0.0952 J**
Zinc	124	410	**231**	**27.6**	**31.4**	**93.8**	**32.6**	**28**	**40.8**	**386**	**32.2**	**26.2**	**186**	**92.1**	**28**	**38.8**
Polycyclic Aromatic Hydrocarbons (µg/kg)																
1-Methylnaphthalene	--	--	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	3.17 U	2.72 U	2.69 U	3.17 U	2.99 U	2.88 U	2.87 U
2-Methylnaphthalene	20.2	670	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	3.17 U	2.72 U	2.69 U	3.17 U	2.99 U	2.88 U	2.87 U
Acenaphthene	6.71	500	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	3.17 U	2.72 U	2.69 U	**3.53 J**	2.99 U	2.88 U	2.87 U
Acenaphthylene	5.87	1300	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	**4.93 J**	2.72 U	2.69 U	**2.48 J**	2.99 U	2.88 U	2.87 U
Anthracene	46.9	960	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	**12.6**	2.72 U	2.69 U	**5.9 J**	2.99 U	2.88 U	2.87 U
Benzo(a)anthracene	74.8	1300	**3.71 J**	2.88 U	2.94 U	**5.63 J**	2.77 U	2.81 U	2.88 U	**59.1**	2.72 U	2.69 U	**34.3**	**4.54 J**	2.88 U	2.87 U
Benzo(a)pyrene	88.8	1600	**3.48 J**	2.88 U	2.94 U	**4.25 J**	2.77 U	2.81 U	2.88 U	**48.6**	2.72 U	2.69 U	**15.1**	**2.01 J**	2.88 U	2.87 U
Benzo(b)fluoranthene	--	--	**11**	2.88 U	2.94 U	**13**	2.77 U	2.81 U	2.88 U	**130**	2.72 U	2.69 U	**47.4**	**6.79**	2.88 U	2.87 U
Benzo(g,h,i)perylene	--	670	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	**14.3**	2.72 U	2.69 U	**4.78 J**	2.99 U	2.88 U	2.87 U
Benzo(k)fluoranthene	--	--	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	3.17 U	2.72 U	2.69 U	3.17 U	2.99 U	2.88 U	2.87 U
Chrysene	108	1400	**5.93**	2.88 U	2.94 U	**7.42**	2.77 U	2.81 U	2.88 U	**66.1**	2.72 U	2.69 U	**33.8**	**4.52 J**	2.88 U	2.87 U
Dibenzo(a,h)anthracene	6.22	230	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	**5.33 J**	2.72 U	2.69 U	3.17 U	2.99 U	2.88 U	2.87 U
Fluoranthene	113	1700	**4.79 J**	2.88 U	2.94 U	**3.26 J**	2.77 U	2.81 U	2.88 U	**37.2**	2.72 U	2.69 U	**85.8**	**12.4**	2.88 U	2.87 U
Fluorene	21.2	540	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	**3.23 J**	2.72 U	2.69 U	**4.06 J**	2.99 U	2.88 U	2.87 U
Indeno(1,2,3-c,d)pyrene	--	600	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	**15.2**	2.72 U	2.69 U	**5.23 J**	2.99 U	2.88 U	2.87 U
Naphthalene	34.6	2100	2.85 U	2.88 U	2.94 U	2.9 U	2.77 U	2.81 U	2.88 U	3.17 U	2.72 U	2.69 U	3.17 U	2.99 U	2.88 U	2.87 U
Phenanthrene	86.7	1500	**1.8 J**	2.88 U	2.94 U	**2.33 J**	2.77 U	2.81 U	2.88 U	**13.5**	2.72 U	2.69 U	**22.3**	**2.11 J**	2.88 U	2.87 U
Pyrene	153	2600	**14**	2.88 U	2.94 U	**12.4**	2.77 U	2.81 U	2.88 U	**80.4**	2.72 U	2.69 U	**96.7**	**10.4**	2.88 U	2.87 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	**11**	2.88 U	2.94 U	**13**	2.77 U	2.81 U	2.88 U	**130**	2.72 U	2.69 U	**47.4**	**6.79**	2.88 U	2.87 U
Total HPAH (SMS) (U = 0)	--	12000	**42.91 J**	2.88 U	2.94 U	**45.96 J**	2.77 U	2.81 U	2.88 U	**456.23 J**	2.72 U	2.69 U	**323.11 J**	**40.66 J**	2.88 U	2.87 U
Total LPAH (SMS) (U = 0)	--	5200	**1.8 J**	2.88 U	2.94 U	**2.33 J**	2.77 U	2.81 U	2.88 U	**34.26 J**	2.72 U	2.69 U	**38.27 J**	**2.11 J**	2.88 U	2.87 U
Total PAH (17) (U = 0)	1684	--	**44.71 J**	2.88 U	2.94 U	**48.29 J**	2.77 U	2.81 U	2.88 U	**490.49 J**	2.72 U	2.69 U	**361.38 J**	**42.77 J**	2.88 U	2.87 U

Table 9
Ore Dock Sediment Results: Metals and PAHs

Location ID			SOD-11	SOD-12	SOD-12	SOD-12	SOD-13	SOD-13	SOD-13	SOD-14	SOD-14	SOD-15	SOD-15	SOD-16	SOD-16	SOD-17	SOD-17	SOD-17
Sample ID			SOD-11-2-4	SOD-12-0-1.5	SOD-12-1.5-3.5	SOD-12-3.5-5.5	SOD-13-0-2	SOD-13-2-4	SOD-13-4-6	SOD-14-0-2	SOD-14-2-4	SOD-15-0-2	SOD-15-2-4	SOD-16-0-2	SOD-16-2-4	SOD-17-0-2	SOD-17-2-4	SOD-17-4-6
Sample Date			01/20/2015	01/18/2015	01/18/2015	01/18/2015	01/21/2015	01/21/2015	01/21/2015	01/21/2015	01/21/2015	01/21/2015	01/21/2015	01/21/2015	01/21/2015	01/26/2015	01/26/2015	01/26/2015
Depth			2 - 4 ft	0 - 1.5 ft	1.5 - 3.5 ft	3.5 - 5.5 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft	0 - 2 ft	2 - 4 ft	0 - 2 ft	2 - 4 ft	0 - 2 ft	2 - 4 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft
Sample Type			N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
X			2376652	2376745	2376745	2376745	2376802	2376802	2376802	2376942	2376942	2377094	2377094	2377089	2377089	2377177	2377177	2377177
Y			2785551	2785471	2785471	2785471	2785653	2785653	2785653	2785653	2785653	2785797	2785797	2785950	2785950	2786229	2786229	2786229
Parameter	**TEL**	**SCO (AET)**																
Conventional Parameters (mg/kg)																		
Sulfur	--	--	--	**170**	--	--	**260**	--	--	**100**	--	**110**	--	**300**	--	**1670**	--	--
Conventional Parameters (percent)																		
Inorganic carbon	--	--	--	0.005 U	--	--	**0.06**	--	--	**0.04**	--	**0.02**	--	**0.02**	--	**0.09**	--	--
Total organic carbon	--	--	**0.0262 J**	**0.07**	**0.0864**	**0.0366 J**	**0.04**	**0.0294 J**	**0.0209 J**	0.005 U	**0.0203 J**	**0.01**	**0.0467 J**	**0.05**	**0.106**	**0.34**	**0.0269 J**	0.0286 U
Total solids	--	--	**88.3**	**81.7**	**83**	**83.9**	**84.1**	**89.9**	**92.1**	**88.3**	**91.2**	**91.6**	**86.3**	**83.1**	**91**	**77.5**	**88**	**92.3**
Metals (mg/kg)																		
Antimony	--	--	0.52 U	0.58 U	0.565 U	0.525 U	0.545 U	0.46 U	0.466 U	0.555 U	0.53 U	0.515 U	0.555 U	0.535 U	0.51 U	0.63 U	0.55 U	0.525 U
Arsenic	7.24	57	0.52 U	**0.511 J**	**0.788 J**	0.525 U	**0.635 J**	**0.372 J**	**0.36 J**	0.555 U	0.53 U	0.515 U	**0.378 J**	**0.435 J**	**0.354 J**	**1.32**	**0.388 J**	0.525 U
Barium	--	--	**104**	**138 J**	**123**	**87.3**	**128 J**	**111**	**111**	**88.7 J**	**74.6**	**106 J**	**90.1**	**130 J**	**113**	**165**	**90**	**100**
Cadmium	0.68	5.1	0.104 U	**0.123 J**	**0.264**	**0.0656 J**	**0.27**	**0.0767 J**	0.093 U	0.112 U	0.106 U	0.102 U	0.111 U	0.107 U	0.102 U	**0.47**	0.11 U	0.105 U
Chromium	52.3	260	**4.74**	**6.58 J**	**5.78**	**4.89**	**11.6 J**	**5.34**	**4.23**	**7.57 J**	**6.94**	**5.97 J**	**3.95**	**5.44 J**	**5.25**	**8.16**	**3.74**	**3.94**
Copper	18.7	390	**3**	**5.57**	**9.33**	**5.72**	**12.2**	**5.15**	**3.11**	**3.93**	**3.69**	**3.63**	**3.03**	**4.46**	**3.45**	**17.1**	**3.43**	**3.2**
Iron	--	--	**10300**	**11900**	**11500**	**9110**	**17100**	**10300**	**8610**	**10500**	**8810**	**9920**	**9970**	**11000**	**10900**	**14800**	**9880**	**8900**
Lead	30.2	450	**2.52**	**47.7**	**111**	**3.61**	**79.8**	**12.6**	**2.21**	**2.01**	**2.15**	**2.43**	**2.3**	**9.71**	**2.04**	**160**	**9.76**	**2.68**
Mercury	0.13	0.41	0.0208 U	**0.0513**	**0.118**	0.0209 U	**0.12**	**0.0177 J**	0.0187 U	0.0222 U	0.0211 U	0.0205 U	0.0221 U	0.0214 U	0.0204 U	**0.198**	0.022 U	0.0209 U
Nickel	15.9	--	**2.4**	**3.07**	**2.7**	**3.6**	**7.75**	**2.32**	**1.79**	**2.33**	**2.13**	**3.26**	**2.09**	**2.48**	**2.34**	**4.09**	**1.97**	**2.33**
Selenium	--	--	0.52 U	0.58 U	0.565 U	0.525 U	0.545 U	0.46 U	0.466 U	0.555 U	0.53 U	0.515 U	0.555 U	0.535 U	0.51 U	**0.398 J**	0.55 U	0.525 U
Silver	0.73	6.1	0.104 U	0.116 U	**0.137 J**	0.105 U	0.109 U	0.092 U	0.093 U	0.112 U	0.106 U	0.102 U	0.111 U	0.107 U	0.102 U	**0.177 J**	0.11 U	0.105 U
Thallium	--	--	**0.0699 J**	**0.119 J**	**0.117 J**	**0.0652 J**	**0.126 J**	**0.0931 J**	**0.0745 J**	**0.0701 J**	**0.0681 J**	**0.0703 J**	0.111 U	**0.107 J**	**0.0894 J**	**0.154 J**	0.11 U	0.105 U
Zinc	124	410	**29.1**	**87.6**	**180**	**26.3**	**200**	**53.8**	**28.9**	**32.4**	**23.8**	**29.5**	**29.3**	**45.9**	**31.6**	**318**	**42.2**	**24.9**
Polycyclic Aromatic Hydrocarbons (µg/kg)																		
1-Methylnaphthalene	--	--	2.77 U	3.04 U	3 U	2.94 U	2.96 U	2.74 U	2.67 U	**7.65**	2.65 U	**4.5 J**	2.79 U	3 U	2.73 U	16.1 U	2.83 U	2.65 U
2-Methylnaphthalene	20.2	670	2.77 U	3.04 U	3 U	2.94 U	2.96 U	2.74 U	2.67 U	**11.7**	2.65 U	**7.49**	2.79 U	3 U	2.73 U	16.1 U	2.83 U	2.65 U
Acenaphthene	6.71	500	2.77 U	3.04 U	3 U	2.94 U	2.96 U	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	16.1 U	2.83 U	2.65 U
Acenaphthylene	5.87	1300	2.77 U	3.04 U	3 U	2.94 U	2.96 U	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**23.6 J**	2.83 U	2.65 U
Anthracene	46.9	960	2.77 U	**2.55 J**	**4.69 J**	2.94 U	**2.24 J**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**66.4**	**6.5**	2.65 U
Benzo(a)anthracene	74.8	1300	2.77 U	**7.63**	**19.4**	2.94 U	**8.64 J**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**252**	**12.4**	2.65 U
Benzo(a)pyrene	88.8	1600	2.77 U	**8.35**	**18.5**	2.94 U	**7.68 J**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**179**	**5.59 J**	2.65 U
Benzo(b)fluoranthene	--	--	2.77 U	**23.3**	**54.5 J**	2.94 U	**23.9 J**	**3.79 J**	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**538**	**11.2**	2.65 U
Benzo(g,h,i)perylene	--	670	2.77 U	**2.69 J**	**6.07**	2.94 U	**2.84 J**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**46.6**	2.83 U	2.65 U
Benzo(k)fluoranthene	--	--	2.77 U	3.04 U	3 UJ	2.94 U	2.96 U	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	16.1 U	**3.63 J**	2.65 U
Chrysene	108	1400	2.77 U	**16.2**	**27.3**	2.94 U	**12.9 J**	**1.99 J**	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**349**	**23.1**	2.65 U
Dibenzo(a,h)anthracene	6.22	230	2.77 U	3.04 U	**2.01 J**	2.94 U	2.96 U	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**14.7 J**	2.83 U	2.65 U
Fluoranthene	113	1700	2.77 U	**5.07 J**	**13.7**	2.94 U	**8.22**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**285**	**3.32 J**	2.65 U
Fluorene	21.2	540	2.77 U	3.04 U	3 U	2.94 U	2.96 U	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**17.4 J**	**1.82 J**	2.65 U
Indeno(1,2,3-c,d)pyrene	--	600	2.77 U	**2.47 J**	**6.13**	2.94 U	**2.9 J**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**49**	2.83 U	2.65 U
Naphthalene	34.6	2100	2.77 U	3.04 U	3 U	2.94 U	2.96 U	2.74 U	2.67 U	**9.68**	2.65 U	**6.14**	2.79 U	3 U	2.73 U	16.1 U	2.83 U	2.65 U
Phenanthrene	86.7	1500	2.77 U	**3.81 J**	**8.76**	2.94 U	**3.58 J**	2.74 U	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**95.6**	**9.51**	2.65 U
Pyrene	153	2600	2.77 U	**15**	**26.3**	2.94 U	**19.1**	**3.83 J**	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**1560**	**27.8**	2.65 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	2.77 U	**23.3**	**54.5 J**	2.94 U	**23.9 J**	**3.79 J**	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**538**	**14.83 J**	2.65 U
Total HPAH (SMS) (U = 0)	--	12000	2.77 U	**80.71 J**	**173.91 J**	2.94 U	**86.18 J**	**9.61 J**	2.67 U	2.81 U	2.65 U	2.71 U	2.79 U	3 U	2.73 U	**3273.3 J**	**87.04 J**	2.65 U
Total LPAH (SMS) (U = 0)	--	5200	2.77 U	**6.36 J**	**13.45 J**	2.94 U	**5.82 J**	2.74 U	2.67 U	**9.68**	2.65 U	**6.14**	2.79 U	3 U	2.73 U	**203 J**	**17.83 J**	2.65 U
Total PAH (17) (U = 0)	1684	--	2.77 U	**87.07 J**	**187.36 J**	2.94 U	**92 J**	**9.61 J**	2.67 U	**21.38**	2.65 U	**13.63**	2.79 U	3 U	2.73 U	**3476.3 J**	**104.87 J**	2.65 U

Table 9
Ore Dock Sediment Results: Metals and PAHs

Location ID			SOD-18	SOD-18	SOD-18	SOD-18	SOD-19	SOD-19	SOD-19	SOD-19	SOD-20	SOD-20	SOD-20
Sample ID			SOD-18-0-2	SOD-68-0-2	SOD-18-2-4	SOD-18-4-6	SOD-19-0-2	SOD-69-0-2	SOD-19-2-4	SOD-19-4-6	SOD-20-0-2	SOD-20-2-4	SOD-20-4-6
Sample Date			01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015
Depth			0 - 2 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft	0 - 2 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft	0 - 2 ft	2 - 4 ft	4 - 6 ft
Sample Type			N	FD	N	N	N	FD	N	N	N	N	N
X			2377175	2377175	2377175	2377175	2377285	2377285	2377285	2377285	2377353	2377353	2377353
Y			2786156	2786156	2786156	2786156	2786218	2786218	2786218	2786218	2786046	2786046	2786046
Parameter	**TEL**	**SCO (AET)**											
Conventional Parameters (mg/kg)													
Sulfur	--	--	**160**	**180**	--	--	**520**	**470**	--	--	**260**	--	--
Conventional Parameters (percent)													
Inorganic carbon	--	--	0.005 U	0.005 U	--	--	0.005 U	0.005 U	--	--	0.005 U	--	--
Total organic carbon	--	--	**0.11**	**0.12**	**0.0316 J**	**0.0229 J**	**0.12**	**0.09**	**0.0433 J**	**0.0304 J**	**0.11**	0.0295 U	**0.0344 J**
Total solids	--	--	**79.7**	**78.8**	**89**	**88.6**	**80.1**	**79.6**	**86.5**	**90.3**	**85.4**	**90.2**	**92.8**
Metals (mg/kg)													
Antimony	--	--	0.585 U	0.585 U	0.515 U	0.55 U	0.58 U	0.575 U	0.57 U	0.55 U	0.58 U	0.473 U	0.5 U
Arsenic	7.24	57	**1.42**	**1.22**	**0.335 J**	**0.459 J**	**0.662 J**	**0.712 J**	**0.614 J**	**0.364 J**	**1.03 J**	0.473 U	0.5 U
Barium	--	--	**154**	**136**	**118**	**111**	**125**	**132**	**116**	**119**	**172**	**97**	**101**
Cadmium	0.68	5.1	**0.0781 J**	0.117 U	0.103 U	0.11 U	**0.0751 J**	**0.114 J**	**0.0864 J**	**0.128 J**	**0.101 J**	0.0945 U	0.1 U
Chromium	52.3	260	**7.07**	**7.31**	**4.41**	**5.83**	**6.24**	**7.19**	**6.7**	**4.82**	**7.61**	**4.01**	**3.29**
Copper	18.7	390	**13.7**	**14.3**	**5.23**	**3.36**	**7.31**	**7.02**	**4.64**	**5.01**	**10.3**	**3.07**	**2.75**
Iron	--	--	**13100**	**12700**	**11200**	**10500**	**12300**	**12700**	**10900**	**9790**	**15500**	**9310**	**9090**
Lead	30.2	450	**202**	**179**	**29.9**	**2.96**	**32.9**	**38.5**	**14.9**	**17.3**	**34.6**	**2.62**	**2.8**
Mercury	0.13	0.41	**0.115**	**0.114**	**0.0239 J**	0.022 U	**0.0294 J**	**0.0396 J**	**0.0146 J**	0.022 U	**0.0481**	0.019 U	0.02 U
Nickel	15.9	--	**3.19**	**3.27**	**1.95**	**2.66**	**2.78**	**2.92**	**3**	**2.39**	**3.94**	**2.24**	**1.57**
Selenium	--	--	0.585 U	0.585 U	0.515 U	0.55 U	0.58 U	0.575 U	0.57 U	0.55 U	0.58 U	0.473 U	0.5 U
Silver	0.73	6.1	0.117 U	0.117 U	0.103 U	0.11 U	0.116 U	0.116 U	0.114 U	0.11 U	0.116 U	0.0945 U	0.1 U
Thallium	--	--	**0.13 J**	**0.122 J**	**0.0709 J**	**0.0704 J**	**0.116 J**	**0.11 J**	**0.0942 J**	**0.0922 J**	**0.154 J**	**0.0747 J**	**0.0803 J**
Zinc	124	410	**124**	**112**	**48.4**	**29.2**	**70.5**	**74.9**	**44.8**	**42.2**	**83**	**28.7**	**27.6**
Polycyclic Aromatic Hydrocarbons (µg/kg)													
1-Methylnaphthalene	--	--	3.11 U	3.13 U	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
2-Methylnaphthalene	20.2	670	3.11 U	3.13 U	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Acenaphthene	6.71	500	3.11 U	3.13 U	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Acenaphthylene	5.87	1300	3.11 U	3.13 U	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Anthracene	46.9	960	**5.15 J**	**9.29**	**2.73 J**	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	**2.09 J**	2.73 U	2.67 U
Benzo(a)anthracene	74.8	1300	**19.2**	**25.4**	**6.3**	2.81 U	**2.12 J**	**2.44 J**	2.86 U	**2.37 J**	**8.66**	2.73 U	2.67 U
Benzo(a)pyrene	88.8	1600	**13.1**	**13.3**	**2.65 J**	2.81 U	3.1 U	**1.96 J**	2.86 U	2.73 U	**4.14 J**	2.73 U	2.67 U
Benzo(b)fluoranthene	--	--	**36.1**	**35.2**	**7.75 J**	2.81 U	**3.6 J**	**5.96 J**	**3.55 J**	**4.9 J**	**12.4**	2.73 U	2.67 U
Benzo(g,h,i)perylene	--	670	**3.87 J**	**4.03 J**	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Benzo(k)fluoranthene	--	--	3.11 U	3.13 U	2.8 UJ	2.81 U	3.1 U	3.1 U	2.86 U	2.73 UJ	2.9 U	2.73 U	2.67 U
Chrysene	108	1400	**38**	**38.7**	**12**	2.81 U	**3.32 J**	**3.48 J**	**2.97 J**	**3.18 J**	**12**	2.73 U	2.67 U
Dibenzo(a,h)anthracene	6.22	230	3.11 U	3.13 U	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Fluoranthene	113	1700	**29.2**	**24.9**	**3.91 J**	2.81 U	**5.8 J**	**3.09 J**	**6.55**	**2.6 J**	**14.4**	2.73 U	2.67 U
Fluorene	21.2	540	**2.39 J**	**2.82 J**	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Indeno(1,2,3-c,d)pyrene	--	600	**4.46 J**	**4.3 J**	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Naphthalene	34.6	2100	**2.92 J**	3.13 U	2.8 U	2.81 U	3.1 U	3.1 U	2.86 U	2.73 U	2.9 U	2.73 U	2.67 U
Phenanthrene	86.7	1500	**9.39**	**11.5**	**6.03**	2.81 U	**3.07 J**	3.1 U	**2.45 J**	2.73 U	**4.98 J**	2.73 U	2.67 U
Pyrene	153	2600	**19.4**	**15.5**	**2.79 J**	2.81 U	**5.39 J**	**3.53 J**	**5.22 J**	**2.5 J**	**9.47**	2.73 U	2.67 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	**36.1**	**35.2**	**7.75 J**	2.81 U	**3.6 J**	**5.96 J**	**3.55 J**	**4.9 J**	**12.4**	2.73 U	2.67 U
Total HPAH (SMS) (U = 0)	--	12000	**163.33 J**	**161.33 J**	**35.4 J**	2.81 U	**20.23 J**	**20.46 J**	**18.29 J**	**15.55 J**	**61.07 J**	2.73 U	2.67 U
Total LPAH (SMS) (U = 0)	--	5200	**19.85 J**	**23.61 J**	**8.76 J**	2.81 U	**3.07 J**	3.1 U	**2.45 J**	2.73 U	**7.07 J**	2.73 U	2.67 U
Total PAH (17) (U = 0)	1684	--	**183.18 J**	**184.94 J**	**44.16 J**	2.81 U	**23.3 J**	**20.46 J**	**20.74 J**	**15.55 J**	**68.14 J**	2.73 U	2.67 U

Table 9
Ore Dock Sediment Results: Metals and PAHs

Notes:
Detected concentration is greater than Threshold Effects Level (TEL) (MacDonald et al. 1996)
Detected concentration is greater than Marine Sediment Apparent Effects Threshold (AET) - Sediment Cleanup Objective (SCO) (SCUM II, March 2015)
Non-detected concentration is above one or more identified screening levels
Bold = Detected result
-- = results not reported or not applicable

µg/kg = micrograms per kilogram
FD = Field duplicate
ft = feet
HPAH = high-molecular-weight PAH
J = Estimated value
LPAH = low-molecular-weight PAH
mg/kg = milligrams per kilogram
N = normal environmental sample
PAH = polycyclic aromatic hydrocarbons
TEQ = toxic equivalency
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit

Horizontal coordinate datum is NAD 1983 State Plane Alaska 1 (U.S. Feet).
U=0 - Totals are calculated as the sum of all detected results. If all results are not detected, the highest reporting limit value is reported as the sum.
*USEPA Stage 2A data validation was completed by Laboratory Data Consultants for all samples.
Total LPAH (SMS) is the total of acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. 2-Methylnapthalene is not included in the sum of LPAHs.
Total HPAH (SMS) is the total of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total PAH (17) is the sum of 2-methylnapthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(x)fluoranthenes, biphenyl, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene.

Table 10
Ore Dock DMMU Composite Results: Metals and PAHs

Location ID / Sample ID / Sample Date / Depth / Sample Type / Parameter	TEL	SCO (AET)	SOD-DMMU-1-2 SOD-DMMU-1-0-4 01/28/2015 0 - 4 ft N	SOD-DMMU-2 SOD-DMMU-2-0-4 01/19/2015 0 - 4 ft N	SOD-DMMU-3 SOD-DMMU-3-0-4 01/20/2015 0 - 4 ft N	SOD-DMMU-4 SOD-DMMU-4-0-4 01/22/2015 0 - 4 ft N	SOD-DMMU-5 SOD-DMMU-5-0-4 01/28/2015 0 - 4 ft N	SOD-DMMU-5 SOD-DMMU-55-04 01/28/2015 0 - 4 ft FD	SOD-DMMU-6 SOD-DMMU-6-4-8 01/28/2015 4 - 8 ft N	SOD-DMMU-6 SOD-DMMU-56-4-8 01/28/2015 4 - 8 ft FD	SOD-DMMU-7 SOD-DMMU-7-4-8 01/19/2015 4 - 8 ft N	SOD-DMMU-8 SOD-DMMU-8-4-8 01/20/2015 4 - 8 ft N	SOD-DMMU-9 SOD-DMMU-9-4-8 01/22/2015 4 - 8 ft N	SOD-DMMU-10 SOD-DMMU-10-4-8 01/28/2015 4 - 8 ft N
Conventional Parameters (percent)														
Total organic carbon	--	--	**0.354**	**0.037 J**	**0.0696**	**0.0397 J**	**0.129**	**0.285**	**0.116**	**0.0972**	**0.0201 J**	0.0293 U	**0.0613 J**	**0.0224 J**
Total solids	--	--	**83.1**	**84.7**	**83.3**	**89.8**	**81.4**	**82.5**	**83**	**83.4**	**87.6**	**87.3**	**86**	**91.3**
Metals (mg/kg)														
Antimony	--	--	**1.38**	0.52 U	0.55 U	0.52 U	0.55 U	0.58 U	0.57 U	0.56 U	0.525 U	0.56 U	0.52 U	0.535 U
Arsenic	7.24	57	**5.52**	**0.588 J**	**1.17**	0.52 U	**0.794 J**	**0.776 J**	**1.1 J**	**0.922 J**	0.525 U	**0.444 J**	**0.378 J**	0.535 U
Barium	--	--	**184 J**	**119 J**	**126**	**87.5**	**123 J**	**126 J**	**150 J**	**130 J**	**94.8**	**102**	**99.1**	**128 J**
Cadmium	0.68	5.1	**7.26**	**0.273**	**0.334**	0.103 U	**0.118 J**	**0.132 J**	**1.01**	**0.906**	**0.0954 J**	0.113 U	0.104 U	**0.0857 J**
Chromium	52.3	260	**9.53**	**5.86 J**	**6.63**	**5.77**	**6.33**	**6.73**	**6.77**	**9.65**	**7.18**	**6.05**	**5.58**	**8.37**
Copper	18.7	390	**111**	**8**	**10.9**	**4.25**	**7.93**	**9.18**	**19.8**	**30.6**	**4.12**	**3.34**	**4.61**	**4.79**
Iron	--	--	**17500**	**11500**	**12000**	**10200**	**11700**	**11900**	**14600**	**15900**	**11400**	**11400**	**11300**	**12500**
Lead	30.2	450	**4080**	**115**	**133**	**12.6**	**67.5**	**71.9**	**355**	**293**	**2.45**	**7.85**	**2.43**	**4.49**
Mercury	0.13	0.41	**2.94**	**0.0994**	**0.152**	**0.0201 J**	**0.0596**	**0.09**	**0.376**	**0.352**	0.0211 U	0.0225 U	0.0208 U	0.0213 U
Nickel	15.9	--	**5.85**	**2.83**	**3.24**	**2.26**	**3.11**	**3.07**	**3.66**	**6.83**	**3.8**	**2.36**	**2.87**	**4.62**
Selenium	--	--	**0.486 J**	0.52 U	0.55 U	0.52 U	0.55 U	0.58 U	**0.355 J**	**0.421 J**	0.525 U	0.56 U	0.52 U	0.535 U
Silver	0.73	6.1	**3.89**	**0.0782 J**	**0.175 J**	0.103 U	0.111 U	0.116 U	**0.313**	**0.283**	0.106 U	0.113 U	0.104 U	0.107 U
Thallium	--	--	**0.912**	**0.107 J**	**0.121 J**	**0.0809 J**	**0.102 J**	**0.126 J**	**0.166 J**	**0.152 J**	**0.0701 J**	**0.0887 J**	**0.0863 J**	**0.0846 J**
Zinc	124	410	**5370**	**196**	**298**	**46.2**	**92.1**	**103**	**663**	**627**	**33.7**	**30**	**31.5**	**37.1**
Polycyclic Aromatic Hydrocarbons (µg/kg)														
1-Methylnaphthalene	--	--	14.8 U	2.93 U	2.99 U	2.77 U	3.05 U	3 U	14.9 U	14.9 U	2.84 U	2.84 U	2.89 U	2.68 U
2-Methylnaphthalene	20.2	670	14.8 U	2.93 U	2.99 U	2.77 U	3.05 U	3 U	14.9 U	14.9 U	2.84 U	2.84 U	2.89 U	2.68 U
Acenaphthene	6.71	500	14.8 U	2.93 U	2.99 U	2.77 U	3.05 U	3 U	14.9 U	14.9 U	2.84 U	2.84 U	2.89 U	2.68 U
Acenaphthylene	5.87	1300	14.8 U	2.93 U	**1.82 J**	2.77 U	**6.53**	**7.06**	**12.9 J**	**9.79 J**	2.84 U	2.84 U	2.89 U	2.68 U
Anthracene	46.9	960	**70**	**5.36 J**	**7.32**	2.77 U	**16.6**	**19.4**	**78.4**	**64**	2.84 U	2.84 U	2.89 U	2.68 U
Benzo(a)anthracene	74.8	1300	**289**	**26.5**	**33.5 J**	**4.86 J**	**49.5**	**64**	**328**	**186**	2.84 U	2.84 U	2.89 U	2.68 U
Benzo(a)pyrene	88.8	1600	**168**	**10.2**	**15.2 J**	**5.41 J**	**48.1**	**54.5**	**190**	**128**	2.84 U	2.84 U	2.89 U	**1.81 J**
Benzo(b)fluoranthene	--	--	**613**	**28**	**46.4 J**	**16.1**	**129**	**144**	**601**	**396**	2.84 U	2.84 U	2.89 U	**5.69**
Benzo(g,h,i)perylene	--	670	**48.3**	**5.25 J**	14.9 U	2.77 U	**14.3**	**15.6**	**52.4**	**35.8**	2.84 U	2.84 U	2.89 U	2.68 U
Benzo(k)fluoranthene	--	--	14.8 U	2.93 U	14.9 U	2.77 U	3.05 U	3 U	14.9 U	14.9 U	2.84 U	2.84 U	2.89 U	2.68 U
Chrysene	108	1400	**415**	**23.1**	**44.1 J**	**6.56**	**90.1**	**141**	**438**	**309**	2.84 U	2.84 U	2.89 U	**1.93 J**
Dibenzo(a,h)anthracene	6.22	230	**20.3 J**	**3.37 J**	14.9 U	2.77 U	**4.58 J**	**5.44 J**	**20.4 J**	**13 J**	2.84 U	2.84 U	2.89 U	2.68 U
Fluoranthene	113	1700	**254**	**88.9**	**42.3 J**	2.77 U	**59**	**56**	**154**	**98.5**	2.84 U	2.84 U	2.89 U	2.68 U
Fluorene	21.2	540	**31.4**	**2.97 J**	**2.8 J**	2.77 U	**4.64 J**	**5.66 J**	**43.3**	**32.3**	2.84 U	2.84 U	2.89 U	2.68 U
Indeno(1,2,3-c,d)pyrene	--	600	**48.8**	**4.9 J**	14.9 U	2.77 U	**14.9**	**16.5**	**57.4**	**37.2**	2.84 U	2.84 U	2.89 U	2.68 U
Naphthalene	34.6	2100	14.8 U	2.93 U	2.99 U	2.77 U	3.05 U	3 U	14.9 U	14.9 U	2.84 U	2.84 U	2.89 U	2.68 U
Phenanthrene	86.7	1500	**115**	**19.5**	**12**	2.77 U	**23.1**	**22.4**	**153**	**110**	2.84 U	2.84 U	2.89 U	2.68 U
Pyrene	153	2600	**635**	**74.5**	**49.5 J**	**2.72 J**	**369**	**348**	**820**	**621**	2.84 U	2.84 U	2.89 U	2.68 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	**613**	**28**	**46.4 J**	**16.1**	**129**	**144**	**601**	**396**	2.84 U	2.84 U	2.89 U	**5.69**
Total HPAH (SMS) (U = 0)	--	12000	**2491.4 J**	**264.72 J**	**231 J**	**35.65 J**	**778.48 J**	**845.04 J**	**2661.2 J**	**1824.5 J**	2.84 U	2.84 U	2.89 U	**9.43 J**
Total LPAH (SMS) (U = 0)	--	5200	**216.4**	**27.83 J**	**23.94 J**	2.77 U	**50.87 J**	**54.52 J**	**287.6 J**	**216.09 J**	2.84 U	2.84 U	2.89 U	2.68 U
Total PAH (17) (U = 0)	1684	--	**2707.8 J**	**292.55 J**	**254.94 J**	**35.65 J**	**829.35 J**	**899.56 J**	**2948.8 J**	**2040.59 J**	2.84 U	2.84 U	2.89 U	**9.43 J**

Table 10
Ore Dock DMMU Composite Results: Metals and PAHs

Location ID Sample ID Sample Date Depth Sample Type Parameter	TEL	SCO (AET)	SOD-DMMU-11 SOD-DMMU-11-8-12 01/28/2015 8 - 12 ft N	SOD-DMMU-12 SOD-DMMU-12-8-12 01/19/2015 8 - 12 ft N	SOD-DMMU-13 SOD-DMMU-13-8-13 01/20/2015 8 - 12 ft N	SOD-DMMU-14 SOD-DMMU-14-8-12 01/22/2015 8 - 12 ft N	SOD-DMMU-15 SOD-DMMU-15-8-12 01/28/2015 8 - 12 ft N
Conventional Parameters (percent)							
Total organic carbon	--	--	**0.0286 J**	**0.06 J**	**0.0251 J**	**0.0594 J**	**0.0418 J**
Total solids	--	--	**87.7**	**83.3**	**87**	**83.4**	**88.2**
Metals (mg/kg)							
Antimony	--	--	0.55 U	0.585 U	0.54 U	0.56 U	0.555 U
Arsenic	7.24	57	0.55 U	**0.406 J**	0.54 U	**0.426 J**	0.555 U
Barium	--	--	**91.4 J**	**121**	**98.5**	**114**	**108 J**
Cadmium	0.68	5.1	**0.0905 J**	**0.0761 J**	0.109 U	0.112 U	**0.132 J**
Chromium	52.3	260	**4.9**	**7.27**	**4.52**	**5.41**	**4.82**
Copper	18.7	390	**3.99**	**4.9**	**3.84**	**4.68**	**4.49**
Iron	--	--	**9330**	**12100**	**10400**	**11500**	**9520**
Lead	30.2	450	**2.92**	**3.13**	**6**	**2.95**	**2.72**
Mercury	0.13	0.41	**0.0187 J**	0.0234 U	0.0216 U	0.0224 U	0.0222 U
Nickel	15.9	--	**2.23**	**3.21**	**1.88**	**2.67**	**2.63**
Selenium	--	--	0.55 U	0.585 U	0.54 U	0.56 U	0.555 U
Silver	0.73	6.1	0.11 U	0.117 U	0.109 U	0.112 U	0.111 U
Thallium	--	--	**0.071 J**	**0.105 J**	**0.106 J**	**0.0944 J**	**0.0784 J**
Zinc	124	410	**28.1**	**36.3**	**27.6**	**34**	**27.2**
Polycyclic Aromatic Hydrocarbons (µg/kg)							
1-Methylnaphthalene	--	--	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
2-Methylnaphthalene	20.2	670	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Acenaphthene	6.71	500	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Acenaphthylene	5.87	1300	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Anthracene	46.9	960	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Benzo(a)anthracene	74.8	1300	**1.86 J**	2.97 U	2.83 U	2.94 U	2.79 U
Benzo(a)pyrene	88.8	1600	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Benzo(b)fluoranthene	--	--	**2.17 J**	2.97 U	2.83 U	2.94 U	2.79 U
Benzo(g,h,i)perylene	--	670	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Benzo(k)fluoranthene	--	--	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Chrysene	108	1400	**2.71 J**	2.97 U	2.83 U	2.94 U	2.79 U
Dibenzo(a,h)anthracene	6.22	230	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Fluoranthene	113	1700	**14.4**	2.97 U	2.83 U	2.94 U	2.79 U
Fluorene	21.2	540	**1.86 J**	2.97 U	2.83 U	2.94 U	2.79 U
Indeno(1,2,3-c,d)pyrene	--	600	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Naphthalene	34.6	2100	2.84 U	2.97 U	2.83 U	2.94 U	2.79 U
Phenanthrene	86.7	1500	**8.32**	2.97 U	2.83 U	2.94 U	2.79 U
Pyrene	153	2600	**11.2**	2.97 U	2.83 U	2.94 U	2.79 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	**2.17 J**	2.97 U	2.83 U	2.94 U	2.79 U
Total HPAH (SMS) (U = 0)	--	12000	**32.34 J**	2.97 U	2.83 U	2.94 U	2.79 U
Total LPAH (SMS) (U = 0)	--	5200	**10.18 J**	2.97 U	2.83 U	2.94 U	2.79 U
Total PAH (17) (U = 0)	1684	--	**42.52 J**	2.97 U	2.83 U	2.94 U	2.79 U

Table 10
Ore Dock DMMU Composite Results: Metals and PAHs

Notes:
Detected concentration is greater than Threshold Effects Level (TEL) (MacDonald et al. 1996)
Detected concentration is greater than Marine Sediment Apparent Effects Threshold (AET) - Sediment Cleanup Objective (SCO) (SCUM II, March 2015)
Non-detected concentration is above one or more identified screening levels
Bold = Detected result
-- = results not reported or not applicable

µg/kg = micrograms per kilogram
FD = Field duplicate
ft = feet
HPAH = high-molecular-weight PAH
J = Estimated value
LPAH = low-molecular-weight PAH
mg/kg = milligrams per kilogram
N = normal environmental sample
PAH = polycyclic aromatic hydrocarbons
PCB = polychlorinated biphenyls
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit

Horizontal coordinate datum is NAD 1983 State Plane Alaska 1 (U.S. Feet).
U=0 - Totals are calculated as the sum of all detected results. If all results are not detected, the highest reporting limit value is reported as the sum.
*USEPA Stage 2A data validation was completed by Laboratory Data Consultants for all samples.

Total LPAH (SMS) is the total of acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. 2-Methylnapthalene is not included in the sum of LPAHs.
Total HPAH (SMS) is the total of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total PAH (17) is the sum of 2-methylnapthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(x)fluoranthenes, biphenyl, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene.

Table 11
Ore Dock Sediment Results: Tributyltin

Location ID	SOD-DMMU-1	SOD-DMMU-2[1]	SOD-04	SOD-05	SOD-06	SOD-07	SOD-08	SOD-DMMU-3	SOD-DMMU-5	SOD-DMMU-5
Sample ID	SOD-DMMU-1-0-4	SOD-DMMU-2-0-4	SOD-04 COMP	SOD-05 COMP	SOD-06 COMP	SOD-07 COMP	SOD-08 COMP	SOD-DMMU-3-0-4	SOD-DMMU-5-0-4	SOD-DMMU-55-04
Sample Date	01/28/2015	01/19/2015	--	--	--	--	--	01/20/2015	01/28/2015	01/28/2015
Depth	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft
Sample Type	N	N	N	N	N	N	N	N	N	FD
Parameter										
Tributyltin, bulk (µg/kg)										
Tributyltin (ion)	**37**	**11000**	**140**	**2**	**14**	1.2 U	1.2 U	**3.1**	**3.1**	**3.6**
Tributyltin (ion) (reanalyzed)*	--	**2.4**	--	--	--	--	--	--	--	--

Notes:
1. SOD-DMMU-2 is composited from the 0-4 depth interval at stations SOD-04, SOD-05, SOD-06, SOD-07, SOD-08
Bold = Detected result
-- = results not reported or not applicable
µg/kg = micrograms per kilogram
FD = Field duplicate
ft = feet
J = Estimated value
N = normal environmental sample
U = Compound analyzed, but not detected above detection limit

Table 12
Ore Dock DMMU Composite Results: Dioxins and PCB Aroclors

Location ID / Sample ID / Sample Date / Depth / Sample Type / Parameter	TEL	SCO (AET)	SOD-DMMU-1-5 / SOD-DMMU-1-5 / 01/28/2015 / 0 - 4 ft / N	SOD-DMMU-1-5 / SOD-DMMU-51-55 / 01/28/2015 / 0 - 4 ft / FD
Conventional Parameters (percent)				
Total solids	--	--	**89**	**86.8**
Dioxin Furans (ng/kg)				
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	0.0696 U	0.0555 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	0.0889 U	0.0716 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	**0.156 J**	**0.0911 J**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	**0.52 J**	**0.545 J**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	0.305 U	0.237 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	**27.1**	**28.8**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	--	**241**	**250**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	0.0696 U	**0.0735**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	0.0889 U	0.0716 U
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	**8.79 J**	**9.04 J**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	**115**	**128**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	--	0.0839 U	0.0566 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	0.0509 U	0.0383 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	0.0605 U	0.0436 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	**0.145 J**	**0.109 J**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	**0.115 J**	**0.0717 J**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	--	0.0957 U	0.056 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	**0.112 J**	**0.105 J**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	--	**1.62 J**	**1.71 J**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	--	**0.169 J**	**0.172 J**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	--	**5.78 J**	**6.52**
Total Tetrachlorodibenzofuran (TCDF)	--	--	0.0839 U	0.0566 U
Total Pentachlorodibenzofuran (PeCDF)	--	--	**0.261**	**0.234**
Total Hexachlorodibenzofuran (HxCDF)	--	--	**2.13 J**	**1.97 J**
Total Heptachlorodibenzofuran (HpCDF)	--	--	**5.36**	**5.49 J**
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	--	--	**0.581 J**	**0.564 J**
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	--	--	**0.468 J**	**0.476 J**
PCB Aroclors (µg/kg)				
Aroclor 1016	--	--	6.5 U	6.6 U
Aroclor 1221	--	--	13 U	14 U
Aroclor 1232	--	--	6.5 U	6.6 U
Aroclor 1242	--	--	6.5 U	6.6 U
Aroclor 1248	--	--	6.5 U	6.6 U
Aroclor 1254	--	--	6.5 U	6.6 U
Aroclor 1260	--	--	**2.7 J**	**16**
Total PCB Aroclors (SMS Marine 2013) (U = 0)	--	130	**2.7 J**	**16**
Total PCB Aroclors (U = 0)	21.6	130	**2.7 J**	**16**

Notes:
Bold = Detected result
-- = results not reported or not applicable

µg/kg = micrograms per kilogram
FD = Field duplicate
ft = feet
J = Estimated value
N = normal environmental sample
ng/kg = nanograms per kilogram
PCB = polychlorinated biphenyl
TEQ = toxic equivalency
U = Compound analyzed, but not detected above detection limit

Horizontal coordinate datum is NAD 1983 State Plane Alaska 1 (U.S. Feet).
U=0 - Totals are calculated as the sum of all detected results. If all results are not detected, the highest reporting limit value is reported as the sum.
U=1/2 - Totals are calculated as the sum of all detected results and half of the reporting limit of undetected results. If all results are not detected, the highest reporting limit value is reported as the sum.
USEPA Stage 2A data validation was completed by Laboratory Data Consultants for all samples.
Total PCB Aroclors is the sum of all PCB Aroclors listed in this table.
Dioxin/furan TEQ values were calculated with 2005 World Health Organization (WHO) TEF values for mammals.

Table 13
Small Boat Harbor Sediment Results: Grain Size

Parameter	Location ID Sample ID Sample Date Depth or Elevation	SBH-DMMU-1 SBH-DMMU-1 01/29/2015 0 - 4 ft bgs	SBH-DMMU-2 SBH-DMMU-2 01/29/2015 0 - 4 ft bgs	SBH-DMMU-3 SBH-DMMU-3 01/29/2015 4 ft bgs to -14 ft MLLW	SBH-DMMU-4 SBH-DMMU-4 01/29/2015 4 ft bgs to 0 ft MLLW	SBH-DMMU-5 SBH-DMMU-5 01/29/2015 0 to -14 ft MLLW
Grain Size (percent)						
Gravel		**40.2**	**62.1**	**36.4**	**62.8**	**60.3**
Sand		**57**	**31.1**	**55.9**	**31.6**	**37.4**
Total fines (Reported, not calculated)		**2.8**	**6.8**	**7.7**	**5.6**	**2.3**

Notes:

Bold = Detected result

-- = results not reported or not applicable

ft = feet

bgs = below ground surface

MLLW = mean lower low water

Table 14
Small Boat Harbor Sediment Results: Petroleum Hydrocarbons

Location ID	SBH-08	SBH-08	SBH-09	SBH-09	SBH-10	SBH-11	SBH-11	SBH-12	SBH-12	SBH-DMMU-1	SBH-DMMU-1	SBH-DMMU-2	SBH-DMMU-2	SBH-DMMU-3	SBH-DMMU-4	SBH-DMMU-5
Sample ID	SBH-08-0-4	SBH-08-4-16.5	SBH-09-0-4	SBH-09-4-18.3	SBH-10-0-4	SBH-11-0-4	SBH-61-0-4	SBH-12-0-4	SBH-12-4-17.4	SBH-DMMU-1	SBH-DMMU-51	SBH-DMMU-2	SBH-DMMU-52	SBH-DMMU-3	SBH-DMMU-4	SBH-DMMU-5
Sample Date	01/27/2015	01/27/2015	01/28/2015	01/28/2015	01/25/2015	01/28/2015	01/28/2015	01/28/2015	01/28/2015	01/29/2015	01/29/2015	01/29/2015	01/29/2015	01/29/2015	01/29/2015	01/29/2015
Depth or Elevation	0 - 4 ft	4 - 16.5 ft	0 - 4 ft	4 - 18.3 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	4 - 17.4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	0 - 4 ft	4 to -14 ft MLLW	4 to 0 ft MLLW	0 to -14 ft MLLW
Sample Type	N	N	N	N	N	N	FD	N	N	N	FD	N	N	N	N	N
X	2378311	2378311	2378385	2378385	2378337	2378347	2378347	2378405	2378405	--	--	--	--	--	--	--
Y	2785885	2785885	2785961	2785961	2785725	2785836	2785836	2785910	2785910	--	--	--	--	--	--	--
Parameter																
Conventional Parameters (percent)																
Total solids	**97**	**90.4**	**95.6**	**91.3**	**74.7**	**91.7**	**93**	**86.4**	**85.7**	**89.7**	**89.8**	**95.1**	**94.5**	**83.9**	**90.7**	**87**
Total volatile solids/organic matter	--	--	--	--	--	--	--	--	--	**0.41 J**	**0.43 J**	**0.48 J**	**0.6 J**	**0.48 J**	**0.41 J**	**0.34 J**
Total Petroleum Hydrocarbons (mg/kg)																
Gas Range Organics (C6 - C10)	1.48 U	1.08 U	1.14 U	1.25 U	1.68 U	1.12 U	0.84 U	3.58 U	1.29 U	--	--	--	--	--	--	--
Diesel range organics (C10 - C25)	10.2 U	11 U	10.3 U	10.8 U	**9.81 J**	10.9 U	10.7 U	**24.5**	11.6 U	11.1 U	**7.41 J**	**7.01 J**	10.4 U	11.8 U	10.9 U	11.4 U
Residual range organics (C25 - C36)	10.2 U	**9.19 J**	**18.1 J**	**7.04 J**	**33.2**	**12.3 J**	**12.8 J**	**96.8**	**18.3 J**	**12 J**	**12 J**	**19.1 J**	**14.5 J**	**13 J**	**9.56 J**	**7.11 J**

Notes:
Bold = Detected result
-- = results not reported or not applicable
FD = Field duplicate
ft = feet
J = Estimated value
mg/kg = milligrams per kilogram
MLLW = mean lower low water
N = normal environmental sample
U = Compound analyzed, but not detected above detection limit
Horizontal coordinate datum is NAD 1983 State Plane Alaska 1 (U.S. Feet).
USEPA Stage 2A data validation was completed by Laboratory Data Consultants for all samples.

Table 15
Small Boat Harbor DMMU Composite Results: Metals and PAHs

Location ID Sample ID Sample Date Depth or Elevation Sample Type Parameter	TEL	SCO (AET)	SBH-DMMU-1 SBH-DMMU-1 01/29/2015 0 - 4 ft N	SBH-DMMU-1 SBH-DMMU-51 01/29/2015 0 - 4 ft FD	SBH-DMMU-2 SBH-DMMU-2 01/29/2015 0 - 4 ft N	SBH-DMMU-2 SBH-DMMU-52 01/29/2015 0 - 4 ft FD	SBH-DMMU-3 SBH-DMMU-3 01/29/2015 4 to -14 ft MLLW N	SBH-DMMU-4 SBH-DMMU-4 01/29/2015 4 to 0 ft MLLW N	SBH-DMMU-5 SBH-DMMU-5 01/29/2015 0 to -14 ft MLLW N
Metals (mg/kg)									
Antimony	--	--	0.505 U	0.51 U	0.492 U	0.498 U	0.545 U	0.55 U	0.56 U
Arsenic	7.24	57	**0.408 J**	**0.391 J**	**0.809 J**	**1.21**	**0.576 J**	**0.586 J**	**0.491 J**
Barium	--	--	**102 J**	**111 J**	**130 J**	**142 J**	**122**	**127 J**	**113 J**
Cadmium	0.68	5.1	0.101 U	0.102 U	0.0985 U	**0.0621 J**	**0.0853 J**	0.11 U	**0.0831 J**
Chromium	52.3	260	**5.3**	**6.7**	**8.13**	**7.22**	**7.04**	**6.91**	**5.3**
Copper	18.7	390	**4.23**	**4.9**	**8.66**	**8.9**	**4.71**	**5.85**	**4.75**
Iron	--	--	**11400**	**11300**	**15100**	**15000**	**14000**	**13900**	**12000**
Lead	30.2	450	**2.97**	**3.44**	**12.9**	**14.5**	**2.55**	**3.55**	**2.43**
Mercury	0.13	0.41	0.0203 U	0.0205 U	**0.0538**	**0.0214 J**	0.0217 U	**0.0195 J**	**0.0204 J**
Nickel	15.9	--	**2.57**	**3.01**	**4.4**	**4.42**	**3.18**	**3.64**	**2.86**
Selenium	--	--	0.505 U	0.51 U	0.492 U	0.498 U	0.545 U	**0.375 J**	0.56 U
Silver	0.73	6.1	0.101 U	0.102 U	0.0985 U	0.0995 U	0.109 U	0.11 U	0.112 U
Thallium	--	--	**0.0827 J**	**0.0872 J**	**0.109 J**	**0.121 J**	**0.111 J**	**0.106 J**	**0.109 J**
Zinc	124	410	**35.6**	**32.7**	**42.7**	**45.4**	**38.4**	**38.7**	**35.4**
Polycyclic Aromatic Hydrocarbons (µg/kg)									
1-Methylnaphthalene	--	--	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
2-Methylnaphthalene	20.2	670	2.77 U	2.75 U	2.6 U	2.62 U	2.94 UJ	2.73 U	2.85 U
Acenaphthene	6.71	500	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
Acenaphthylene	5.87	1300	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
Anthracene	46.9	960	2.77 U	2.75 U	**1.74 J**	**2.09 J**	2.94 U	2.73 U	2.85 U
Benzo(a)anthracene	74.8	1300	2.77 U	2.75 U	**3.41 J**	**3.43 J**	2.94 U	2.73 U	2.85 U
Benzo(a)pyrene	88.8	1600	2.77 U	2.75 U	**2.82 J**	**2.58 J**	2.94 U	2.73 U	2.85 U
Benzo(b)fluoranthene	--	--	2.77 U	2.75 U	**9.55**	**12**	2.94 U	**1.65 J**	2.85 U
Benzo(g,h,i)perylene	--	670	2.77 U	2.75 U	**2.64 J**	**2.97 J**	2.94 U	2.73 U	2.85 U
Benzo(k)fluoranthene	--	--	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
Chrysene	108	1400	2.77 U	2.75 U	**5.9**	**7.51**	2.94 U	2.73 U	2.85 U
Dibenzo(a,h)anthracene	6.22	230	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
Fluoranthene	113	1700	2.77 U	2.75 U	**6.97**	**7.81**	14.7 U	**2.35 J**	2.85 U
Fluorene	21.2	540	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
Indeno(1,2,3-c,d)pyrene	--	600	2.77 U	2.75 U	**2.06 J**	**2.41 J**	2.94 U	2.73 U	2.85 U
Naphthalene	34.6	2100	2.77 U	2.75 U	2.6 U	2.62 U	2.94 U	2.73 U	2.85 U
Phenanthrene	86.7	1500	2.77 U	2.75 U	**4.11 J**	**3.87 J**	14.7 U	2.73 U	2.85 U
Pyrene	153	2600	2.77 U	2.75 U	**6.82**	**6.17**	2.94 U	**2.27 J**	2.85 U
Total Benzofluoranthenes (b,j,k) (U = 0)	--	3200	2.77 U	2.75 U	**9.55**	**12**	2.94 U	**1.65 J**	2.85 U
Total HPAH (SMS) (U = 0)	--	12000	2.77 U	2.75 U	**40.17 J**	**44.88 J**	14.7 U	**6.27 J**	2.85 U
Total LPAH (SMS) (U = 0)	--	5200	2.77 U	2.75 U	**5.85 J**	**5.96 J**	14.7 U	2.73 U	2.85 U
Total PAH (17) (U = 0)	1684	--	2.77 U	2.75 U	**46.02 J**	**50.84 J**	14.7 UJ	**6.27 J**	2.85 U

Table 15
Small Boat Harbor DMMU Composite Results: Metals and PAHs

Location ID Sample ID Sample Date Depth or Elevation Sample Type Parameter	TEL	SCO (AET)	SBH-DMMU-1 SBH-DMMU-1 01/29/2015 0 - 4 ft N	SBH-DMMU-1 SBH-DMMU-51 01/29/2015 0 - 4 ft FD	SBH-DMMU-2 SBH-DMMU-2 01/29/2015 0 - 4 ft N	SBH-DMMU-2 SBH-DMMU-52 01/29/2015 0 - 4 ft FD	SBH-DMMU-3 SBH-DMMU-3 01/29/2015 4 to -14 ft MLLW N	SBH-DMMU-4 SBH-DMMU-4 01/29/2015 4 to 0 ft MLLW N	SBH-DMMU-5 SBH-DMMU-5 01/29/2015 0 to -14 ft MLLW N
Semivolatile Organics (µg/kg)									
1,2,4-Trichlorobenzene	--	31	139 U	139 U	131 U	132 U	146 U	138 U	141 U
1,2-Dichlorobenzene	--	35	139 U	139 U	131 U	132 U	146 UJ	138 U	141 U
1,3-Dichlorobenzene	--	--	139 UJ	139 U	131 U	132 U	146 UJ	138 U	141 U
1,4-Dichlorobenzene	--	110	139 U	139 U	131 U	132 U	146 UJ	138 U	141 U
1-Chloronaphthalene	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,2'-Oxybis (1-chloropropane)	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,4,5-Trichlorophenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,4,6-Trichlorophenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,4-Dichlorophenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,4-Dimethylphenol	--	29	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,4-Dinitrophenol	--	--	1670 U	1670 U	1560 U	1580 U	1750 U	1650 U	1700 U
2,4-Dinitrotoluene	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,6-Dichlorophenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2,6-Dinitrotoluene	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2-Chloronaphthalene	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2-Chlorophenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2-Methylphenol (o-Cresol)	--	63	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2-Nitroaniline	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
2-Nitrophenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
3,3'-Dichlorobenzidine	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
3-Methylphenol & 4-Methylphenol (m&p-Cresol)	--	--	555 U	555 U	520 U	525 U	585 U	550 U	565 U
3-Nitroaniline	--	--	278 U	278 U	261 U	264 U	292 U	275 U	282 U
4-Bromophenyl-phenyl ether	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
4-Chloro-3-methylphenol	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
4-Chloroaniline	--	--	278 U	278 U	261 U	264 U	292 U	275 U	282 U
4-Chlorophenyl phenyl ether	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
4-Nitroaniline	--	--	1670 U	1670 U	1560 U	1580 U	1750 U	1650 U	1700 U
4-Nitrophenol	--	--	555 U	555 U	520 U	525 U	585 U	550 U	565 U
Aniline	--	--	1110 UJ	1120 UJ	1040 UJ	1050 UJ	1170 UJ	1100 UJ	1130 UJ
Azobenzene	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Benzoic acid	--	650	835 U	835 U	780 U	790 U	875 UJ	825 U	845 U
Benzyl alcohol	--	57	139 U	139 U	131 U	132 U	146 U	138 U	141 U
bis(2-Chloroethoxy)methane	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
bis(2-Chloroethyl)ether	--	--	139 U	139 U	131 U	132 U	146 UJ	138 U	141 U
bis(2-Ethylhexyl)phthalate	182	1300	139 U	**108 J**	**106 J**	**106 J**	146 U	**103 J**	141 U
Butylbenzyl phthalate	--	63	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Carbazole	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Dibenzofuran	--	540	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Diethyl phthalate	--	200	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Dimethyl phthalate	--	71	139 U	139 U	131 U	132 U	146 U	138 U	141 U

Table 15
Small Boat Harbor DMMU Composite Results: Metals and PAHs

Location ID Sample ID Sample Date Depth or Elevation Sample Type Parameter	TEL	SCO (AET)	SBH-DMMU-1 SBH-DMMU-1 01/29/2015 0 - 4 ft N	SBH-DMMU-1 SBH-DMMU-51 01/29/2015 0 - 4 ft FD	SBH-DMMU-2 SBH-DMMU-2 01/29/2015 0 - 4 ft N	SBH-DMMU-2 SBH-DMMU-52 01/29/2015 0 - 4 ft FD	SBH-DMMU-3 SBH-DMMU-3 01/29/2015 4 to -14 ft MLLW N	SBH-DMMU-4 SBH-DMMU-4 01/29/2015 4 to 0 ft MLLW N	SBH-DMMU-5 SBH-DMMU-5 01/29/2015 0 to -14 ft MLLW N
Di-n-butyl phthalate	--	1400	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)	--	--	1110 U	1120 U	1040 U	1050 U	1170 U	1100 U	1130 U
Di-n-octyl phthalate	--	6200	278 U	278 U	261 U	264 U	292 U	275 U	282 U
Hexachlorobenzene	--	22	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Hexachlorobutadiene (Hexachloro-1,3-butadiene)	--	11	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Hexachlorocyclopentadiene	--	--	389 U	390 U	365 U	369 U	408 U	385 U	396 U
Hexachloroethane	--	--	139 UJ	139 U	131 U	132 U	146 UJ	138 U	141 U
Isophorone	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Nitrobenzene	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
n-Nitrosodimethylamine	--	--	139 U	139 U	131 U	132 U	146 UJ	138 U	141 U
n-Nitrosodi-n-propylamine	--	--	139 U	139 U	131 U	132 U	146 U	138 U	141 U
n-Nitrosodiphenylamine	--	28	139 U	139 U	131 U	132 U	146 U	138 U	141 U
Pentachlorophenol	--	360	1110 U	1120 U	1040 U	1050 U	1170 U	1100 U	1130 U
Phenol	--	420	139 U	139 U	131 U	132 U	146 U	138 U	141 U

Notes:
Detected concentration is greater than Threshold Effects Level (TEL) (MacDonald et al. 1996)
Detected concentration is greater than Marine Sediment Apparent Effects Threshold (AET) - Sediment Cleanup Objective (SCO) (SCUM II, March 2015)
Non-detected concentration is above one or more identified screening levels
Bold = Detected result
-- = results not reported or not applicable

µg/kg = micrograms per kilogram
FD = Field duplicate
ft = feet
HPAH = high-molecular-weight PAH
J = Estimated value
LPAH = low-molecular-weight PAH
mg/kg = milligrams per kilogram
N = normal environmental sample
PAH = polycyclic aromatic hydrocarbons
SE = sediment matrix
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit

U=0 - Totals are calculated as the sum of all detected results. If all results are not detected, the highest reporting limit value is reported as the sum.
USEPA Stage 2A data validation was completed by Laboratory Data Consultants for all samples.
Total LPAH (SMS) is the total of acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. 2-Methylnapthalene is not included in the sum of LPAHs.
Total HPAH (SMS) is the total of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total PAH (17) is the sum of 2-methylnapthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(x)fluoranthenes, biphenyl, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene.

Table 16
Small Boat Harbor DMMU Composite Results: Dioxins and PCB Aroclors

Parameter	TEL	SCO (AET)	Location ID: SBH-DMMU-1-5 Sample ID: SBH-DMMU-1-5 Sample Date: 01/29/2015
Conventional Parameters (percent)			
Total solids	--	--	**86.3**
Dioxin Furans (ng/kg)			
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	0.0497 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	**0.0847 J**
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	**0.101 J**
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	**0.66 J**
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	0.309 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	**10.6**
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	--	--	**73.6**
Total Tetrachlorodibenzo-p-dioxin (TCDD)	--	--	**0.093 J**
Total Pentachlorodibenzo-p-dioxin (PeCDD)	--	--	**0.0847**
Total Hexachlorodibenzo-p-dioxin (HxCDD)	--	--	**3.26 J**
Total Heptachlorodibenzo-p-dioxin (HpCDD)	--	--	**25**
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	--	--	0.0648 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	0.0375 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	--	--	**0.0669 J**
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	**0.0953 J**
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	**0.0787 J**
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	--	--	0.0677 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	--	--	**0.103 J**
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	--	--	**0.821 J**
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	--	--	0.0595 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	--	--	**1.02 J**
Total Tetrachlorodibenzofuran (TCDF)	--	--	0.0648 U
Total Pentachlorodibenzofuran (PeCDF)	--	--	**0.926 J**
Total Hexachlorodibenzofuran (HxCDF)	--	--	**2.39 J**
Total Heptachlorodibenzofuran (HpCDF)	--	--	**2.32**
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	--	--	**0.393 J**
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	--	--	**0.345 J**
PCB Aroclors (µg/kg)			
Aroclor 1016	--	--	6.7 U
Aroclor 1221	--	--	14 U
Aroclor 1232	--	--	6.7 U
Aroclor 1242	--	--	6.7 U
Aroclor 1248	--	--	6.7 U
Aroclor 1254	--	--	6.7 U
Aroclor 1260	--	--	6.7 U
Total PCB Aroclors (SMS Marine 2013) (U = 0)	21.6	130	14 U
Total PCB Aroclors (U = 0)	--	130	14 U

Notes:
Bold = Detected result
-- = results not reported or not applicable

µg/kg = micrograms per kilogram
J = Estimated value
ng/kg = nanograms per kilogram
PCB = polychlorinated biphenyl
TEQ = toxic equivalency
U = Compound analyzed, but not detected above detection limit

Horizontal coordinate datum is NAD 1983 State Plane Alaska 1 (U.S. Feet).
U=0 - Totals are calculated as the sum of all detected results. If all results are not detected, the highest reporting limit value is reported as the sum.
U=1/2 - Totals are calculated as the sum of all detected results and half of the reporting limit of undetected results. If all results are not detected, the highest reporting limit value is reported as the sum.
USEPA Stage 2A data validation was completed by Laboratory Data Consultants for all samples.
Total PCB Aroclors is the sum of all PCB Aroclors listed in this table.
Dioxin/furan TEQ values were calculated with 2005 World Health Organization (WHO) TEF values for mammals.

Table 17
Skagway Ore Terminal Upland Soil Results

Location ID		G03	G03	G04	G04	G05	G05	G06	G06	G07	G07	G08	G08	G10	G10
Sample ID		G03 0-2	G03 4-6	G04 0-2	G04 4-6	G05 0-2	G05 4-6	G06 0-2	G06 4-6	G07 0-2	G07 4-6	G08 0-2	G08 4-6	G10 0-2	G10 4-6
Sample Date		01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/23/2015	01/23/2015	01/23/2015	01/23/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015
Depth		0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft
X		2377333.9	2377333.9	2377153.5	2377153.5	2376854.6	2376854.6	2376634.6	2376634.6	2376336.1	2376336.1	2376249.3	2376249.3	2376605.9	2376605.9
Y	Alaska Soil	2786559.7	2786559.7	2786633.8	2786633.8	2786321.3	2786321.3	2786069.2	2786069.2	2785843.2	2785843.2	2785913.0	2785913.0	2786539.2	2786539.2
Parameter	CULs														
Conventional Parameters (percent)															
Total solids	--	**96**	**96.4**	**95.7**	**93.6**	**96**	**94.3**	**91.9**	**94.2**	**93.7**	**94.7**	**97**	**98.6**	**95.3**	**94.7**
Metals (mg/kg)															
Arsenic	3.7	**0.61 J**	**0.474 J**	**0.357 J**	**0.593 J**	**0.411 J**	0.5 U	**0.984 J**	**0.432 J**	**0.624 J**	**0.428 J**	**2.03**	**0.492 J**	**0.565 J**	**0.732 J**
Barium	16,600	**158 J**	**156 J**	**106 J**	**117 J**	**161 J**	**144 J**	**166 J**	**106 J**	**152 J**	**140 J**	**225 J**	**206 J**	**122 J**	**211 J**
Cadmium	65	0.097 U	**0.13 J**	**0.489**	**0.4**	**0.601**	**0.701**	**0.199**	**0.155 J**	**0.126 J**	**0.261**	**0.56**	**0.266**	**0.26**	**0.137 J**
Chromium	250	**16**	**8.21**	**6.93**	**8.47**	**8.55**	**7.94**	**7.56**	**4.68**	**7.82**	**7.04**	**11.3**	**11.3**	**11**	**18.5**
Lead	400	**4.46 J**	**48.7 J**	**15.2 J**	**228 J**	**15.3 J**	**5.61 J**	**97.3 J**	**16.6 J**	**30.7 J**	**37.3 J**	**1030 J**	**93.2 J**	**90.8 J**	**34.1 J**
Mercury	25	0.0193 U	**0.0542**	**0.0176 J**	**0.164**	**0.0326 J**	**0.017 J**	**0.0583**	**0.0246 J**	**0.0189 J**	**0.023 J**	**0.85**	**0.0977**	**0.0964**	**0.108**
Selenium	410	0.484 U	0.5 U	0.52 U	0.51 U	0.489 U	0.5 U	0.494 U	0.5 U	0.53 U	0.483 U	0.505 U	0.45 U	0.492 U	0.515 U
Silver	410	0.097 U	0.1 U	0.104 U	**0.149 J**	0.098 U	0.1 U	**0.105 J**	0.101 U	**0.0753 J**	**0.071 J**	**1.04**	**0.104 J**	**0.0679 J**	0.103 U
Polycyclic Aromatic Hydrocarbons (µg/kg)															
1-Methylnaphthalene	230,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	2.69 U	2.62 U	2.63 U	**3.99 J**	**18.7 J**	12.4 U	**2.1 J**	2.6 U
2-Methylnaphthalene	230,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**1.89 J**	2.62 U	**2.32 J**	**6.31**	**29**	**11.5 J**	**2.59 J**	2.6 U
Acenaphthene	2,300,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	2.69 U	2.62 U	2.63 U	2.62 U	12.8 U	12.4 U	2.62 U	2.6 U
Acenaphthylene	2,300,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**2.47 J**	2.62 U	2.63 U	2.62 U	12.8 U	12.4 U	2.62 U	2.6 U
Anthracene	16,800,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**4.32 J**	2.62 U	2.63 U	2.62 U	**14.5 J**	12.4 U	2.62 U	2.6 U
Benzo(a)anthracene	4,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**11.5**	**2.78 J**	**2.77 J**	**2.86 J**	**51.7**	**32.5 J**	2.62 U	2.6 U
Benzo(a)pyrene	400	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**14.8**	**2.54 J**	**2.78 J**	**2.32 J**	**27**	**25.1 J**	2.62 U	2.6 U
Benzo(b)fluoranthene	4,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**39.8**	**12.7**	**8.44**	**6.9**	**103**	**60**	2.62 U	2.6 U
Benzo(g,h,i)perylene	1,100,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**8.55**	2.62 U	**2.78 J**	**2.23 J**	**15.7 J**	**19 J**	2.62 U	2.6 U
Benzo(k)fluoranthene	40,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	2.69 U	2.62 U	2.63 U	2.62 U	12.8 U	24.9 U	2.62 U	2.6 U
Chrysene	400,000	2.57 U	2.58 U	2.61 U	2.67 U	**3.63 J**	**3.38 J**	**63.7**	**9.99**	**6.96**	**5.31**	**115**	**150**	**3.51 J**	**2.51 J**
Dibenzo(a,h)anthracene	400	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**2.46 J**	2.62 U	2.63 U	2.62 U	12.8 U	24.9 U	2.62 U	2.6 U
Fluoranthene	1,500,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**36.1**	**4.39 J**	**7.76**	**6.61**	**245**	**43.6 J**	**2.5 J**	2.6 U
Fluorene	1,900,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	2.69 U	2.62 U	2.63 U	2.62 U	**8.08 J**	12.4 U	2.62 U	2.6 U
Indeno(1,2,3-c,d)pyrene	4,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**6.78**	2.62 U	**1.85 J**	2.62 U	**14.3 J**	24.9 U	2.62 U	2.6 U
Naphthalene	1,100,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	2.69 U	2.62 U	2.63 U	**3.67 J**	**16.3 J**	12.4 U	**1.62 J**	2.6 U
Phenanthrene	16,800,000	2.57 U	2.58 U	2.61 U	2.67 U	2.58 U	2.61 U	**12.1**	2.62 U	**3.64 J**	**7.97**	**63.4**	**38.6**	**3.78 J**	**1.64 J**
Pyrene	1,100,000	2.57 U	2.58 U	2.61 U	2.67 U	**1.62 J**	2.61 U	**49.3**	**3.32 J**	**7.04**	**6.12**	**186**	**70.7**	**2.76 J**	**2 J**
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	--	2.57 U	2.58 U	2.61 U	2.67 U	**1.97 J**	**1.99 J**	**21.63 J**	**4.58 J**	**4.42 J**	**3.74 J**	**46.3 J**	**39.6 J**	**2.00 J**	**1.98 J**
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	--	2.57 U	2.58 U	2.61 U	2.67 U	**0.0363 J**	**0.0338 J**	**21.5 J**	**4.19 J**	**4.16 J**	**3.35 J**	**45.1 J**	**35.9 J**	**0.0351 J**	**0.0251 J**

Table 17
Skagway Ore Terminal Upland Soil Results

Location ID		G03	G03	G04	G04	G05	G05	G06	G06	G07	G07	G08	G08	G10	G10
Sample ID		G03 0-2	G03 4-6	G04 0-2	G04 4-6	G05 0-2	G05 4-6	G06 0-2	G06 4-6	G07 0-2	G07 4-6	G08 0-2	G08 4-6	G10 0-2	G10 4-6
Sample Date		01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015	01/23/2015	01/23/2015	01/23/2015	01/23/2015	01/24/2015	01/24/2015	01/24/2015	01/24/2015
Depth		0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft	0 - 2 ft	4 - 6 ft
X		2377333.9	2377333.9	2377153.5	2377153.5	2376854.6	2376854.6	2376634.6	2376634.6	2376336.1	2376336.1	2376249.3	2376249.3	2376605.9	2376605.9
Y	Alaska Soil	2786559.7	2786559.7	2786633.8	2786633.8	2786321.3	2786321.3	2786069.2	2786069.2	2785843.2	2785843.2	2785913.0	2785913.0	2786539.2	2786539.2
Parameter	**CULs**														
Total Petroleum Hydrocarbons (mg/kg)															
Diesel range organics (C10 - C25)	8,250	**13.5 J**	10.3 U	**12.2 J**	42.6 U	41.5 U	41.7 U	**14.9 J**	**19.1 J**	**8.33 J**	**23.4**	**88.5**	**141 J**	41.7 U	**32.9 J**
Gas Range Organics (C6-C10)	1,400	1.21 U	1.11 U	1.08 U	1.09 U	0.97 U	1.24 U	3.07 U	1.03 U	1.46 U	1.2 U	1.84 U	0.87 U	1.23 U	1.29 U
Residual range organics (C25 - C36)	8,300	41 U	20.6 U	37.8 U	85.3 U	84.9 U	121 U	**60.4**	50.9 U	44.5 U	**71**	**520**	**1740**	83.4 UJ	132 U

Notes:
Detected concentration is greater than Alaska Soil Cleanup Levels (CULs) from Tables B1 and B2 of 18 AAC 75.341 (direct contact/ingestion, over 40 inch zone).
Bold = Detected result
µg/kg = micrograms per kilogram
cPAH = carcinogenic PAH
feet bgs = feet below ground surface
J = Estimated value
mg/kg = milligrams per kilogram
N = normal field sample
PAH = polycyclic aromatic hydrocarbons
U = Compound analyzed, but not detected above detection limit
UJ = Compound analyzed, but not detected above estimated detection limit

U=0 - Totals are calculated as the sum of all detected results. If all results are not detected, the highest reporting limit value is reported as the sum.
U=1/2 - Totals are calculated as the sum of all detected results and half of the reporting limit of undetected results. If all results are not detected, the highest reporting limit value is reported as the sum.
Total cPAH TEQ (7 minimum CAEPA 2005) calculation includes benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-c,d)pyrene. Per MTCA cleanup Regulation, Table 708-2 Toxicity Equivalency Factors for Minimum Required cPAHs under WAC 173-340-708(e).

Table 18
Leachability Compositing Approach: Ore Dock Sediments

Composite Station ID	Discrete Samples Composited	Depth Interval (feet below mudline)	Bathymetric Surface Elevation (feet MLLW)[1]	Bottom of Interval Bathymetric Elevation (feet MLLW)
SOD-01	SOD-01-0-2.5	0 - 2.5	-36.9	-39.4
	SOD-01-2.5-4.5	2.5 - 4.5		-41.4
	SOD-01-4.5-6.5	4.5 - 6.5		-43.4
SOD-02	SOD-02-0-3.0	0 - 3.0	-34.5	-37.5
	SOD-02-5.0-6.5	5.0 - 6.5		-41.0
	SOD-02-6.5-8.5	6.5 - 8.5		-43.0
SOD-03	SOD-03-0-2.5	0 - 2.5	-40.11	-42.6
	SOD-03-2.5-4.5	2.5 - 4.5		-44.6
	SOD-03-4.5-6.5	4.5 - 6.5		-46.6
SOD-05	SOD-05-0-1.5	0 - 1.5	-40.09	-41.6
	SOD-05-1.5-3.5	1.5 - 3.5		-43.6

Notes:
1. Elevation of samples determined using multibeam bathymetry survey by Terrasond in 2014.
MLLW = mean lower low water

Table 19
Leachability Testing Approach: Ore Dock Sediments

Composite Station ID	Sample ID	Method	Testing
SOD-01	SD1 M6 2001	TCLP	TCLP Metals, TCLP PAHs, Total Metals, PAHs
	SOD-01S_M12_b1 SOD-01S_M13_b2 SOD-01S_M14_b3 SOD-01S_M15_b4	Seawater SBLT	Metals, PAHs
	SOD-01F_M12_b1 SOD-01F_M13_b2 SOD-01F_M14_b3 SOD-01F_M15_b4	Freshwater SBLT	Metals, PAHs
SOD-02	SD2 M6 2002	TCLP	TCLP Metals, TCLP PAHs, Total Metals, PAHs
	SOD-02S_M12_b1 SOD-02S_M13_b2 SOD-02S_M14_b3 SOD-02S_M15_b4	Seawater SBLT	Metals, PAHs
	SOD-02F_M12_b1 SOD-02F_M13_b2 SOD-02F_M14_b3 SOD-02F_M15_b4	Freshwater SBLT	Metals, PAHs
SOD-03	SD3 M6 2003	TCLP	TCLP Metals, TCLP PAHs, Total Metals, PAHs
	SOD-03S_M12_b1 SOD-03S_M13_b2 SOD-03S_M14_b3 SOD-03S_M15_b4	Seawater SBLT	Metals, LVI PAHs
	SOD-03F_M12_b1 SOD-03F_M13_b2 SOD-03F_M14_b3 SOD-03F_M15_b4	Freshwater SBLT	Metals, LVI PAHs
SOD-05	SD5 M6 2005	TCLP	TCLP Metals, TCLP PAHs, Total Metals, PAHs
	SOD-05S_M12_b1 SOD-05S_M13_b2 SOD-05S_M14_b3 SOD-05S_M15_b4	Seawater SBLT	Metals, PAHs
	SOD-05F_M12_b1 SOD-05F_M13_b2 SOD-05F_M14_b3 SOD-05F_M15_b4	Freshwater SBLT	Metals, PAHs

Notes:

1. Sample IDs denote batch by b1 = batch 1, b2 = batch 2, b3 = batch 3, b4 = batch 4.

Metals = total and dissolved metals, antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, barium, and iron

PAH = polycyclic aromatic hydrocarbon

SBLT = Sequential Batch Leachate Test

TCLP = Toxicity Characteristic Leaching Procedure

Laboratory duplicate samples were analyzed for each SBLT sample batch and are denoted in Tables 21 and 22 by the addition of -50 to the sample ID (e.g., SOD-51 is the duplicate of SOD-01).

Table 20
Site Seawater Results

Parameter	Sample ID: SOD-MET-W01 Sample Date: 1/21/2015 Matrix: Site Seawater
Conventional Parameters (mg/L)	
Alkalinity, bicarbonate as calcium carbonate (CaCO3)	**119**
Alkalinity, carbonate as calcium carbonate (CaCO3)	5 U
Alkalinity, hydroxide as calcium carbonate (CaCO3)	5 U
Alkalinity, total as calcium carbonate (CaCO3)	**119**
Nitrate as nitrogen	**0.63 J**
Phosphorus	2.5 U
Sulfate	**3250**
Conventional Parameters (ppth)	
Salinity	**37.2**
Conventional Parameters (su)	
pH	**7.53 J**
Metals (mg/L)	
Calcium	**313**
Magnesium	**997**
Silicon	2.5 U
Sodium	**8880**

Notes:
Bold = Detected result
-- = results not reported or not applicable
J = Estimated value
mg/L = milligrams per liter
ppth = part per thousand
su = standard unit
U = Compound analyzed, but not detected above detection limit

Table 21
SBLT Testing Results: Freshwater

Parent Station ID			SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-02	SOD-02	SOD-02	SOD-02
Sample ID			SOD-01F_M12_b1	SOD-01F_M13_b2	SOD-01F_M14_b3	SOD-01F_M15_b4	SOD-51F_M12_b1	SOD-51F_M13_b2	SOD-51F_M14_b3	SOD-51F_M15_b4	SOD-02F_M12_b1	SOD-02F_M13_b2	SOD-02F_M14_b3	SOD-02F_M15_b4
Batch			Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater	Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate	Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater
Sample Date	EPA Water Quality Criteria: Aquatic Life for Freshwater		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft
Parameter	**Acute (CMC)**	**Chronic (CCC)**												
Metals, Dissolved (µg/L)														
Antimony	--	--	**11.5**	**13.6**	**11**	**6.92**	--	--	--	--	**9.17**	**9.22**	**18.5**	**11.8**
Arsenic	340	150	**3.17 J**	**1.83**	**1.56**	**1.06**	--	--	--	--	**6.56**	**5.11**	**6.27**	**3.69**
Barium	--	--	**91.1**	**49.5**	**45.6**	**38.8**	--	--	--	--	**23**	**26.6**	**145**	**65.9**
Cadmium	2	0.25	1 U	0.257 U	0.225 U	0.2 U	--	--	--	--	1 U	**0.222 J**	**0.533 J**	**0.256**
Chromium (total)	--	--	5 U	**2.29**	**1.69**	**1.07**	--	--	--	--	**8.56**	**4.28 , J**	**12.3**	**4.7**
Copper	2.337	1.45	**5.67**	**1.21 J**	**2.08 J**	**1.82**	--	--	--	--	**1.51 J**	**5.04**	**32.3**	**97.8**
Iron	--	1000	**155 J**	**246**	**720**	**425**	--	--	--	--	**209 J**	**999**	**8720**	**4420**
Lead	65	2.5	**76.5**	**145**	**286**	**239**	--	--	--	--	**17.2**	**135**	**1360**	**726**
Mercury	1.4	0.77	0.4 U	0.103 U	0.09 U	0.08 U	--	--	--	--	0.4 U	0.4 U	**0.352**	**0.192**
Nickel	470	52	5 U	1.29 U	**0.612 J**	1 U	--	--	--	--	5 U	5 U	**5.5**	**2.87**
Selenium	--	5	**3.51**	**4.11 J**	**0.975 J**	**1.1 J**	--	--	--	--	**8.17**	**1.92 J**	**2.5 J**	20 U
Silver	3.2	--	1 U	0.257 U	**0.15 J**	0.2 U	--	--	--	--	1 U	1 U	**1.93**	**0.989**
Zinc	120	120	20 U	**8.79**	**24.6**	**17.9**	--	--	--	--	20 U	**29.8**	**227**	**174**
Metals, Total (µg/L)														
Antimony	--	--	**58.2**	**13.7**	**11.9**	**7.67 J**	**55.3**	**12.1**	**13.3**	**7.63**	**47.2**	**7.63**	**16.6**	100 U
Arsenic	--	--	**1.84 J**	**0.9 J**	**3.21**	**1.68**	**1.8 J**	**1.04**	**3.07**	**2.04**	**3.47**	**2.87**	**26.4**	100 U
Barium	--	--	**120**	**173**	**204**	**158**	**132**	**184**	**201**	**156**	**27.9**	**162**	**1100**	**1250**
Cadmium	--	--	**0.178 J**	**0.511**	**1.71**	**0.511**	**0.289 J**	**0.389**	**1.64**	**0.7**	2 U	**0.356**	**4.62**	**5.56 J**
Chromium (total)	--	--	**8.78 J**	**3.49**	**5.8**	**4.26**	**9.67 J**	**3.83**	**5.12**	**4.46**	**41.2**	**5.91**	**51.4**	**63.3 J**
Copper	--	--	**9.07**	**14.8**	**42.4**	**23.7**	**6.22**	**14.6**	**37.9**	**25.7**	**2.24**	**22.3**	**233**	**344**
Iron	--	--	**5900**	**4930**	**8950**	**6470**	**6180**	**5420**	**7900**	**6540**	**2540**	**9250**	**85300**	**113000**
Lead	--	--	**522**	**1900**	**4190**	**2440**	**851**	**2000**	**3950**	**2620**	**42.3**	**1030**	**12800**	**15600**
Mercury	--	--	0.16 U	**0.201**	**0.622**	**0.302**	0.16 U	**0.198**	**0.445**	**0.348**	0.16 U	**0.256**	**3.26**	**4.73 J**
Nickel	--	--	**1.4 J**	**3.68**	**3.63**	**2.3**	**1.04 J**	**3.53**	**3.34**	**2.33**	**1.49 J**	**5.21**	**36**	**44.8**
Selenium	--	--	**8.98**	4 U	**2.22**	20.00 U	**8.02**	4 U	**1 J**	1 U	**15.7**	4 U	**2.3 J**	200 U
Silver	--	--	**0.4**	**1.13**	**3.56**	**1.99**	**0.622**	**1.16**	**3.27**	**2.21**	0.4 U	**1.18**	**16.5**	**18.9 J**
Zinc	--	--	**153**	**354**	**1200**	**443**	**278**	**328**	**1210**	**509**	**11.7**	**174**	**1980**	**2490**

Table 21
SBLT Testing Results: Freshwater

Parent Station ID			Freshwater Batches 1-4 for SOD-01				Freshwater Batches 1-4 for SOD-51				Freshwater Batches 1-4 for SOD-02			
Sample ID			SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-02	SOD-02	SOD-02	SOD-02
			SOD-01F_M12_b1	SOD-01F_M13_b2	SOD-01F_M14_b3	SOD-01F_M15_b4	SOD-51F_M12_b1	SOD-51F_M13_b2	SOD-51F_M14_b3	SOD-51F_M15_b4	SOD-02F_M12_b1	SOD-02F_M13_b2	SOD-02F_M14_b3	SOD-02F_M15_b4
Batch			Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater	Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate	Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater
Sample Date	EPA Water Quality Criteria: Aquatic Life for Freshwater		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft
Parameter	Acute (CMC)	Chronic (CCC)												
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	--	--	0.0647 U	0.0699 U	0.0681 U	0.0622 U	**0.0336 J**	0.0652 U	0.0315 U	0.0628 U	**0.0375 J**	0.0793 U	**0.0426 J**	0.33 U
2-Methylnaphthalene	--	--	**0.0384 J**	0.0699 U	0.0681 U	**0.0361 J**	**0.0388 J**	**0.044 J**	0.0315 U	**0.0314 J**	**0.0703**	0.0793 U	0.0625 U	0.33 U
Acenaphthene	--	--	**0.133**	**0.0739**	**0.0744**	**0.0501**	**0.143**	**0.102**	**0.065**	**0.0412**	**0.187**	**0.0773**	**0.186**	**0.202 J**
Acenaphthylene	--	--	0.0323 U	0.035 U	0.034 U	0.0311 U	0.0323 U	**0.0322 J**	0.0158 U	0.0314 U	**0.0236 J**	**0.0436**	**0.114**	0.33 U
Anthracene	--	--	**0.0469**	**0.0319 J**	**0.0506**	**0.0412**	**0.0521**	**0.0917**	**0.0591**	**0.0306 J**	**0.0725**	**0.0734**	**0.243**	0.33 U
Benzo(a)anthracene	--	--	**0.0259**	**0.0586**	**0.163**	**0.176**	**0.0433**	**0.385**	**0.169**	**0.177**	**0.0375**	**0.264**	**0.602**	**0.763**
Benzo(a)pyrene	--	--	0.0162 U	**0.0376**	**0.173**	**0.183**	**0.0234**	**0.357**	**0.171**	**0.18**	**0.0291**	**0.322**	**1.05**	**1.53**
Benzo(b)fluoranthene	--	--	**0.0105 J**	**0.106**	**0.487**	**0.507**	**0.0586**	**0.983**	**0.462**	**0.487**	**0.0636**	**0.711**	**2.43**	**3.83**
Benzo(g,h,i)perylene	--	--	0.0323 U	0.035 U	**0.0328 J**	**0.0354**	0.0323 U	**0.0668**	**0.035**	**0.0338**	0.0337 U	**0.0629**	**0.187**	**0.334**
Benzo(k)fluoranthene	--	--	0.0162 U	**0.0254**	**0.0876**	**0.121**	**0.0158 J**	**0.221**	**0.111**	**0.115**	**0.0177**	**0.181**	**0.611**	**0.894**
Chrysene	--	--	**0.0582**	**0.103**	**0.267**	**0.26**	**0.0744**	**0.592**	**0.248**	**0.255**	**0.117**	**0.457**	**1.43**	**1.93**
Dibenzo(a,h)anthracene	--	--	0.0162 U	0.0175 U	**0.0162 J**	**0.0175**	0.0162 U	**0.0322**	**0.0161**	**0.0173**	0.0168 U	**0.0253**	**0.0762**	**0.185**
Fluoranthene	--	--	**0.347**	**0.365**	**0.539**	**0.458**	**0.349**	**0.95**	**0.52**	**0.424**	**0.68**	**1.4**	**2.41**	**2.55**
Fluorene	--	--	**0.21**	**0.125**	**0.115**	**0.103**	**0.219**	**0.161**	**0.112**	**0.0812**	**0.21**	**0.111**	**0.291**	**0.326 J**
Indeno(1,2,3-c,d)pyrene	--	--	0.0162 U	0.0175 U	**0.0417**	**0.0486**	0.0162 U	**0.0848**	**0.0457**	**0.0459**	0.0168 U	**0.0748**	**0.25**	**0.445**
Naphthalene	--	--	**0.0772**	0.0699 U	0.0681 U	**0.0377 J**	**0.074**	**0.0587 J**	**0.0394 J**	**0.0447 J**	**0.0623 J**	0.0793 U	0.0625 U	0.33 U
Phenanthrene	--	--	**0.687**	**0.538**	**0.59**	**0.489**	**0.692**	**0.707**	**0.519**	**0.37**	**0.302**	**0.24**	**0.428**	**0.466 J**
Pyrene	--	--	**1.55**	**1.6**	**2.34**	**1.99**	**1.55**	**3.98**	**2.29**	**1.86**	**3.47**	**5.63**	**15.5**	**14.5**
Total Aqueous Hydrocarbons (TAqH) U=0	15		**3.2**	**3.1**	**5.0**	**4.6**	**3.4**	**8.8**	**4.9**	**4.2**	**5.4**	**9.7**	**25.9**	**28.0**

Table 21
SBLT Testing Results: Freshwater

Parent Station ID			Freshwater Batches 1-4 for SOD-52				Freshwater Batches 1-4 for SOD-03				Freshwater Batches 1-4 for SOD-53			
Sample ID			SOD-02	SOD-02	SOD-02	SOD-02	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03
			SOD-52F_M12_b1	SOD-52F_M13_b2	SOD-52F_M14_b3	SOD-52F_M15_b4	SOD-03F_M12_b1	SOD-03F_M13_b2	SOD-03F_M14_b3	SOD-03F_M15_b4	SOD-53F_M12_b1	SOD-53F_M13_b2	SOD-53F_M14_b3	SOD-53F_M15_b4
Batch			Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate	Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater	Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate
Sample Date	EPA Water Quality Criteria: Aquatic Life for Freshwater		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft
Parameter	Acute (CMC)	Chronic (CCC)												
Metals, Dissolved (µg/L)														
Antimony	--	--	--	--	--	--	**6.06**	**4.06 , J**	**4.2**	**2.31**	--	--	--	--
Arsenic	340	150	--	--	--	--	**5.28**	**4.44 , J**	**3.53**	**2.39**	--	--	--	--
Barium	--	--	--	--	--	--	**28.1**	**15.8**	**63.8**	**14.8**	--	--	--	--
Cadmium	2	0.25	--	--	--	--	1 U	1 U	**0.233 J**	0.2 U	--	--	--	--
Chromium (total)	--	--	--	--	--	--	**5.61**	**2.5 , J**	**5.67**	**1.46**	--	--	--	--
Copper	2.337	1.45	--	--	--	--	5 U	**3.22**	**15.1**	--	--	--	--	--
Iron	--	1000	--	--	--	--	**196 J**	**627**	**3570**	**645**	--	--	--	--
Lead	65	2.5	--	--	--	--	**23.5**	**89.8**	**506**	**103**	--	--	--	--
Mercury	1.4	0.77	--	--	--	--	0.4 U	0.4 U	**0.14 J**	0.08 U	--	--	--	--
Nickel	470	52	--	--	--	--	5 U	5 U	**1.9 J**	**0.6 J**	--	--	--	--
Selenium	--	5	--	--	--	--	**6.06**	**1.11 J**	3 U	2 U	--	--	--	--
Silver	3.2	--	--	--	--	--	1 U	1 U	**0.633**	**0.144 J**	--	--	--	--
Zinc	120	120	--	--	--	--	20 U	**29**	**154**	**31.3**	--	--	--	--
Metals, Total (µg/L)														
Antimony	--	--	**40.7**	**8.4**	**12.4**	100 U	**31.7**	**3.99**	**4.38**	**2.34**	**5.53**	**6.17**	**3.83**	**2.24**
Arsenic	--	--	**3.44**	**2.63**	**22.5**	100 U	**3.02**	**2.37**	**4.18**	**3.48**	**2.24**	**5.72**	**4.01**	**3.13**
Barium	--	--	**26.9**	**139**	**986**	**1390**	**55**	**143**	**146**	**163**	**49.2**	**211**	**159**	**167**
Cadmium	--	--	2 U	**0.267**	**4.11**	**6.67 J**	2 U	**0.589**	**0.675**	**0.822**	0.4 U	**0.722 , J**	**0.733**	**0.7**
Chromium (total)	--	--	**49**	**4.98**	**46.1**	**68.9 J**	**29.6**	**5.57**	**7.32**	**6.56**	**1.07 J**	**9.28**	**6.21**	**6.43**
Copper	--	--	**2.49**	**17.9**	**220**	**414**	**19.4**	**23.9**	**33.5**	**39.2**	**4.29**	**39.6**	**28.3**	**31.1**
Iron	--	--	**2380**	**7690**	**78100**	**124000**	**8960**	**8410**	**9120**	**10000**	**1650**	**13300**	**9780**	**9600**
Lead	--	--	**37.3**	**856**	**12300**	**17200**	**126**	**902**	**1220**	**1200**	**121**	**1570**	**1090**	**1070**
Mercury	--	--	0.16 U	**0.207**	**3.19**	**4.86 J**	0.16 U	**0.356**	**0.52**	**0.574**	0.16 U	**0.75**	**0.515**	**0.571**
Nickel	--	--	**1.58 J**	**4.76**	**33.7**	**47.8**	**2.31**	**4.22**	**4.15**	**0.689 J**	**1.02 J**	**5.61**	**4.38**	**4.13**
Selenium	--	--	**15.4**	4 U	**2.23**	200 U	**13.7**	4 U	4.5 U	**0.689 J**	**3.53**	0.933 J	2 U	**0.5 J**
Silver	--	--	0.4 U	**1.08**	**15.1**	**21.1**	0.4 U	**1.08**	**1.7**	**1.63**	0.4 U	**2.11**	**1.57**	**1.52**
Zinc	--	--	**13.6**	**146**	**1810**	**2820**	**48.4**	**288**	**370**	**389**	**45.6**	**514**	**377**	**375**

Table 21
SBLT Testing Results: Freshwater

Parameter	EPA Water Quality Criteria: Aquatic Life for Freshwater Acute (CMC)	EPA Water Quality Criteria: Aquatic Life for Freshwater Chronic (CCC)	Freshwater Batches 1-4 for SOD-52				Freshwater Batches 1-4 for SOD-03				Freshwater Batches 1-4 for SOD-53			
Parent Station ID			SOD-02	SOD-02	SOD-02	SOD-02	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03
Sample ID			SOD-52F_M12_b1	SOD-52F_M13_b2	SOD-52F_M14_b3	SOD-52F_M15_b4	SOD-03F_M12_b1	SOD-03F_M13_b2	SOD-03F_M14_b3	SOD-03F_M15_b4	SOD-53F_M12_b1	SOD-53F_M13_b2	SOD-53F_M14_b3	SOD-53F_M15_b4
Batch			Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate	Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater	Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate
Sample Date			5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	--	--	**0.0414 J**	0.073 U	1.29 U	1.25 U	0.0641 U	0.0778 U	0.0629 U	1.25 U	**0.0384 J**	0.0703 U	1.46 U	0.131 U
2-Methylnaphthalene	--	--	**0.0831**	0.073 U	1.29 U	1.25 U	**0.0521 J**	**0.0579 J**	0.0629 U	1.25 U	**0.0636 J**	**0.0391 J**	1.46 U	0.131 U
Acenaphthene	--	--	**0.157**	**0.103**	**0.323 J**	0.626 U	**0.278**	**0.207**	**0.081**	0.623 U	**0.302**	**0.135**	0.731 U	**0.0558 J**
Acenaphthylene	--	--	**0.0205 J**	0.0548 U,	0.646 U	0.626 U	0.032 U	**0.0681**	0.0315 U	0.623 U	0.032 U	0.0351 U	0.731 U	0.0657 U
Anthracene	--	--	**0.0735**	**0.0908**	0.646 U	0.626 U	**0.0433**	**0.145**	**0.0291 J**	0.623 U	**0.0492**	**0.0391**	0.731 U	**0.0378 J**
Benzo(a)anthracene	--	--	**0.0217**	**0.125**	**0.678**	**0.845**	**0.0152 J**	**0.286**	**0.0684**	**0.311**	**0.036**	**0.0597**	0.366 U	**0.113**
Benzo(a)pyrene	--	--	**0.0145 J**	**0.232**	**1.44**	**1.62**	0.016 U	**0.297**	**0.0889**	**0.343**	**0.0296**	**0.0698**	**0.283 J**	**0.149**
Benzo(b)fluoranthene	--	--	**0.0341**	**0.554**	**3.67**	**3.66**	**0.0112 J**	**0.623**	**0.197**	**0.864**	**0.07**	**0.145**	**0.64**	**0.246**
Benzo(g,h,i)perylene	--	--	0.0321 U	**0.0525**	0.646 U	**0.368 J**	0.032 U	**0.0822**	**0.0224 J**	0.623 U	0.032 U	**0.0215 J**	0.731 U	**0.0402 J**
Benzo(k)fluoranthene	--	--	**0.012 J**	**0.137**	**1.05**	**1**	0.016 U	**0.17**	**0.0527**	**0.226 J**	**0.0176**	**0.0365**	**0.21 J**	**0.069**
Chrysene	--	--	**0.102**	**0.342**	**2.41**	**2.09**	**0.0272**	**0.405**	**0.101**	**0.413**	**0.0576**	**0.0918**	0.366 U	**0.172**
Dibenzo(a,h)anthracene	--	--	0.0161 U	**0.0242**	0.323 U	**0.172 J**	0.016 U	**0.0297**	**0.00787 J**	0.311 U	0.016 U	**0.00922 J**	0.366 U	0.0329 U
Fluoranthene	--	--	**0.613**	**0.951**	**3.65**	**3.34**	**0.226**	**1.1**	**0.292**	**1.04**	**0.295**	**0.31**	**0.768**	**0.356**
Fluorene	--	--	**0.375**	**0.319**	**0.573 J**	**0.368 J**	**0.192**	**0.193**	**0.0684**	0.623 U	**0.196**	**0.115**	0.731 U	**0.0731**
Indeno(1,2,3-c,d)pyrene	--	--	0.0161 U	**0.0653**	**0.315 J**	**0.454**	0.016 U	**0.0983**	**0.0279**	0.311 U	**0.0108 J**	**0.0228**	0.366 U	**0.0435**
Naphthalene	--	--	**0.0674**	0.073 U	1.29 U	1.25 U	0.0641 U	0.0778 U	0.0629 U	1.25 U	0.064 U	0.0703 U	1.46 U	**0.0673 J**
Phenanthrene	--	--	**0.474**	**0.649**	**1.11 J**	**0.665 J**	**0.247**	**0.349**	**0.16**	1.25 U	**0.289**	**0.235**	1.46 U	**0.152**
Pyrene	--	--	**3.22**	**4.45**	**21.7**	**15**	**0.506**	**1.51**	**0.46**	**1.61**	**0.527**	**0.491**	**1.5**	**0.527**
Total Aqueous Hydrocarbons (TAqH) U=0	15		**5.3**	**8.1**	**36.9**	**29.6**	**1.6**	**5.6**	**1.7**	**4.8**	**2.0**	**1.8**	**3.4**	**2.1**

Table 21
SBLT Testing Results: Freshwater

Parent Station ID			Freshwater Batches 1-4 for SOD-05				Freshwater Batches 1-4 for SOD-55			
Sample ID			SOD-05 SOD-05F_M12_b1	SOD-05 SOD-05F_M13_b2	SOD-05 SOD-05F_M14_b3	SOD-05 SOD-05F_M15_b4	SOD-05 SOD-55F_M12_b1	SOD-05 SOD-55F_M13_b2	SOD-05 SOD-55F_M14_b3	SOD-05 SOD-55F_M15_b4
Batch			Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater	Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate
Sample Date	EPA Water Quality Criteria: Aquatic Life for Freshwater		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft
Parameter	Acute (CMC)	Chronic (CCC)								
Metals, Dissolved (µg/L)										
Antimony	--	--	**7**	**3.79**	**1.99**	**1.03**	--	--	--	--
Arsenic	340	150	**5.94**	**3.54**	**2.32**	**1.38**	--	--	--	--
Barium	--	--	**34.1**	**28.1**	**36**	**13.9**	--	--	--	--
Cadmium	2	0.25	1 U	**0.122 J**	**0.111 J**	**0.0667 J**	--	--	--	--
Chromium (total)	--	--	**8**	**2.19**	**1.98**	**1.82**	--	--	--	--
Copper	2.337	1.45	**5.17 J**	**4.78**	**8.75**	9 U	--	--	--	--
Iron	--	1000	**194 J**	**1290**	**1500**	**530**	--	--	--	--
Lead	65	2.5	**41.2**	**363**	**347**	**121**	--	--	--	--
Mercury	1.4	0.77	0.4 U	0.08 U	**0.0598 J**	0.08 U	--	--	--	--
Nickel	470	52	5 U	**0.811 J**	**0.844 J**	1 U	--	--	--	--
Selenium	--	5	**6.56**	**0.633 J**	2 U	2 U	--	--	--	--
Silver	3.2	--	1 U	**0.3**	**0.356**	**0.144 J**	--	--	--	--
Zinc	120	120	20 U	**84.2**	**97.8**	**42.6**	--	--	--	--
Metals, Total (µg/L)										
Antimony	--	--	**36**	**4.39 J**	**2.2**	**1.27**	**38.2**	**5.02**	**2.76**	**1.36**
Arsenic	--	--	**3.78**	**5.28**	**3.03**	**1.5**	**2.53**	**4.7**	**3.11**	**1.74**
Barium	--	--	**68.1**	**110**	**112**	**60.7**	**74**	**124**	**59.5**	**54.4**
Cadmium	--	--	2 U	**0.722 J**	**0.644 J**	**0.444**	2 U	**0.678**	**0.5 J**	**0.811**
Chromium (total)	--	--	**43.4**	**6.56**	**4.5**	**2.73**	**44.6**	**5.93**	**3.51**	**3.5**
Copper	--	--	**254**	**19.4**	**19**	**11.8**	**4.87**	**24.2**	**14.7**	**18.8**
Iron	--	--	**12400**	**6450**	**5500**	**3250**	**10900**	**7750**	**3860**	**3920**
Lead	--	--	**353**	**1350**	**1100**	**578**	**320**	**1670**	**842**	**807**
Mercury	--	--	0.16 U	**0.294 J**	**0.353**	**0.23**	0.16 U	**0.463**	**0.276**	**0.279**
Nickel	--	--	**1.4 J**	**3.22 J**	**2.37**	**1.58**	**1.44 J**	**3.38**	**1.77**	**1.26 J**
Selenium	--	--	**17.1**	**0.611 J**	**1.02 J**	2 U	**9.93**	2 U	**0.856 J**	2 U
Silver	--	--	**0.244 J**	**1.56**	**1.41**	**0.767**	**0.289 J**	**1.81**	**1.08**	**1.03**
Zinc	--	--	**120**	**393**	**415**	**246**	**108**	**491**	**316**	**486**

Table 21
SBLT Testing Results: Freshwater

Parent Station ID			Freshwater Batches 1-4 for SOD-05				Freshwater Batches 1-4 for SOD-55			
Sample ID			SOD-05 SOD-05F_M12_b1	SOD-05 SOD-05F_M13_b2	SOD-05 SOD-05F_M14_b3	SOD-05 SOD-05F_M15_b4	SOD-05 SOD-55F_M12_b1	SOD-05 SOD-55F_M13_b2	SOD-05 SOD-55F_M14_b3	SOD-05 SOD-55F_M15_b4
Batch			Batch 1 - Freshwater	Batch 2 - Freshwater	Batch 3 - Freshwater	Batch 4 - Freshwater	Batch 1 - Freshwater Duplicate	Batch 2 - Freshwater Duplicate	Batch 3 - Freshwater Duplicate	Batch 4 - Freshwater Duplicate
Sample Date	EPA Water Quality Criteria: Aquatic Life for Freshwater		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft
Parameter	Acute (CMC)	Chronic (CCC)								
Polycyclic Aromatic Hydrocarbons (µg/L)										
1-Methylnaphthalene	--	--	0.0707 U	0.0727 U	0.654 U	0.0629 U	0.0631 U	0.065 U	0.0625 U	0.0624 U
2-Methylnaphthalene	--	--	0.0707 U	0.0727 U	0.654 U	0.0629 U	0.0631 U	0.065 U	0.0625 U	0.0624 U
Acenaphthene	--	--	**0.296**	**0.148**	0.327 U	**0.163**	**0.191**	**0.0606**	0.0547 U,	**0.0581**
Acenaphthylene	--	--	0.0354 U	0.0364 U	0.327 U	0.0314 U	0.0315 U	**0.0252**	0.0312 U	0.0312 U
Anthracene	--	--	0.0354 U	0.0364 U	0.327 U	0.0314 U	**0.0197 J**	**0.0402**	0.0312 U	0.0312 U
Benzo(a)anthracene	--	--	**0.0208**	**0.0677**	0.164 U	**0.0212**	**0.0217**	**0.154**	**0.0433**	**0.0148 J**
Benzo(a)pyrene	--	--	**0.00928 J**	**0.0664**	0.164 U	**0.0181**	**0.013 J**	**0.137**	**0.0457**	**0.0129 J**
Benzo(b)fluoranthene	--	--	**0.023**	**0.167**	**0.209**	**0.0598**	**0.0323**	**0.365**	**0.12**	**0.0394**
Benzo(g,h,i)perylene	--	--	0.0354 U	**0.0205 J**	0.327 U	0.0314 U	0.0315 U	**0.0439**	0.0312 U	0.0312 U
Benzo(k)fluoranthene	--	--	0.0177 U	**0.0441**	0.164 U	**0.0157**	**0.00867 J**	**0.0943**	**0.0297**	**0.0133 J**
Chrysene	--	--	**0.0305**	**0.115**	0.164 U	**0.0307**	**0.0434**	**0.261**	**0.0785**	**0.0249**
Dibenzo(a,h)anthracene	--	--	0.0177 U	0.0182 U	0.164 U	0.0157 U	0.0158 U	**0.0179**	0.0156 U	0.0156 U
Fluoranthene	--	--	**0.307**	**0.48**	**0.499**	**0.167**	**0.304**	**0.729**	**0.239**	**0.0967**
Fluorene	--	--	**0.188**	**0.254**	**0.241 J**	**0.135**	**0.203**	**0.112**	**0.0367**	**0.0195 J**
Indeno(1,2,3-c,d)pyrene	--	--	0.0177 U	**0.0223**	0.164 U	**0.00786 J**	0.0158 U	**0.059**	**0.0164**	0.0156 U
Naphthalene	--	--	0.0707 U	0.0727 U	0.654 U	**0.0326 J**	0.0631 U	0.065 U	0.0625 U	**0.0327 J**
Phenanthrene	--	--	**0.786**	**1.08**	**1.24**	**0.601**	**0.825**	**0.735**	**0.2**	**0.146**
Pyrene	--	--	**0.295**	**0.546**	**0.581**	**0.16**	**0.3**	**0.798**	**0.394**	**0.101**
Total Aqueous Hydrocarbons (TAqH) U=0	15		**2.0**	**3.0**	**2.8**	**1.4**	**2.0**	**3.6**	**1.2**	**0.6**

Table 21
SBLT Testing Results: Freshwater

Notes:
Detected concentration is greater than the chronic EPA Water Quality Criteria: Aquatic Life for Freshwater (Clean Water Act §304[a])
Detected concentration is greater than the acute EPA Water Quality Criteria: Aquatic Life for Freshwater (Clean Water Act §304[a]
Non-detected concentration is above one or more identified screening levels
Bold = Detected result
-- = results not reported or not applicable
µg/L = micrograms per liter
C = Composite sample
ft = feet
J = Estimated value
PAH = polycyclic aromatic hydrocarbons
Total Aqueous Hydrocarbons (TAqH) (U=0) is the sum all detected PAHs
S-05 = Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference
Chronic copper freshwater screening value is from the EPA Aquatic Life Ambient Freshwater Quality Criteria Table 3b (EPA 2007)
Acute copper freshwater screening value is from the EPA Aquatic Life Ambient Freshwater Quality Criteria Table 3b (EPA 2007)
Detected TAqH concentration is greater than the Alaska Water Quality Standards for Designated Uses (18 AAC 70.020 (5)(A)(iii))

Table 22
SBLT Testing Results: Seawater

Parameter	Alaska Water Quality Criteria: Aquatic Life for Marine Waters		Seawater Batches 1-4 for SOD-01				Seawater Batches 1-4 for SOD-51				Seawater Batches 1-4 for SOD-02			
Parent Station ID			SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-02	SOD-02	SOD-02	SOD-02
Sample ID			SOD-01S_M12_b1	SOD-01S_M13_b2	SOD-01S_M14_b3	SOD-01S_M15_b4	SOD-51S_M12_b1	SOD-51S_M13_b2	SOD-51S_M14_b3	SOD-51S_M15_b4	SOD-02S_M12_b1	SOD-02S_M13_b2	SOD-02S_M14_b3	SOD-02S_M15_b4
Batch			Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater	Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate	Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater
Sample Date			5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft
	Acute (CMC)	Chronic (CCC)												
Metals, Dissolved (µg/L)[1]														
Antimony	--	--	**26.6**	**14.1**	**10.2**	**8.44 J**	--	--	--	--	**19.8**	**13.4**	**11.2**	**9 J**
Arsenic	69	36	**5.89 J**	**7.33 J**	**7.78 J**	**5.56 J**	--	--	--	--	**10.8**	**8.11 J**	**9.56 J**	**10.9 J**
Barium	--	--	**97.9**	**131**	**172**	**128**	--	--	--	--	**45.2**	**144**	**122**	**182**
Cadmium	40	8.8	10 U	10 U	2 U	2 U	--	--	--	--	10 U	10 U	2 U	2 U
Chromium (total)	--	--	**10.1**	**9.44 J**	**5.89 J**	**6.44 J**	--	--	--	--	**16.1**	**12.3**	**8.33 J**	**9.56 J**
Copper	4.8	3.1	**5 J**	10 U	**7.67 J**	**10.5**	--	--	--	--	10 U	10 U	**6.89 J**	**7.11 J**
Iron	--	--	**756 J**	**559 J**	**506**	**408 J**	--	--	--	--	**965 J**	**903 J**	**748**	**576**
Lead	210	8.1	**237**	**531**	**669**	**576**	--	--	--	--	**6.89 J**	**64.3**	**17.6**	**47.8**
Mercury	1.8	0.94	1.6 U	1.6 U	**0.8** U	0.8 U	--	--	--	--	1.6 U	1.6 U	0.8 U	0.8 U
Nickel	74	8.2	**7.11 J**	**6.33 J**	**8.22 J**	**10**	--	--	--	--	**7 J**	**7.56 J**	**7.44 J**	**9 J**
Selenium	290	71	**17.2 J**	**20.8**	20 U	20 U	--	--	--	--	**24.8**	**9.56 J**	**5.78 J**	**6.11 J**
Silver	1.9	--	2 U	2 U	2 U	2 U	--	--	--	--	2 U	2 U	2 U	2 U
Zinc	90	81	40 U	40 U	40 U	**22.8 J**	--	--	--	--	40 U	40 U	40 U	40 U
Metals, Total (µg/L)[1]														
Antimony	--	--	**23.3**	**14**	**8.78 J**	100 U	**23.4**	**16.4**	**12.4**	180 U,	**17.7**	**14.1**	**10.2**	**7.44 J**
Arsenic	--	--	**12.4**	**7.56 J**	**11.3**	100 U	**13.1**	10 U	**11.1**	180 U,	**14.9**	**59.6**	**14.3**	**18.4**
Barium	--	--	**113**	**114**	**129**	**94.4 J**	**101**	**125**	**141**	**102 J,**	**65.1**	**148**	**119**	**1150**
Cadmium	--	--	10 U	2 U	**1.33 J**	20 U	**0.556 J**	10 U	10 U	36 U,	10 U	2 U	10 U	**5.00**
Chromium (total)	--	--	10 U	**9.78 J**	10 U	100 U	10 U	5.44 J	10 U	180 U,	**5.56 J**	**11.8**	10 U	**45.3**
Copper	--	--	**7.44 J**	**10.6**	**9.33 J**	100 U	**6 J**	**8.56 J**	**9.89 J**	180 U,	**7.78 J**	10 U	10 U	**170**
Iron	--	--	**1270 J**	**1540**	**647 J**	5000 U	**995 J**	**2040**	**1150 J**	9000 U,	**1240 J**	**892**	**541 J**	**77600**
Lead	--	--	**448**	**704**	**585**	**501**	**332**	**577**	**537**	**550**	**84.7**	**36.8**	**19.8**	**5440**
Mercury	--	--	0.8 U	0.8 U	0.8 U	8 U	0.8 U	0.8 U	0.8 U	14.4 U,	0.8 U	0.8 U	0.8 U	**2.47**
Nickel	--	--	**12.8**	**8.67 J**	**13.1**	**11.6**	**13.2**	**10.3**	**13.7**	**12.4 J**	**11**	**9.11 J**	**12.2**	**37.1**
Selenium	--	--	**25.8**	**4.83 J**	**13.1 J**	200 U	**22.1**	**12.6 J**	**9.22 J**	360 U,	**29.2**	**37.8 J**	**14.7 J**	20.0 U
Silver	--	--	2 U	2 U	2 U	20 U	2 U	2 U	2 U	36 U,	2 U	2 U	2 U	**7.22**
Zinc	--	--	**87.9**	**169**	**126**	**66.6**	**58.7**	**142**	**146**	**72**	**38.4 J**	40 U	40 U	**2970**

Table 22
SBLT Testing Results: Seawater

Parent Station ID			Seawater Batches 1-4 for SOD-01				Seawater Batches 1-4 for SOD-51				Seawater Batches 1-4 for SOD-02			
Sample ID			SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-01	SOD-02	SOD-02	SOD-02	SOD-02
Batch			SOD-01S_M12_b1	SOD-01S_M13_b2	SOD-01S_M14_b3	SOD-01S_M15_b4	SOD-51S_M12_b1	SOD-51S_M13_b2	SOD-51S_M14_b3	SOD-51S_M15_b4	SOD-02S_M12_b1	SOD-02S_M13_b2	SOD-02S_M14_b3	SOD-02S_M15_b4
			Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater	Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate	Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater
Sample Date			5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation	Alaska Water Quality Criteria: Aquatic Life for Marine Waters		0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft
Parameter	Acute (CMC)	Chronic (CCC)												
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	--	--	**0.053 J**	**0.138**	**0.039 J**	**0.0306 J**	0.0643 U	0.0635 U	0.0631 U	0.0632 U	**0.0447 J**	0.0654 U	0.063 U	0.0638 U
2-Methylnaphthalene	--	--	**0.0534 J**	**0.0879**	**0.0351 J**	**0.0325 J**	0.0643 U	**0.0373 J**	0.0631 U	0.0632 U	**0.0831**	0.0654 U	0.063 U	0.0638 U
Acenaphthene	--	--	**0.188**	**0.623**	**0.196**	**0.122**	**0.107**	**0.0785**	**0.0469**	**0.0304 J**	**0.14**	**0.0716**	**0.107**	**0.0407**
Acenaphthylene	--	--	**0.0187 J**	**0.0383**	0.0312 U	0.0306 U	0.0322 U	0.0317 U	0.0315 U	0.0316 U	0.032 U	**0.0176 J**	0.0315 U	0.0319 U
Anthracene	--	--	**0.0522**	0.0417 U,	**0.0308 J**	0.0306 U	**0.0326**	**0.0317**	**0.0197 J**	0.0316 U	**0.0451**	**0.0667**	**0.0417**	**0.0351**
Benzo(a)anthracene	--	--	**0.0159**	**0.0175**	**0.0176**	**0.0119 J**	**0.0217**	**0.0179**	**0.0162**	**0.0142 J**	**0.016**	**0.0736**	**0.0134 J**	**0.0108 J**
Benzo(a)pyrene	--	--	0.0159 U	0.0167 U	0.0156 U	0.0153 U	**0.00804 J**	0.0159 U	0.0158 U	0.0158 U	0.016 U	**0.0785**	0.0157 U	0.016 U
Benzo(b)fluoranthene	--	--	0.0159 U	0.0167 U	**0.00936 J**	0.0153 U	**0.0225**	0.0159 U	**0.0106 J**	0.0158 U	**0.0148 J**	**0.188**	**0.0146 J**	**0.0128 J**
Benzo(g,h,i)perylene	--	--	0.0319 U	0.0333 U	0.0312 U	0.0306 U	0.0322 U	0.0317 U	0.0315 U	0.0316 U	0.032 U	**0.0192 J**	0.0315 U	0.0319 U
Benzo(k)fluoranthene	--	--	0.0159 U	0.0167 U	0.0156 U	0.0153 U	0.0161 U	0.0159 U	0.0158 U	0.0158 U	0.016 U	**0.0503**	0.0157 U	0.016 U
Chrysene	--	--	**0.0303**	**0.0367**	**0.0324**	**0.0199**	**0.0402**	**0.0333**	**0.0347**	**0.0265**	**0.0671**	**0.166**	**0.0618**	**0.057**
Dibenzo(a,h)anthracene	--	--	0.0159 U	0.0167 U	0.0156 U	0.0153 U	0.0161 U	0.0159 U	0.0158 U	0.0158 U	0.016 U	**0.009 J**	0.0157 U	0.016 U
Fluoranthene	--	--	**0.259**	**0.345**	**0.297**	**0.165**	**0.262**	**0.286**	**0.237**	**0.164**	**0.538**	**0.58**	**0.468**	**0.402**
Fluorene	--	--	**0.249**	**0.644**	**0.235**	**0.136**	**0.185**	**0.144**	**0.0828**	**0.0482**	**0.187**	**0.144**	**0.13**	**0.0949**
Indeno(1,2,3-c,d)pyrene	--	--	0.0159 U	0.0167 U	0.0156 U	0.0153 U	0.0161 U	0.0159 U	0.0158 U	0.0158 U	0.016 U	**0.0204**	0.0157 U	0.016 U
Naphthalene	--	--	**0.114**	**0.153**	**0.0542 J**	**0.0471 J**	**0.043 J**	**0.0536 J**	**0.0406 J**	**0.0344 J**	**0.0779**	0.0654 U	0.063 U	0.0638 U
Phenanthrene	--	--	**0.676**	**1.97**	**1.08**	**0.54**	**0.577**	**0.538**	**0.372**	**0.203**	**0.234**	**0.211**	**0.216**	**0.147**
Pyrene	--	--	**1.18**	**1.12**	**1.01**	**0.567**	**1.23**	**1.27**	**1.05**	**0.682**	**2.74**	**2.92**	**2.43**	**2.15**
Total Aqueous Hydrocarbons (TAqH) U=0	15		**2.9**	**5.2**	**3.0**	**1.7**	**2.5**	**2.5**	**1.9**	**1.2**	**4.2**	**4.6**	**3.5**	**3.0**

Table 22
SBLT Testing Results: Seawater

Parameter	Alaska Water Quality Criteria: Aquatic Life for Marine Waters		Seawater Batches 1-4 for SOD-52				Seawater Batches 1-4 for SOD-03				Seawater Batches 1-4 for SOD-53			
Parent Station ID			SOD-02	SOD-02	SOD-02	SOD-02	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03
Sample ID			SOD-52S_M12_b1	SOD-52S_M13_b2	SOD-52S_M14_b3	SOD-52S_M15_b4	SOD-03S_M12_b1	SOD-03S_M13_b2	SOD-03S_M14_b3	SOD-03S_M15_b4	SOD-53S_M12_b1	SOD-53S_M13_b2	SOD-53S_M14_b3	SOD-53S_M15_b4
Batch			Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate	Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater	Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate
Sample Date			5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft
	Acute (CMC)	Chronic (CCC)												
Metals, Dissolved (µg/L)[1]														
Antimony	--	--	--	--	--	--	**9.56 J**	**5.78 J**	10 U	**10** U	--	--	--	--
Arsenic	69	36	--	--	--	--	**8.11 J**	**8.89 J**	**12.6 J**	**10.3 J**	--	--	--	--
Barium	--	--	--	--	--	--	**102**	**195**	**217**	**126**	--	--	--	--
Cadmium	40	8.8	--	--	--	--	10 U	10 U	2 U	2 U	--	--	--	--
Chromium (total)	--	--	--	--	--	--	**15.9**	**12**	**10.1**	**9.78 J**	--	--	--	--
Copper	4.8	3.1	--	--	--	--	**5.89 J**	10 U	**16.7**	**22.6**	--	--	--	--
Iron	--	--	--	--	--	--	**899 J**	**844 J**	**912**	**578**	--	--	--	--
Lead	210	8.1	--	--	--	--	**49.2**	**86.4**	**158**	**94.3**	--	--	--	--
Mercury	1.8	0.94	--	--	--	--	1.6 U	1.6 U	0.8 U	0.8 U	--	--	--	--
Nickel	74	8.2	--	--	--	--	**6.67 J**	**6.56 J**	**13**	**10.8**	--	--	--	--
Selenium	290	71	--	--	--	--	**12.4 J**	**13.1 J**	**9.33 J**	20 U	--	--	--	--
Silver	1.9	--	--	--	--	--	2 U	2 U	2 U	2 U	--	--	--	--
Zinc	90	81	--	--	--	--	40 U	40 U	40 U	40 U	--	--	--	--
Metals, Total (µg/L)[1]														
Antimony	--	--	**20.2**	**12.4**	**12.8**	**10.2**	**8.78 J**	**5.78 J**	10 U	10 U	**6.89 J**	10 U	10 U	10 U
Arsenic	--	--	**18.1**	**63.9**	**12.7**	**6.67 J**	**12.3**	**73**	**15.6**	**5.44 J**	**12.9**	**64.4**	**11.2**	**5.44 J**
Barium	--	--	**77.8**	**156**	**198**	**179**	**113**	**196**	**217**	**186**	**119**	**291**	**224**	**257**
Cadmium	--	--	10 U	2 U	**0.444 J**	2 U	10 U	2 U	**0.444 J**	2 U	**0.444 J**	2 U	10 U	**0.556 J**
Chromium (total)	--	--	**8.67 J**	**11.9**	10 U	10 U	**6.33 J**	**11.9**	10 U	10 U	**7 J**	**16.4**	10 U	10 U
Copper	--	--	**5.22 J**	10 U	**6 J**	**8.22 J**	**9 J**	**8.11 J**	**15.7**	**23**	**6.89 J**	**17.4**	**6.67 J**	**25**
Iron	--	--	**1250 J**	**884**	**381 J**	**299 J**	**799 J**	**1520**	**749 J**	**4090**	**609 J**	**8250**	**476 J**	**6070**
Lead	--	--	**155**	**47.2**	**37.3**	**34.6**	**94.4**	**124**	**158**	**385**	**72.1**	**536**	**86.6**	**478**
Mercury	--	--	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Nickel	--	--	**11.7**	**8.67 J**	**11.9**	**12.4**	**11**	**8.44 J**	**19.1**	**14**	**9.89 J**	**10.4**	**10.7**	**14.7**
Selenium	--	--	**31.1**	100 U	**71.0**	20 U	**22.7**	100 U	**13.2 J**	20 U	**16.9 J**	50 U	**10 J**	20 U
Silver	--	--	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Zinc	--	--	**44.3**	40 U	**22.2 J**	40 U	**25.7 J**	**41.3**	**34.4 J**	**122**	**60.1**	**239**	**32.4 J**	**176**

Table 22
SBLT Testing Results: Seawater

Parameter	Alaska Water Quality Criteria: Aquatic Life for Marine Waters		Seawater Batches 1-4 for SOD-52				Seawater Batches 1-4 for SOD-03				Seawater Batches 1-4 for SOD-53			
Parent Station ID			SOD-02	SOD-02	SOD-02	SOD-02	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03	SOD-03
Sample ID			SOD-52S_M12_b1	SOD-52S_M13_b2	SOD-52S_M14_b3	SOD-52S_M15_b4	SOD-03S_M12_b1	SOD-03S_M13_b2	SOD-03S_M14_b3	SOD-03S_M15_b4	SOD-53S_M12_b1	SOD-53S_M13_b2	SOD-53S_M14_b3	SOD-53S_M15_b4
Batch			Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate	Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater	Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate
Sample Date			5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 8.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft	0 - 6.5 ft
	Acute (CMC)	Chronic (CCC)												
Polycyclic Aromatic Hydrocarbons (µg/L)														
1-Methylnaphthalene	--	--	**0.0458 J**	0.0632 U	0.0714 U	0.0617 U	**0.0369 J**	0.0622 U	0.0619 U	0.0613 U	**0.0429 J**	0.0627 U	0.0628 U	0.0616 U
2-Methylnaphthalene	--	--	**0.075**	0.0632 U	0.0714 U	0.0617 U	**0.065**	**0.0443 J**	0.0619 U	0.0613 U	**0.0666**	**0.036 J**	**0.0353 J**	0.0616 U
Acenaphthene	--	--	**0.139**	**0.0735**	**0.0835**	**0.049**	**0.266**	**0.152**	**0.0681**	**0.0789**	**0.237**	**0.104**	**0.11**	**0.0639**
Acenaphthylene	--	--	0.0316 U	0.0316 U	0.0357 U	0.0308 U	0.0321 U	0.0311 U	0.0309 U	0.0307 U	0.0321 U	0.0313 U	0.0314 U	0.0308 U
Anthracene	--	--	**0.0529**	**0.0584**	**0.0411**	**0.0328**	**0.0273 J**	**0.0167 J**	0.0309 U	0.0307 U	**0.0217 J**	**0.018 J**	0.0314 U	0.0308 U
Benzo(a)anthracene	--	--	**0.0185**	**0.0194**	**0.0174 J**	**0.0135 J**	**0.00883 J**	0.0155 U	**0.017**	0.0153 U	0.016 U	0.0157 U	0.0157 U	0.0154 U
Benzo(a)pyrene	--	--	**0.0126 J**	0.0158 U	**0.0134 J**	0.0154 U	0.0161 U	0.0155 U	**0.0132 J**	0.0153 U	0.016 U	0.0157 U	0.0157 U	0.0154 U
Benzo(b)fluoranthene	--	--	**0.0324**	**0.0142 J**	**0.0357**	**0.0158**	0.0161 U	0.0155 U	**0.029**	0.0153 U	0.016 U	0.0157 U	0.0157 U	0.0154 U
Benzo(g,h,i)perylene	--	--	0.0316 U	0.0316 U	0.0357 U	0.0308 U	0.0321 U	0.0311 U	0.0309 U	0.0307 U	0.0321 U	0.0313 U	0.0314 U	0.0308 U
Benzo(k)fluoranthene	--	--	**0.00947 J**	0.0158 U	**0.0107 J**	0.0154 U	0.0161 U	0.0155 U	**0.00812 J**	0.0153 U	0.016 U	0.0157 U	0.0157 U	0.0154 U
Chrysene	--	--	**0.0844**	**0.0679**	**0.0616**	**0.0601**	**0.0141 J**	0.0155 U	**0.0255**	0.0153 U	**0.0104 J**	0.0157 U	0.0118 J	0.0154 U
Dibenzo(a,h)anthracene	--	--	0.0158 U	0.0158 U	0.0179 U	0.0154 U	0.0161 U	0.0155 U	0.0155 U	0.0153 U	0.016 U	0.0157 U	0.0157 U	0.0154 U
Fluoranthene	--	--	**0.64**	**0.584**	**0.425**	**0.468**	**0.15**	**0.154**	**0.13**	**0.135**	**0.128**	**0.122**	**0.117**	**0.107**
Fluorene	--	--	**0.195**	**0.199**	**0.135**	**0.117**	**0.2**	**0.141**	**0.0727**	**0.0732**	**0.174**	**0.106**	**0.102**	**0.0666**
Indeno(1,2,3-c,d)pyrene	--	--	0.0158 U	0.0158 U	0.0179 U	0.0154 U	0.0161 U	0.0155 U	0.0155 U	0.0153 U	0.016 U	0.0157 U	0.0157 U	0.0154 U
Naphthalene	--	--	**0.0706**	0.0632 U	0.0714 U	0.0617 U	**0.0377 J**	**0.0323 J**	0.0619 U	**0.0364 J**	**0.0558 J**	**0.0388 J**	**0.0342 J**	**0.0377 J**
Phenanthrene	--	--	**0.361**	**0.345**	**0.258**	**0.215**	**0.22**	**0.182**	**0.116**	**0.117**	**0.193**	**0.151**	**0.142**	**0.0997**
Pyrene	--	--	**2.89**	**2.5**	**1.92**	**2.25**	**0.24**	**0.252**	**0.185**	**0.185**	**0.249**	**0.209**	**0.205**	**0.167**
Total Aqueous Hydrocarbons (TAqH) U=0	15		**4.6**	**3.9**	**3.0**	**3.2**	**1.3**	**1.0**	**0.7**	**0.6**	**1.2**	**0.7**	**0.7**	**0.5**

Table 22
SBLT Testing Results: Seawater

Parent Station ID			Seawater Batches 1-4 for SOD-05				Seawater Batches 1-4 for SOD-55			
Sample ID			SOD-05 SOD-05S_M12_b1	SOD-05 SOD-05S_M13_b2	SOD-05 SOD-05S_M14_b3	SOD-05 SOD-05S_M15_b4	SOD-05 SOD-55S_M12_b1	SOD-05 SOD-55S_M13_b2	SOD-05 SOD-55S_M14_b3	SOD-05 SOD-55S_M15_b4
Batch			Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater	Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate
Sample Date	Alaska Water Quality Criteria: Aquatic Life for Marine Waters		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft
Parameter	Acute (CMC)	Chronic (CCC)								
Metals, Dissolved (µg/L)[1]										
Antimony	--	--	**10.7**	10 U	10 U	10 U	--	--	--	--
Arsenic	69	36	**7.44 J**	**5.89 J**	**9.22 J**	**7.56 J**	--	--	--	--
Barium	--	--	**118**	**167**	**167**	**128**	--	--	--	--
Cadmium	40	8.8	10 U	10 U	2 U	2 U	--	--	--	--
Chromium (total)	--	--	**16.3**	**12.7**	**8.67 J**	**9.78 J**	--	--	--	--
Copper	4.8	3.1	10 U	**5.11 J**	**8.78 J**	**15**	--	--	--	--
Iron	--	--	**951 J**	**926 J**	**644**	**561**	--	--	--	--
Lead	210	8.1	**125**	**202**	**201**	**220**	--	--	--	--
Mercury	1.8	0.94	1.6 U	1.6 U	0.8 U	0.8 U	--	--	--	--
Nickel	74	8.2	**5.44 J**	**6.89 J**	**7.44 J**	**10.1**	--	--	--	--
Selenium	290	71	**16.6 J**	20 U	11.4 J	**14.7** J	--	--	--	--
Silver	1.9	--	2 U	2 U	2 U	2 U	--	--	--	--
Zinc	90	81	40 U	40 U	40 U	40 U	--	--	--	--
Metals, Total (µg/L)[1]										
Antimony	--	--	**9.11 J**	10 U	10 U	10 U	100 U, R-04	10 U, R-04	10 U, R-04	10 U, R-04
Arsenic	--	--	**11.4**	**49.1**	**8.44 J**	10 U	100 U, R-04	**49.7**	**6.11 J, R-04**	10 U, R-04
Barium	--	--	**118**	**169**	**195**	**141**	**132**	**231**	**188**	**172**
Cadmium	--	--	10 U	2 U	10 U	2 U	20 U, R-04	2 U, R-04	10 U, R-04	2 U, R-04
Chromium (total)	--	--	**7.22 J**	**11.3**	10 U	10 U	100 U, R-04	**14.4**	**10.9**	10 U, R-04
Copper	--	--	**6.11 J**	**13.4**	**9 J**	**15.8**	100 U, R-04	**15.4**	**7.56 J, R-04**	**18**
Iron	--	--	**325 J**	**1230**	**1260 J**	**857**	5000 U, R-04	**5140**	**1510**	**2230**
Lead	--	--	**162**	**220**	**361**	248	**186**	**652**	**280**	**458**
Mercury	--	--	0.8 U	0.8 U	0.8 U	0.8 U	8 U, R-04	0.8 U, R-04	0.8 U, R-04	0.8 U, R-04
Nickel	--	--	**9.33 J**	**8.44 J**	**9.22 J**	**13.4**	17.2 J, R-04	**9.78 J, R-04**	**8 J, R-04**	**13.4**
Selenium	--	--	**25.6**	200 U	**11.9 J**	20 U	200 U, R-04	200 U, R-04	20 U, R-04	20 U, R-04
Silver	--	--	2 U	2 U	2 U	2 U	20 U, R-04	2 U, R-04	2 U, R-04	2 U, R-04
Zinc	--	--	40 U	**47**	**93**	**26.8 J**	400 U, R-04	**241**	**51.6**	**107**

Table 22
SBLT Testing Results: Seawater

Parent Station ID			Seawater Batches 1-4 for SOD-05				Seawater Batches 1-4 for SOD-55			
Sample ID			SOD-05 SOD-05S_M12_b1	SOD-05 SOD-05S_M13_b2	SOD-05 SOD-05S_M14_b3	SOD-05 SOD-05S_M15_b4	SOD-05 SOD-55S_M12_b1	SOD-05 SOD-55S_M13_b2	SOD-05 SOD-55S_M14_b3	SOD-05 SOD-55S_M15_b4
Batch			Batch 1 - Seawater	Batch 2 - Seawater	Batch 3 - Seawater	Batch 4 - Seawater	Batch 1 - Seawater Duplicate	Batch 2 - Seawater Duplicate	Batch 3 - Seawater Duplicate	Batch 4 - Seawater Duplicate
Sample Date	Alaska Water Quality Criteria: Aquatic Life for Marine Waters		5/12/2015	5/13/2015	5/14/2015	5/15/2015	5/12/2015	5/13/2015	5/14/2015	5/15/2015
Elevation			0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft	0 - 3.5 ft
Parameter	Acute (CMC)	Chronic (CCC)								
Polycyclic Aromatic Hydrocarbons (µg/L)										
1-Methylnaphthalene	--	--	0.0631 U	0.0621 U	0.0627 U	0.0629 U	0.064 U	0.0624 U	0.0635 U	0.0621 U
2-Methylnaphthalene	--	--	0.0631 U	0.0621 U	0.0627 U	0.0629 U	0.064 U	0.0624 U	0.0635 U	0.0621 U
Acenaphthene	--	--	**0.0809**	**0.0353**	**0.0215 J**	0.0315 U	**0.0841**	0.0312 U	**0.0238 J**	0.0311 U
Acenaphthylene	--	--	0.0316 U	0.031 U	0.0313 U	0.0315 U	0.032 U	0.0312 U	0.0318 U	0.0311 U
Anthracene	--	--	0.0316 U	0.031 U	0.0313 U	0.0315 U	0.032 U	0.0312 U	0.0318 U	0.0311 U
Benzo(a)anthracene	--	--	0.0158 U	**0.00893 J**	0.0157 U	0.0157 U	0.016 U	0.0156 U	0.0159 U	**0.00893 J**
Benzo(a)pyrene	--	--	0.0158 U	0.0155 U	0.0157 U	0.0157 U	0.016 U	0.0156 U	0.0159 U	0.0155 U
Benzo(b)fluoranthene	--	--	0.0158 U	**0.00776 J**	0.0157 U	0.0157 U	0.016 U	0.0156 U	0.0159 U	0.0105 J
Benzo(g,h,i)perylene	--	--	0.0316 U	0.031 U	0.0313 U	0.0315 U	0.032 U	0.0312 U	0.0318 U	0.0311 U
Benzo(k)fluoranthene	--	--	0.0158 U	0.0155 U	0.0157 U	0.0157 U	0.016 U	0.0156 U	0.0159 U	0.0155 U
Chrysene	--	--	**0.0134 J**	**0.014 J**	0.0157 U	0.0157 U	**0.0116 J**	0.0156 U	0.0159 U	**0.019**
Dibenzo(a,h)anthracene	--	--	0.0158 U	0.0155 U	0.0157 U	0.0157 U	0.016 U	0.0156 U	0.0159 U	0.0155 U
Fluoranthene	--	--	**0.2**	**0.205**	**0.173**	**0.0968**	**0.203**	**0.146**	**0.154**	**0.0986**
Fluorene	--	--	**0.157**	**0.0834**	**0.0498**	**0.024 J**	**0.169 Q-29**	**0.0597**	**0.0488**	**0.0233 J**
Indeno(1,2,3-c,d)pyrene	--	--	0.0158 U	0.0155 U	0.0157 U	0.0157 U	0.016 U	0.0156 U	0.0159 U	0.0155 U
Naphthalene	--	--	0.0631 U	**0.0314 J**	0.0627 U	**0.0327 J**	0.064 U	**0.0332 J**	0.0635 U	**0.0326 J**
Phenanthrene	--	--	**0.613**	**0.46**	**0.328**	**0.157**	**0.615**	**0.34**	**0.304**	**0.135**
Pyrene	--	--	**0.292**	**0.222**	**0.21**	**0.1**	**0.272**	**0.154**	**0.188**	**0.123**
Total Aqueous Hydrocarbons (TAqH) U=0	15		**1.4**	**1.1**	**0.8**	**0.4**	**1.4**	**0.7**	**0.7**	**0.4**

Table 22
SBLT Testing Results: Seawater

Notes:
Detected concentration is greater than the chronic Alaska Water Quality Criteria: Aquatic Life for Marine Waters (ADEC 2008)
Detected concentration is greater than the acute Alaska Water Quality Criteria: Aquatic Life for Marine Waters (ADEC 2008)
Non-detected concentration is above one or more identified screening levels
Bold = Detected result
1. Laboratory reports indicate matrix interference due to the presence of high levels of sodium and minerals
-- = results not reported or not applicable
µg/L = micrograms per liter
C = Composite sample
ft = feet
J = Estimated value.
PAH = polycyclic aromatic hydrocarbons
Total Aqueous Hydrocarbons (TAqH) (U=0) is the sum all detected PAHs
U = Compound analyzed, but not detected above detection limit
Detected TAqH concentration is greater than the Alaska Water Quality Standards for Designated Uses (18 AAC 70.020 (17)(C))

Table 23
TCLP Testing Results

Location ID Composite Sample ID Depth Parameter	TCLP Threshold	SOD-01 SD1 M6 2001 0 - 6.5 ft		SOD-02 SD2 M6 2002 0 - 8.5 ft		SOD-03 SD3 M6 2003 0 - 6.5 ft		SOD-05 SD5 M6 2005 0 - 3.5 ft	
Conventional Parameters (percent)									
Total solids		79.0		71.3		86.4		82.9	
Metals, TCLP (mg/L)									
Antimony	--	0.05	U	0.05	U	0.05	U	0.05	U
Arsenic	5.0	0.1	U	0.1	U	0.1	U	0.1	U
Barium	100.0	**0.806**		**0.361**		**0.538**		**0.516**	
Cadmium	1.0	0.05	U	0.05	U	0.05	U	0.05	U
Chromium	5.0	0.1	U	0.1	U	0.1	U	0.1	U
Copper	--	0.25	U	0.25	U	0.25	U	0.25	U
Iron	--	**9.96**		**30.8**		**6.43**		**7.86**	
Lead	5.0	**27.8**		**18.9**		**8.24**		**5.12**	
Mercury	0.2	0.004	U	0.004	U	0.004	U	0.004	U
Nickel	--	0.1	U	0.1	U	0.1	U	0.1	U
Selenium	1.0	0.1	U	0.1	U	0.1	U	0.1	U
Silver	5.0	0.05	U	0.05	U	0.05	U	0.05	U
Zinc	--	**1.87**		**3.71**		**2.61**		**1.56**	
Polycyclic Aromatic Hydrocarbons, TCLP (µg/L)									
1-Methylnaphthalene	--	0.0004	U	0.0004	U	0.0004	U	0.0004	U
2-Methylnaphthalene	--	0.0004	U	0.0004	U	0.0004	U	0.0004	U
Acenaphthene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Acenaphthylene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Anthracene	--	0.0002	U	**0.000146**	J	0.0002	U	0.0002	U
Benzo(a)anthracene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Benzo(a)pyrene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Benzo(b)fluoranthene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Benzo(g,h,i)perylene	--	0.0004	U	0.0004	U	0.0004	U	0.0004	U
Benzo(k)fluoranthene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Chrysene	--	0.0002	U	0.0003	U	0.0002	U	0.0002	U
Dibenzo(a,h)anthracene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Dibenzofuran	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Fluoranthene	--	**0.000361**		**0.00106**		**0.000142**	J	**0.000193**	J
Fluorene	--	0.0002	U	**0.000339**		0.0002	U	0.0002	U
Indeno(1,2,3-c,d)pyrene	--	0.0002	U	0.0002	U	0.0002	U	0.0002	U
Naphthalene	--	0.0004	U	0.0004	U	0.0004	U	0.0004	U
Phenanthrene	--	**0.000512**		**0.000882**		**0.000131**	J	**0.000387**	
Pyrene	--	**0.00163**		**0.00348**		**0.000226**		**0.000179**	J
Total Metals, Sediment (mg/kg)									
Antimony	--	**4.27**		**1.35**	J	1.16	U	1.3	U
Arsenic	--	**4.02**		**6.3**		**1.28**		**0.687**	J
Barium	--	**166**		**298**		**111**		**113**	
Cadmium	--	**7.63**		**5.43**		**0.765**		**0.454**	
Chromium	--	**5.79**		**13.6**		**5.47**		**4.2**	
Copper	--	**118**		**112**		**19.4**		**11.9**	
Iron	--	**14300**		**26900**		**11800**		**10200**	
Lead	--	**4380**		**2030**		**471**		**274**	
Mercury	--	**3.01**		**2.23**		**0.378**		**0.201**	
Nickel	--	**3.08**		**7.36**		**2.9**		**1.92**	
Selenium	--	**0.794**	J	3.04	U	2.32	U	2.59	U
Silver	--	**4.14**		**2.4**		**0.464**		**0.259**	
Zinc	--	**5530**		**4050**		**555**		**371**	
Polycyclic Aromatic Hydrocarbons, Sediment (µg/kg)									
Acenaphthene	--	10.3	U	**6.48**	**J**	**8.31**	**J**	10.9	U
Acenaphthylene	--	10.3	U	**19**		**6.05**	**J**	10.9	U
Anthracene	--	**28.3**		**142**		**18.4**		10.9	U
Benz(a)anthracene	--	**177**		**579**		**97.2**		**30.1**	
Benzo(a)pyrene	--	**96.9**		**376**		**82.1**		**15.3**	
Benzo(b+k)fluoranthene(s)	--	**309**		**1090**		**195**		**48.5**	
Benzo(g,h,i)perylene	--	**24.1**		**93.9**		**32.8**		10.9	U
Chrysene	--	**195**		**870**		**125**		**29.8**	
Dibenz(a,h)anthracene	--	**12.1**		**45**		**10.5**	**J**	10.9	U
Fluoranthene	--	**141**		**403**		**138**		**31**	
Fluorene	--	**20**		**74.5**		**10.4**	**J**	10.9	U
Indeno(1,2,3-cd)pyrene	--	**32**		**126**		**41.2**		**6.83**	**J**
Naphthalene	--	10.3	U	11.9	U	11	U	10.9	U
Phenanthrene	--	**79.1**		**250**		**31.8**		**21.8**	
Pyrene	--	**512**		**1450**		**195**		**31.6**	

Notes:
Detected concentration is greater than the TCLP threshold (40 CFR § 261.24).
Bold = Detected result
-- = results not reported or not applicable
µg/L = micrograms per liter
ft = feet
J = Estimated value.
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
PAH = polycyclic aromatic hydrocarbon
TCLP = Toxicity Characteristic Leaching Procedure
U = Compound analyzed, but not detected above detection limit

FIGURES

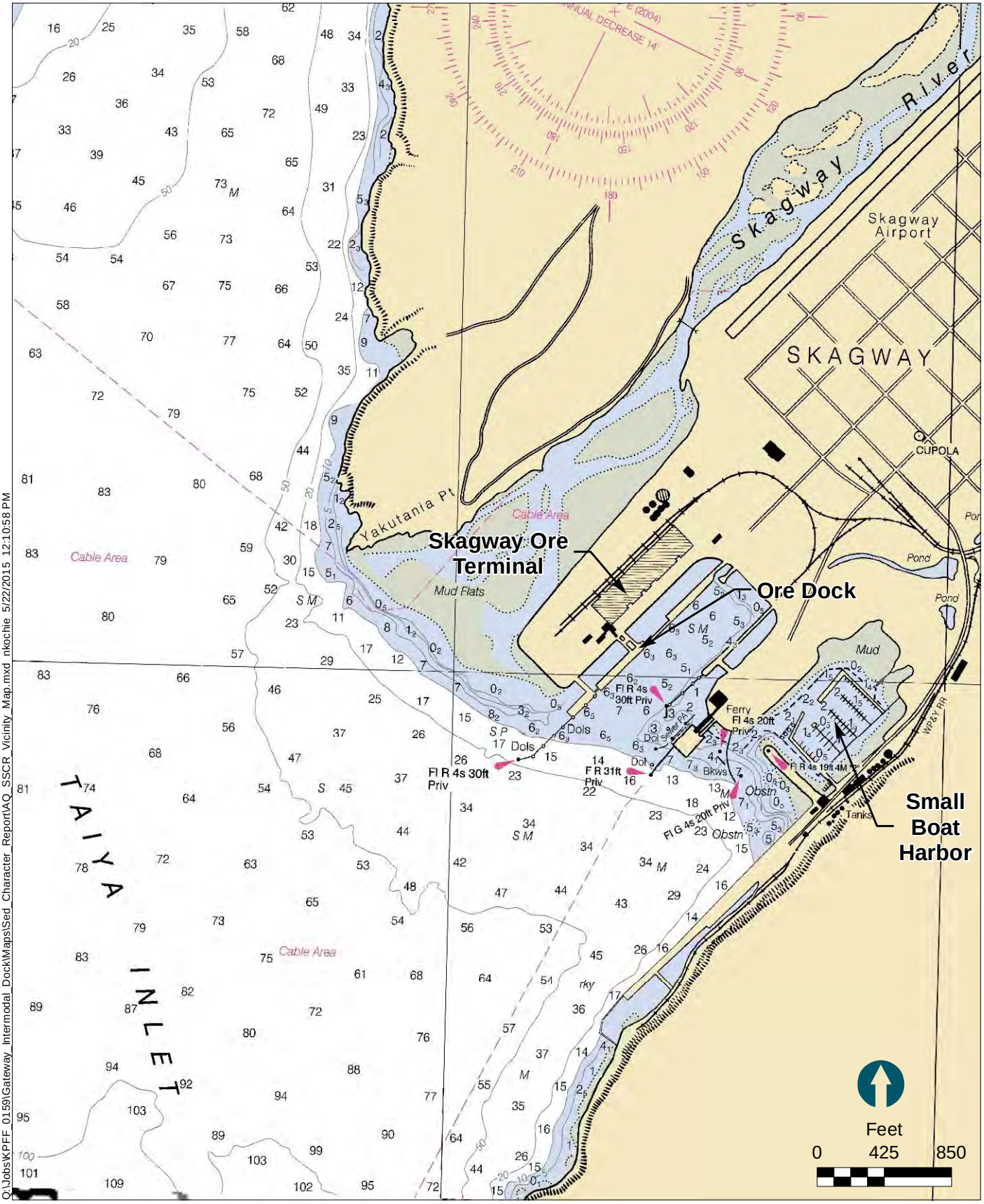

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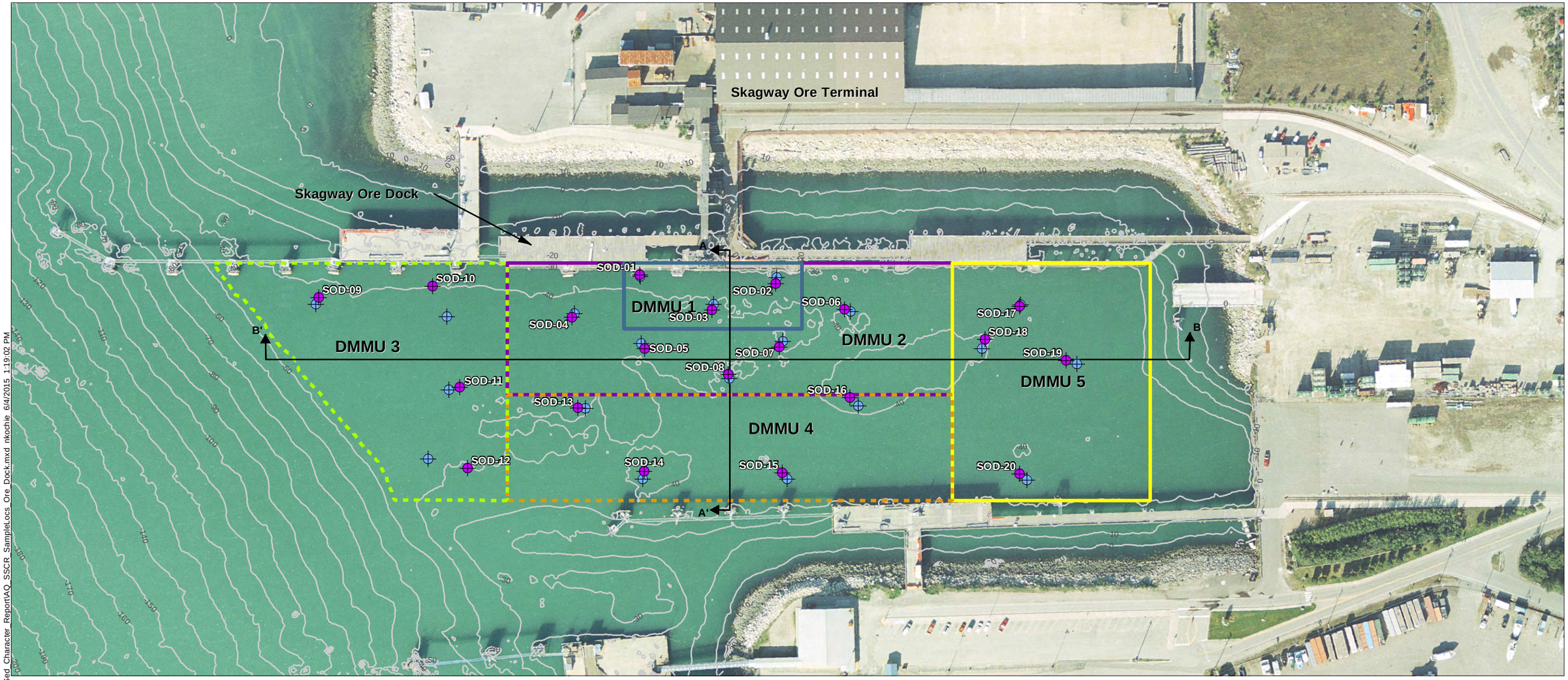
Figure 1
Vicinity Map
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project
and Legacy Harbor Contaminant Mitigation Program



Actual Sonic Drilling Location
Proposed Sonic Drilling Location

DMMU 1
DMMU 2
DMMU 3
DMMU 4
DMMU 5

2014 TerraSond Bathymetry (ft MLLW)

NOTES:
1. DMMUs shown on are those proposed in the Gateway SAP Anchor QEA 2014).
2. Cross Sections A-A' and B-B' are shown on Figures 2b and 2c, respectively.
3. Bathymetry from TerraSond survey dated October 28, 2014. Elevations in MLLW.

Feet
0 75 150 225 300

Q:\Jobs\KPFF_0159\Gateway_Intermodal_Dock\Maps\Sed_Character_Report\AQ_SSCR_SampleLocs_Ore_Dock.mxd nkoehle 6/4/2015 1:19:02 PM

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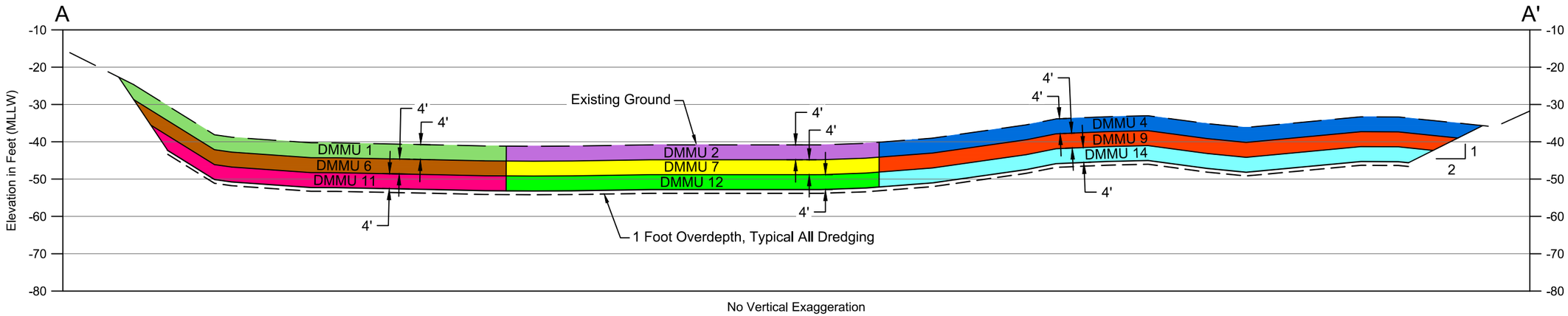
Figure 2a
Sampling Locations and Dredged Material Management Units: Ore Dock
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



SOURCE: Bathymetry Survey performed by NOAA in 2000.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

Jun 16, 2015 12:26pm tgriga K:\Projects\1146-Gubala Consulting\Port of Skagway\1146-RP-002.dwg Figure 2b

ANCHOR QEA

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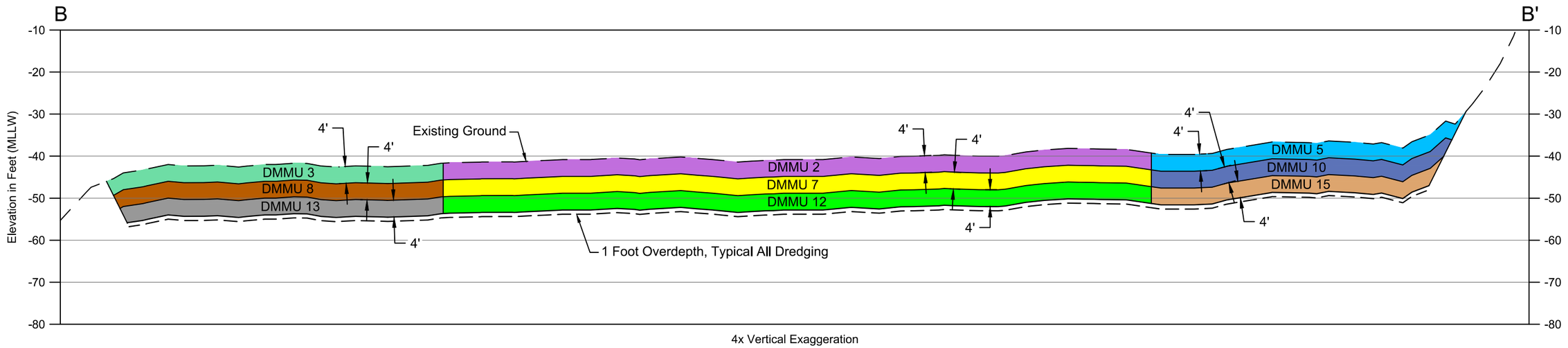
Figure 2b
Ore Dock Cross Section A-A': Original DMMUs
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



SOURCE: Bathymetry Survey performed by NOAA in 2000.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

Jun 16, 2015 12:26pm tgriga K:\Projects\1146-Gubala Consulting\Port of Skagway\1146-RP-002.dwg Figure 2c

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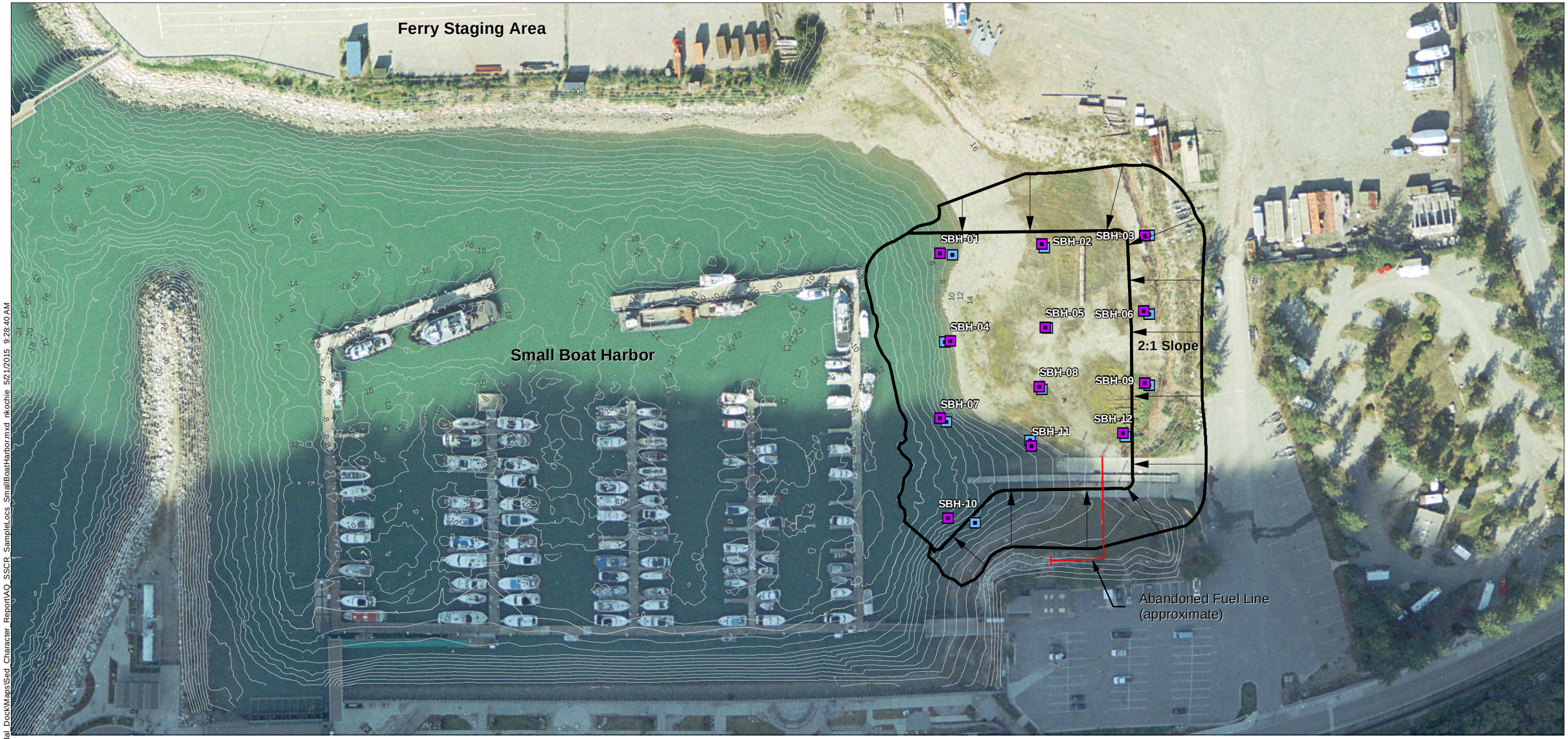
Figure 2c
Ore Dock Cross Section B-B': Original DMMUs
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



NOTE:
1. Bathymetry from USACE 2011 Survey.

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Figure 3
Sampling Locations: Small Boat Harbor
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program

Upland Soil Sampling Location

2014 TerraSond Bathymetry (ft MLLW)

Feet

0 50 100 150 200

NOTE:
Bathymetry from TerraSond survey dated October 28, 2014. Elevations in MLLW.

Q:\Jobs\KPFF_0159\Gateway_Intermodal_Dock\Maps\Sed_Character_Report\AQ_SSCR_SampleLocs_HarfCrowser.mxd nkochie 6/4/2015 9:39:38 AM

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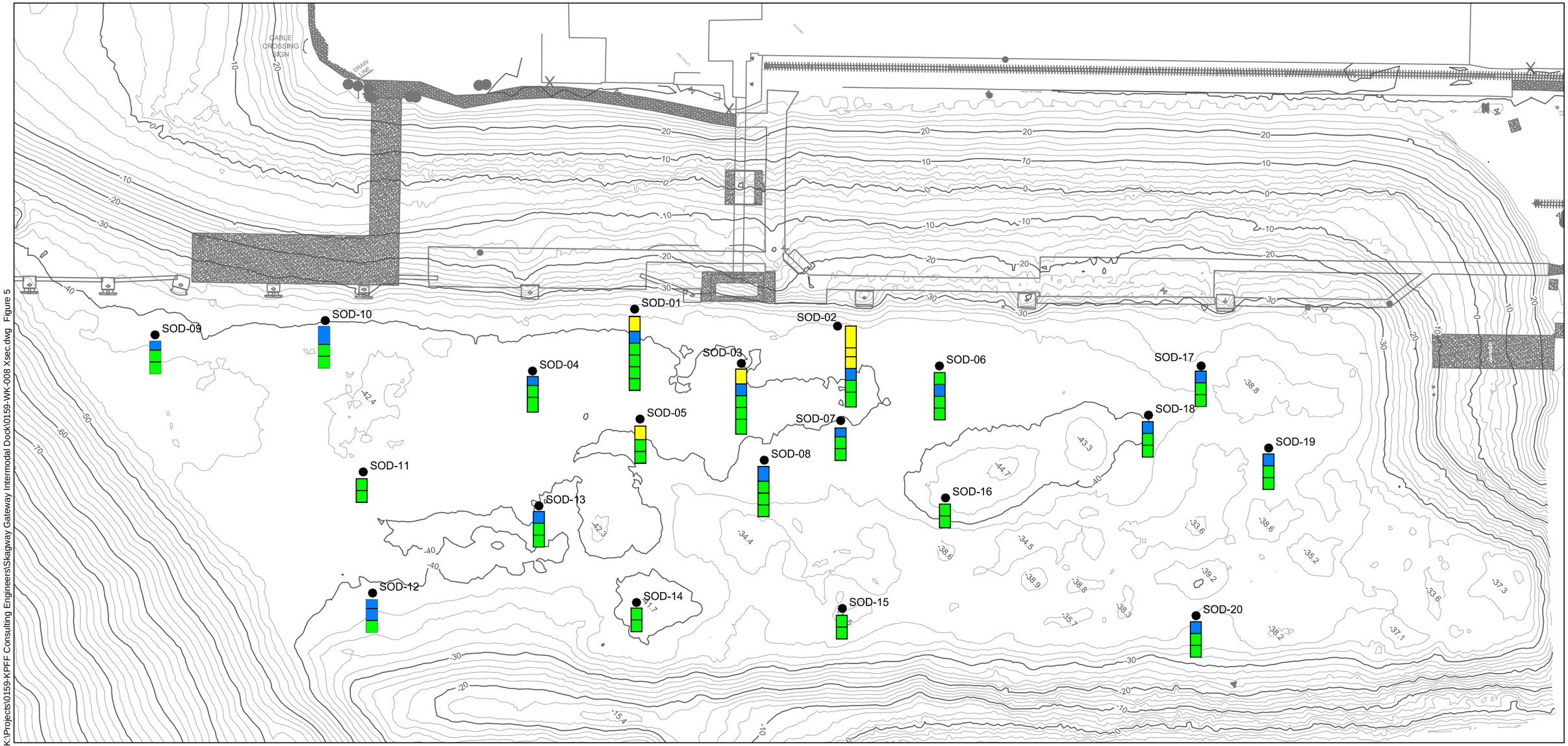
Figure 4
Sampling Locations: Skagway Ore Terminal Uplands
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 5

Jun 08, 2015 9:57am tgriga

SOURCE: Drawing prepared CAD file provided by KPFF called "X-Survey Base.dwg"
HORIZONTAL DATUM: Alaska State Plane, Zone 1, NAD83 2011, U.S. Feet.
VERTICAL DATUM: Mean Lower Low Water (MLLW).
SURVEY: TerraSond dated October 28, 2014.

LEGEND:

-10 Existing Bathymetry (2014, 2 ft Intervals)

SOD-01 Anchor QEA Sediment Core Location (2015)

<TEL
>TEL
>SCO and TEL

TEL = Threshold Effects Level (MacDonald et al., 1996)

SCO = Sediment Cleanup Objective (Washington Sediment Management Standards; WAC 173-204; 2013 rule revision)

Color coding is based on screening level exceedances of metals and/or PAH levels in sediment samples

0 100
Scale in Feet

ANCHOR QEA

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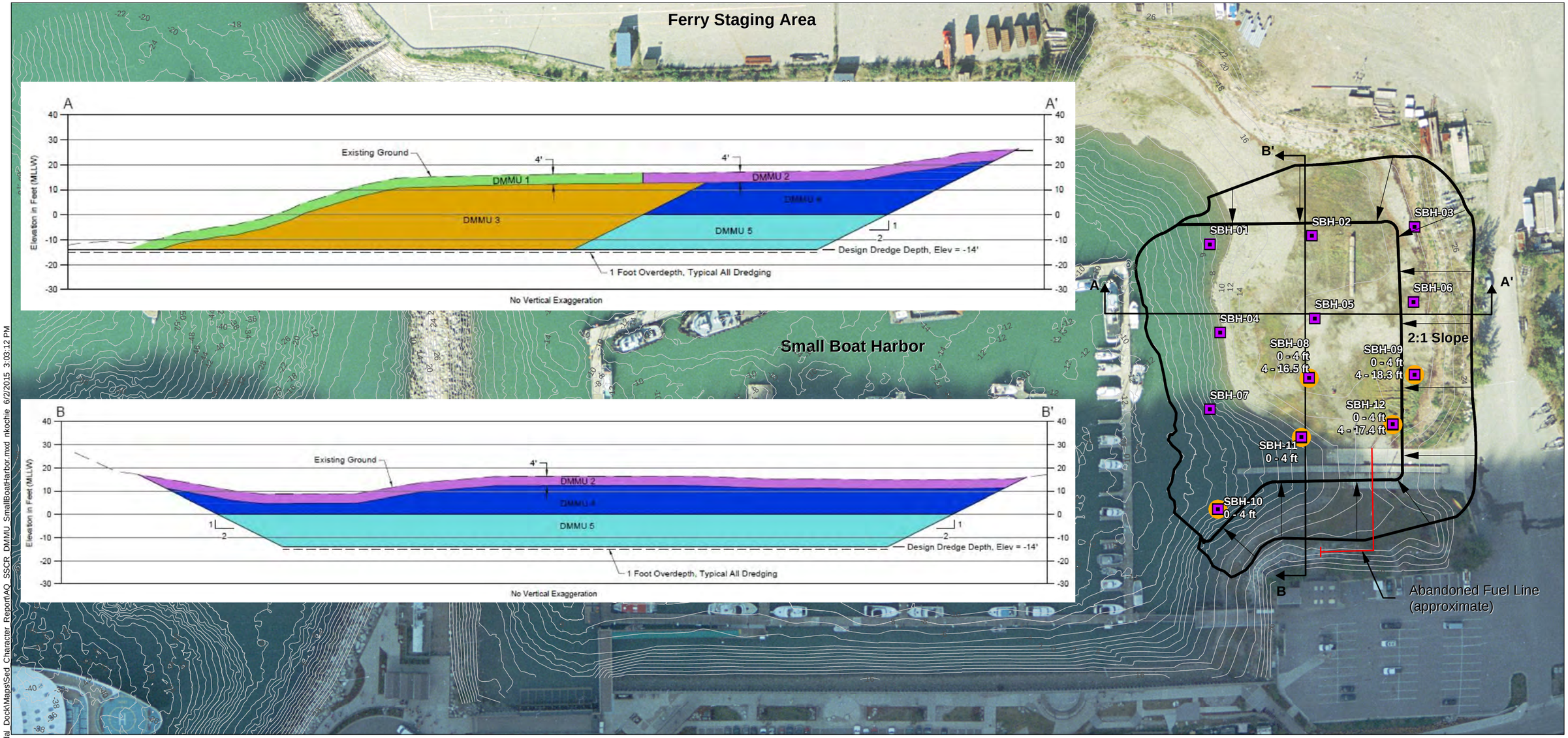
Figure 5
Ore Dock Sediment Results
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



Actual Borehole Location

TPH Sampled Location and Depth Interval

2011 Skagway Harbor Bathymetry (ft MLLW)

Approximate Extent of Proposed Dredging/Grading

NOTE:
1. TPH = Total Petroleum Hydrocarbons.
2. Bathymetry from USACE 2011 Survey.

Feet
0 50 100 150 200

Q:\Jobs\KPFF_0159\Gateway_Intermodal_Dock\Maps\Sed Character_ReportAQ_SSCR_DMMU_SmallBoatHarbor.mxd nkochie 6/2/2015 3:03:12 PM

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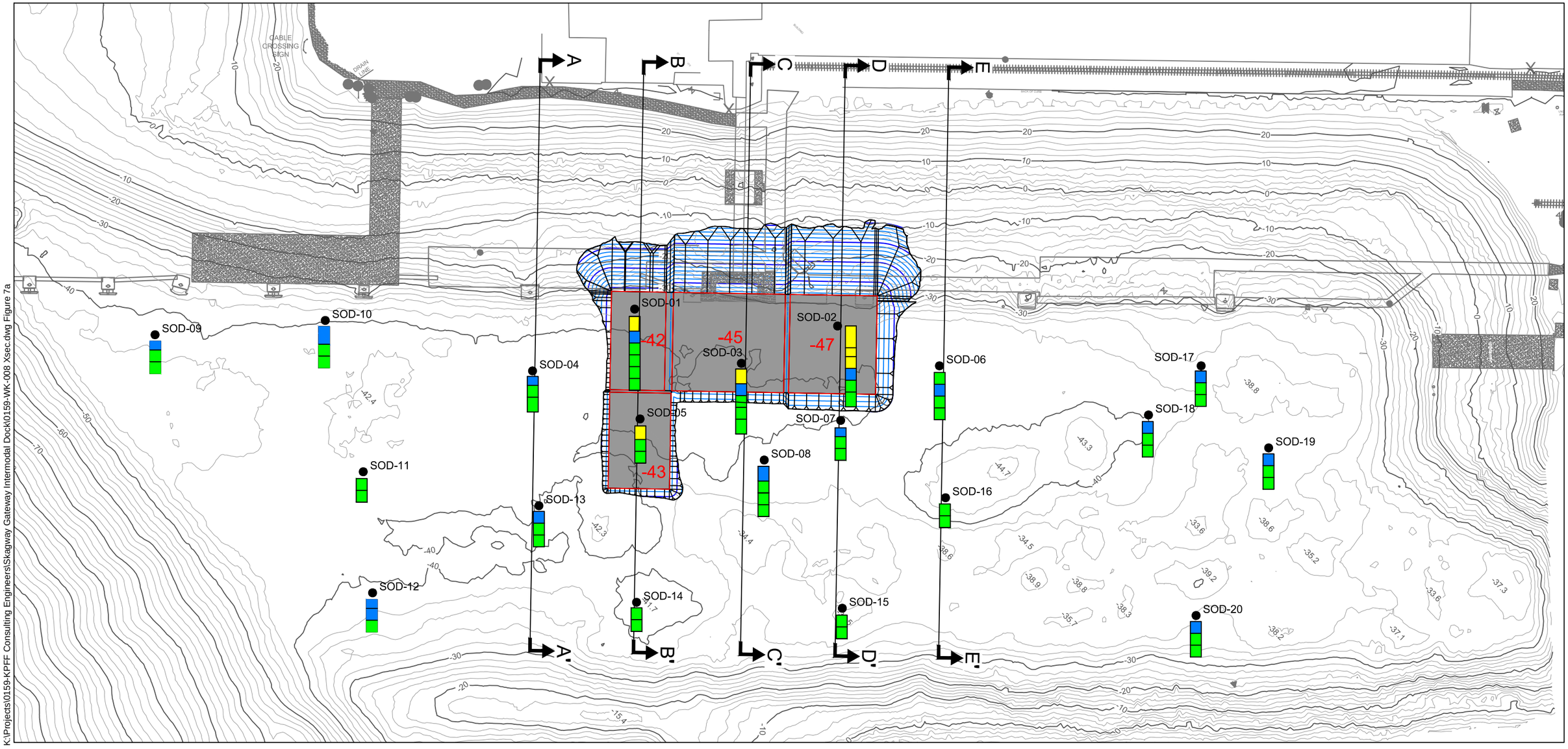
Figure 6
Small Boat Harbor Dredged Material Management Units
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program

K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 7a
Jun 04, 2015 5:27pm tgriga



SOURCE: Drawing prepared CAD file provided by KPFF called "X-Survey Base.dwg"
HORIZONTAL DATUM: Alaska State Plane, Zone 1, NAD83 2011, U.S. Feet.
VERTICAL DATUM: Mean Lower Low Water (MLLW).
SURVEY: TerraSond dated October 28, 2014.
NOTE: Cross sections A-A' through E-E' are shown on Figures 7b to 7f.

LEGEND:

-10 — Existing Bathymetry (2014, 2 ft Intervals)

A / L — Cross Section Location and Designation

SOD-01 — Anchor QEA Sediment Core Location (2015)

-42 — Proposed Remedial Dredge Footprint and Elevation (feet MLLW)

<TEL
>TEL
>SCO and TEL

TEL = Threshold Effects Level (MacDonald et al., 1996)

SCO = Sediment Cleanup Objective (Washington Sediment Management Standards; WAC 173-204; 2013 rule revision)

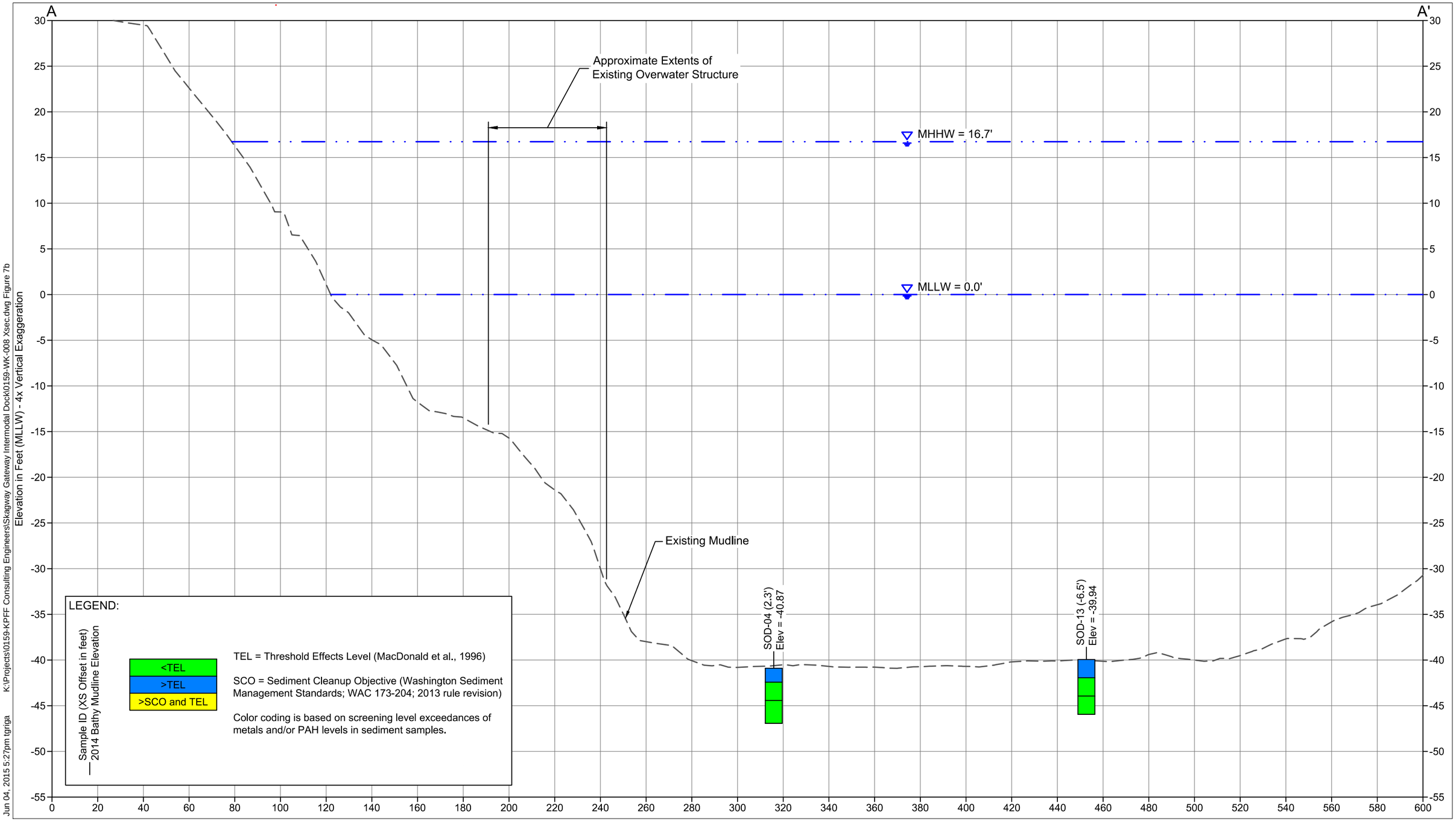
Color coding is based on screening level exceedances of metals and/or PAH levels in sediment samples

0 100
Scale in Feet

ANCHOR QEA

DRAFT

Figure 7a
Ore Dock Results and Updated Dredge Footprint
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



Jun 04, 2015 5:27pm tgriga K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 7b

ANCHOR QEA

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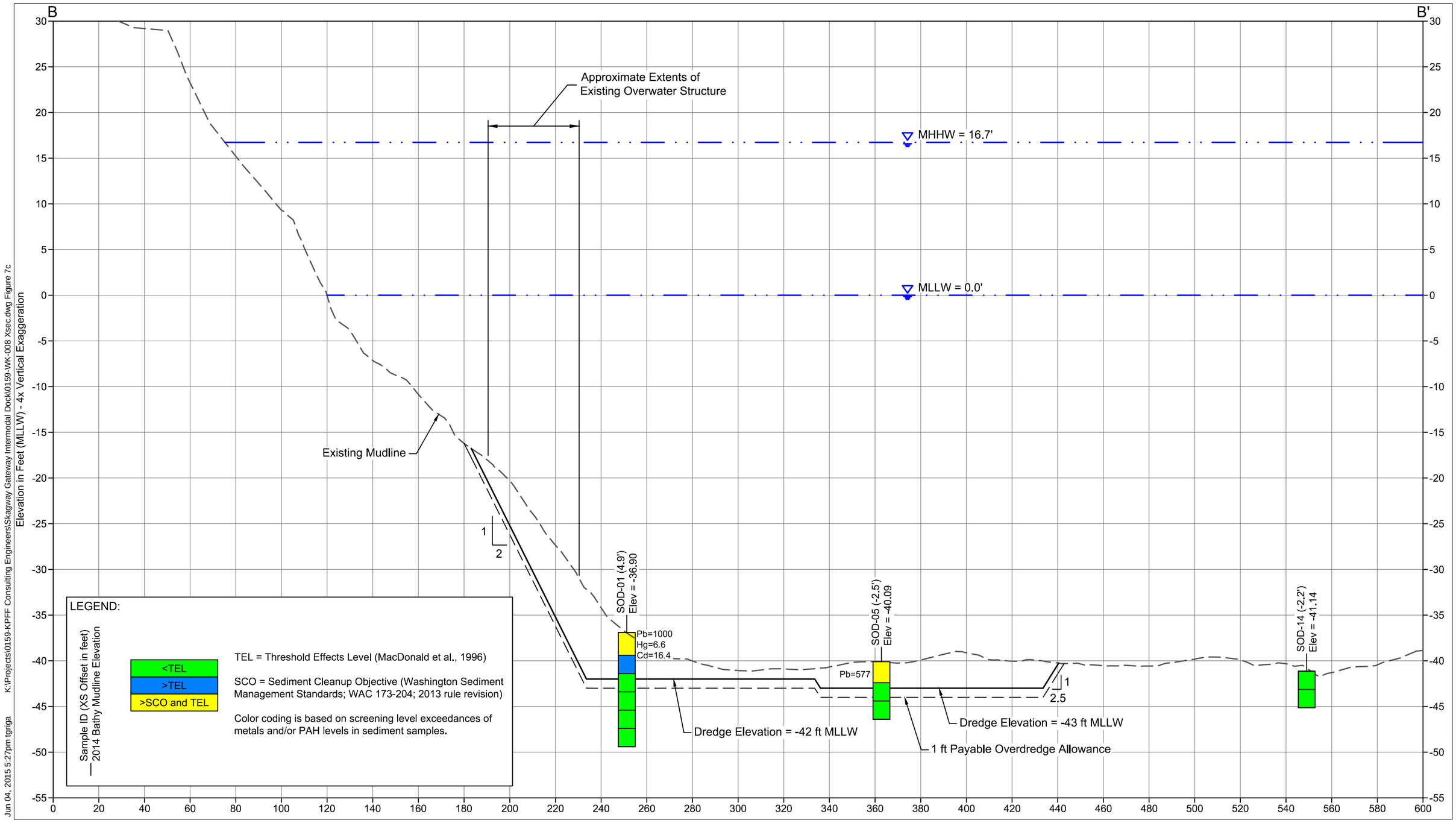
Figure 7b
Ore Dock Cross Section A-A' Results and Updated Dredge Footprint
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



Jun 04, 2015 5:27pm tgriga K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 7c

ANCHOR QEA

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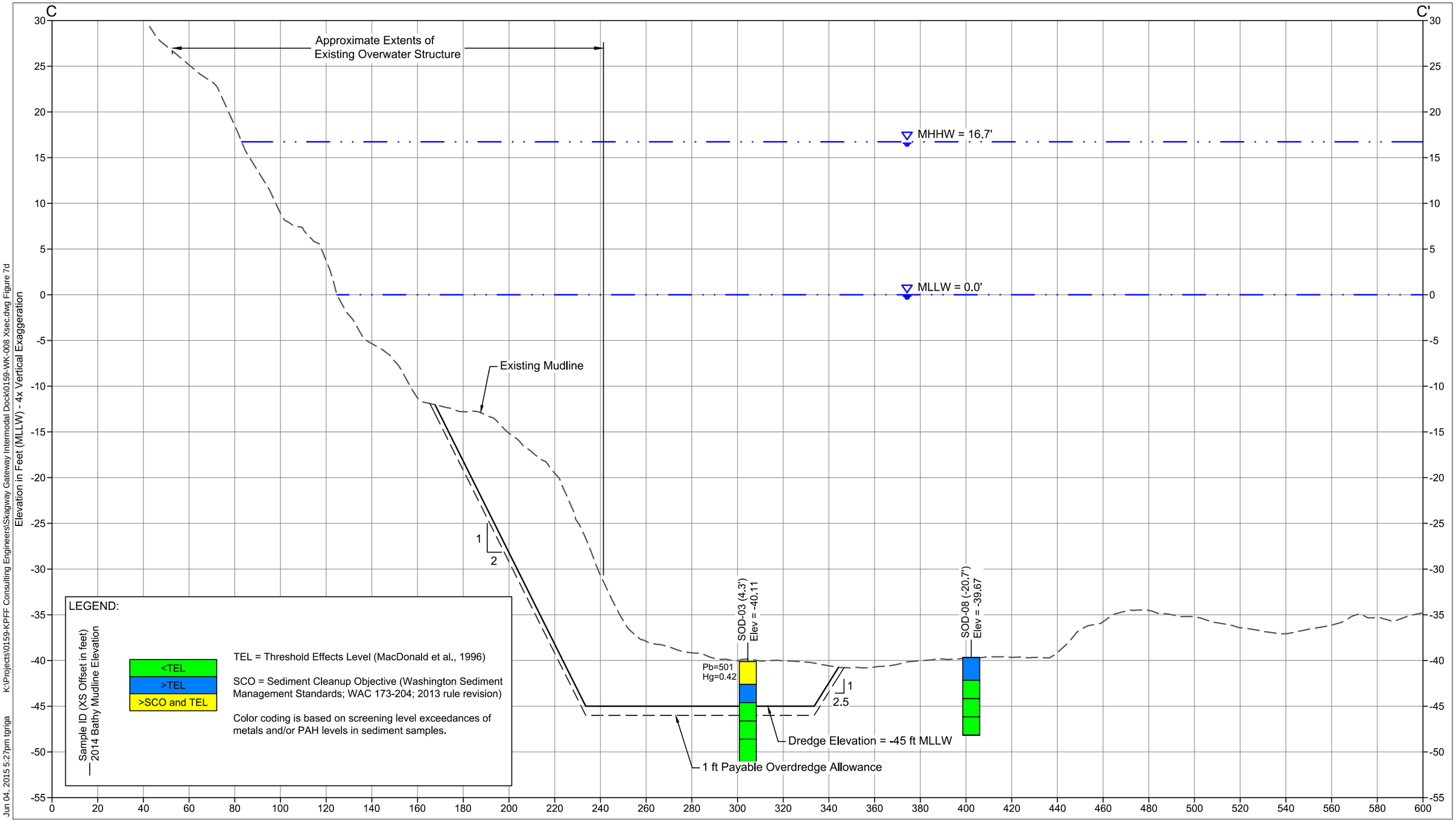
Figure 7c
Ore Dock Cross Section B-B' Results and Updated Dredge Footprint
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



Jun 04, 2015 5:27pm tgriga K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 7d

ANCHOR QEA

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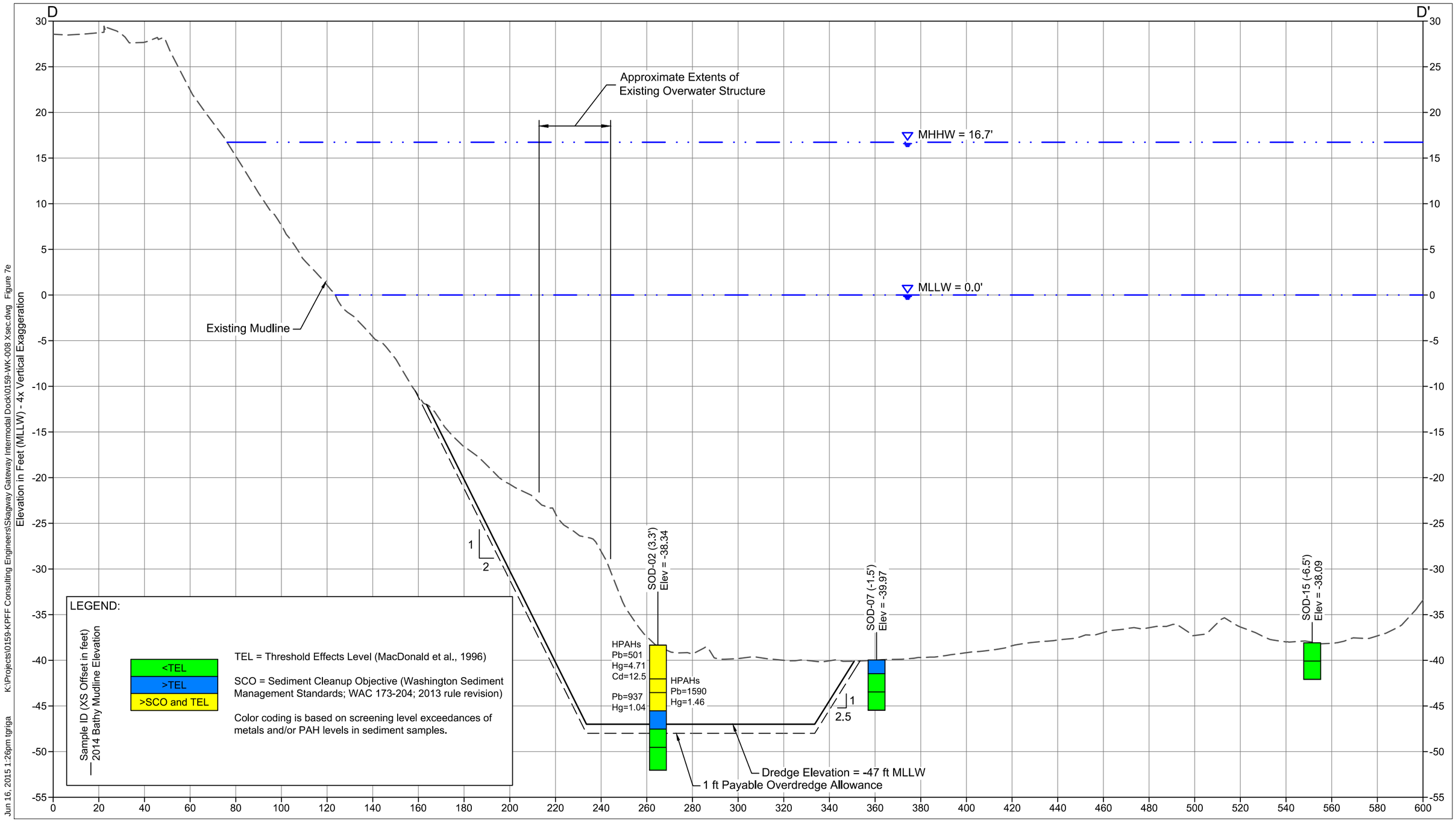
Figure 7d
Ore Dock Cross Section C-C' Results and Updated Dredge Footprint
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



Jun 16, 2015 1:26pm tgriga K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 7e

ANCHOR QEA

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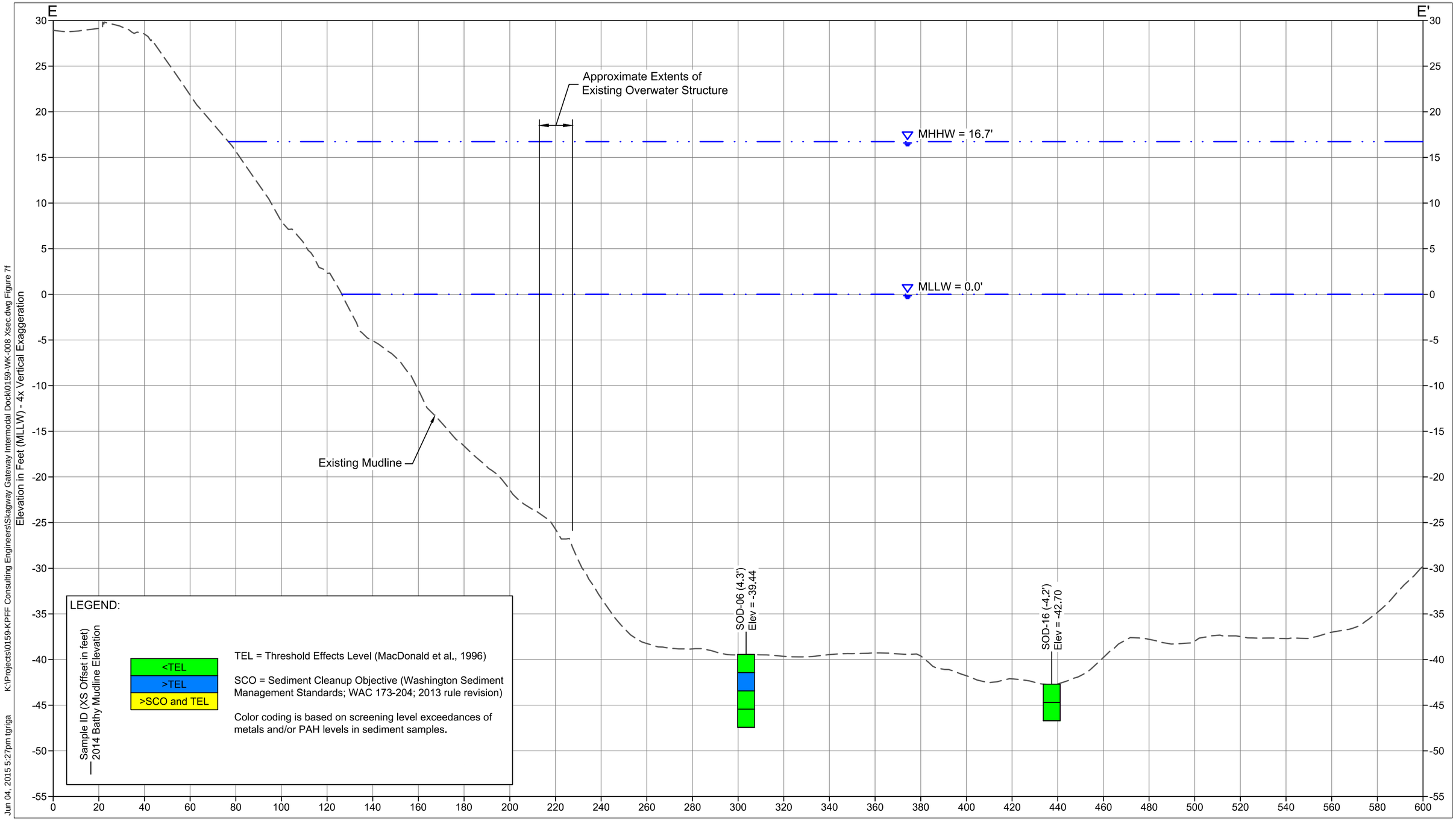
Figure 7e
Ore Dock Cross Section D-D' Results and Updated Dredge Footprint
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program



Jun 04, 2015 5:27pm tgriga K:\Projects\0159-KPFF Consulting Engineers\Skagway Gateway Intermodal Dock\0159-WK-008 Xsec.dwg Figure 7f

ANCHOR QEA

DRAFT

Figure 7f
Ore Dock Cross Section E-E' Results and Updated Dredge Footprint
Sediment Characterization Report
Municipality of Skagway Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program

APPENDIX A
FIELD LOGS

APPENDIX B
FIELD PHOTOGRAPHS

APPENDIX C
CHAIN-OF-CUSTODY FORMS

APPENDIX D
LABORATORY ANALYTICAL REPORTS
(on CD)

APPENDIX E
DATA QUALITY ASSURANCE/QUALITY CONTROL AND VALIDATION (on CD)

APPENDIX F
ANCHOR QEA STANDARD OPERATING PROCEDURE: SEQUENTIAL BATCH LEACHATE TEST