FINAL
SEDIMENT CHARACTERIZATION REPORT
BERTH 161 DREDGING PROJECT
LOS ANGELES HARBOR

Submitted to:

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
<	less than
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
%	percent
AMEC	AMEC Environment & Infrastructure, Inc.
ASTM	American Society for Testing and Materials (now ASTM International)
BHC	benzene hexachloride
BMP	best management practice
Calscience	Calscience Environmental Laboratories, Inc.
CCC	criterion continuous concentration
CCR	California Code of Regulations
CDF	confined disposal facility
CFR	Code of Federal Regulations
CMC	criterion maximum concentration
CTR	California Toxics Rule
cy	cubic yard(s)
DGPS	Differential Global Positioning System
DDT	dichlorodiphenyltrichloroethane
ERL	effects-range low
ERM	effects-range median
ft	foot/feet
GC	gas chromatography
Inland Testing Manual	*Evaluation of Dredged Materials Proposed for Discharge in Waters of the U.S.* EPA-823-B-98-004
L	liter
LCS	laboratory control sample
(M)	modified
m	meter(s)
MDL	method detection limit
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MLLW	mean lower low water
mm	millimeter(s)
N/A	not applicable
ND	non-detect
ng/L	nanograms per liter
NOAA	National Oceanic and Atmospheric Administration
OD	overdredge

ACRONYMS AND ABBREVIATIONS (Cont.)

oz.	ounce(s)
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
Port	Port of Los Angeles
Project	Berth 161 Dredging Project
QA	quality assurance
QC	quality control
RL	reporting limit
SAP	sampling and Analysis Plan
SM	Standard Method
SIM	selective ion monitoring
STLC	soluble threshold limit concentration
TCLP	toxicity characteristic leaching procedure
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TQ	toxicity quotient
TRPH	total recoverable petroleum hydrocarbons
TTLC	total threshold limit concentration
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
WET	waste extraction test

1.0 INTRODUCTION

This document is the Sediment Characterization Report for the Port of Los Angeles (Port) Berth 161 Dredging Project (Project). The proposed Project is to dredge sediment at Berth 161 near a boat launch and marine railway facility in the Los Angeles Harbor. The Project will support the construction of new marine ways. The dredged material generated during the Project will be disposed offsite, at either the agency-approved confined disposal facility (CDF) located at Berth 243-245, or at an upland disposal facility.

AMEC Environment & Infrastructure, Inc. (AMEC) was contracted by the Port to prepare a Project-specific sampling and analysis plan (SAP), sample sediment and seawater at the Project site, and provide a sediment characterization report based on the results of sediment investigation. AMEC prepared the SAP in May 2013, collected samples in June 2013, and received initial physical and chemistry testing results from Calscience Environmental Laboratories, Inc. (Calscience) in July and August 2013. Based upon the results of the initial round of bulk sediment testing, it was determined that a second round of chemical testing was necessary. The second-round chemical tests included a leaching procedure analysis to investigate landfill approval as a disposal alternative. The results of the second round of tests were received in October 2013.

The purpose of this report is to assess sediment quality within the in-water portion (below the high tide line) of the Berth 161 dredge footprint and to evaluate the most appropriate disposal alternative.

1.1 Project Description

The Project is located in the Slip 1 area of Los Angeles Harbor, north of the Inner Harbor Turning Basin (Figure 1-1). The Project involves construction to improve containment of work debris and runoff on the marine railway and boat launch ramp near Berth 161 (Figure 1-2). A backhoe will be used to dredge approximately 1 foot of surface material from the harbor bottom within the Project dredge footprint. The dredge depth across the Project footprint ranges between +5.8 feet mean lower low water (MLLW) and approximately +0.5 foot MLLW, plus a 1-foot overdredge (OD) allowance. The material below the +5.8-ft MLLW elevation (i.e., the highest high tide level) is considered to be harbor bottom. The total dredge volume of the Project (including overdredge) is an estimated 375 cubic yards (cy).

1.1.1 Land Uses and Influences

Land use in the Project area includes Port-maintained construction and maintenance division offices in the buildings south of the Project site, and repair shops and storage warehouses to the north. The wharf at Berth 161 is primarily used for mooring, hauling, and repairing Port-owned floating equipment. Approximately 35 pieces of floating equipment, including marker buoys, are moored at this location. The wharf is divided by one 350-ton marine railway and connected by a 4-foot-wide steel drawbridge. The berthing distance on the north side of the wharf is 125 meters (m); on the south side, it is 585 m. There is also a mobile dry dock on the railway that runs along the length of the Project site.

1.1.2 Previous Sediment Characterization Studies

According to Port staff, no previous sediment characterization studies have been conducted within the Berth 161 footprint.

1.2 Project Sediment Characterization Study

To assess suitability of the dredged material for CDF disposal, tests were conducted according to the guidelines set forth in the United States Environmental Protection Agency (USEPA)/U.S. Army Corps of Engineers (USACE) *Evaluation of Dredged Materials Proposed for Discharge in Waters of the U.S.,* EPA-823-B-98-004 (Inland Testing Manual) (1998).

To evaluate the proposed dredge material at Berth 161, four push core samples were collected within the Project footprint. The design depth of the Project ranges between +5.8 feet MLLW and approximately +0.5-foot MLLW, plus a 1-foot OD allowance. During sample collection, penetration of 1-additional foot of sediment was attempted at each location to evaluate the 0.5-foot Z-layer (i.e., the new, post-dredging sediment surface).

The preferred disposal option for the Project was to use the material as fill in the Berth 243-245 CDF; no unconfined aquatic disposal was proposed. Consequently, analyses for this study were limited to chemical and physical testing. Sediment core samples collected within the footprint underwent physical and chemical analyses . A full suite of chemical analytes was evaluted, including general chemistry parameters, metals, chlorinated pesticides, polychlorinated biphenyl (PCB) congeners, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), total recoverable petroleum hydrocarbons (TRPH), pyrethroid pesticides, phenols, phthalates, and organotins. Dredged materials were also assessed using elutriate analysis to evaluate the potential to release soluble chemicals into the water column during dredging and disposal operations.

When AMEC and Port staff reviewed the initial results of the bulk sediment chemistry tests, it was determined that hazardous waste characterization was also needed for the proposed dredge materials. This additional testing was necessary because the core samples collected in the dredge footprint had elevated levels of several chemicals (in particular, copper and lead). The follow-up testing included evaluations of soluble threshold limit concentrations (STLC) and toxicity characteristic leaching procedure (TCLP) analysis. The additional analyses were performed by Calscience for samples with elevated chemistry levels. The results of STLC and TCLP analysis were received in October 2013.

The following sections provide information on sample collection locations and methods; sediment and elutriate chemistry test methods and results; a comparison of the results to available sediment and water quality guidelines; data analysis; and quality assurance (QA)/quality control (QC) evaluation of all results and other deliverables. Sediment core logs, sediment core photographs, and sediment and elutriate chemistry reports are appended to this report.

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Project Vicinity
Berth 161 Sediment Characterization Study
Port of Los Angeles

FIGURE
1-1

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Project Location
Berth 161 Sediment Characterization Study
Port of Los Angeles

FIGURE
1-2

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2.0 MATERIALS AND METHODS

The following sections describe the locations and techniques used June 24-25, 2013, to collect site water and sediment samples within the Project dredge footprint. Coordination between AMEC and the Port, pertinent security personnel, and Calscience was conducted prior to initiating any field activities.

2.1 Sediment Collection

Sediment and site water collection followed the guidance provided in *Methods for Collection, Storage, and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual* (USEPA, 2001), and detailed in the SAP submitted by AMEC to the Port prior to conducting sample collection and testing (AMEC, 2013). The sample collection was documented using sediment core logs and photography. Sediment core logs are in Appendix A and photographs of sediment cores are in Appendix B.

2.1.1 Collection Locations

Sample collection locations were selected using bathymetry provided by the Port (Figure 2-1). Locations were selected to adequately characterize the top 1 foot (plus the one-foot overdredge and Z-layer) of material across the entire dredge footprint. Samples were collected on foot (without using a collection vessel) during an extreme low-tide cycle. The access window for some of the core collection sites was time-limited; therefore, some of the locations were adjusted from those proposed in the SAP.

The Differential Global Positioning System (DGPS) was used to identify and navigate to the target sampling locations listed in Table 2-1. The target accuracy of the DGPS was ±3 m. Once a sampling location was identified, it was recorded in the field log (Figure 2-1).

2.1.2 Test Sediment Collection

Core samples were collected using a push core device to 1 foot below the sediment surface plus a 1-foot OD allowance. An additional 1.0 foot of penetration was also attempted to adequately sample the 0.5-foot Z-layer. The push core device includes a stainless steel push core head attached to galvanized rods. At each sampling location, an aluminum tube lined with food-grade, low-density polyethylene plastic was secured to the push core device (Figure 2-2). The first attempt for each push core sample was performed by hand, using physical force to insert the tube into the sediment. If the push core could not penetrate to the target depth of 3.0 feet below ground surface by hand, a fencepost hammer was used to drive the core into the substrate. Push core refusal was typically due to encountering hard sediment, rocks, or other debris such as wood fragments (Table 2-1).

Table 2-1.
Sample Collection Locations

Station ID	Attempt	Collection Coordinates		Sample Collection Depths		Notes
		Latitude WGS84 (DD°mm.mmm')	Longitude WGS84 (DDD°mm.mmm')	Actual Penetration Depth (ft)	Recovered Core Length (ft)	
B161-P1	1	33° 45.795'	–118° 15.924'	0.7	1.1	Met refusal at 1.1 feet.
	2	33° 45.795'	–118° 15.924'	2.6	2.6	Possible Z-layer
	3	33° 45.795'	–118° 15.924'	1.2	1.1	Hard sediment; met refusal.
B161-P2	1	33° 45.792'	–118° 15.919'	2.9	2.9	Z-layer 2–2.7' jarred.
	2	33° 45.792'	–118° 15.919'	2.3	2.3	Z-layer (2-2.3) not included in sample.
B161-P3	1	33° 45.790'	–118° 15.928'	2.8	2.8	Z-layer from 1.7–2.5'
	2	33° 45.790'	–118° 15.928'	2.3	1.7	Wood fragments encountered at 1.7' (possible cause of refusal).
B161-P4	1	33° 45.789'	–118° 15.922'	1.7	1.7	After tube withdrawal, sheen on water and visible brown free product from sediment was noted; met refusal on large rock plug.
	2	33° 45.789'	–118° 15.922'	1.7	1.7	Oil product was visible at 1.5–1.7';' met refusal at 1.7'.

Notes:
dd/-ddd°mm.mmm - degrees decimal minutes
ft - foot/feet

Core penetration depth was estimated by cutting each push core tube to a length of 3.0 feet prior to the field event. Once the push core reached the desired depth, the core was extracted and capped. To process each sample, the core was extruded from the core tube onto a lined tray, photographed, and inspected for unique strata, color, odors, and other visual parameters. Sediment core logs and photographs are included as Appendices A and B, respectively.

Each core was separated in up to three sections for analysis:

0.0 to 1.0 feet – dredge material sample
1.0 to 2.0 feet – OD material sample
2.0 to 3.0 feet – divided in half to obtain 2.0-foot to 2.5-foot Z-layer sample.

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Sampling Locations
Berth 161 Sediment Characterization Study
Port of Los Angeles

FIGURE
2-1

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Push Core Device
Berth 161 Sediment Characterization Study
Port of Los Angeles

FIGURE
2-2

GRAPHICS/Aquatic Sciences/Pier_161/SedSampling.fh8

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2.1.3 Z-Layer Sediment Collection

The Z-layer is defined as the 0.5-foot-thick sediment surface exposed after dredging. As described previously, to collect Z-layer samples, AMEC scientists advanced the push corer to a depth of 1.0 foot below the OD allowance, making the total target penetration depth 3.0 feet. The corer was advanced 0.5 feet below the Z-layer target depth of 2.5 feet (to 3 feet into the sediment column) to ensure that the entire Z-layer could be subsampled. Any material collected below the Z-layer depth was discarded. The 0.5-foot-thick Z-layer was separated from the rest of the core sample and transferred directly from the push core tube to an 8-ounce (oz.) jar, placed in a cooler on ice, and archived at Calscience until it was determined that analytical analysis was necessary.

A Z-layer sample was successfully collected at three of the four collection locations (B161-P1, B161-P2, and B161-P3). At the fourth station, B161-4, field personnel were unable to penetrate into the sediment column deep enough to collect the Z-layer sample.

2.1.4 Site Water Collection

Site water for elutriate analysis was collected by AMEC scientists near the proposed dredging area. Collection was performed using a 2.2-liter (L) Van Dorn water sampling device. The device was lowered to mid-water depth for collection to ensure that no floating debris or other contaminants (e.g., oil, foam, or similar material) were included in the sample. All site water was stored in 10-L polyethylene cubitainers and delivered to Calscience where it was used to prepare standard elutriates for chemical analysis. Seawater samples were collected on June 25, 2013, concurrent with the test sediment samples.

2.1.5 Elutriate Preparation

Elutriate testing was conducted to predict potential water quality compliance issues during dredging and disposal operations. Site water and sediment were combined to prepare the elutriate sample for chemical analyses. Only one elutriate analysis was performed using a site-wide composite sample prepared by combining sediment from all four core samples. No Z-layer material was included in the elutriate test.

The elutriate sample was prepared by combining the site-wide composite sample with site water at a 1:4 part sediment to water ratio. The sediment:water combination was vigorously mixed, then left to settle. The supernatant removed from the surface of the mixing vessel was the elutriate test material. The elutriate sample was prepared by Calscience in its laboratory according to the procedures outlined in the Inland Testing Manual (ITM USEPA/USACE, 1998).

2.2 Sample Documentation, Handling, and Delivery

Sample documentation followed procedures included in the SAP. The integrity of each sample from the time of collection to the point of data reporting was maintained throughout the study by recording accurate core logs, filling out chain-of-custody forms at the time of sample collection, and photographically documenting each core.

Once each sediment sample was photographed and logged, unique strata were sampled for archival purposes. The remaining sample material was transferred into a lined bucket, placed on ice, and delivered to the analytical laboratory on June 25, 2013. Core sample homogenization and subsampling was performed by Calscience staff in a controlled-laboratory setting. This process included the following steps:

1. Homogenized sediment from each core location separately and extracted an archive sample,
2. Prepared two composite samples by mixing the remainder of sediment from the four individual core samples as follows:
   a. Composite A—B161-P1 and B161-P2
   b. Composite B—B161-P3 and B161-P4
3. Subsampled each composite for chemical and physical testing and retained an archive of the remaining sediment,
4. Combined sediment from all four push core samples to create an area composite sample of the entire footprint for elutriate analysis.

Archived samples were collected and handled in the same manner as the test material, then frozen to −20 degrees Celsius (°C) and stored at Calscience.

2.3 Chemical and Physical Analyses

The results of the physical and chemical analyses conducted on the sediment, elutriate, and site water samples are discussed below. USEPA- and USACE-approved analysis methods and the target detection limits for sediment and elutriate testing are listed in Table 2-2.

2.3.1 Particle Size Analyses

Grain-size analysis was performed on each composite sample at Calscience using a laser method (American Society for Testing Materials [ASTM] D4464M). Gravel, sand, silt, and clay were reported to 0.1 percent (%), along with the corresponding millimeter and phi sizes, and a cumulative grain-size distribution diagram. The grain-size distribution and the mean grain size of each sample were classified by Calscience using Plumb (1981).

2.3.2 Chemical Analyses

Full laboratory reports, including: USEPA- and USACE-approved analytical methods, detection limits, and relevant QA/QC information are in Appendix C. A sample analysis matrix of whole sediment chemicals is in Table 2-2. Calscience, a California-accredited laboratory, conducted all analytical chemical analyses on both the sediment and elutriate samples. For the Project sediment characterization study, both composite samples and all available Z-layer samples were analyzed for the full list of analytes in Table 2-2.

2.3.2.1 Leaching Analysis

State and federal leaching analysis is required by the State of California for disposal of sediment waste streams that contain samples that exceed pre-defined trigger levels for several metals and organic compounds. The two types of leaching analysis are the STLC waste extraction test (WET) and the TCLP.

- STLC analysis is required by the state and uses the procedure from 22 California Code of Regulations (CCR) Division 4.5, Chapter 11, Appendix II. For this test, solids are milled to 0.45 microns and diluted 10:1 with citric acid (sodium citrate) solution. The sample is then leached for 48 hours and tested for required analytes.
- TCLP analysis is a federal requirement that separates solids and liquids in samples and recombines them for analysis. Acetic acid is then used at a ratio of 20 parts acid to 1 part sample to leach contaminants from a waste stream in a tumbler over a period of 18 hours.

The results of both tests are compared to numbers listed in Tables I, II, and III of CCR Title 22 66261.24 as the regulatory level in milligrams per liter (mg/L). If the concentrations are equal to or greater than this concentration, the waste material is considered hazardous waste.

For a particular analyte, trigger levels for STLC analysis are defined as 10 times the STLC value, while TCLP trigger levels are typically defined as 20 times the STLC value. However, note that there are fewer TCLP threshold values than with STLC threshold values. For the Project sediment characterization study, STLC leaching analysis was conducted on the composite samples for the analytes lead and copper, and TCLP leaching analysis was conducted for lead only.

Table 2-2.
Chemical Analyses of Sediment and Elutriate Samples

Analyte	Analysis Method	Sediment Target Detection Limit[a,b]	Elutriate Target Detection Limit[a,b]	Leachate Target Detection Limit
Total Solids	SM 2540 B	0.1%	N/A	N/A
Total Organic Carbon	9060	0.1%	N/A	N/A
Total Ammonia	SM 4500-NH_3 B/C (M)[c]	0.2 mg/kg	N/A	N/A
Total Sulfides	376.2M[c]	0.5 mg/kg	N/A	N/A
Soluble Sulfides	SM 4500 S2 - D	0.5 mg/kg	N/A	N/A
Oil and Grease	EPA 413.2M	10 mg/kg	N/A	N/A
Arsenic	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Cadmium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Chromium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Copper	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Lead	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Mercury	7471A[d]	0.02 mg/kg	0.0002 mg/L	N/A
Nickel	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Selenium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Silver	6020/6010B[d]	0.1 mg/kg	0.001 mg/L	N/A
Zinc	6020/6010B[d]	1.0 mg/kg	0.005 mg/L	N/A
Total Petroleum Hydrocarbons (C6–C44)	EPA 8015B(M)/8015B	5.0 mg/kg	N/A	N/A
Total Recoverable Petroleum Hydrocarbons	418.1M[d]	10 mg/kg	N/A	N/A
Polycyclic Aromatic Hydrocarbons[e]	8270C SIM/ GC/TQ[d]	10 µg/kg	0.2 µg/L	N/A
Chlorinated Pesticides[f]	8081A[d]	1.0–20 µg/kg[j]	0.1 µg/L	N/A
Polychlorinated Biphenyl (PCB) Congeners[g]	8270C SIM PCB [d]	0.5 µg/kg	0.02 µg/L	N/A
Phenols	8270C SIM[d]	20–100 µg/kg	N/A	N/A
Phthalates	8270C SIM[d]	10 µg/kg	N/A	N/A
Pyrethroids[h]	GC/MS	0.5–1.0 µg/kg	N/A	N/A
Organotins	Rice/Krone[i]	3.0 µg/kg	3.0 ng/L	N/A
Soluble Threshold Limit Concentration	T22.11.5. AII/6010B	N/A	N/A	0.1 mg/L
Toxicity Characteristic Leaching Procedure	EPA 1311/6010B	N/A	N/A	0.1 mg/L

Notes:

[a] Sediment minimum detection limits are on a dry-weight basis.

[b] Detection limits were provided by Calscience Environmental Laboratories, Inc.

[c] *Standard Methods for the Examination of Water and Wastewater*, 19th edition, American Public Health Association et al., 1995

[d] EPA 1986-1996. SW -846. Test Methods for Evaluating Solid Waste: *Physical/Chemical Methods*, 3rd Edition

[e] Includes 1,6,7-trimethylnapthalene, 1-methylnapthalene, 1-methylphenanthrene, 2,6-dimethylnapthalene, naphthalene, acenaphthylene, acenaphthene, anthracene, fluorene, phenanthrene, fluoranthene, Pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, biphenyl, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenz(a,h)anthracene, and benzo(g,h,i)perylene.

[f] Includes aldrin, α-benzene hexachloride (BHC), β-BHC, γ-BHC (lindane), δ-BHC, chlordane, 2,4- and 4,4-dichlorodiphenyldiethane (DDD), 2,4- and 4,4- dichlorodiphenylethylene (DDE), 2,4- and 4,4- dichlorodiphenyltrichloroethane (DDT), dieldrin, trans-nonachlor, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, heptachlor, heptachlor epoxide, methoxychlor, toxaphene, alpha-chlordane, gamma-chlordane, cis-nonachlor, and oxychlordane..

[g] Polychlorinated biphenyls (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)

[h] Allethrin (bioallethrin), bifenthrin, cyfluthrin-beta (baythroid), cyhalothrin-lamba, cypermethrin, deltamethrin (decamethrin), esfenvalerate, fenpropathrin (danitol), fenvalerate (sanmarton), fluvalinate permethrin (cis and trans), resmethrin (bioresmethrin), resmethrin, sumithrin (phenothrin}, tetramethrin, and tralomethrin.

[i] Rice, C.D., F.A. Espourteille, and R.J. Huggett. 1987. Analysis of Tributyltin in Estuarine Sediments and Oyster Tissue, *Crassostrea virginica*. *Applied Organometallic Chemistry* 1: 541–544., or similar (e.g., Krone et al., 1989) Krone, C.A., D.W. Brown, D.G. Burrows, R.G. Bogar, S.L. Chan, and U. Varanasi, 1989. A Method for Analysis of Butyltin Species and Measurement of Butyltins in Sediment and English Sole Liver from Puget Sound. Marine Environmental Research 27: 1–18.

[j] Except toxaphene, which is 1,000 micrograms per kilogram (parts per billion)

% - percent
µg/kg - micrograms per kilogram (parts per billion)
µg/L - micrograms per liter
EPA - Environmental Protection Agency
GC - gas chromatography
(M) - modified
mg/kg - milligrams per kilogram (parts per million)
N/A - not applicable
ng/L - nanograms per liter
mg/L - milligrams per liter
SM - Standard Method
SIM - selective ion monitoring
TOC - total organic carbon
TQ - toxicity quotient

3.0 RESULTS

3.1 Physical Characteristics

Grain size analysis of the two dredged material composite samples showed that the mean grain size of Composite A was medium sand (0.484 millimeters [mm]) and Composite B was coarse sand (0.527 mm) (Plumb, 1981). However, the proportion of silt sized grains in each sample was greater than 40 percent. A summary of grain size fractions is in Table 3-1. The results of the physical analysis are also included in the laboratory data report from Calscience (Appendix C).

Table 3-1.
Grain Size Results

Analytical Method	Grain Size	Unit	B161 Composite A	B161 Composite B
ASTM D464 (M)	Clay	%	17.33	12.05
ASTM D464 (M)	Silt	%	58.61	40.18
ASTM D464 (M)	Total Silt and Clay	%	75.94	52.23
ASTM D464 (M)	Very Fine Sand	%	8.31	10.62
ASTM D464 (M)	Fine Sand	%	0.46	11.31
ASTM D464 (M)	Medium Sand	%	ND	9.85
ASTM D464 (M)	Coarse Sand	%	ND	1.65
ASTM D464 (M)	Very Coarse Sand	%	ND	ND
ASTM D464 (M)	Gravel	%	15.29	14.33

Notes:
% - percent
ASTM - American Society for Testing and Materials
(M) - modified
ND - non-detect

3.2 Analytical Chemistry Results

Two sediment samples, one elutriate sample, and one site water sample were evaluated for the analyses in Table 2-2. Sediment chemistry was initially evaluated in dry weight in conjunction with elutriate and site water testing. The results for sediment, elutriate, and site water tests are presented in Sections 3.2.1 and 3.2.2, respectively. The dry weight results of the chemical analyses indicated that several analytes were detected at elevated concentrations. Dry weight results were then converted to wet weight and compared to California Title 22 Total Threshold Limit Concentration (TTLC) concentrations to see if the dredged material may be classified as hazardous waste. This review is discussed in Section 3.2.3.

Based on wet weight result comparisons to TTLC values and STLC and TCLP trigger levels, additional testing was performed. The results of the analysis are discussed in Section 3.2.4.

3.2.1 Sediment Chemistry Results

Dry weight sediment chemistry results are summarized in Table 3-2. Sediment chemistry results in dry weight are also included in the laboratory data report from Calscience (Appendix C). The results of the chemical analyses, in milligrams per kilogram (mg/kg) dry weight, are compared to the effects range low (ERL) and the effects range median (ERM) screening levels of the National Oceanographic and Atmospheric Administration (NOAA).

Chlorinated pesticides and phenols were non-detect in all samples. There are no sediment quality guidelines for pyrethroid pesticides, phthalates, TPH, and organotins. The results for these analytes are in Tables 3-2 and Table 3-4, but are not summarized in this text because of the low concentration levels observed.

3.2.1.1 Comparison to Sediment Quality Screening Levels

The sediment chemical analyses results in Table 3-2 are compared to ERL and ERM sediment quality guidelines as a relative screening measure of sediment quality (Buchman, 2008). These benchmark values for sediment quality were developed in cooperation with NOAA in 1995, and then were updated in 2008. In addition, various guideline values have been developed to screen sediment results to evaluate potential effects on sediment-associated biota. The ERL and ERM guideline values were derived by matching chemical and biological data.

The ERL values are the lower-tenth-percentile concentrations; the ERM values are the median concentrations at which statistically significant biological effects have been reported. These values were calculated using a large database of study results, including laboratory and field-generated data for a large number of end points for species and other biological effects. In general, the ERL values are concentrations below which biological effects are rarely expected to occur; ERM values are concentrations above which biological effects are expected to occur (Buchman, 2008). Due to the wide range of site-specific factors that may influence the toxicity and bioavailability of any given compound in the sediment, these guidelines are intended for use not as strict criteria for regulatory application, but rather as general screening gauges.

Metals

Composite A contained three metals (arsenic, cadmium, and nickel) and Composite B contained two metals (arsenic and nickel) that were measured above their ERLs but below their ERMs. Four of the metals analyzed (copper, lead, mercury, and zinc) exceeded their ERM levels in both composite samples.

Z-layer sediment samples also contained metal concentrations that exceeded ERL values—arsenic, copper, lead, and zinc in P1 sediments; arsenic and copper in P2 sediment; and cadmium and mercury in P3 sediment—and exceeded ERM values (mercury in P1 sediments and copper, and lead, and zinc in P3 sediments). All metals except cadmium and silver were detected in the P2 sediments, but none exceeded the ERL or ERM guideline levels.

Table 3-2.
Berth 161 Sediment Chemistry Results Summary

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-Layer	B161 Area A-P2 Z-Layer	B161 Composite B	B161 Area B-P3 Z-Layer
Solids, Total	Gen. Chem.	%	.	.	80.8	79.0	76.8	85.6	81.4
Total Organic Carbon			.	.	1.90	1.00	0.180	1.40	3.50
Ammonia (as N)		mg/kg	.	.	2.10	18.0	18.0	0.650	41.0
Sulfide, Total			.	.	2.50	4.60	5.10	3.50	4.40
Sulfide, Dissolved			.	.	ND <0.10	ND < 0.100	ND < 0.100	ND< 10.0	ND < 0.100
Oil and Grease			.	.	3400	6200	54.0	4500	19000
Arsenic	Metals	mg/kg	**8.2**	**70**	**25.7**	**9.31**	**8.24**	**19.9**	5.97
Cadmium			**1.2**	**9.6**	**1.22**	1.08	ND < 0.130	1.12	**1.36**
Chromium			**81**	**370**	44.0	13.2	19.9	34.8	14.7
Copper			**34**	**270**	**2210**	**144**	**35.2**	**2520**	**322**
Lead			**46.7**	**218**	**353**	**73.3**	7.13	**384**	**1110**
Mercury			**0.15**	**0.71**	**6.59**	**0.846**	0.0398	**2.26**	**0.522**
Nickel			**20.9**	**51.6**	**34.9**	11.1	14.8	**27.5**	11.8
Selenium			.	.	0.370	ND <0.127	0.136	0.303	0.291
Silver			**1.0**	**3.7**	0.267	ND <0.127	ND < 0.130	0.273	0.154
Zinc			**150**	**410**	**922**	**282**	55.2	**834**	**605**
C6	TPH	mg/kg	.	.	ND <31.0	ND < 63.0	ND < 6.50	ND < 29.0	ND < 61.0
C7			.	.	ND <31.0	ND < 63.0	ND < 6.50	ND < 29.0	ND < 61.0
C8			.	.	ND <31.0	ND < 63.0	ND < 6.50	ND < 29.0	ND < 61.0
C9-C10			.	.	ND <31.0	ND < 63.0	ND < 6.50	ND < 29.0	ND < 61.0
C11-C12			.	.	ND <31.0	ND < 63.0	ND < 6.50	ND < 29.0	ND < 61.0
C13-C14			.	.	ND <31.0	ND < 63.0	ND < 6.50	ND < 29.0	140
C15-C16			.	.	49.0	120	ND < 6.50	38.0	460
C17-C18			.	.	84.0	150	ND < 6.50	62.0	720
C19-C20			.	.	100	170	ND < 6.50	98.0	760
C21-C22			.	.	110	160	ND < 6.50	83.0	730
C23-C24			.	.	100	210	ND < 6.50	87.0	630

Table 3-2.
Berth 161 Sediment Chemistry Results Summary (Cont.)

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-layer	B161 Area A-P2 Z-layer	B161 Composite B	B161 Area B-P3 Z-layer
C25-C28	TPH	mg/kg	-	-	170	360	ND < 6.50	140	990
C29-C32			-	-	220	480	ND < 6.50	200	1100
C33-C36			-	-	150	410	ND < 6.50	130	850
C37-C40			-	-	120	320	ND < 6.50	92.0	560
C41-C44			-	-	55.0	200	ND < 6.50	ND < 29.0	320
C6-C44 Total			-	-	1200	2600	ND < 6.50	960	7200
TRPH	—	mg/kg	-	-	2500	4800	50.0	3500	15000
1,6,7-Trimethylnaphthalene	LMW PAH	µg/kg	-	-	ND < 120	60.0	ND < 13.0	ND < 120	ND< 250
1-Methylnaphthalene			**80**	**800**	ND < 120	**130**	ND < 13.0	ND < 120	ND < 250
1-Methylphenanthrene			-	-	ND < 120	390	ND < 13.0	ND < 120	ND < 250
2,6-Dimethylnaphthalene			-	-	ND < 120	100	ND < 13.0	ND < 120	ND < 250
Acenaphthene			**16**	**500**	**140**	**630**	ND < 13.0	**110**	ND < 250
Acenaphthylene			**44**	**640**	**320**	**230**	ND < 13.0	**290**	**340**
Anthracene			**853**	**1100**	730	**1300**	ND < 13.0	720	800
Benzo (a) Anthracene	HMW PAH	µg/kg	**261**	**1600**	**1200**	**2000**	ND < 13.0	**2100**	**1300**
Benzo (a) Pyrene			**430**	**1600**	**2200**	**3400**	20.0	**2700**	**2700**
Benzo (b) Fluoranthene			-	-	2500	3600	34.0	3500	3600
Benzo (e) Pyrene			-	-	2300	2100	18.0	2600	2100
Benzo (g,h,i) Perylene			-	-	1500	1200	14.0	1500	670
Benzo (k) Fluoranthene			-	-	2200	1800	24.0	2600	3000
Biphenyl			-	-	ND < 120	41.0	ND < 13.0	ND < 120	ND < 250
Chrysene			**384**	**2800**	**1900**	**2100**	ND < 13.0	**3100**	**1200**
Dibenz (a,h) Anthracene			**63.4**	**260**	**430**	**420**	ND < 13.0	**480**	**270**
Dibenzothiophene			-	-	ND < 120	130	ND < 13.0	ND < 120	ND < 250
Fluoranthene			**600**	**5100**	**2700**	**4100**	13.0	**5100**	**7400**
Fluorene			**19**	**540**	**230**	**580**	ND < 13.0	**160**	ND < 250

Table 3-2.
Berth 161 Sediment Chemistry Results Summary (Cont.)

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-layer	B161 Area A-P2 Z-layer	B161 Composite B	B161 Area B-P3 Z-layer
Indeno (1,2,3-c,d) Pyrene	HMW PAH	µg/kg			1500	1200	ND < 13.0	1500	670
Naphthalene	LMW PAH		**160**	**2100**	ND < 120	**180**	ND < 13.0	**1400**	**560**
Perylene	HMW PAH				790	860	ND < 13.0	1000	2200
Phenanthrene	LMW PAH		**240**	**1500**	**1700**	**4700**	ND < 13.0	**1700**	**620**
Pyrene	HMW PAH		**665**	**2600**	**6500**	**6100**	49.0	**7100**	**25000**
Total Detectable PAHs	PAH		**4022**	**44792**	**28840**	**37351**	172	**37660**	**52430**
2,3,4,6-Tetrachlorophenol	Phenols	µg/kg			ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2,6-Dichlorophenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2,4,5-Trichlorophenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2,4,6-Trichlorophenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2,4-Dichlorophenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2,4-Dimethylphenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2,4-Dinitrophenol					ND < 6200	ND < 1300	ND <650	ND <5800	ND < 12000
2-Chlorophenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2-Methylnaphthalene			**70**	**670**	ND < 120	**150**	ND < 13.0	ND < 120	ND < 250
2-Methylphenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
2-Nitrophenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
3/4-Methylphenol					ND < 120	31.0	ND < 13.0	ND < 120	ND < 250
4,6-Dinitro-2-Methylphenol					ND < 6200	ND < 1300	ND < 650	ND <5800	ND < 12000
4-Chloro-3-Methylphenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
4-Nitrophenol					ND < 6200	ND < 1300	ND < 650	ND <5800	ND < 12000
Pentachlorophenol					ND < 6200	ND < 1300	ND < 650	ND <5800	ND < 12000
Phenol					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND < 250
Bis(2-Ethylhexyl) Phthalate	Phthalate	µg/kg			1300	160	160	1200	2500
Butyl Benzyl Phthalate					ND < 120	ND < 25.0	16.0	ND < 120	ND <250
Diethyl Phthalate					ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND <250
Dimethyl Phthalate					290	ND < 25.0	ND < 13.0	200	ND <250

Table 3-2.
Berth 161 Sediment Chemistry Results Summary (Cont.)

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-layer	B161 Area A-P2 Z-layer	B161 Composite B	B161 Area B-P3 Z-layer
Di-n-Butyl Phthalate	Phthalate	µg/kg	-	-	ND < 120	ND < 25.0	51.0	ND < 120	ND <250
Di-n-Octyl Phthalate			-	-	ND < 120	ND < 25.0	ND < 13.0	ND < 120	ND <250
2,4'-DDD	Chlor. Pest.	µg/kg	-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
2,4'-DDE			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
2,4'-DDT			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
4,4'-DDD			**2.0**	**20**	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
4,4'-DDE			**2.2**	**2.2**	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
4,4'-DDT			**1.0**	**7.0**	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Total Detectable DDTs			**5.2**	**29.2**	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Aldrin	Chlor. Pest.	µg/kg	-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.20	ND < 1.20
Alpha-BHC			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Beta-BHC			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Delta-BHC			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Gamma-BHC			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Chlordane			**0.5**	**6.0**	ND < 12.0	ND > 13.0	ND < 13.0	ND < 12.0	ND < 12.0
Dieldrin			**0.02**	**8**	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Trans-nonachlor			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Endosulfan I			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Endosulfan II			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Endosulfan Sulfate			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Endrin			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Endrin Aldehyde			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Endrin Ketone			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Heptachlor			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Heptachlor Epoxide			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Methoxychlor			-	-	ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Toxaphene			-	-	ND <25.0	ND <25	ND < 26.0	ND < 23.0	ND < 25.0

Table 3-2.
Berth 161 Sediment Chemistry Results Summary (Cont.)

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-layer	B161 Area A-P2 Z-layer	B161 Composite B	B161 Area B-P3 Z-layer
Alpha Chlordane	Chlor. Pest.	µg/kg			ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Gamma Chlordane					ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Cis-nonachlor					ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
Oxychlordane					ND < 1.20	ND < 1.30	ND < 1.30	ND < 1.2	ND < 1.20
PCB018	PCB Cong.	µg/kg			8.40	7.40	ND < 0.650	16.0	43.0
PCB028					7.30	7.20	ND < 0.650	19.0	ND < 1.2
PCB037					ND <0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.2
PCB044					6.00	3.70	ND < 0.650	1.50	22.0
PCB049					41.0	46.0	ND < 0.650	77.0	160
PCB052					9.30	5.50	ND < 0.650	8.90	69.0
PCB066					3.40	ND < 0.630	ND < 0.650	5.60	ND < 1.2
PCB070					5.50	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.2
PCB074					3.50	ND < 0.630	ND < 0.650	ND < 0.580	1.90
PCB077					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB081					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB087					5.10	ND < 0.630	ND < 0.650	7.40	35.0
PCB099					6.20	ND < 0.630	ND < 0.650	8.50	ND < 1.20
PCB101					12.0	ND < 0.630	ND < 0.650	12.0	ND < 1.20
PCB105					8.80	ND < 0.630	ND < 0.650	7.90	ND <1 .20
PCB110					13.0	ND < 0.630	ND < 0.650	16.0	19.0
PCB114					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB118					3.20	ND < 0.630	ND < 0.650	3.00	ND < 1.20
PCB119					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB123					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB126					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB128					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB138/158					10.0	ND < 1.30	ND < 1.30	12.0	ND < 2.50

Table 3-2.
Berth 161 Sediment Chemistry Results Summary (Cont.)

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-layer	B161 Area A-P2 Z-layer	B161 Composite B	B161 Area B-P3 Z-layer
PCB149	PCB Cong.	µg/kg			7.30	ND < 0.630	ND < 0.650	9.20	ND < 1.20
PCB151					7.00	ND < 0.630	ND < 0.650	7.80	ND < 1.20
PCB153					7.00	ND < 0.630	ND < 0.650	9.20	ND < 1.20
PCB156					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB157					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB167					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB168					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB169					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB170					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB177					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB180					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB183					0.720	ND < 0.630	ND < 0.650	0.600	ND < 1.20
PCB187					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB189					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB194					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB201					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
PCB206					ND < 0.620	ND < 0.630	ND < 0.650	ND < 0.580	ND < 1.20
Total Detectable PCBs			**22.7**	**180**	**165**	**69.8**	ND	**222**	**350**
Allethrin	Pyrethroids	µg/kg			ND < 6.20	ND < 0.63	ND < 0.650	ND < 5.80	ND < 0.61
Bifenthrin					3.70J	1.40	ND < 0.650	3.6	1.80
Cyfluthrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.80	ND < 0.61
lambda-Cyhalothrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.80	ND < 0.61
Cypermethrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.80	ND < 0.61
Deltamethrin/Tralomethrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.80	ND < 0.61
Fenpropathrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.8	ND < 0.61
Fenvalerate/Esfenvalerate					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.8	ND < 0.61
Fluvalinate					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.8	ND < 0.61

Table 3-2.
Berth 161 Sediment Chemistry Results Summary (Cont.)

Compound Name	Type	Unit (Dry Weight)	ERL	ERM	B161 Composite A	B161 Area A-P1 Z-layer	B161 Area A-P2 Z-layer	B161 Composite B	B161 Area B-P3 Z-layer
Permethrin (cis/trans)	Pyrethroids	µg/kg			42.0	11.0	0.250	46.0	14.0
Phenothrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.8	ND < 0.61
Resmethrin/Bioresmethrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.8	ND < 0.61
Tetramethrin					ND < 6.20	ND < 0.630	ND < 0.650	ND < 5.8	ND < 0.61
Total Pyrethroids					42.0	12.4	0.250	49.6	15.8
Dibutyltin	Organotins	µg/kg			1500	ND < 3.80	ND < 3.90	4000	ND < 3.70
Monobutyltin					140	ND < 3.80	ND < 3.90	410	ND < 3.70
Tetrabutyltin					ND < 3.70	ND < 3.80	ND < 3.90	6.50	ND < 3.70
Tributyltin					230	ND < 3.80	ND < 3.90	1000	ND < 3.70
Total Organotins					1870	ND < 3.80	ND < 3.90	5417	ND < 3.70

Notes:
J - concentrations greater than or equal to MDL but less than RL
Bold - values exceeding ERL
Bold - values exceeding ERM
< - less than
% - percent
µg/kg - microgram per kilogram
cong. - congeners
DDT - dichlorodiphenyltrichloroethane
ERL - effects range low
ERM - effects range medium
mg/kg - milligram per kilogram
MDL - method detection limit
ND - non-detect
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl
RL - reporting limit
TOC - total organic carbon
TPH - total petroleum hydrocarbons
TRPH - total recoverable petroleum hydrocarbons
TTLC - total threshold limit concentration

Polycyclic Aromatic Hydrocarbons

Several individual PAH concentrations were measured above their ERLs but below their ERMs including total detectable PAHs in both Composite A and Composite B. In addition, four individual PAH results exceeded their ERMs in Composite A and seven individual PAHs exceeded their ERMs in Composite B.

PAHs were also detected throughout the Z-layer sediment samples; most were detected in the P1 and P3 sediments, which had 10 ERL exceedances (5 exceedances each in the P1 and P3 Z-layer sediments). Total PAHs exceeded the ERL in the P1 Z-layer sediment sample and exceeded the ERM in the P3 Z-layer sediment sample.

The total number of ERM exceedances in the Z-layer sediments was 14 (8 in the P1 sample and 4 in the P3 sample). Almost all phenols were not detected above the method detection limits (MDLs), except 2-methylnaphthalene and 3/4-methylphenol in P1 sediments. The concentration of phenol 2-methylnaphthalene also exceeded its ERL.

Polychlorinated Biphenyl Congeners

In sediment composite samples, PCB congener concentrations ranged from a high of 77 µg/kg (for PCB 049) to less than the detection limit. The total detectable concentrations of PCB congeners in Composites A and B were 165 µg/kg and 222 µg/kg, respectively. The total detectable PCBs in Composite A exceeded the ERL, while the result for Composite B exceeded the ERM.

P1 and P3 Z-layer samples both contained detectable levels of PCBs, while P2 sediments did not. Concentrations of individual PCBs were detected below ERLs and ERMs, but total PCBs in P1 (69.8 µg/kg) exceeded the ERL (22.7 µg/kg) and total PCBs in P3 (350 µg/kg) exceeded the ERM (180 µg/kg).

3.2.2 Elutriate Chemistry Results

Elutriate chemistry results are presented in Table 3-3. A more detailed chemistry summary and analytical chemistry data reports are provided as Appendix D. As outlined previously, all four core samples were combined to form one overall site composite sample for elutriate analysis. The chemical composition of the site water used to prepare the elutriate sample was also analyzed. The site water was evaluated to determine the ambient levels of the chemicals of concern at the dredging site. The site water underwent the same mixing method as that used for elutriate preparation, sans sediments.

Elutriate and site water chemistry results were compared to California Toxics Rule (CTR) criterion continuous concentrations (CCC) and criteria maximum concentration (CMC) values (EPA, 2000) (Table 3-3).

Metals
Of all the metals that were measured in the elutriate water, only copper (10.9 µg/L) and zinc (101 µg/L) concentrations exceeded their respective CCC criteria (3.1 µg/L and 81 µg/L, respectively) and CMC criteria (4. 8 µg/L and 90 µg/L, respectively) for the elutriate analysis. All other metals were below the CCC and CMC levels or were not detected.

Chlorinated Pesticides
Total DDTs were detected above the CCC value of 0.001 µg/L in the Berth 161 site water sample, but not in the elutriate sample. The concentration of total DDT was 0.040 µg/L.

3.2.3 Comparison to State and Federal Hazardous Waste Criteria

The sediment quality screening assessment discussed in Section 3.2.1 shows that several of the chemicals evaluated in the bulk sediment (metals, in particular) were found at high enough levels to warrant additional hazardous waste analyses. The results of the chemical analysis in wet weight are compared to California Title 22 Total Threshold Limit Concentrations (TTLC), and STLC and TCLP trigger levels. Table 3-4 summarizes the Berth 161 sediment chemistry results compared to TTLC regulatory criteria,[1] as well as to the STLC and TCLP trigger levels.

An exceedance of the TTLC criteria is a good indication that the sediment may be a hazardous waste; however, the decision whether to deem a waste stream as hazardous is based upon the results of the entire waste stream, not a single sample. Exceeding an STLC or TCLP trigger level for a particular analyte indicates that the sediment chemical level is high enough to warrant a STLC or TCLP leachability test. These tests are designed to predict the potential solubility of a contaminant following placement in a solid waste landfill.

Metals
While no metals were measured above TTLC criteria levels in the two composite samples, copper (1,786 mg/kg and 2,157 mg/kg) and lead (285 mg/kg and 329 mg/kg) concentrations in Composite A and B, respectively, exceeded their respective STLC trigger levels (250 mg/kg of copper and 50 mg/kg of lead). Mercury (5.32 mg/kg) levels also exceeded the STLC trigger level of 2.0 mg/kg and TCLP trigger level of 4.0 mg/kg in Composite A only. Furthermore, both composite samples exceeded the TCLP trigger level of 10.0 mg/kg for lead (Table 3-4).

None of the Z-layer samples tested exceeded TTLC criteria levels; however, Sample B-P3 Z-layer had a lead level of 904 mg/kg (wet weight), which was slightly below the TTLC criteria level of lead (1,000 mg/kg).

Metal levels in the Z-layer sediments were mostly detected below STLC and TCLP trigger levels, except for lead and copper. Lead concentrations were 57.9 mg/kg in the P1 Z-layer and 904 mg/kg in the P3 Z-layer; lead also exceeded the TCLP trigger level (100 mg/kg) in the P3 Z-layer sediments. The concentration of copper was 262 mg/kg in P3 Z-layer sediments, which exceeded the STLC trigger level of 250 mg/kg.

1. Note: TTLC criteria are in wet-weight units; consequently, the Berth 161 sediment chemistry results were converted to wet-weight concentrations for all the comparisons presented in Table 3-3 and discussed in this section.

Table 3-3.
Elutriate and Site Water Chemistry Summary

Analytical Method	Compound Name	Type	Unit	CCC	CMC	B161 Dredge Area Composite (Elutriate)	B161 Site Water
SM 2540 D	Total Suspended Solids	Gen. Chem.	mg/L	.	.	11.0	1.40
EPA 1640	Arsenic	Metals	µg/L	36	69	3.50	1.62
	Cadmium			9.3	42	0.581	0.0621
	Chromium			·	·	ND < 0.500	0.292J
	Copper			3.1	4.8	10.9	2.88
	Lead			8.1	210	1.38	0.132
EPA 7470A	Mercury			·	·	0.166	ND <0.0500
EPA 1640	Nickel			8.2	74	8.17	0.460
	Selenium			71	290	ND < 0.0500	0.0294J
	Silver			·	1.9	ND < 0.0500	ND <0.0500
	Zinc			81	90	101	8.23
EPA 8270C SIM PAHs	Naphthalene	LMW PAH	µg/L	·	·	ND <0.20	ND < 0.20
	2-Methylnaphthalene			·	·	ND <0.20	ND < 0.20
	1-Methylnaphthalene			·	·	ND <0.20	ND < 0.20
	Acenaphthylene			·	·	ND <0.20	ND < 0.20
	Acenaphthene			·	·	ND <0.20	ND < 0.20
	Fluorene	HMW PAH		·	·	ND <0.20	ND < 0.20
	Phenanthrene			·	·	ND <0.20	ND < 0.20
	Anthracene	LMW PAH		·	·	ND <0.20	ND < 0.20
	Fluoranthene	HMW PAH		·	·	ND <0.20	ND < 0.20
	Pyrene			·	·	0.320	ND < 0.20
	Benzo (a) Anthracene			·	·	ND <0.20	ND < 0.20
	Chrysene			·	·	ND <0.20	ND < 0.20
	Benzo (k) Fluoranthene			·	·	ND <0.20	ND < 0.20
	Benzo (b) Fluoranthene			·	·	ND <0.20	ND < 0.20
	Benzo (a) Pyrene			·	·	ND <0.20	ND < 0.20
	Indeno (1,2,3-c,d) Pyrene			·	·	ND <0.20	ND < 0.20

Table 3-3.
Elutriate and Site Water Chemistry Summary (Cont.)

Analytical Method	Compound Name	Type	Unit	CCC	CMC	B161 Dredge Area Composite (Elutriate)	B161 Site Water
EPA 8270C SIM PAHs	Dibenz (a,h) Anthracene	HMW PAH	µg/L	-	-	ND <0.20	ND < 0.20
	Benzo (g,h,i) Perylene			-	-	ND <0.20	ND < 0.20
	Benzo (e) Pyrene			-	-	ND <0.20	ND < 0.20
	Perylene			-	-	ND <0.20	ND < 0.20
	Biphenyl			-	-	ND <0.20	ND < 0.20
	1-Methylphenanthrene	LMW PAH		-	-	ND <0.20	ND < 0.20
	2,6-Dimethylnaphthalene			-	-	ND <0.20	ND < 0.20
	1,6,7-Trimethylnaphthalene			-	-	ND <0.20	ND < 0.20
	Total Detectable PAHs	PAH		-	-	0.320	ND < 0.20
EPA 8081A	2,4'-DDD	Chlor. Pest.	µg/L	-	-	ND < 0.0096	ND < 0.0098
	2,4'-DDE			-	-	ND < 0.0096	0.040
	2,4'-DDT			-	-	ND < 0.0096	ND < 0.0098
	4,4'-DDD			-	-	ND < 0.0096	ND < 0.0098
	4,4'-DDE			-	-	ND < 0.0096	ND < 0.0098
	4,4'-DDT			**0.001**	**0.13**	ND < 0.0096	ND < 0.0098
—	Total Detectable DDTs			**0.001**	**0.13**	ND	**0.040**
EPA 8081A	Aldrin	Chlor. Pest.	µg/L	-	**1.3**	ND < 0.0096	ND < 0.0098
	Alpha-BHC			-	-	ND < 0.0096	ND < 0.0098
	Chlordane			**0.004**	**0.09**	ND < 0.024	ND < 0.024
	Beta-BHC			-	-	ND < 0.0096	ND < 0.0098
	Delta-BHC			-	-	ND < 0.0096	ND < 0.0098
	Gamma-BHC			-	**0.16**	ND < 0.0096	ND < 0.0098
	Alpha Chlordane			-	-	ND < 0.0096	ND < 0.0098
	Dieldrin			-	-	ND < 0.0096	ND < 0.0098
	Trans-nonachlor			-	-	ND < 0.0096	ND < 0.0098
	Endosulfan I			-	-	ND < 0.0096	ND < 0.0098
	Endosulfan II			-	-	ND < 0.0096	ND < 0.0098
	Endosulfan Sulfate			-	-	ND < 0.0096	ND < 0.0098

Table 3-3.
Elutriate and Site Water Chemistry Summary (Cont.)

Analytical Method	Compound Name	Type	Unit	CCC	CMC	B161 Dredge Area Composite (Elutriate)	B161 Site Water
EPA 8081A	Endrin	Chlor. Pest.	µg/L	·	÷	ND < 0.0096	ND < 0.0098
	Endrin Aldehyde			·	÷	ND < 0.0096	ND < 0.0098
	Endrin Ketone			·	÷	ND < 0.0096	ND < 0.0098
	Heptachlor			·	÷	ND < 0.0096	ND < 0.0098
	Heptachlor Epoxide			·	÷	ND < 0.0096	ND < 0.0098
	Methoxychlor			·	÷	ND < 0.0096	ND < 0.0098
	Mirex			·	÷	ND < 0.0096	ND < 0.0098
	Toxaphene			·	÷	ND < 0.12	ND < 0.12
	Gamma Chlordane			·	÷	ND < 0.0096	ND < 0.0098
	Cis-nonachlor			·	÷	ND < 0.0096	ND <0.0098
	Oxychlordane			·	÷	ND < 0.0096	ND <0.0098
EPA 8270C SIM PCB Cong.	PCB018	PCB Cong.	µg/L	·	÷	ND < 0.020	ND < 0.020
	PCB028			·	÷	ND < 0.020	ND < 0.020
	PCB037			·	÷	ND < 0.020	ND < 0.020
	PCB044			·	÷	ND < 0.020	ND < 0.020
	PCB049			·	÷	ND < 0.020	ND < 0.020
	PCB052			·	÷	ND < 0.020	ND < 0.020
	PCB066			·	÷	ND < 0.020	ND < 0.020
	PCB070			·	÷	ND < 0.020	ND < 0.020
	PCB074			·	÷	ND < 0.020	ND < 0.020
	PCB077			·	÷	ND < 0.020	ND < 0.020
	PCB081			·	÷	ND < 0.020	ND < 0.020
	PCB087			·	÷	ND < 0.020	ND < 0.020
	PCB099			·	÷	ND < 0.020	ND < 0.020
	PCB101			·	÷	ND < 0.020	ND < 0.020
	PCB105			·	÷	ND < 0.020	ND < 0.020
	PCB110			·	÷	ND < 0.020	ND < 0.020
	PCB114			·	÷	ND < 0.020	ND < 0.020

Table 3-3.
Elutriate and Site Water Chemistry Summary (Cont.)

Analytical Method	Compound Name	Type	Unit	CCC	CMC	B161 Dredge Area Composite (Elutriate)	B161 Site Water
EPA 8270C SIM PCB Cong.	PCB118	PCB Cong.	µg/L	·	÷	ND < 0.020	ND < 0.020
	PCB119			·	÷	ND < 0.020	ND < 0.020
	PCB123			·	÷	ND < 0.020	ND < 0.020
	PCB126			·	÷	ND < 0.020	ND < 0.020
	PCB128			·	÷	ND < 0.020	ND < 0.020
	PCB138/158			·	÷	ND < 0.040	ND < 0.040
	PCB149			·	÷	ND < 0.020	ND < 0.020
	PCB151			·	÷	ND < 0.020	ND < 0.020
	PCB153			·	÷	ND < 0.020	ND < 0.020
	PCB156			·	÷	ND < 0.020	ND < 0.020
	PCB157			·	÷	ND < 0.020	ND < 0.020
	PCB167			·	÷	ND < 0.020	ND < 0.020
	PCB168			·	÷	ND < 0.020	ND < 0.020
	PCB169			·	÷	ND < 0.020	ND < 0.020
	PCB170			·	÷	ND < 0.020	ND < 0.020
	PCB177			·	÷	ND < 0.020	ND < 0.020
	PCB180			·	÷	ND < 0.020	ND < 0.020
	PCB183			·	÷	ND < 0.020	ND < 0.020
	PCB187			·	÷	ND < 0.020	ND < 0.020
	PCB189			·	÷	ND < 0.020	ND < 0.020
	PCB194			·	÷	ND < 0.020	ND < 0.020
	PCB201			·	÷	ND < 0.020	ND < 0.020
	PCB206			·	÷	ND < 0.020	ND < 0.020
—	Total Detectable PCBs			**0.03**	÷	ND	ND
EPA 8270D (M)/TQ/EI	Allethrin	Pyrethroids	µg/L	·	÷	ND < 0.0020	ND < 0.0019
	Bifenthrin			·	÷	ND < 0.0020	ND < 0.0019
	Cyfluthrin			·	÷	ND < 0.0020	ND < 0.0019
	lambda-Cyhalothrin			·	÷	ND < 0.0020	ND < 0.0019
	Cypermethrin			·	÷	ND < 0.0020	ND < 0.0019

Table 3-3.
Elutriate and Site Water Chemistry Summary (Cont.)

Analytical Method	Compound Name	Type	Unit	CCC	CMC	B161 Dredge Area Composite (Elutriate)	B161 Site Water
EPA 8270D (M)/TQ/EI	Deltamethrin/Tralomethrin	Pyrethroids	µg/L	·	÷	ND < 0.0020	ND < 0.0019
	Fenpropathrin			·	÷	ND < 0.0020	ND < 0.0019
	Fenvalerate/Esfenvalerate			·	÷	ND < 0.0020	ND < 0.0019
	Fluvalinate			·	÷	ND < 0.0020	ND < 0.0019
	Permethrin (cis/trans)			·	÷	0.0056	ND < 0.0038
	Phenothrin			·	÷	ND < 0.0020	ND < 0.0019
	Resmethrin/Bioresmethrin			·	÷	ND < 0.0020	ND < 0.0019
	Tetramethrin			·	÷	ND < 0.0020	ND < 0.0019
	Total Pyrethroids			·	÷	0.0056	ND
Organotins by Krone et al.	Dibutyltin	Organotins	ng/L	·	÷	100	ND < 3.00
	Monobutyltin			·	÷	ND < 3.00	ND < 3.00
	Tetrabutyltin			·	÷	ND < 3.00	ND < 3.00
	Tributyltin			·	÷	27.0	ND < 3.00
—	Total Organotins			·	÷	127	ND < 3.0

Notes:
Bold - values exceeding CCC
Bold - values exceeding CMC
< - less than
µg/L - micrograms per liter
BHC - benzene hexachloride
CCC - criterion continuous concentration
CMC - criterion maximum concentration
DDT - dichlorodiphenyltrichloroethane
mg/L - milligrams per liter
ng/L - nanograms per liter
ND - non-detect
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl

Table 3-4.
Berth 161 Sediment Chemistry Results Compared to Hazardous Waste Criteria

Analytical Method	Compound Name	Type	Unit (Wet Wt.)	TTLC	STLC Trigger Level	TCLP Trigger Level	B161 Composite A	Area A-P1 Z-Layer	Area A-P2 Z-Layer	B161 Composite B	Area B-P3 Z-Layer
SM 2540 B (M)	Solids, Total	Gen. Chem.	%	---	---	---	80.8	79.0	76.8	85.6	81.4
EPA 9060A	Total Organic Carbon			---	---	---	1.53	0.790	0.138	1.20	2.85
SM 4500-NH3 B/C (M)	Ammonia (as N)		mg/kg	---	---	---	1.70	14.2	13.8	0.556	33.4
EPA 376.2M	Sulfide, Total			---	---	---	2.02	3.63	3.92	3.00	3.58
EPA 376.2M	Sulfide, Dissolved			---	---	---	ND	ND	ND	ND	ND
EPA 413.2M	Oil and Grease			---	---	---	2747	4898	41.5	3852	15466
EPA 6020	Arsenic	Metals	mg/kg	**500**	**50**	***100***	20.8	7.35	6.33	17.0	4.86
EPA 6020	Cadmium			**100**	**10**	***20***	0.985	0.853	ND	0.959	1.11
EPA 6020	Chromium			**2500**	**50**	***100***	35.6	10.4	15.3	29.8	12.0
EPA 6020	Copper			**2500**	**250**	---	**1786**	114	27.0	**2157**	**262**
EPA 6020	Lead			**1000**	**50**	***100***	***285***	**57.9**	5.48	***329***	***904***
EPA 7471A	Mercury			**20**	**2.0**	***4.0***	***5.32***	0.668	0.031	1.93	0.425
EPA 6020	Nickel			**2000**	**200**	---	28.2	8.77	11.4	23.5	9.61
EPA 6020	Selenium			**100**	**10**	***20***	0.299	ND	0.104	0.259	0.237
EPA 6020	Silver			**500**	**50**	***100***	0.216	ND0	ND	0.233	0.125
EPA 6020	Zinc			**5000**	**2500**	---	745	223	42.4	714	492
EPA 8015B (M)	C6	TPH	mg/kg	---	---	---	ND	ND	ND	ND	ND
	C7			---	---	---	ND	ND	ND	ND	ND
	C8			---	---	---	ND	ND	ND	ND	ND
	C9-C10			---	---	---	ND	ND	ND	ND	ND
	C11-C12			---	---	---	ND	ND	ND	ND	ND
	C13-C14			---	---	---	ND	ND	ND	ND	114
	C15-C16			---	---	---	39.6	94.8	ND	32.5	374
	C17-C18			---	---	---	67.9	119	ND	53.1	586
	C19-C20			---	---	---	80.8	134	ND	83.8	619
	C21-C22			---	---	---	88.9	126	ND	71.0	594
	C23-C24			---	---	---	80.8	166	ND	74.4	513
	C25-C28			---	---	---	137	284	ND	120	806
	C29-C32			---	---	---	178	379	ND	171	895
	C33-C36			---	---	---	121	324	ND	111	692
	C37-C40			---	---	---	97.0	253	ND	78.7	456
	C41-C44			---	---	---	44.5	158	ND	ND	260
	C6-C44 Total			---	---	---	970	2054	ND	822	5861

Table 3-4.
Berth 161 Sediment Chemistry Results Compared to Hazardous Waste Criteria (Cont.)

Analytical Method	Compound Name	Type	Unit	TTLC	STLC Trigger Level	TCLP Trigger Level	B161 Composite A	Area A-P1 Z-Layer	Area A-P2 Z-Layer	B161 Composite B	Area B-P3 Z-Layer
EPA 418.1M	TRPH		mg/kg	---	---	---	2020	3792	38.4	2996	12210
EPA 8270C SIM	1,6,7-Trimethylnaphthalene	LMW PAH	µg/kg	---	---	---	ND	47.4	ND	ND	ND
	1-Methylnaphthalene			---	---	---	ND	103	ND	ND	ND
	1-Methylphenanthrene			---	---	---	ND	308	ND	ND	ND
	2,3,4,6-Tetrachlorophenol			---	---	---	ND	ND	ND	ND	ND
	2,6-Dichlorophenol			---	---	---	ND	ND	ND	ND	ND
	2,6-Dimethylnaphthalene			---	---	---	ND	79.0	ND	ND	ND
	Acenaphthene			---	---	---	113	498	ND	94.2	ND
	Acenaphthylene			---	---	---	259	182	ND	248	277
	Anthracene			---	---	---	590	1027	ND	616	651
	Benzo (a) Anthracene	HMW PAH		---	---	---	970	1580	ND	1798	1058
	Benzo (a) Pyrene			---	---	---	1778	2686	15.4	2311	2198
	Benzo (b) Fluoranthene			---	---	---	2020	2844	26.1	2996	2930
	Benzo (e) Pyrene			---	---	---	1858	1659	13.8	2226	1709
	Benzo (g,h,i) Perylene			---	---	---	1212	948	10.8	1284	545
	Benzo (k) Fluoranthene			---	---	---	1778	1422	18.4	2226	2442
	Biphenyl			---	---	---	ND	32.4	ND	ND	ND
	Chrysene			---	---	---	1535	1659	ND	2654	977
	Dibenz (a,h) Anthracene			---	---	---	347	332	ND	411	220
	Dibenzothiophene			---	---	---	ND	103	ND	ND	ND
	Fluoranthene			---	---	---	2182	3239	9.98	4366	6024
	Fluorene			---	---	---	186	458	ND	137	ND
	Indeno (1,2,3-c,d) Pyrene			---	---	---	1212	948	ND	1284	545
	Naphthalene	LMW PAH		---	---	---	ND	142	ND	1198	456
	Perylene	HMW PAH		---	---	---	638	679	ND	856	1791
	Phenanthrene	LMW PAH		---	---	---	1374	3713	ND	1455	505
	Pyrene	HMW PAH		---	---	---	5252	4819	37.6	6078	20350
	Total Detectable PAHs	PAH		---	---	---	23303	29507	132	32237	42678
EPA 8270C SIM	2,4,5-Trichlorophenol	Phenols	µg/kg	---	---	---	ND	ND	ND	ND	ND
	2,4,6-Trichlorophenol			---	---	---	ND	ND	ND	ND	ND
	2,4-Dichlorophenol			---	---	---	ND	ND	ND	ND	ND
	2,4-Dimethylphenol			---	---	---	ND	ND	ND	ND	ND
	2,4-Dinitrophenol			---	---	---	ND	ND	ND	ND	ND

Table 3-4.
Berth 161 Sediment Chemistry Results Compared to Hazardous Waste Criteria (Cont.)

Analytical Method	Compound Name	Type	Unit	TTLC	STLC Trigger Level	TCLP Trigger Level	B161 Composite A	Area A-P1 Z-Layer	Area A-P2 Z-Layer	B161 Composite B	Area B-P3 Z-Layer
EPA 8270C SIM	2-Chlorophenol	Phenols	µg/kg	---	---	---	ND	ND	ND	ND	ND
	2-Methylnaphthalene			---	---	---	ND	119	ND	ND	ND
	2-Methylphenol			---	---	---	ND	ND	ND	ND	ND
	2-Nitrophenol			---	---	---	ND	ND	ND	ND	ND
	3/4-Methylphenol			---	---	---	ND	24.5	ND	ND	ND
	4,6-Dinitro-2-Methylphenol			---	---	---	ND	ND	ND	ND	ND
	4-Chloro-3-Methylphenol			---	---	---	ND	ND	ND	ND	ND
	4-Nitrophenol			---	---	---	ND	ND	ND	ND	ND
	Pentachlorophenol			---	---	***17***	ND	ND	ND	ND	ND
	Phenol			---	---	---	ND	ND	ND	ND	ND
EPA 8270C SIM	Bis(2-Ethylhexyl) Phthalate	Phthalate	µg/kg	---	---	---	1050	126	123	1027	2035
	Butyl Benzyl Phthalate			---	---	---	ND	ND	12.3	ND	ND
	Diethyl Phthalate			---	---	---	ND	ND	ND	ND	ND
	Dimethyl Phthalate			---	---	---	230	ND	ND	170	ND
	Di-n-Butyl Phthalate			---	---	---	ND	ND	39.2	ND	ND
	Di-n-Octyl Phthalate			---	---	---	ND	ND	ND	ND	ND
EPA 8081A	2,4'-DDD	Chlor. Pest.	µg/kg	**1000**	**1.0**	---	ND	ND	ND	ND	ND
	2,4'-DDE			**1000**	**1.0**	---	ND	ND	ND	ND	ND
	2,4'-DDT			**1000**	**1.0**	---	ND	ND	ND	ND	ND
	4,4'-DDD			**1000**	**1.0**	---	ND	ND	ND	ND	ND
	4,4'-DDE			**1000**	**1.0**	---	ND	ND	ND	ND	ND
	4,4'-DDT			**1000**	**1.0**	---	ND	ND	ND	ND	ND
—	Total Detectable DDTs			**1000**	**1.0**	---	ND	ND	ND	ND	ND
EPA 8081A	Aldrin	Chlor. Pest.	µg/kg	**1400**	**1.4**	---	ND	ND	ND	ND	ND
	Alpha-BHC			---	---	---	ND	ND	ND	ND	ND
	Beta-BHC			---	---	---	ND	ND	ND	ND	ND
	Delta-BHC			---	---	---	ND	ND	ND	ND	ND
	Gamma-BHC			---	---	---	ND	ND	ND	ND	ND
	Chlordane			**2500**	**2.5**	***0.03***	ND	ND	ND	ND	ND
	Dieldrin			**8000**	**8.0**	---	ND	ND	ND	ND	ND
	Trans-nonachlor			---	---	---	ND	ND	ND	ND	ND
	Endosulfan I			---	---	---	ND	ND	ND	ND	ND
	Endosulfan II			---	---	---	ND	ND	ND	ND	ND

Table 3-4.
Berth 161 Sediment Chemistry Results Compared to Hazardous Waste Criteria (Cont.)

Analytical Method	Compound Name	Type	Unit	TTLC	STLC Trigger Level	TCLP Trigger Level	B161 Composite A	Area A-P1 Z-Layer	Area A-P2 Z-Layer	B161 Composite B	Area B-P3 Z-Layer
EPA 8081A	Endosulfan Sulfate	Chlor. Pest.	µg/kg	---	---	---	ND	ND	ND	ND	ND
	Endrin			200	0.2	0.4	ND	ND	ND	ND	ND
	Endrin Aldehyde			---	---	---	ND	ND	ND	ND	ND
	Endrin Ketone			---	---	---	ND	ND	ND	ND	ND
	Heptachlor			4700	4.7	9.4	ND	ND	ND	ND	ND
	Heptachlor Epoxide			4700	4.7	9.4	ND	ND	ND	ND	ND
	Methoxychlor			100000	100	---	ND	ND	ND	ND	ND
	Toxaphene			5000	5.0	10	ND	ND	ND	ND	ND
	Alpha Chlordane			---	---	---	ND	ND	ND	ND	ND
	Gamma Chlordane			---	---	---	ND	ND	ND	ND	ND
	Cis-nonachlor			---	---	---	ND	ND	ND	ND	ND
	Oxychlordane			---	---	---	ND	ND	ND	ND	ND
EPA 8270C SIM PCB Cong.	PCB018	PCB Cong.	µg/kg	---	---	---	6.79	5.85	ND	13.7	35.0
	PCB028			---	---	---	5.90	5.69	ND	16.3	ND
	PCB037			---	---	---	ND	ND	ND	ND	ND
	PCB044			---	---	---	4.85	2.92	ND	1.28	17.9
	PCB049			---	---	---	33.1	36.3	ND	65.9	130
	PCB052			---	---	---	7.51	4.35	ND	7.62	56.2
	PCB066			---	---	---	2.75	ND	ND	4.79	ND
	PCB070			---	---	---	4.44	ND	ND	ND	ND
	PCB074			---	---	---	2.83	ND	ND	ND	1.55
	PCB077			---	---	---	ND	ND	ND	ND	ND
	PCB081			---	---	---	ND	ND	ND	ND	ND
	PCB087			---	---	---	4.12	ND	ND	6.33	28.5
	PCB099			---	---	---	5.01	ND	ND	7.28	ND
	PCB101			---	---	---	9.70	ND	ND	10.3	ND
	PCB105			---	---	---	7.11	ND	ND	6.76	ND
	PCB110			---	---	---	10.5	ND	ND	13.7	15.5
	PCB114			---	---	---	ND	ND	ND	ND	ND
	PCB118			---	---	---	2.59	ND	ND	2.57	ND
	PCB119			---	---	---	ND	ND	ND	ND	ND
	PCB123			---	---	---	ND	ND	ND	ND	ND
	PCB126			---	---	---	ND	ND	ND	ND	ND
	PCB128			---	---	---	ND	ND	ND	ND	ND

Table 3-4.
Berth 161 Sediment Chemistry Results Compared to Hazardous Waste Criteria (Cont.)

Analytical Method	Compound Name	Type	Unit	TTLC	STLC Trigger Level	TCLP Trigger Level	B161 Composite A	Area A-P1 Z-Layer	Area A-P2 Z-Layer	B161 Composite B	Area B-P3 Z-Layer
EPA 8270C SIM PCB Cong.	PCB138/158	PCB Cong.	µg/kg	---	---	---	8.08	ND	ND	10.3	ND
	PCB149			---	---	---	5.90	ND	ND	7.88	ND
	PCB151			---	---	---	5.66	ND	ND	6.68	ND
	PCB153			---	---	---	5.66	ND	ND	7.88	ND
	PCB156			---	---	---	ND	ND	ND	ND	ND
	PCB157			---	---	---	ND	ND	ND	ND	ND
	PCB167			---	---	---	ND	ND	ND	ND	ND
	PCB168			---	---	---	ND	ND	ND	ND	ND
	PCB169			---	---	---	ND	ND	ND	ND	ND
	PCB170			---	---	---	ND	ND	ND	ND	ND
	PCB177			---	---	---	ND	ND	ND	ND	ND
	PCB180			---	---	---	ND	ND	ND	ND	ND
	PCB183			---	---	---	0.58	ND	ND	0.514	ND
	PCB187			---	---	---	ND	ND	ND	ND	ND
	PCB189			---	---	---	ND	ND	ND	ND	ND
	PCB194			---	---	---	ND	ND	ND	ND	ND
	PCB201			---	---	---	ND	ND	ND	ND	ND
	PCB206			---	---	---	ND	ND	ND	ND	ND
—	Total Detectable PCBs			**50000**	**50**	---	**133**	**55.1**	ND	**190**	**285**
EPA 8270D (M)/TQ/EI	Allethrin	Pyrethroids	µg/kg	---	---	---	ND	ND	ND	ND	ND
	Bifenthrin			---	---	---	2.99J	1.11	ND	3.08	1.47
	Cyfluthrin			---	---	---	ND	ND	ND	ND	ND
	lambda-Cyhalothrin			---	---	---	ND	ND	ND	ND	ND
	Cypermethrin			---	---	---	ND	ND	ND	ND	ND
	Deltamethrin/Tralomethrin			---	---	---	ND	ND	ND	ND	ND
	Fenpropathrin			---	---	---	ND	ND	ND	ND	ND
	Fenvalerate/Esfenvalerate			---	---	---	ND	ND	ND	ND	ND
	Fluvalinate			---	---	---	ND	ND	ND	ND	ND
	Permethrin (cis/trans)			---	---	---	33.9	8.69	0.192	39.4	11.4
	Phenothrin			---	---	---	ND	ND	ND	ND	ND
	Resmethrin/Bioresmethrin			---	---	---	ND	ND	ND	ND	ND
	Tetramethrin			---	---	---	ND	ND	ND	ND	ND
	Total Pyrethroids			---	---	---	33.9	9.80	0.192	42.5	12.9

Table 3-4.
Berth 161 Sediment Chemistry Results Compared to Hazardous Waste Criteria (Cont.)

Analytical Method	Compound Name	Type	Unit	TTLC	STLC Trigger Level	TCLP Trigger Level	B161 Composite A	Area A-P1 Z-Layer	Area A-P2 Z-Layer	B161 Composite B	Area B-P3 Z-Layer
Organotins by Krone et al.	Dibutyltin	Organotins	µg/kg	---	---	---	1212	ND	ND	3424	ND
	Monobutyltin			---	---	---	113	ND	ND	351	ND
	Tetrabutyltin			---	---	---	ND	ND	ND	5.56	ND
	Tributyltin			---	---	---	186	ND	ND	856	ND
—	Total Organotins			---	---	---	1511	---	---	4637	---

Notes:
bold - exceeds TTLC
bold - exceeds STLC trigger level
bold - exceeds TCLP trigger level
% - percent
µg/kg - micrograms per kilogram
SM - Standard Method
STLC - soluble threshold limit concentration
TCLP - toxicity characteristic leaching procedure
TTLC - total threshold limit concentration
mg/kg - milligrams per kilogram
ND - non-detect
PAH - polycyclic aromatic hydrocarbon
PCB - polychlorinated biphenyl

PCB Congeners

All of the composite and Z-layer samples tested had total PCB levels well below the California Title 22 TTLC value for total detectable PCBs (50,000 µg/kg) (Table 3-4). However, total PCB results for Composite A (133 µg/kg) and B (190 µg/kg) did exceed the STLC trigger level of 50 µg/kg. Two Z-layer sediment samples were also found to exceed the STLC trigger level: P1 Z-layer (55.1 µg/kg) and P3 Z-layer (285 µg/kg).

3.2.4 Soluble Threshold Limit Concentration and Toxicity Characteristic Leaching Procedure Results

As noted in Section 3.2, both copper and lead exceeded the STLC trigger levels and lead exceeded TCLP trigger levels in the bulk sediment chemistry analyses. Following consultation with Port staff on September 19, 2013, it was decided that additional extraction analyses were needed to help define additional disposal options. Therefore, STLC analyses were performed for Composite Area A and B samples for the analytes copper and lead, and TCLP analysis was conducted on Composite A and B samples for lead only.

3.2.4.1 Soluble Threshold Limit Concentration

In Composite A, concentrations of both metals (copper [32 mg/L] and lead [10.2 mg/L]) exceeded the respective STLC regulatory values (25 mg/L and 5.0 mg/L, respectively). In Composite B, lead was the only metal detected at a concentration that exceeded the STLC regulatory value, with a result of 14.5 mg/L (Table 3-5).

Table 3-5.
Soluble Threshold Limit Concentration and
Toxicity Characteristic Leaching Procedure Results

Compound	Unit	STLC Analyses			TCLP Analyses		
		STLC Regulatory Level	Composite A	Composite B	TCLP Regulatory Level	Composite A	Composite B
Copper	mg/L	**25.0**	**32.0**	0.250	N/A	N/A	N/A
Lead	mg/L	**5.00**	**10.2**	**14.5**	**5.00**	0.330	0.181

Notes:
bold - exceeded STLC levels.
N/A - not applicable
STLC - soluble threshold limit concentration
TCLP - toxicity characteristic leaching procedure

3.2.4.2 Toxicity Characteristic Leaching Procedure

The testing results for Composite A (0.33 mg/L) and Composite B (0.181 mg/L) did not exceed the TCLP regulatory value of 5.0 mg/L (Table 3-5).

3.3 Data Validation

Quality assurance data are presented in full detail within the original chemistry reports (Appendices C and D). This section summarizes the results of the QC procedures used to ensure that the chemistry data reported are valid.

3.3.1 Bulk Sediment Data Validation

Holding Times
All holding times were met.

Reporting Limits
The method detection limits (MDLs) were met.

Blanks
Concentrations of target analytes in the method blank were below reporting limits for all testing.

Laboratory Control Samples
A laboratory control sample (LCS) was analyzed for each applicable test; all parameters were within established control limits.

Surrogates
Surrogate recoveries for all applicable tests and samples were within acceptable control limits, with the following exceptions:

- For organotins by Krone et al., 1989, in sediment, the surrogate recovery was high outside of control limits in both samples.
- For PCB congeners by EPA 8270C SIM, the 2-fluorobiphenyl recovery for sample Composite A was low outside of the control limits.
- For chlorinated pesticides by EPA 8081A, the decachlorobiphenyl recovery was high outside of control limits in both samples.

Matrix Spikes
Matrix spiking was performed at the required frequencies.

3.3.2 Elutriate and Water Chemistry Data Validation

Holding Times
All holding times were met.

Calibration
Frequency and control criteria for initial and continuing calibration verifications were met.

Blanks
Concentrations of target analytes in the method blank were below reporting limits for all testing.

Reporting Limits
The MDLs were met.

Laboratory Control Samples
An LCS was analyzed for each applicable test.

Surrogates
Surrogate recoveries for all applicable tests and samples were within acceptable control limits.

3.3.3 Z-Layer Sediment Data Validation

Holding Times
All holding times were met, with the following exceptions:

- The samples were received and/or analyzed outside the EPA method recommended holding time for all analyses except metals and particle size. Calscience follows standard industry practice and the Puget Sound protocol for holding times in sediment samples, which allows extending the holding time up to one year if the sample is kept frozen after collection. The samples were frozen after collection (prior to holding time expiration) at −20ºC. Therefore, the results have not been flagged as exceeding the EPA recommended holding time.

Blanks
Concentrations of target analytes in the method blank were below reporting limits for all testing.

Reporting Limits
The MDLs were met.

Laboratory Control Samples
An LCS was analyzed for each applicable test; all parameters were within established control limits.

Matrix Spikes
Matrix spiking was performed on samples from within and outside of the Project area. The matrix spike parameters outside the acceptable control limits are noted as follows:

- For TRPH by EPA 418.1M, the recoveries were outside of the control limits; because the LCS recoveries were in control, the results are released with no further action.
- For pyrethroids by EPA 8270D (M)/TQ/EI, several of the recoveries were outside of the control limits; because the LCS recovery was in control, the results are released with no further action.
- For metals by EPA 6020, the zinc MSD recovery was outside the control limits; because the LCS recovery was in control, the results are released with no further action.

- For chlorinated pesticides by EPA 8081A, the endrin aldehyde recoveries were outside the control limits; because the LCS recovery was in control, the results are released with no further action.
- For organotins by Krone et al., 1989, the recoveries were outside the control limits; because the LCS recoveries were in control, the results are released with no further action.

Surrogates
Surrogate recoveries for all applicable tests and samples were within acceptable control limits, with the following exceptions:

- For chlorinated pesticides by EPA 8081A, the surrogate recoveries for samples B161-P1 Z-Layer and B161-P3 Z-Layer were outside the acceptable control limits.
- For PCB congeners by EPA 8270C SIM, the 2-fluorobiphenyl recovery was outside of acceptable control limits for sample B161-P3 Z-Layer.
- For organotins by Krone et al., 1989, the recoveries of both surrogates for samples B161-P1 Z-Layer and B161-P3 Z-Layer were outside the control limits.

3.3.4 STLC and TCLP Sediment Data Validation

Holding Times
All samples were analyzed within prescribed holding times and/or in accordance with the Calscience sample acceptance policy, unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40 Code of Federal Regulations (CFR) Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (Table II, Footnote 4) is considered a "field" test; the reported results are qualified as being received outside of the stated holding time, unless the sample is received at the laboratory within 15 minutes of the collection time.

Quality Control
All QC procedures were within established control limits, except where noted in the QC summary forms or described further in this report.

3.3.5 Elutriate Data Validation

Holding Times
All holding times were met.

Calibration
Frequency and control criteria for initial and continuing calibration verifications were met.

Blanks
Concentrations of target analytes in the method blank were below reporting limits for all testing.

Reporting Limits
The MDLs were met.

Laboratory Control Samples
An LCS was analyzed for each applicable test.

Matrix Spikes
Because of limited sample volume, matrix spiking was performed on the samples which were not collected for this sediment characterization study.

Surrogates
Surrogate recoveries for all applicable tests and samples were within acceptable control limits.

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4.0 DISCUSSION

The Port of Los Angeles is proposing to upgrade the marine railway facility located at Berth 161. A component of the upgrade will include dredging the top one foot of sediment located between the higher high tide line (+5.8 feet MLLW) to an elevation of approximately +0.5 feet MLLW offshore. The total dredge volume of the Project (including a one-foot overdredge) is approximately 375 cy. AMEC was contracted by the Port to conduct a sediment investigation of the Project sediments in order to determine the most suitable disposal location for the dredged materials. The Port's primary disposal location for the Berth 161 dredged materials is in the CDF located at Berths 243–245. A secondary option is upland disposal. Disposal suitability is based upon the chemical levels within the proposed dredged materials. The results of the sediment disposal suitability investigation are discussed below.

4.1 Sediment Chemistry

As mentioned above, disposal suitability of the Berth 161 dredged material is primarily based upon sediment contaminant levels. Four core samples were collected in the footprint (Cores 1 through 4). Cores 1 and 2 were combined to form a single composite (Composite A) and Cores 3 and 4 were combined to form Composite B.

The Berth 161 sediment quality assessment was conducted using an iterative approach. First, the two composite samples (A and B) were subjected to chemical analysis. The results of the composite sample chemical analyses in dry weight were compared to the ERL/ERM sediment guidelines to assess the general level of contaminants present in the proposed dredged materials. In addition, wet weight chemistry results were compared to Title 22 TTLC criteria to determine if the material may be classified as a hazardous waste. In addition, wet weight chemistry results were compared to the hazardous waste trigger levels (i.e. STLC and TCLP trigger levels). These trigger levels indicate if an additional hazardous material assessment is necessary (further discussed in Section 4.3, below).

The result of this assessment indicated that there were numerous metals (particularly copper, lead, mercury, and zinc), PAHs, and PCBs that exceeded ERM levels. None of the chemicals were found to exceed TTLC hazardous waste criteria; however, several metals and PCBs were found to exceed STLC/TCLP trigger levels.

Based upon these findings, it was determined that additional analyses should be performed on the archived samples. The additional analyses included conducting chemical tests on the three Z-layer samples as well as performing STLC/TCLP leachability tests for copper and lead on Composite Areas A and B samples.

As mentioned above, the original objective of this study was to evaluate the suitability of the proposed Berth 161 dredged material for disposal in the Berths 243–245 CDF. However, elevated chemical levels detected in the sediments indicate that placement of this material in the CDF is unlikely.

4.2 Elutriate Chemistry

Elutriate analyses are conducted in order to predict the potential release of soluble contaminants during dredging and dredged material disposal operations. The results of elutriate chemical analyses are compared to the chemical levels in the ambient site (i.e. site water) as well as the criteria listed in the CTR. Comparisons to the CTR criteria are used to determine whether dredging and disposal operations may result in an unacceptable release of contaminants into the water column. In addition, these results can also be used to determine what type(s) of Best Management Practices would need to be implemented during the dredging project in order to mitigate potential water quality impacts.

For this Project, one composite sample was prepared for elutriate analysis by combining an aliquot of sediment collected at each of the four push core locations. The test sediment composite was mixed with water collected from the proposed dredging water to form the elutriate samples.

The results of the elutriate chemistry indicated only two exceedances of water ambient water quality criteria. The metals copper and zinc were detected at concentrations that exceeded their respective CTR CMC values. No other analytes exceeded either the CCC or CMC thresholds, indicating that the metals copper and zinc are the only compounds that may have adverse effects to aquatic life during dredging or disposal operations.

4.3 Comparison to Hazardous Waste Solubility Criteria

As mentioned above, the contaminant levels observed in the proposed dredged material would likely preclude the material from being placed at the Berths 243–245 CDF. A more likely disposal option for the Berth 161 dredged materials is upland in a solid waste landfill. Due to the elevated levels of copper and lead found in the dredged material (above STLC/TCLP trigger levels), the Port requested that an additional evaluation be conducted to determine if the dredged material might be classified as a hazardous waste according to California Title 22 guidelines. This assessment by carried out by conducting STLC and TCLP analyses for copper and lead on archived Composite A and B sediment samples.

Results of these tests indicated that copper and lead in Composite A and lead in Composite B exceeded STLC regulatory criteria (5.0 mg/L for lead and 25 mg/L for copper). The TCLP regulatory threshold value for lead (5.0 mg/L) was not exceeded for either composite (note: there is no TCLP criterion for copper).

The hazardous waste assessment conducted as part of this study is not a definitive classification of the proposed dredged material. It is, however, intended to assist the Port with determining the class of landfill for disposal of the Berth 161 sediment. Additional STLC and TCLP tests would likely be required by a landfill prior to accepting the dredged material. Landfill testing requirements and acceptance criteria should be discuss directly with landfill staff.

5.0 CONCLUSIONS/RECOMMENDATIONS

The results of the Berth 161 sediment quality investigation showed the following:

- The proposed dredged material contains elevated concentrations of numerous chemicals, including copper, lead, mercury, zinc, PAHs, and PCBs. Based upon the chemical concentrations observed in this study, the Berth 161 dredged material would likely be unsuitable for placement within the Berths 243–245 CDF.
- The Z-layer analyses also showed elevated levels of numerous contaminants, particularly metals, PAHs, and PCBs. This finding should be factored into the construction design for the Project so that the resultant harbor bottom post-dredging does not expose unacceptable levels of chemicals to the marine environment following dredged material removal.
- Elutriate chemistry results indicate that the Berth 161 dredged materials have the potential to cause impairments to water quality during dredging due to soluble levels of copper and zinc. The implementation of turbidity control BMPs to account for this finding should be included in the construction design for the Project.
- The STLC solubility tests found both lead and copper to be at levels which may result in the Berth 161 dredged material being classified as a Title 22 hazardous waste. The need for additional hazardous material characterization should be discussed with staff from an appropriate solid waste landfill.

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6.0 REFERENCES

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APPENDIX A

SEDIMENT CORE LOGS

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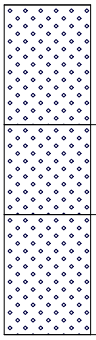
Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 14:00

Latitude: 32°45.7952
Longitude: -118°15.9235
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand with Shell Hash	Olive Brown with Dark Reddish-brown & very Dark Gray	2.5Y 4/3 2.5YR 3/4 2.5Y 3/1	None	
0.5		Fine grained Sand				
		Fine grained Sand	Black	5Y 2.5/1		
1.0						Refusal
1.5						
2.0						
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

Water Depth (ft): N/A
Tide (ft): N/A
Target Penetration (ft): 2.5
Actual Penetration (ft): 0.7
Recovered Core Length (ft): 1.1

Log of Station ID: B161-P1 Attempt 1

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 14:45

Latitude: 32°45.7952
Longitude: -118°15.9235
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand	Olive Brown with Dark Reddish-brown & Very Dark Gray	2.5Y 4/3 2.5YR 3/4 2.5Y 3/1	None	
		Fine grained Sand		2.5Y 4/3		
0.5		Fine grained Sand	Olive Brown Black	5Y 2.5/1		
1.0		Gravel	Black	5Y 2.5/1		
		Fine grained Sand with small pebbles/rocks	Black with Light Olive Brown small flecks	5Y 2.5/1 2.5Y 5/6		
1.5		Fine grained Sand	Black	5Y 2.5/1		
		Fine grained Sand	Dark Gray	2.5Y 4/1		
2.0						Possible Z-layer
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 2.6
Recovered Core Length (ft): 2.6

Log of Station ID: B161-P1 Attempt 2

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 15:15

Latitude: 32°45.7952
Longitude: -118°15.9235
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand	Olive Brown with Dark Reddish-brown speck	2.5Y 4/3	None	
		Fine grained Sand		2.5YR 3/4		
		Fine grained Sand		2.5Y 4/3		Shell hash from 0.2' to 0.4'
0.5			Very Dark Gray Olive Brown			
		Fine grained Sand	Black	5Y 2.5/1		Hard sediment
1.0						Refusal
1.5						
2.0						
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 1.2
Recovered Core Length (ft): 1.1

Log of Station ID: B161-P1 Attempt 3

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/25/2013 **Time:** 08:45

Latitude: 32°45.7921
Longitude: -118°15.9189
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand with pebbles	Black	Black	None	Lenses of fine grained sand, olive (5Y 5/4) & fleck, smaller lenses of dark reddish-brown (2.5YR 3/4)
		Pebbles & Gravel	Dark Reddish-brown	Dark Reddish-brown		
0.5		Gravel	Black	Black		Some fine grained sand between gravel
		Pebbles & Fine grained Sand	Black	Black		
			Gray	Gray		
1.0		Fine grained Sand				
1.5						Wood fragments at 1.7'
2.0						Large rock at 1.9'
						Z-layer from 2.0' to 2.7' jarred
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

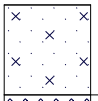
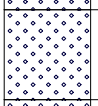
Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 2.9
Recovered Core Length (ft): 2.9

Log of Station ID: B161-P2 Attempt 1

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/25/2013 **Time:** 09:15

Latitude: 32°45.7921
Longitude: -118°15.9189
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand with Silt	Black	5Y 2.5/1	None	Small lens of dark reddish-brown (2.5YR 3/4) fine grained sand
0.5		Fine to Medium grained Sand	Dark Gray	5Y 4/1		Some cobble & shell hash
		Fine to Medium grained Sand	Black	5Y 2.5/1		
1.0		Fine grained Sand	Dark Gray	5Y 4/1		
1.5						Shell hash at 1.6' & 2.2'
2.0						Small lens of small marble sized rocks, color: pale red (2.5YR 6/2, Z-layer not included in sample from 2.0' to 2.3'
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

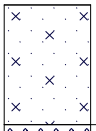
Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 2.3
Recovered Core Length (ft): 2.3

Log of Station ID: B161-P2 Attempt 2

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 16:00

Latitude: 32°45.7899
Longitude: -118°15.9281
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0 – 0.5		Fine grained Sand with Silt	Olive	5Y 5/4	None	
0.5 – 1.7		Fine grained Sand	Dark Gray	5Y 4/1		
1.0 – 1.7		Fine to Medium grained Sand	Black	5Y 2.5/1		Shell hash at 1.2'
1.7 – 2.5		Fine grained Sand	Dark Gray	5Y 4/1		Z-layer from 1.7' to 2.5' Wood fragments at 2.3' Shell hash & large oyster shell at 2.5'

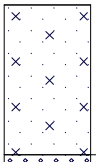
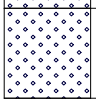
Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 2.8
Recovered Core Length (ft): 2.5

Log of Station ID: B161-P3 Attempt 1

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 16:45

Latitude: 32°45.7899
Longitude: -118°15.9281
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand with Silt	Olive	5Y 5/4	None	
0.5		Fine grained Sand	Black	5Y 2.5/1		Shell hash, larger rocks & cobble at 0.7'
1.0						
1.5		Fine grained Sand	Dark Gray	5Y 4/1		Wood fragments at 1.7', possible cause of refusal
2.0						
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 2.3
Recovered Core Length (ft): 1.7

Log of Station ID: B161-P3 Attempt 2

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 17:15

Latitude: 32°45.7888
Longitude: -118°15.9216
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0 – 0.5		Fine grained Sand with Silt & Shell Hash	Olvie	5Y 5/4	Strong Petroleum Odor	Sheen on water after tube withdraw, visible brown free product from sediment, larger small rock & shell hash at 0.8'
0.5 – 1.5		Fine grained Sand	Black	5Y 2.5/1	Strong Petroleum Odor	Sheen on water after tube withdraw, visible brown free product from sediment
1.5 – 5.0						Refusal on large rock plug

Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 1.7
Recovered Core Length (ft): 1.7

Log of Station ID: B161-P4 Attempt 1

Additional Notes:

Project Number: 1015101928
Project Manager: Barry Snyder
Logged and Sampled By: TH
Sample Type: Push Core
Date: 6/24/2013 **Time:** 17:45

Latitude: 32°45.7888
Longitude: -118°15.9216
Project Depth (ft MLLW): N/A
Mudline Elevation (ft MLLW): N/A

Depth in Feet	Lithology	Sediment Description	Color	Munsell Color Notation	Odor	Remarks
0.0		Fine grained Sand	Olive	5Y 5/4	Strong Petroleum Odor	Small olive lens
		Fine grained Sand	Black	5Y 2.5/1	Strong Petroleum Odor	
0.5						Glass shards at 0.4' Large rock at 0.5'
1.0						Several cobble from 1.0' to 1.5'
1.5						Oil product visible from 1.5' to 1.7'
						Refusal at 1.7'
2.0						
2.5						
3.0						
3.5						
4.0						
4.5						
5.0						

Water Depth (ft): N/A
Tide (ft): +1.9
Target Penetration (ft): 2.5
Actual Penetration (ft): 1.7
Recovered Core Length (ft): 1.7

Log of Station ID: B161-P4 Attempt 2

Additional Notes:

APPENDIX B

PHOTOGRAPHS OF SEDIMENT CORES

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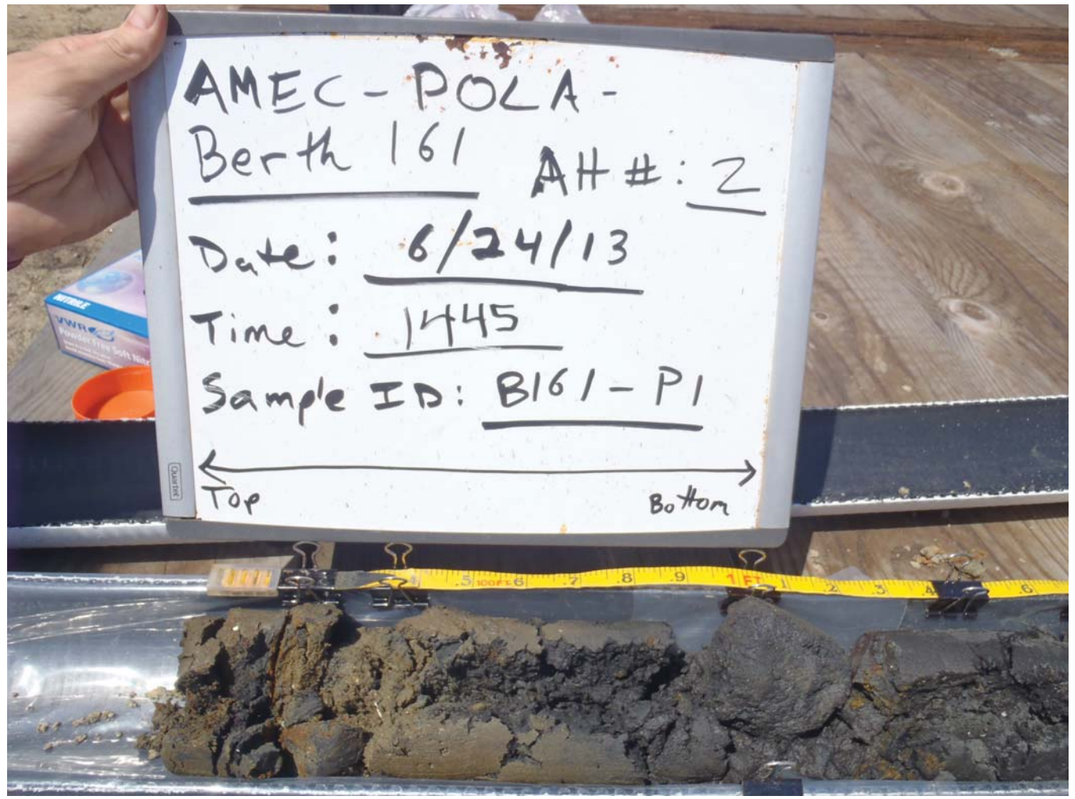
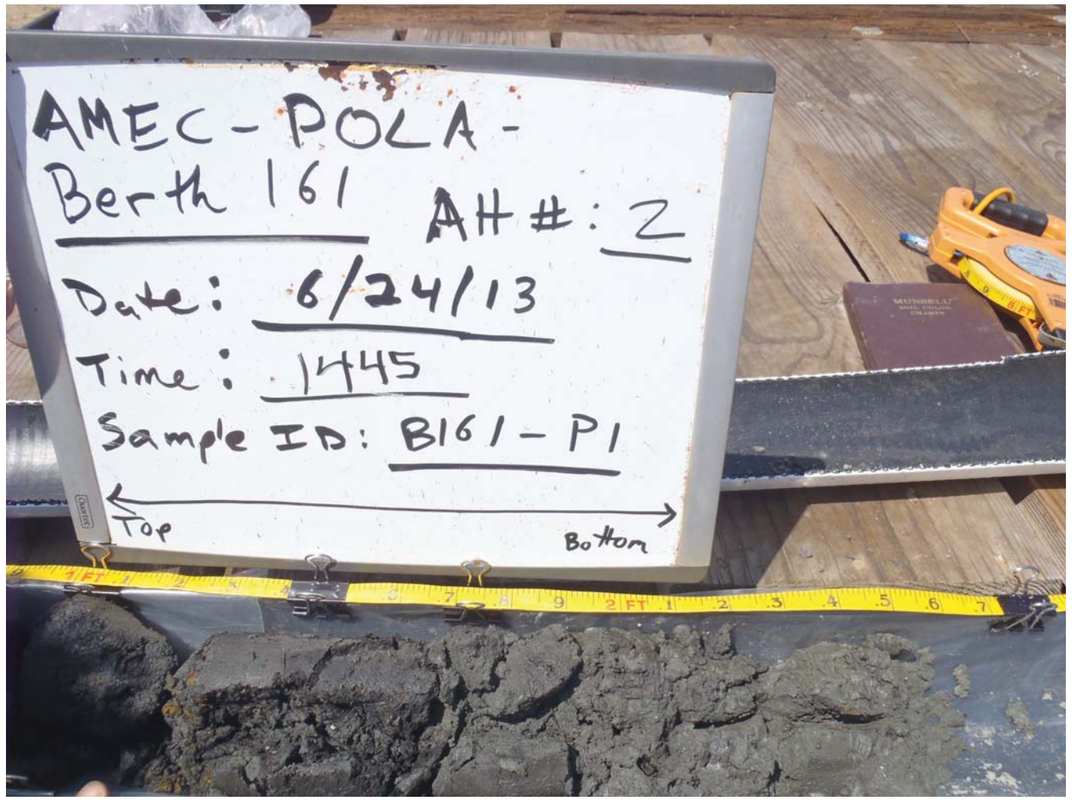
Location: POLA Berth 161
Sample ID: B161-P1
Attempt #: 1
Core Length: 0 - 1.1 ft.
Sample Date & Time: 06/24/2013 1400

Location: POLA Berth 161
Sample ID: 161-P1
Attempt #: 1
Core Length: Close Up
Sample Date & Time: 06/24/2013 1400

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013



Location: POLA Berth 161
Sample ID: B161-P1
Attempt #: 2
Core Length: 0 - 1.5 ft.
Sample Date & Time: 06/24/2013 1445



Location: POLA Berth 161
Sample ID: 161-P1
Attempt #: 2
Core Length: 1.0 - 2.6 ft.
Sample Date & Time: 06/24/2013 1445

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013

Graphics/AquaticSciences/POLA Berth 161/B161_Sampling_PC2.ai

Location: POLA Berth 161
Sample ID: B161-P1
Attempt #: 3
Core Length: 0 - 1.1 ft.
Sample Date & Time: 06/24/2013 1515

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013

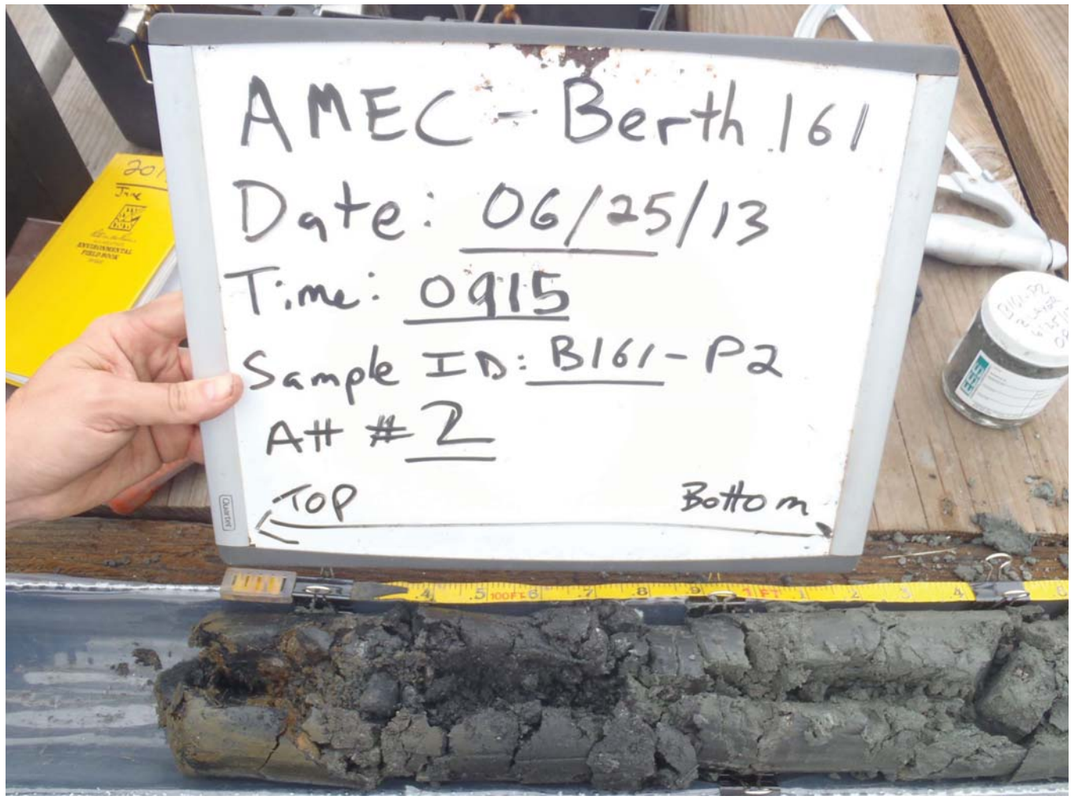
Location: POLA Berth 161
Sample ID: B161-P2
Attempt #: 1
Core Length: 0 - 1.5 ft.
Sample Date & Time: 06/25/2013 0845

Location: POLA Berth 161
Sample ID: B161-P2
Attempt #: 1
Core Length: 1.0 - 2.5 ft.
Sample Date & Time: 06/25/2013 0845

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013

Graphics/AquaticSciences/POLA Berth 161/B161_Sampling_PC4.ai

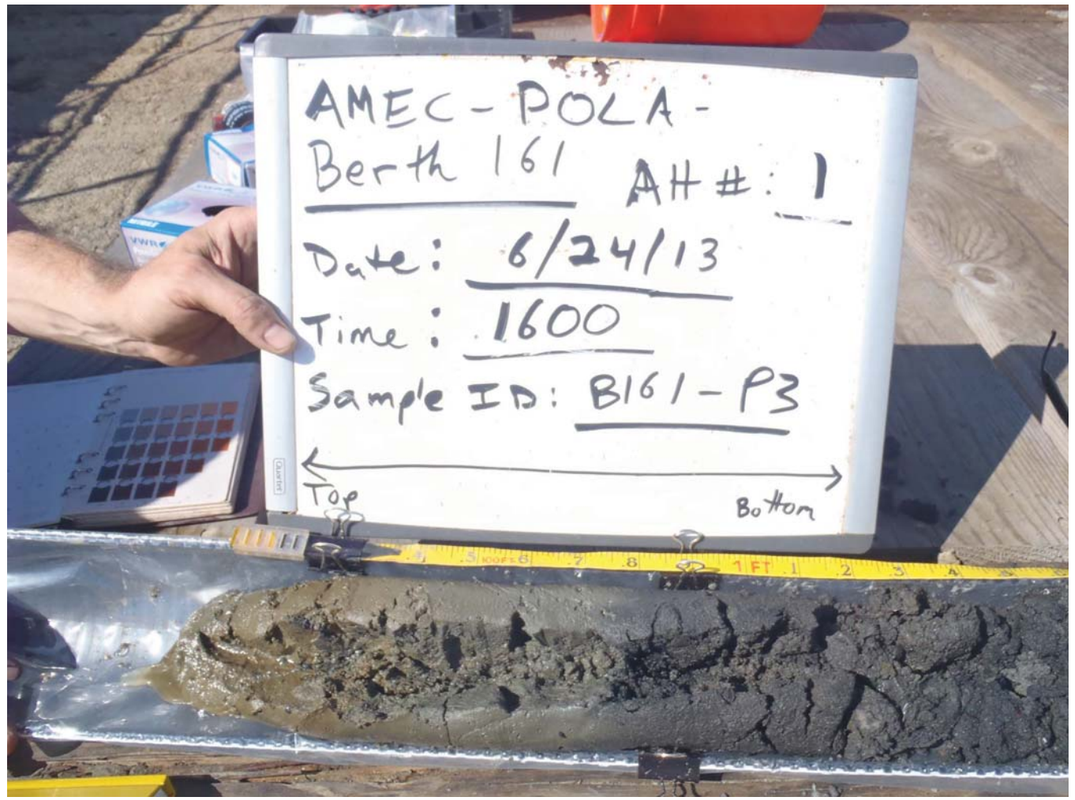
Location: POLA Berth 161
Sample ID: B161-P2
Attempt #: 1
Core Length: 2.0 - 2.9 ft.
Sample Date & Time: 06/25/2013 0845



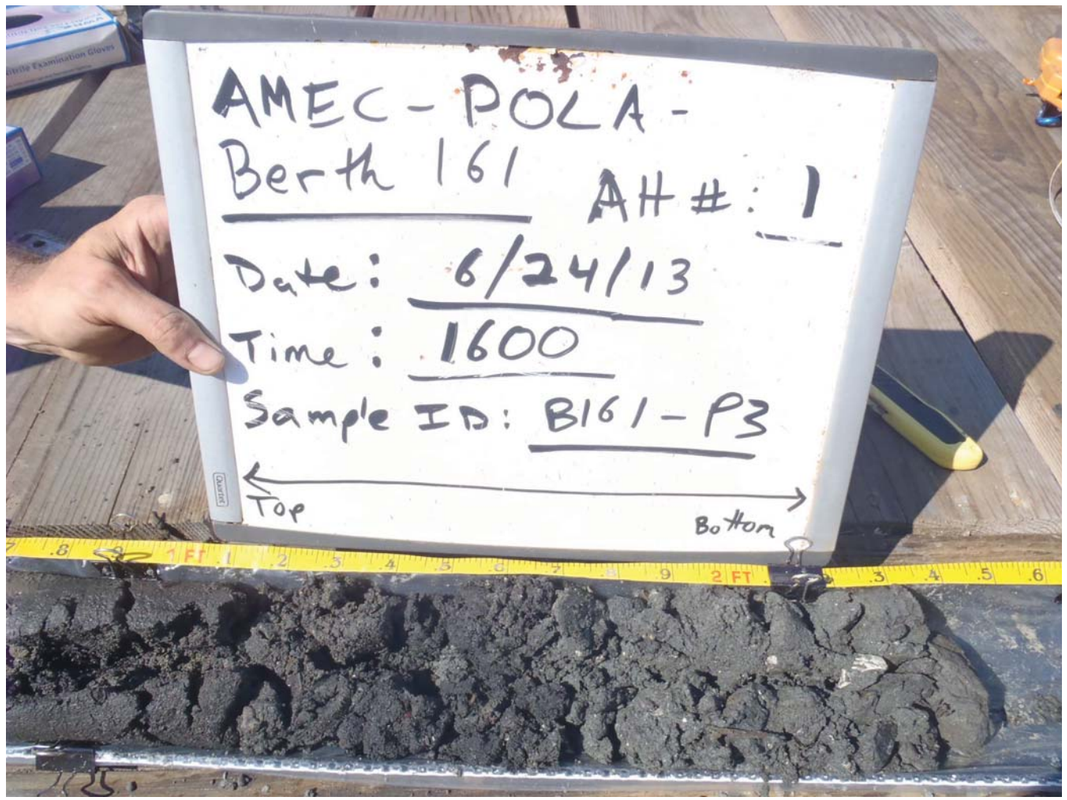
Location: POLA Berth 161
Sample ID: B161-P2
Attempt #: 2
Core Length: 0 - 1.5 ft.
Sample Date & Time: 06/25/2013 0915

Location: POLA Berth 161
Sample ID: B161-P2
Attempt #: 2
Core Length: 1.0 - 2.3 ft.
Sample Date & Time: 06/25/2013 0915

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013

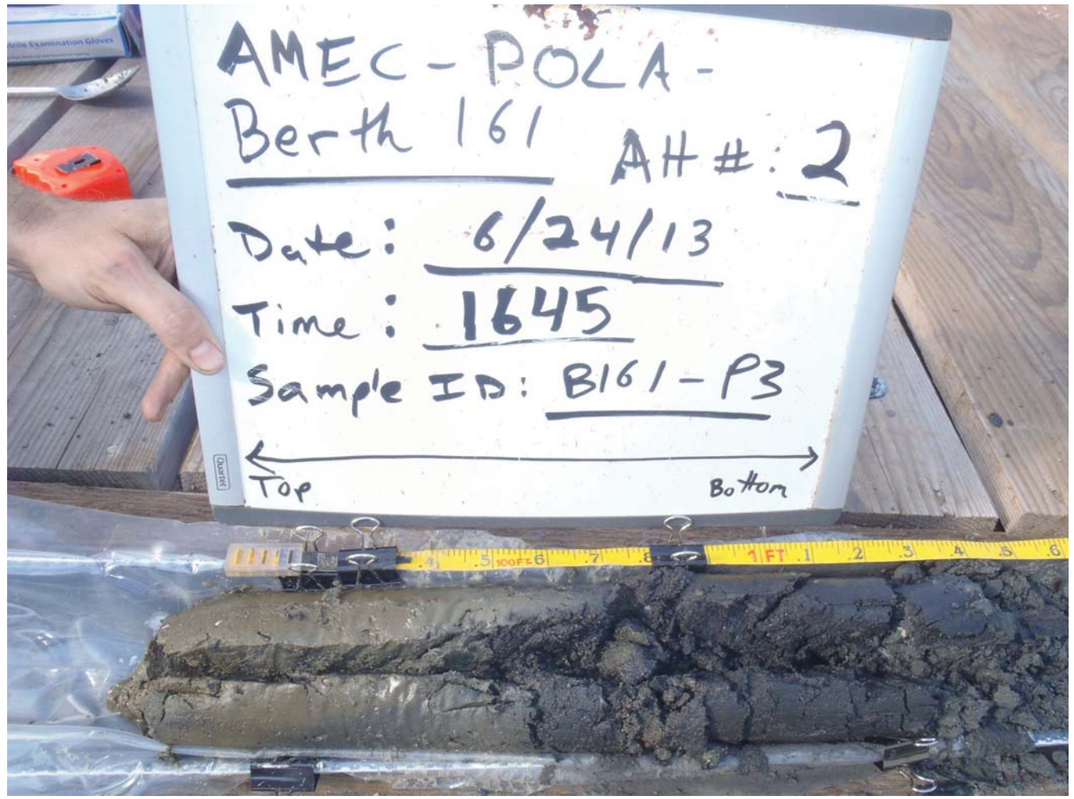


Location: POLA Berth 161
Sample ID: B161-P3
Attempt #: 1
Core Length: 0 - 1.5 ft.
Sample Date & Time: 06/24/2013 1600

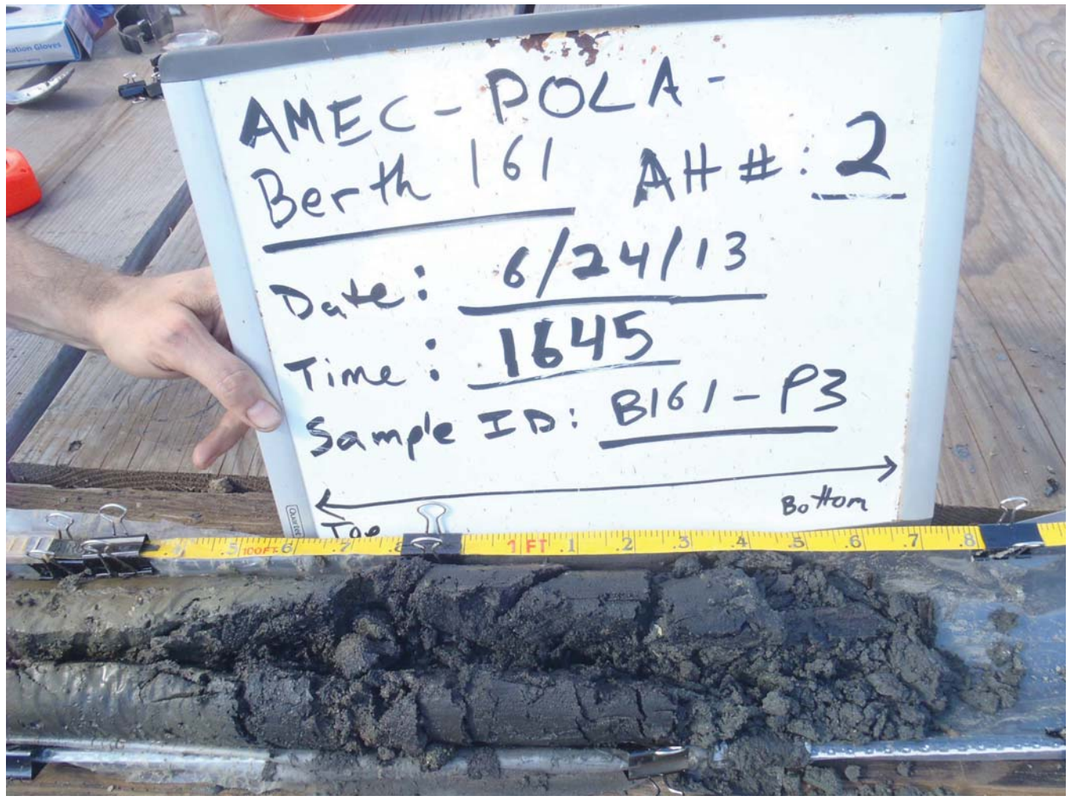


Location: POLA Berth 161
Sample ID: B161-P3
Attempt #: 1
Core Length: 1.0 - 2.5 ft.
Sample Date & Time: 06/24/2013 1600

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013



Location: POLA Berth 161
Sample ID: B161-P3
Attempt #: 2
Core Length: 0 - 1.5 ft.
Sample Date & Time: 06/24/2013 1645



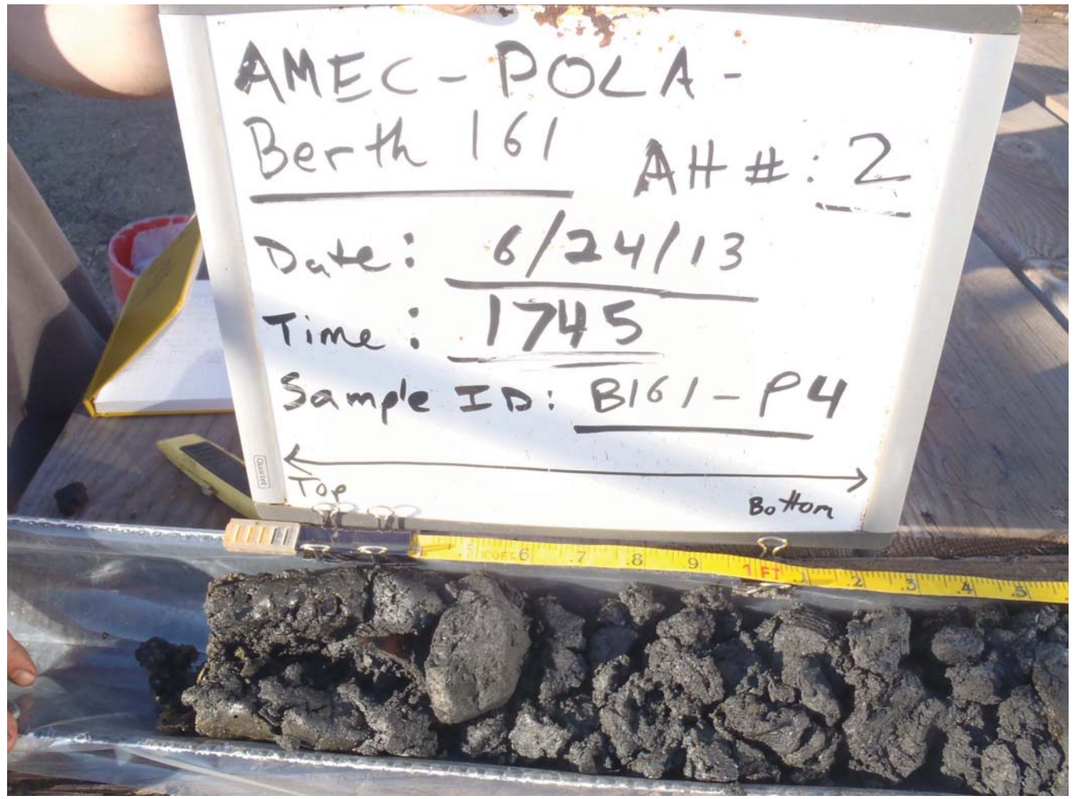
Location: POLA Berth 161
Sample ID: B161-P3
Attempt #: 2
Core Length: 0.5 - 1.8 ft.
Sample Date & Time: 06/24/2013 1645

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013

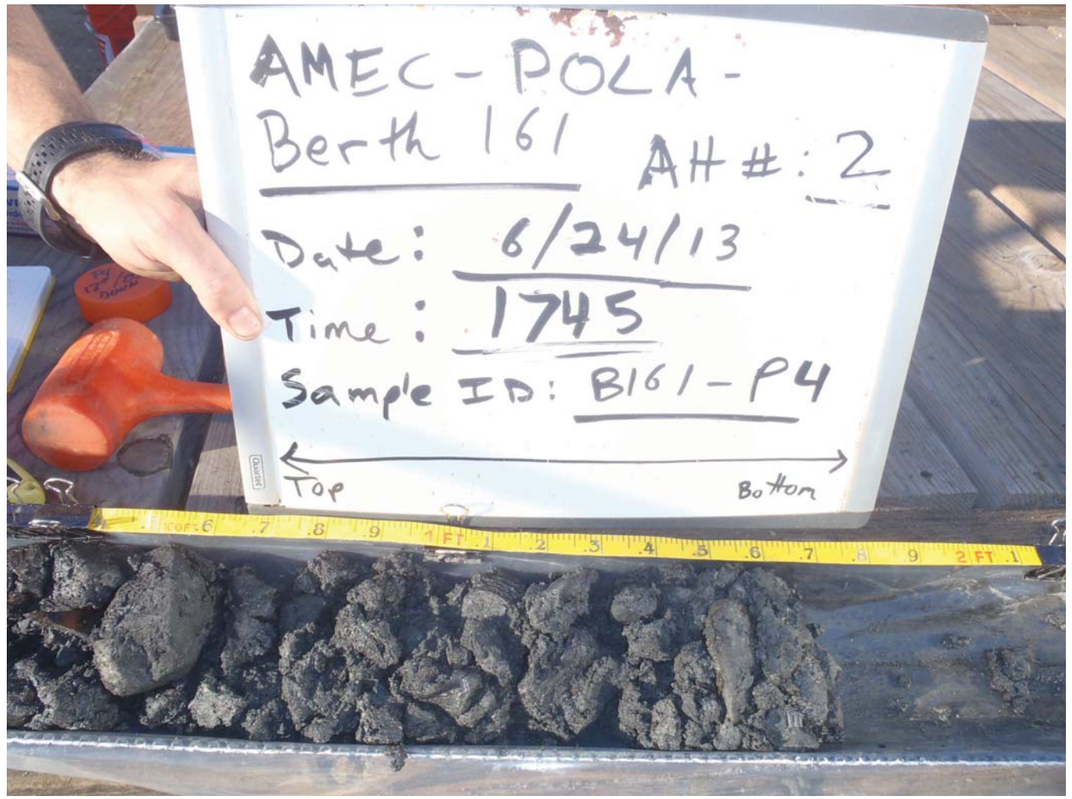
Graphics/AquaticSciences/POLA Berth 161/B161_Sampling_PC8.ai

Location: POLA Berth 161
Sample ID: B161-P4
Attempt #: 1
Core Length: 0 - 1.7 ft.
Sample Date & Time: 06/24/2013 1715

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013



Location: POLA Berth 161
Sample ID: B161-P4
Attempt #: 2
Core Length: 0 - 1.5 ft.
Sample Date & Time: 06/24/2013 1745



Location: POLA Berth 161
Sample ID: B161-P4
Attempt #: 2
Core Length: 0.5 - 1.7 ft.
Sample Date & Time: 06/24/2013 1745

Port of Los Angeles
Berth 161 Sediment Study
AMEC Project No. 1015101929
June 2013

APPENDIX C

SEDIMENT CHEMISTRY

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Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-06-1677

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: AMEC Environment & Infrastructure

Client Project Name: POLA - B161

Attention: Barry Snyder
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Approved for release on 07/10/2013 by:
Danielle Gonsman
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: POLA - B161
Work Order Number: 13-06-1677

Calscience Environmental Laboratories, Inc.

CASE NARRATIVE

Calscience Work Order No.: 13-06-1677
Project ID: POLA- B161

Provided below is a narrative of our analytical effort, including any unique features or anomalies encountered as part of the analysis of the sediment samples.

Sample Condition on Receipt

Four sediment samples and one sea water sample were received for this project on June 25, 2013. The samples were transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody (COC) procedures. The temperature of the samples upon receipt at the laboratory ranged between 3.7 - 4.0°C. All samples were logged into the Laboratory Information Management System (LIMS), given laboratory identification numbers and then stored in refrigeration units pending compositing and analysis.

COC discrepancies (if any) were noted in the Sample Anomaly Form.

Tests Performed

Sediment Samples:

Per client's instructions (included with the Chain of Custody), the four sediment samples were homogenized. After homogenization, samples B161-P1 and B161-P2 were composited together to create sample Composite-A, and samples B161-P3 and B161-P4 were composited together to create Composite-B. The two composite samples were analyzed for the following:

Total Solids by SM 2540B
Total Organic Carbon by EPA 9060A
Ammonia by SM 4500-NH3-B/C (M)
Dissolved and Total Sulfide by EPA 376.2M
Oil and Grease by EPA 413.2M
Trace Metals by EPA 6020/7471
TRPH by EPA 418.1M
TPH C6-C44 by EPA 8015B (M)
PAHs, Phenols and Phthalates by EPA 8270C SIM
Chlorinated Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
Pyrethroids by EPA 8270D (M)/TQ/EI
Organotins by Krone et al.
Grain Size by ASTM D4464

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Sea Water sample:

Trace Metals by EPA 1640/7471
PAHs by EPA 8270C SIM
Chlorinated Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
Pyrethroids by EPA 8270D (M)/TQ/EI
Organotins by Krone et al.

Elutriate sample:

The four sediment samples (B161-P1-P4) were composited together to create sample Berth 161 Dredge Area Composite. The composite sample and Site Water was used to create an EET sample. The elutriate results are presented within CEL WO# 13-07-0159.

Data Summary

Holding times

All holding times were met.

Blanks

Concentrations of target analytes in the method blank were found to be below reporting limits for all testing.

Reporting Limits

The Method Detection Limits were met.

Laboratory Control Samples

A Laboratory Control Sample (LCS) analysis was performed for each applicable test. All parameters were within established control limits.

Matrix Spikes

Matrix spiking was performed at the required frequencies.

Surrogates

Surrogate recoveries for all applicable tests and samples were within acceptable control limits with the following exceptions.

For Organotins by Krone et al. in sediment the surrogate recovery was high outside of control limits in both samples.

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For PCB Congeners by EPA 8270C SIM, the 2-Fluorobiphenyl recovery for sample Composite-A was low outside of the control limits.

For Chlorinated Pesticides by EPA 8081A, the Decachlorobiphenyl recovery was high outside of control limits in both samples.

Acronyms

LCS - Laboratory Control Sample
PDS - Post Digestion Spike
MS/MSD- Matrix Spike/Matrix Spike Duplicate
ME-Marginal Exceedance
RPD- Relative Percent Difference

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Work Order Narrative

Work Order: 13-06-1677 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 06/25/13. They were assigned to Work Order 13-06-1677.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with an immediate holding time (HT </= 15 minutes --40CFR-136.3 Table II footnote 4), is considered a "field" test and reported samples results are not flagged unless the analysis is performed beyond 24 hours of the time of collection.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Calscience Environmental Laboratories, Inc.

Sample Summary

Client:	AMEC Environment & Infrastructure	Work Order:	13-06-1677
	9210 Sky Park Court, Suite 200	Project Name:	POLA - B161
	San Diego, CA 92123-4302	PO Number:	
		Date Received:	06/25/13
Attn:	Barry Snyder		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B161-P1	13-06-1677-1	06/24/13 14:00	1	Sediment
B161-P2	13-06-1677-2	06/25/13 08:45	1	Sediment
B161-P3	13-06-1677-3	06/24/13 16:00	1	Sediment
B161-P4	13-06-1677-4	06/24/13 17:15	1	Sediment
B161-Sitewater	13-06-1677-5	06/25/13 13:25	1	Sea Water
COMPOSITE A	13-06-1677-6	06/24/13 00:00	1	Sediment
COMPOSITE B	13-06-1677-7	06/24/13 00:00	1	Sediment

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: N/A
Method: EPA 376.2M
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**N/A**	**07/01/13**	**07/01/13 19:50**	**D0701SL2**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	2.5	0.12	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**N/A**	**07/01/13**	**07/01/13 19:50**	**D0701SL2**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	3.5	0.12	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-001-4697**	**N/A**	**Soil**	**N/A**	**07/01/13**	**07/01/13 19:50**	**D0701SL2**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	ND	0.10	0.2	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: N/A
Method: EPA 376.2M
Units: mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**N/A**	**06/25/13**	**06/25/13 20:50**	**D0625DSL2**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**N/A**	**06/25/13**	**06/25/13 20:50**	**D0625DSL2**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-001-4695**	**N/A**	**Soil**	**N/A**	**06/25/13**	**06/25/13 20:50**	**D0625DSL2**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: N/A
Method: EPA 9060A
Units: %

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**TOC 5**	**07/01/13**	**07/02/13 12:24**	**D0701TOCL1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	1.9	0.062	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**TOC 5**	**07/01/13**	**07/02/13 12:24**	**D0701TOCL1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	1.4	0.058	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-881**	**N/A**	**Soil**	**TOC 5**	**07/01/13**	**07/02/13 12:24**	**D0701TOCL1**

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	ND	0.050	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: N/A
Method: SM 2540 B (M)
Units: %

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**N/A**	**06/27/13**	**06/27/13 18:06**	**D0627TSB1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	80.8	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**N/A**	**06/27/13**	**06/27/13 18:06**	**D0627TSB1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	85.6	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-2252**	**N/A**	**Soil**	**N/A**	**06/27/13**	**06/27/13 18:06**	**D0627TSB1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	ND	0.100	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: N/A
Method: SM 4500-NH3 B/C (M)
Units: mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**BUR05**	**07/05/13**	**07/05/13 19:00**	**D0705NH3L1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	2.1	0.25	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**BUR05**	**07/05/13**	**07/05/13 19:00**	**D0705NH3L1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	0.65	0.23	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-816-63**	**N/A**	**Soil**	**BUR05**	**07/05/13**	**07/05/13 19:00**	**D0705NH3L1**

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	ND	0.20	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
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Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: Extraction
Method: EPA 413.2M
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**IR 2**	**06/28/13**	**06/28/13 13:00**	**130628L02**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	3400	250	20	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**IR 2**	**06/28/13**	**06/28/13 13:00**	**130628L02**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	4500	230	20	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-141**	**N/A**	**Soil**	**IR 2**	**06/28/13**	**06/28/13 13:00**	**130628L02**

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	ND	10	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: Extraction
Method: EPA 418.1M
Units: mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**IR 2**	**06/28/13**	**06/28/13 12:00**	**130628L01**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
TRPH	2500	250	20	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**IR 2**	**06/28/13**	**06/28/13 12:00**	**130628L01**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
TRPH	3500	230	20	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1932**	**N/A**	**Soil**	**IR 2**	**06/28/13**	**06/28/13 12:00**	**130628L01**

Parameter	Result	RL	DF	Qualifiers
TRPH	ND	10	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**GC 46**	**06/27/13**	**06/27/13 22:16**	**130627B01**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
C6	ND	31	5	
C7	ND	31	5	
C8	ND	31	5	
C9-C10	ND	31	5	
C11-C12	ND	31	5	
C13-C14	ND	31	5	
C15-C16	49	31	5	
C17-C18	84	31	5	
C19-C20	100	31	5	
C21-C22	110	31	5	
C23-C24	100	31	5	
C25-C28	170	31	5	
C29-C32	220	31	5	
C33-C36	150	31	5	
C37-C40	120	31	5	
C41-C44	55	31	5	
C6-C44 Total	1200	31	5	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	102	61-145	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**GC 46**	**06/27/13**	**06/27/13 22:33**	**130627B01**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
C6	ND	29	5	
C7	ND	29	5	
C8	ND	29	5	
C9-C10	ND	29	5	
C11-C12	ND	29	5	
C13-C14	ND	29	5	
C15-C16	38	29	5	
C17-C18	62	29	5	
C19-C20	98	29	5	
C21-C22	83	29	5	
C23-C24	87	29	5	
C25-C28	140	29	5	
C29-C32	200	29	5	
C33-C36	130	29	5	
C37-C40	92	29	5	
C41-C44	ND	29	5	
C6-C44 Total	960	29	5	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	97	61-145	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-490-380**	**N/A**	**Soil**	**GC 46**	**06/27/13**	**06/27/13 19:00**	**130627B01**

Parameter	Result	RL	DF	Qualifiers
C6	ND	5.0	1	
C7	ND	5.0	1	
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C28	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C37-C40	ND	5.0	1	
C41-C44	ND	5.0	1	
C6-C44 Total	ND	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	90	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**GCTQ 1**	**06/28/13**	**07/06/13 13:34**	**130628L01**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	6.2	3.2	10	
Bifenthrin	3.7	6.2	1.2	10	J
Cyfluthrin	ND	6.2	1.1	10	
Cypermethrin	ND	6.2	0.85	10	
Deltamethrin/Tralomethrin	ND	6.2	2.6	10	
Fenpropathrin	ND	6.2	0.45	10	
Fenvalerate/Esfenvalerate	ND	6.2	0.44	10	
Fluvalinate	ND	6.2	0.71	10	
Permethrin (cis/trans)	42	12	1.4	10	
Phenothrin	ND	6.2	0.85	10	
Resmethrin/Bioresmethrin	ND	6.2	1.1	10	
Tetramethrin	ND	6.2	0.47	10	
lambda-Cyhalothrin	ND	6.2	0.54	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	168	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**GCTQ 1**	**06/28/13**	**07/06/13 14:11**	**130628L01**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	5.8	3.0	10	
Bifenthrin	3.6	5.8	1.1	10	J
Cyfluthrin	ND	5.8	0.99	10	
Cypermethrin	ND	5.8	0.80	10	
Deltamethrin/Tralomethrin	ND	5.8	2.4	10	
Fenpropathrin	ND	5.8	0.42	10	
Fenvalerate/Esfenvalerate	ND	5.8	0.42	10	
Fluvalinate	ND	5.8	0.67	10	
Permethrin (cis/trans)	46	12	1.3	10	
Phenothrin	ND	5.8	0.80	10	
Resmethrin/Bioresmethrin	ND	5.8	1.1	10	
Tetramethrin	ND	5.8	0.44	10	
lambda-Cyhalothrin	ND	5.8	0.51	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	166	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-403-35**	**N/A**	**Sediment**	**GCTQ 1**	**06/28/13**	**07/06/13 03:46**	**130628L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.50	0.26	1	
Bifenthrin	ND	0.50	0.094	1	
Cyfluthrin	ND	0.50	0.085	1	
Cypermethrin	ND	0.50	0.069	1	
Deltamethrin/Tralomethrin	ND	0.50	0.21	1	
Fenpropathrin	ND	0.50	0.036	1	
Fenvalerate/Esfenvalerate	ND	0.50	0.036	1	
Fluvalinate	ND	0.50	0.057	1	
Permethrin (cis/trans)	ND	1.0	0.11	1	
Phenothrin	ND	0.50	0.069	1	
Resmethrin/Bioresmethrin	ND	0.50	0.092	1	
Tetramethrin	ND	0.50	0.038	1	
lambda-Cyhalothrin	ND	0.50	0.044	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	88	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270D (M)/TQ/EI
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-G**	**06/25/13 13:25**	**Sea Water**	**GCTQ 1**	**07/01/13**	**07/06/13 02:33**	**130701L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.0019	0.0012	0.96	
Bifenthrin	ND	0.0019	0.00015	0.96	
Cyfluthrin	ND	0.0019	0.00066	0.96	
Cypermethrin	ND	0.0019	0.0016	0.96	
Deltamethrin/Tralomethrin	ND	0.0019	0.00045	0.96	
Fenpropathrin	ND	0.0019	0.00035	0.96	
Fenvalerate/Esfenvalerate	ND	0.0019	0.00071	0.96	
Fluvalinate	ND	0.0019	0.0014	0.96	
Permethrin (cis/trans)	ND	0.0038	0.0018	0.96	
Phenothrin	ND	0.0019	0.00069	0.96	
Resmethrin/Bioresmethrin	ND	0.0019	0.00013	0.96	
Tetramethrin	ND	0.0019	0.00071	0.96	
lambda-Cyhalothrin	ND	0.0019	0.00044	0.96	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	97	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270D (M)/TQ/EI
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-553-8**	**N/A**	**Aqueous**	**GCTQ 1**	**07/01/13**	**07/06/13 17:14**	**130701L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.0020	0.0012	1	
Bifenthrin	ND	0.0020	0.00015	1	
Cyfluthrin	ND	0.0020	0.00069	1	
Cypermethrin	ND	0.0020	0.0016	1	
Deltamethrin/Tralomethrin	ND	0.0020	0.00047	1	
Fenpropathrin	ND	0.0020	0.00037	1	
Fenvalerate/Esfenvalerate	ND	0.0020	0.00074	1	
Fluvalinate	ND	0.0020	0.0015	1	
Permethrin (cis/trans)	ND	0.0040	0.0018	1	
Phenothrin	ND	0.0020	0.00072	1	
Resmethrin/Bioresmethrin	ND	0.0020	0.00014	1	
Tetramethrin	ND	0.0020	0.00074	1	
lambda-Cyhalothrin	ND	0.0020	0.00046	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	78	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3005A Total
Method: EPA 1640
Units: ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-B**	**06/25/13 13:25**	**Sea Water**	**ICP/MS 05**	**06/26/13**	**06/26/13 23:07**	**130626L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Arsenic	1.62	0.0300	0.0122	1	
Selenium	0.0294	0.0500	0.0121	1	J

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-B**	**06/25/13 13:25**	**Sea Water**	**ICP/MS 05**	**06/26/13**	**06/27/13 15:21**	**130626L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Cadmium	0.0621	0.0300	0.00567	1	
Chromium	0.292	0.500	0.164	1	J
Copper	2.88	0.0300	0.00898	1	
Lead	0.132	0.0300	0.0135	1	
Nickel	0.460	0.0500	0.00607	1	
Zinc	8.23	0.500	0.0736	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-B**	**06/25/13 13:25**	**Sea Water**	**ICP/MS 05**	**06/26/13**	**07/01/13 10:58**	**130626L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Silver	ND	0.0500	0.00822	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-13-067-334**	**N/A**	**Aqueous**	**ICP/MS 05**	**06/26/13**	**06/27/13 13:26**	**130626L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Arsenic	ND	0.0300	0.0122	1	
Cadmium	ND	0.0300	0.00567	1	
Chromium	ND	0.500	0.164	1	
Copper	ND	0.0300	0.00898	1	
Lead	ND	0.0300	0.0135	1	
Nickel	ND	0.0500	0.00607	1	
Selenium	ND	0.0500	0.0121	1	
Silver	ND	0.0500	0.00822	1	
Zinc	ND	0.500	0.0736	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**ICP/MS 03**	**06/27/13**	**06/27/13 19:49**	**130627L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Arsenic	25.7	0.124	1	
Cadmium	1.22	0.124	1	
Chromium	44.0	0.124	1	
Copper	2210	0.124	1	
Lead	353	0.124	1	
Nickel	34.9	0.124	1	
Selenium	0.370	0.124	1	
Silver	0.267	0.124	1	
Zinc	922	1.24	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**ICP/MS 03**	**06/27/13**	**06/27/13 19:52**	**130627L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Arsenic	19.9	0.117	1	
Cadmium	1.12	0.117	1	
Chromium	34.8	0.117	1	
Copper	2520	0.117	1	
Lead	384	0.117	1	
Nickel	27.5	0.117	1	
Selenium	0.303	0.117	1	
Silver	0.273	0.117	1	
Zinc	834	1.17	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-254-121**	**N/A**	**Soil**	**ICP/MS 03**	**06/27/13**	**06/27/13 18:53**	**130627L03E**

Parameter	Result	RL	DF	Qualifiers
Arsenic	ND	0.100	1	
Cadmium	ND	0.100	1	
Chromium	ND	0.100	1	
Copper	ND	0.100	1	
Lead	ND	0.100	1	
Nickel	ND	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Zinc	ND	1.00	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 7470A Total
Method: EPA 7470A
Units: ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-B**	**06/25/13 13:25**	**Sea Water**	**Mercury**	**07/09/13**	**07/09/13 16:32**	**130709L03A**

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0500	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-510-362**	**N/A**	**Aqueous**	**Mercury**	**07/09/13**	**07/09/13 15:54**	**130709L03A**

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0500	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 7471A Total
Method: EPA 7471A
Units: mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**Mercury**	**06/27/13**	**06/27/13 16:15**	**130627L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Mercury	6.59	0.248	9.98	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**Mercury**	**06/27/13**	**06/27/13 16:17**	**130627L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Mercury	2.26	0.234	9.98	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-387**	**N/A**	**Soil**	**Mercury**	**06/27/13**	**06/27/13 13:25**	**130627L03E**

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: N/A
Method: ASTM D4464 (M)
Units: %

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-A**	**06/24/13 00:00**	**Sediment**	**LPSA 1**	**N/A**	**07/09/13 18:18**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	17.33	
Silt (0.00391 to 0.0625mm)	58.61	
Total Silt and Clay (0 to 0.0625mm)	75.94	
Very Fine Sand (0.0625 to 0.125mm)	8.31	
Fine Sand (0.125 to 0.25mm)	0.46	
Medium Sand (0.25 to 0.5mm)	ND	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	15.29	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-A**	**06/24/13 00:00**	**Sediment**	**LPSA 1**	**N/A**	**07/09/13 18:27**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	12.05	
Silt (0.00391 to 0.0625mm)	40.18	
Total Silt and Clay (0 to 0.0625mm)	52.23	
Very Fine Sand (0.0625 to 0.125mm)	10.62	
Fine Sand (0.125 to 0.25mm)	11.31	
Medium Sand (0.25 to 0.5mm)	9.85	
Coarse Sand (0.5 to 1mm)	1.65	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	14.33	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**GC 44**	**06/28/13**	**07/02/13 14:14**	**130628L07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.2	1	
Alpha-BHC	ND	1.2	1	
Beta-BHC	ND	1.2	1	
Delta-BHC	ND	1.2	1	
Gamma-BHC	ND	1.2	1	
Chlordane	ND	12	1	
Dieldrin	ND	1.2	1	
Trans-nonachlor	ND	1.2	1	
2,4'-DDD	ND	1.2	1	
2,4'-DDE	ND	1.2	1	
2,4'-DDT	ND	1.2	1	
4,4'-DDD	ND	1.2	1	
4,4'-DDE	ND	1.2	1	
4,4'-DDT	ND	1.2	1	
Endosulfan I	ND	1.2	1	
Endosulfan II	ND	1.2	1	
Endosulfan Sulfate	ND	1.2	1	
Endrin	ND	1.2	1	
Endrin Aldehyde	ND	1.2	1	
Endrin Ketone	ND	1.2	1	
Heptachlor	ND	1.2	1	
Heptachlor Epoxide	ND	1.2	1	
Methoxychlor	ND	1.2	1	
Toxaphene	ND	25	1	
Alpha Chlordane	ND	1.2	1	
Gamma Chlordane	ND	1.2	1	
Cis-nonachlor	ND	1.2	1	
Oxychlordane	ND	1.2	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	80	50-130	
Decachlorobiphenyl	160	50-130	2,7

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**GC 44**	**06/28/13**	**07/02/13 14:28**	**130628L07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.2	1	
Alpha-BHC	ND	1.2	1	
Beta-BHC	ND	1.2	1	
Delta-BHC	ND	1.2	1	
Gamma-BHC	ND	1.2	1	
Chlordane	ND	12	1	
Dieldrin	ND	1.2	1	
Trans-nonachlor	ND	1.2	1	
2,4'-DDD	ND	1.2	1	
2,4'-DDE	ND	1.2	1	
2,4'-DDT	ND	1.2	1	
4,4'-DDD	ND	1.2	1	
4,4'-DDE	ND	1.2	1	
4,4'-DDT	ND	1.2	1	
Endosulfan I	ND	1.2	1	
Endosulfan II	ND	1.2	1	
Endosulfan Sulfate	ND	1.2	1	
Endrin	ND	1.2	1	
Endrin Aldehyde	ND	1.2	1	
Endrin Ketone	ND	1.2	1	
Heptachlor	ND	1.2	1	
Heptachlor Epoxide	ND	1.2	1	
Methoxychlor	ND	1.2	1	
Toxaphene	ND	23	1	
Alpha Chlordane	ND	1.2	1	
Gamma Chlordane	ND	1.2	1	
Cis-nonachlor	ND	1.2	1	
Oxychlordane	ND	1.2	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	67	50-130	
Decachlorobiphenyl	142	50-130	2,7

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-210**	**N/A**	**Soil**	**GC 44**	**06/28/13**	**07/01/13 13:19**	**130628L07**

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.0	1	
Alpha-BHC	ND	1.0	1	
Beta-BHC	ND	1.0	1	
Delta-BHC	ND	1.0	1	
Gamma-BHC	ND	1.0	1	
Chlordane	ND	10	1	
Dieldrin	ND	1.0	1	
Trans-nonachlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1	
2,4'-DDE	ND	1.0	1	
2,4'-DDT	ND	1.0	1	
4,4'-DDD	ND	1.0	1	
4,4'-DDE	ND	1.0	1	
4,4'-DDT	ND	1.0	1	
Endosulfan I	ND	1.0	1	
Endosulfan II	ND	1.0	1	
Endosulfan Sulfate	ND	1.0	1	
Endrin	ND	1.0	1	
Endrin Aldehyde	ND	1.0	1	
Endrin Ketone	ND	1.0	1	
Heptachlor	ND	1.0	1	
Heptachlor Epoxide	ND	1.0	1	
Methoxychlor	ND	1.0	1	
Toxaphene	ND	20	1	
Alpha Chlordane	ND	1.0	1	
Gamma Chlordane	ND	1.0	1	
Cis-nonachlor	ND	1.0	1	
Oxychlordane	ND	1.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	97	50-130	
Decachlorobiphenyl	93	50-130	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8081A
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-F**	**06/25/13 13:25**	**Sea Water**	**GC 44**	**06/27/13**	**06/28/13 15:16**	**130627L17**

Parameter	Result	RL	DF	Qualifiers
Oxychlordane	ND	0.0098	0.98	
Aldrin	ND	0.0098	0.98	
Alpha Chlordane	ND	0.0098	0.98	
Alpha-BHC	ND	0.0098	0.98	
Beta-BHC	ND	0.0098	0.98	
Chlordane	ND	0.024	0.98	
Cis-nonachlor	ND	0.0098	0.98	
2,4'-DDD	ND	0.0098	0.98	
4,4'-DDD	ND	0.0098	0.98	
4,4'-DDE	ND	0.0098	0.98	
2,4'-DDE	0.040	0.0098	0.98	
2,4'-DDT	ND	0.0098	0.98	
4,4'-DDT	ND	0.0098	0.98	
Delta-BHC	ND	0.0098	0.98	
Dieldrin	ND	0.0098	0.98	
Endosulfan I	ND	0.0098	0.98	
Endosulfan II	ND	0.0098	0.98	
Endosulfan Sulfate	ND	0.0098	0.98	
Endrin	ND	0.0098	0.98	
Endrin Aldehyde	ND	0.0098	0.98	
Endrin Ketone	ND	0.0098	0.98	
Gamma Chlordane	ND	0.0098	0.98	
Gamma-BHC	ND	0.0098	0.98	
Heptachlor	ND	0.0098	0.98	
Heptachlor Epoxide	ND	0.0098	0.98	
Methoxychlor	ND	0.0098	0.98	
Mirex	ND	0.0098	0.98	
Toxaphene	ND	0.12	0.98	
Trans-nonachlor	ND	0.0098	0.98	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	74	50-150	
2,4,5,6-Tetrachloro-m-Xylene	73	50-150	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8081A
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-435-89**	**N/A**	**Aqueous**	**GC 44**	**06/27/13**	**06/28/13 14:33**	**130627L17**

Parameter	Result	RL	DF	Qualifiers
Oxychlordane	ND	0.010	1	
Aldrin	ND	0.010	1	
Alpha Chlordane	ND	0.010	1	
Alpha-BHC	ND	0.010	1	
Beta-BHC	ND	0.010	1	
Chlordane	ND	0.025	1	
Cis-nonachlor	ND	0.010	1	
2,4'-DDD	ND	0.010	1	
4,4'-DDD	ND	0.010	1	
4,4'-DDE	ND	0.010	1	
2,4'-DDE	ND	0.010	1	
2,4'-DDT	ND	0.010	1	
4,4'-DDT	ND	0.010	1	
Delta-BHC	ND	0.010	1	
Dieldrin	ND	0.010	1	
Endosulfan I	ND	0.010	1	
Endosulfan II	ND	0.010	1	
Endosulfan Sulfate	ND	0.010	1	
Endrin	ND	0.010	1	
Endrin Aldehyde	ND	0.010	1	
Endrin Ketone	ND	0.010	1	
Gamma Chlordane	ND	0.010	1	
Gamma-BHC	ND	0.010	1	
Heptachlor	ND	0.010	1	
Heptachlor Epoxide	ND	0.010	1	
Methoxychlor	ND	0.010	1	
Mirex	ND	0.010	1	
Toxaphene	ND	0.12	1	
Trans-nonachlor	ND	0.010	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	73	50-150	
2,4,5,6-Tetrachloro-m-Xylene	71	50-150	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**GC/MS MM**	**06/29/13**	**07/04/13 01:31**	**130629L06**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	ND	120	10	
2,4,5-Trichlorophenol	ND	120	10	
2,4,6-Trichlorophenol	ND	120	10	
2,4-Dichlorophenol	ND	120	10	
2,4-Dimethylphenol	ND	120	10	
2,4-Dinitrophenol	ND	6200	10	
2-Chlorophenol	ND	120	10	
2-Methylnaphthalene	ND	120	10	
2-Methylphenol	ND	120	10	
2-Nitrophenol	ND	120	10	
3/4-Methylphenol	ND	120	10	
4,6-Dinitro-2-Methylphenol	ND	6200	10	
4-Chloro-3-Methylphenol	ND	120	10	
4-Nitrophenol	ND	6200	10	
Acenaphthene	140	120	10	
Acenaphthylene	320	120	10	
Anthracene	730	120	10	
Benzo (a) Anthracene	1200	120	10	
Benzo (a) Pyrene	2200	120	10	
Benzo (b) Fluoranthene	2500	120	10	
Benzo (g,h,i) Perylene	1500	120	10	
Benzo (k) Fluoranthene	2200	120	10	
Bis(2-Ethylhexyl) Phthalate	1300	120	10	
Butyl Benzyl Phthalate	ND	120	10	
Chrysene	1900	120	10	
Di-n-Butyl Phthalate	ND	120	10	
Di-n-Octyl Phthalate	ND	120	10	
Dibenz (a,h) Anthracene	430	120	10	
Diethyl Phthalate	ND	120	10	
Dimethyl Phthalate	290	120	10	
Fluoranthene	2700	120	10	
Fluorene	230	120	10	
Indeno (1,2,3-c,d) Pyrene	1500	120	10	
N-Nitrosodimethylamine	ND	120	10	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	120	10	
Pentachlorophenol	ND	6200	10	
Phenanthrene	1700	120	10	
Phenol	ND	120	10	
Pyrene	6500	120	10	
1,6,7-Trimethylnaphthalene	ND	120	10	
2,3,4,6-Tetrachlorophenol	ND	120	10	
2,6-Dichlorophenol	ND	120	10	
Dibenzothiophene	ND	120	10	
1-Methylphenanthrene	ND	120	10	
Benzo (e) Pyrene	2300	120	10	
Perylene	790	120	10	
Biphenyl	ND	120	10	
2,6-Dimethylnaphthalene	ND	120	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	77	32-143	
2-Fluorobiphenyl	63	14-146	
2-Fluorophenol	54	15-138	
Nitrobenzene-d5	45	18-162	
p-Terphenyl-d14	92	34-148	
Phenol-d6	69	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**GC/MS MM**	**06/29/13**	**07/04/13 01:56**	**130629L06**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	ND	120	10	
2,4,5-Trichlorophenol	ND	120	10	
2,4,6-Trichlorophenol	ND	120	10	
2,4-Dichlorophenol	ND	120	10	
2,4-Dimethylphenol	ND	120	10	
2,4-Dinitrophenol	ND	5800	10	
2-Chlorophenol	ND	120	10	
2-Methylnaphthalene	ND	120	10	
2-Methylphenol	ND	120	10	
2-Nitrophenol	ND	120	10	
3/4-Methylphenol	ND	120	10	
4,6-Dinitro-2-Methylphenol	ND	5800	10	
4-Chloro-3-Methylphenol	ND	120	10	
4-Nitrophenol	ND	5800	10	
Acenaphthene	120	120	10	
Acenaphthylene	290	120	10	
Anthracene	720	120	10	
Benzo (a) Anthracene	2100	120	10	
Benzo (a) Pyrene	2700	120	10	
Benzo (b) Fluoranthene	3500	120	10	
Benzo (g,h,i) Perylene	1500	120	10	
Benzo (k) Fluoranthene	2600	120	10	
Bis(2-Ethylhexyl) Phthalate	1200	120	10	
Butyl Benzyl Phthalate	ND	120	10	
Chrysene	3100	120	10	
Di-n-Butyl Phthalate	ND	120	10	
Di-n-Octyl Phthalate	ND	120	10	
Dibenz (a,h) Anthracene	480	120	10	
Diethyl Phthalate	ND	120	10	
Dimethyl Phthalate	200	120	10	
Fluoranthene	5100	120	10	
Fluorene	160	120	10	
Indeno (1,2,3-c,d) Pyrene	1500	120	10	
N-Nitrosodimethylamine	ND	120	10	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
Naphthalene	1400	120	10	
Pentachlorophenol	ND	5800	10	
Phenanthrene	1700	120	10	
Phenol	ND	120	10	
Pyrene	7100	120	10	
1,6,7-Trimethylnaphthalene	ND	120	10	
2,3,4,6-Tetrachlorophenol	ND	120	10	
2,6-Dichlorophenol	ND	120	10	
Dibenzothiophene	ND	120	10	
1-Methylphenanthrene	ND	120	10	
Benzo (e) Pyrene	2600	120	10	
Perylene	1000	120	10	
Biphenyl	ND	120	10	
2,6-Dimethylnaphthalene	ND	120	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	78	32-143	
2-Fluorobiphenyl	64	14-146	
2-Fluorophenol	44	15-138	
Nitrobenzene-d5	43	18-162	
p-Terphenyl-d14	90	34-148	
Phenol-d6	70	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-256-39**	**N/A**	**Soil**	**GC/MS MM**	**06/29/13**	**07/04/13 16:41**	**130629L06**

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1	
2,4-Dichlorophenol	ND	10	1	
2,4-Dimethylphenol	ND	10	1	
2,4-Dinitrophenol	ND	500	1	
2-Chlorophenol	ND	10	1	
2-Methylnaphthalene	ND	10	1	
2-Methylphenol	ND	10	1	
2-Nitrophenol	ND	10	1	
3/4-Methylphenol	ND	10	1	
4,6-Dinitro-2-Methylphenol	ND	500	1	
4-Chloro-3-Methylphenol	ND	10	1	
4-Nitrophenol	ND	500	1	
Acenaphthene	ND	10	1	
Acenaphthylene	ND	10	1	
Anthracene	ND	10	1	
Benzo (a) Anthracene	ND	10	1	
Benzo (a) Pyrene	ND	10	1	
Benzo (b) Fluoranthene	ND	10	1	
Benzo (g,h,i) Perylene	ND	10	1	
Benzo (k) Fluoranthene	ND	10	1	
Bis(2-Ethylhexyl) Phthalate	ND	10	1	
Butyl Benzyl Phthalate	ND	10	1	
Chrysene	ND	10	1	
Di-n-Butyl Phthalate	ND	10	1	
Di-n-Octyl Phthalate	ND	10	1	
Dibenz (a,h) Anthracene	ND	10	1	
Diethyl Phthalate	ND	10	1	
Dimethyl Phthalate	ND	10	1	
Fluoranthene	ND	10	1	
Fluorene	ND	10	1	
Indeno (1,2,3-c,d) Pyrene	ND	10	1	
N-Nitrosodimethylamine	ND	10	1	
Naphthalene	ND	10	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
Pentachlorophenol	ND	500	1	
Phenanthrene	ND	10	1	
Phenol	ND	10	1	
Pyrene	ND	10	1	
1,6,7-Trimethylnaphthalene	ND	10	1	
2,3,4,6-Tetrachlorophenol	ND	10	1	
2,6-Dichlorophenol	ND	10	1	
Dibenzothiophene	ND	10	1	
1-Methylphenanthrene	ND	10	1	
Benzo (e) Pyrene	ND	10	1	
Perylene	ND	10	1	
Biphenyl	ND	10	1	
2,6-Dimethylnaphthalene	ND	10	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	70	32-143	
2-Fluorobiphenyl	56	14-146	
2-Fluorophenol	51	15-138	
Nitrobenzene-d5	38	18-162	
p-Terphenyl-d14	74	34-148	
Phenol-d6	68	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-D**	**06/25/13 13:25**	**Sea Water**	**GC/MS AAA**	**06/27/13**	**07/01/13 13:05**	**130627L03**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	0.20	1	
2-Methylnaphthalene	ND	0.20	1	
1-Methylnaphthalene	ND	0.20	1	
Acenaphthylene	ND	0.20	1	
Acenaphthene	ND	0.20	1	
Fluorene	ND	0.20	1	
Phenanthrene	ND	0.20	1	
Anthracene	ND	0.20	1	
Fluoranthene	ND	0.20	1	
Pyrene	ND	0.20	1	
Benzo (a) Anthracene	ND	0.20	1	
Chrysene	ND	0.20	1	
Benzo (k) Fluoranthene	ND	0.20	1	
Benzo (b) Fluoranthene	ND	0.20	1	
Benzo (a) Pyrene	ND	0.20	1	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	1	
Dibenz (a,h) Anthracene	ND	0.20	1	
Benzo (g,h,i) Perylene	ND	0.20	1	
Benzo (e) Pyrene	ND	0.20	1	
Perylene	ND	0.20	1	
Biphenyl	ND	0.20	1	
1-Methylphenanthrene	ND	0.20	1	
2,6-Dimethylnaphthalene	ND	0.20	1	
1,6,7-Trimethylnaphthalene	ND	0.20	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	85	28-139	
2-Fluorobiphenyl	90	33-144	
p-Terphenyl-d14	105	23-160	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-280-38**	**N/A**	**Aqueous**	**GC/MS AAA**	**06/27/13**	**07/01/13 12:13**	**130627L03**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	0.20	1	
2-Methylnaphthalene	ND	0.20	1	
1-Methylnaphthalene	ND	0.20	1	
Acenaphthylene	ND	0.20	1	
Acenaphthene	ND	0.20	1	
Fluorene	ND	0.20	1	
Phenanthrene	ND	0.20	1	
Anthracene	ND	0.20	1	
Fluoranthene	ND	0.20	1	
Pyrene	ND	0.20	1	
Benzo (a) Anthracene	ND	0.20	1	
Chrysene	ND	0.20	1	
Benzo (k) Fluoranthene	ND	0.20	1	
Benzo (b) Fluoranthene	ND	0.20	1	
Benzo (a) Pyrene	ND	0.20	1	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	1	
Dibenz (a,h) Anthracene	ND	0.20	1	
Benzo (g,h,i) Perylene	ND	0.20	1	
Benzo (e) Pyrene	ND	0.20	1	
Perylene	ND	0.20	1	
Biphenyl	ND	0.20	1	
1-Methylphenanthrene	ND	0.20	1	
2,6-Dimethylnaphthalene	ND	0.20	1	
1,6,7-Trimethylnaphthalene	ND	0.20	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	84	28-139	
2-Fluorobiphenyl	87	33-144	
p-Terphenyl-d14	103	23-160	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**GC/MS HHH**	**06/29/13**	**07/02/13 16:51**	**130629L05**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
PCB018	8.4	0.62	1	
PCB028	7.3	0.62	1	
PCB037	ND	0.62	1	
PCB044	6.0	0.62	1	
PCB049	41	0.62	1	
PCB052	9.3	0.62	1	
PCB066	3.4	0.62	1	
PCB070	5.5	0.62	1	
PCB074	3.5	0.62	1	
PCB077	ND	0.62	1	
PCB081	ND	0.62	1	
PCB087	5.1	0.62	1	
PCB099	6.2	0.62	1	
PCB101	12	0.62	1	
PCB105	8.8	0.62	1	
PCB110	13	0.62	1	
PCB114	ND	0.62	1	
PCB118	3.2	0.62	1	
PCB119	ND	0.62	1	
PCB123	ND	0.62	1	
PCB126	ND	0.62	1	
PCB128	ND	0.62	1	
PCB138/158	10	1.2	1	
PCB149	7.3	0.62	1	
PCB151	7.0	0.62	1	
PCB153	7.0	0.62	1	
PCB156	ND	0.62	1	
PCB157	ND	0.62	1	
PCB167	ND	0.62	1	
PCB168	ND	0.62	1	
PCB169	ND	0.62	1	
PCB170	ND	0.62	1	
PCB177	ND	0.62	1	
PCB180	ND	0.62	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB183	0.72	0.62	1	
PCB187	ND	0.62	1	
PCB189	ND	0.62	1	
PCB194	ND	0.62	1	
PCB201	ND	0.62	1	
PCB206	ND	0.62	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	22	50-125	1,2,6
p-Terphenyl-d14	83	50-125	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**GC/MS HHH**	**06/29/13**	**07/02/13 17:20**	**130629L05**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
PCB018	16	0.58	1	
PCB028	19	0.58	1	
PCB037	ND	0.58	1	
PCB044	1.5	0.58	1	
PCB049	77	0.58	1	
PCB052	8.9	0.58	1	
PCB066	5.6	0.58	1	
PCB070	ND	0.58	1	
PCB074	ND	0.58	1	
PCB077	ND	0.58	1	
PCB081	ND	0.58	1	
PCB087	7.4	0.58	1	
PCB099	8.5	0.58	1	
PCB101	12	0.58	1	
PCB105	7.9	0.58	1	
PCB110	16	0.58	1	
PCB114	ND	0.58	1	
PCB118	3.0	0.58	1	
PCB119	ND	0.58	1	
PCB123	ND	0.58	1	
PCB126	ND	0.58	1	
PCB128	ND	0.58	1	
PCB138/158	12	1.2	1	
PCB149	9.2	0.58	1	
PCB151	7.8	0.58	1	
PCB153	9.2	0.58	1	
PCB156	ND	0.58	1	
PCB157	ND	0.58	1	
PCB167	ND	0.58	1	
PCB168	ND	0.58	1	
PCB169	ND	0.58	1	
PCB170	ND	0.58	1	
PCB177	ND	0.58	1	
PCB180	ND	0.58	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB183	0.60	0.58	1	
PCB187	ND	0.58	1	
PCB189	ND	0.58	1	
PCB194	ND	0.58	1	
PCB201	ND	0.58	1	
PCB206	ND	0.58	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	99	50-125	
p-Terphenyl-d14	70	50-125	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-107**	**N/A**	**Soil**	**GC/MS HHH**	**06/29/13**	**07/03/13 16:27**	**130629L05**

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.50	1	
PCB028	ND	0.50	1	
PCB037	ND	0.50	1	
PCB044	ND	0.50	1	
PCB049	ND	0.50	1	
PCB052	ND	0.50	1	
PCB066	ND	0.50	1	
PCB070	ND	0.50	1	
PCB074	ND	0.50	1	
PCB077	ND	0.50	1	
PCB081	ND	0.50	1	
PCB087	ND	0.50	1	
PCB099	ND	0.50	1	
PCB101	ND	0.50	1	
PCB105	ND	0.50	1	
PCB110	ND	0.50	1	
PCB114	ND	0.50	1	
PCB118	ND	0.50	1	
PCB119	ND	0.50	1	
PCB123	ND	0.50	1	
PCB126	ND	0.50	1	
PCB128	ND	0.50	1	
PCB138/158	ND	1.0	1	
PCB149	ND	0.50	1	
PCB151	ND	0.50	1	
PCB153	ND	0.50	1	
PCB156	ND	0.50	1	
PCB157	ND	0.50	1	
PCB167	ND	0.50	1	
PCB168	ND	0.50	1	
PCB169	ND	0.50	1	
PCB170	ND	0.50	1	
PCB177	ND	0.50	1	
PCB180	ND	0.50	1	
PCB183	ND	0.50	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB187	ND	0.50	1	
PCB189	ND	0.50	1	
PCB194	ND	0.50	1	
PCB201	ND	0.50	1	
PCB206	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	61	50-125	
p-Terphenyl-d14	102	50-125	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-E**	**06/25/13 13:25**	**Sea Water**	**GC/MS HHH**	**06/27/13**	**07/01/13 16:00**	**130627L16**

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.020	1	
PCB028	ND	0.020	1	
PCB037	ND	0.020	1	
PCB044	ND	0.020	1	
PCB049	ND	0.020	1	
PCB052	ND	0.020	1	
PCB066	ND	0.020	1	
PCB070	ND	0.020	1	
PCB074	ND	0.020	1	
PCB077	ND	0.020	1	
PCB081	ND	0.020	1	
PCB087	ND	0.020	1	
PCB099	ND	0.020	1	
PCB101	ND	0.020	1	
PCB105	ND	0.020	1	
PCB110	ND	0.020	1	
PCB114	ND	0.020	1	
PCB118	ND	0.020	1	
PCB119	ND	0.020	1	
PCB123	ND	0.020	1	
PCB126	ND	0.020	1	
PCB128	ND	0.020	1	
PCB138/158	ND	0.040	1	
PCB149	ND	0.020	1	
PCB151	ND	0.020	1	
PCB153	ND	0.020	1	
PCB156	ND	0.020	1	
PCB157	ND	0.020	1	
PCB167	ND	0.020	1	
PCB168	ND	0.020	1	
PCB169	ND	0.020	1	
PCB170	ND	0.020	1	
PCB177	ND	0.020	1	
PCB180	ND	0.020	1	
PCB183	ND	0.020	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB187	ND	0.020	1	
PCB189	ND	0.020	1	
PCB194	ND	0.020	1	
PCB201	ND	0.020	1	
PCB206	ND	0.020	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
p-Terphenyl-d14	107	50-150	
2-Fluorobiphenyl	67	50-150	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-433-54**	**N/A**	**Aqueous**	**GC/MS HHH**	**06/27/13**	**07/01/13 12:34**	**130627L16**

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.020	1	
PCB028	ND	0.020	1	
PCB037	ND	0.020	1	
PCB044	ND	0.020	1	
PCB049	ND	0.020	1	
PCB052	ND	0.020	1	
PCB066	ND	0.020	1	
PCB070	ND	0.020	1	
PCB074	ND	0.020	1	
PCB077	ND	0.020	1	
PCB081	ND	0.020	1	
PCB087	ND	0.020	1	
PCB099	ND	0.020	1	
PCB101	ND	0.020	1	
PCB105	ND	0.020	1	
PCB110	ND	0.020	1	
PCB114	ND	0.020	1	
PCB118	ND	0.020	1	
PCB119	ND	0.020	1	
PCB123	ND	0.020	1	
PCB126	ND	0.020	1	
PCB128	ND	0.020	1	
PCB138/158	ND	0.040	1	
PCB149	ND	0.020	1	
PCB151	ND	0.020	1	
PCB153	ND	0.020	1	
PCB156	ND	0.020	1	
PCB157	ND	0.020	1	
PCB167	ND	0.020	1	
PCB168	ND	0.020	1	
PCB169	ND	0.020	1	
PCB170	ND	0.020	1	
PCB177	ND	0.020	1	
PCB180	ND	0.020	1	
PCB183	ND	0.020	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB187	ND	0.020	1	
PCB189	ND	0.020	1	
PCB194	ND	0.020	1	
PCB201	ND	0.020	1	
PCB206	ND	0.020	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
p-Terphenyl-d14	104	50-150	
2-Fluorobiphenyl	71	50-150	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3510C
Method: Organotins by Krone et al.
Units: ng/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-Sitewater	**13-06-1677-5-C**	**06/25/13 13:25**	**Sea Water**	**GC/MS JJJ**	**07/01/13**	**07/05/13 11:05**	**130701L06**

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1	
Tetrabutyltin	ND	3.0	1	
Tributyltin	ND	3.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	86	30-120	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-035-233**	**N/A**	**Aqueous**	**GC/MS JJJ**	**07/01/13**	**07/05/13 10:35**	**130701L06**

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1	
Tetrabutyltin	ND	3.0	1	
Tributyltin	ND	3.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	94	30-120	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**GC/MS JJJ**	**07/02/13**	**07/02/13 18:27**	**130702L06**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Monobutyltin	140	3.7	1	
Tetrabutyltin	ND	3.7	1	
Tributyltin	230	3.7	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	134	48-126	2,7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**GC/MS JJJ**	**07/02/13**	**07/03/13 18:52**	**130702L06**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	1500	37	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	173	48-126	1,2,7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**GC/MS JJJ**	**07/02/13**	**07/02/13 18:57**	**130702L06**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Tetrabutyltin	6.5	3.5	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	131	48-126	2,7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**GC/MS JJJ**	**07/02/13**	**07/03/13 19:22**	**130702L06**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	4000	70	20	
Monobutyltin	410	70	20	
Tributyltin	1000	70	20	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	184	48-126	1,2,7

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-1034**	**N/A**	**Soil**	**GC/MS JJJ**	**07/02/13**	**07/02/13 10:57**	**130702L06**

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1	
Tetrabutyltin	ND	3.0	1	
Tributyltin	ND	3.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	92	48-126	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

PARTICLE SIZE SUMMARY

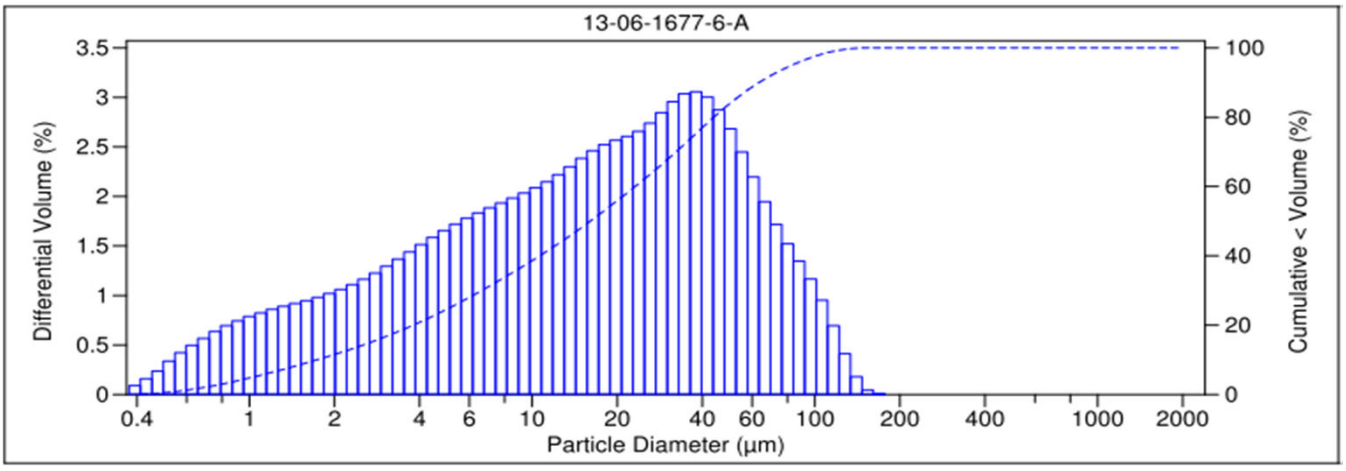
(ASTM D422 / D4464M)

AMEC San Diego		Date Sampled:	6/24/2013
		Date Received:	6/25/2013
		Work Order No:	13-06-1677
		Date Analyzed:	7/9/2013
		Method:	ASTM D4464M

Project: POLA - B161

Sample ID	Depth ft	Description	Mean Grain Size mm
COMPOSITE A		Medium Sand	0.484

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
15.29	0.00	0.00	0.00	0.46	8.31	58.61	17.33	75.94



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Calscience Environmental Laboratories, Inc.

PARTICLE SIZE SUMMARY

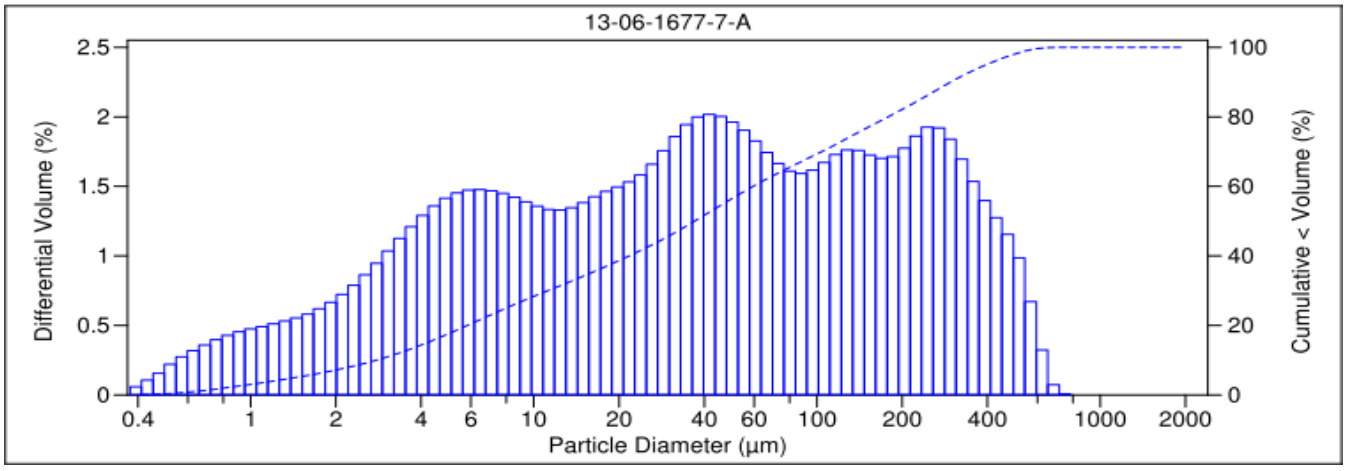
(ASTM D422 / D4464M)

AMEC San Diego		Date Sampled:	6/24/2013
		Date Received:	6/25/2013
		Work Order No:	13-06-1677
		Date Analyzed:	7/9/2013
		Method:	ASTM D4464M

Project: POLA - B161

Sample ID	Depth ft	Description	Mean Grain Size mm
COMPOSITE B		Coarse Sand	0.527

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
14.33	0.00	1.65	9.85	11.31	10.62	40.18	12.05	52.23



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Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order: 13-06-1677 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

For any analysis identified as a "field" test with a holding time (HT) </= 15 minutes where the sample is received outside of HT, Calscience will adhere to its internal HT of 24 hours. In cases where sample analysis does not meet Calscience's internal HT, results will be appropriately qualified.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

☒ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

Date 6/25/13

Page 1 of 5

LABORATORY CLIENT: AMEC

ADDRESS: 9210 Sky Park ct #200

CITY San Diego, STATE CA ZIP 92123

TEL: (858) 445-2334 E-MAIL: tyler.huff@amec.com

CLIENT PROJECT NAME / NUMBER: POLA - B161

P.O. NO.:

PROJECT CONTACT: Barry Snyder

SAMPLER(S): (PRINT) Tyler Huff

COELT LOG CODE

LAB USE ONLY 13-06-1677

COOLER RECEIPT TEMP= °C

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐ _____

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (g)	TPH (d) or (C6-C36) or (C6-C44)	TPH (___)	BTEX / MTBE (8260B) or (___)	VOCs (8260B)	Oxygenates (8260B)	Encore Prep (5035)	SVOCs (8270C)	Pesticides (8081A)	PCBs (8082)	PNAs (8310) or (8270C)	T22 Metals (6010B/747X)	Cr(VI) [7196A or 7199 or 218.6]	VOCs (TO-14A) or (TO-15)	TPH (g) [TO-3]+ ___	See attached		
1	B161-P1		6/24/13	1400	sed	1																X		
2	B161-P2		6/25/13	0845		1																X		
3	B161-P3 (3)		6/24/13	1600		1																X		
4	B161-P4		6/24/13	1715	↓	1																X		
5	B161-Sitewater		6/25/13	1325	H_2O	1																X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
	Amec / A-CS	6/25/13	1845
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

05/01/07 Revision

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B161 Instructions

amec

1677

(1) take an individual bag/site sample (ex B161-P1) and Homogenize it only with itself.

↳ (1.1) ~~Take~~ Jar an 8oz archive Jar from homogenized sample. set aside Remaining Sample

↳ (1.2) Repeat for all 4 bags / sites (B161-P2, B161-P3, B161-P4)

(2) make "composite Area A" by combining material from B161-P1 & B161-P2. Homogenize / composite thoroughly.

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↳ (2.1) Jar an 8oz archive ~~Jar~~, a 16oz chem test Jar, and 1x grainsize ziplock, test the 16oz Jar + grainsize, test via table 3.3 (attached)

~~↳ (2.2) repeat~~

(3) make "composite Area B" by combining material from B161-P3, B161-P4. Homogenize / composite thoroughly.

↳ (3.1) Jar an 8oz archive Jar, a 16oz chem test Jar + grainsize, test ~~this~~ 16oz Jar + grainsize as per table 3.3 (attached)

(see next page)

B161 Instructions (Continued)

3 of 5

(1677)

(4) ~~Label~~ Combine all remaining sediment material into one. This material will be named "Berth 161 Dredge Area Composite" Jar all of this material into 16 oz Jars. This material will be used with the B161-site water to create the EET/MET elutriate test.

any questions, have Danielle Gonsman Contact Barry Snyder @ (858) 354-8340

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3.4.1 Test Sediment Compositing

All push cores collected will be sent directly to Calscience for compositing. There will be two sediment composites (Composite Area A and Composite Area B) created by Calscience at the culmination of sampling at the Project site. Once collected, each core will be marked with its final length and the location of the Z-layer (if able to be sampled) will be indicated on each tube.

Test sediment composites will be prepared by Calscience by first removing the Z-layer, if present. The remainder of each core sample (up to 2 ft) and the Z-layer from each core sample (if collected) will then be homogenized separately in clean, stainless-steel mixing vessels. An archive sample will be collected from each core and Z-layer sample.

step 0

Once individual core archives have been collected, the remainder of each sample will be thoroughly combined into two separate composite samples, Composite A and Composite B. Composite A will be composed of material from core samples B161-P1 and B161-P2 and Composite Area B will be composed of core samples B161-P3 and B161-P4.

step 2

step 3

3.4.2 Z-layer Sediment Compositing

If collected, there will be no compositing of Z-layer samples or initial analysis of individual z-layer samples. Archives from any Z-layer samples collected will be retained and frozen, should there be a need for additional testing in the future.

3.4.3 Elutriate Preparation and Testing

Site water from the proposed dredge area will be used to prepare the sediment elutriates for chemical analyses. Site water will be stored in polyethylene cubitainers and sampled at the end of the effort to minimize holding times.

Elutriate testing will be conducted to predict potential water quality compliance issues during dredging and disposal operations. Only one elutriate analysis will be performed for Project sediments. The elutriate test will be performed using sediment from all four core samples. This sediment composite from all four core samples will be known as the Berth 161 Dredge Area Composite (no Z-layer samples will be included). The elutriate samples will be prepared by combining a subsample of the Berth 161 Dredge Area Composite sediment with harbor water collected from the Project dredge footprint at a 1:4 part sediment to water ratio. The elutriate sample will be prepared by Calscience according to the procedures outlined in the Inland Testing Manual (ITM USEPA/USACE, 1998).

step 4

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Table 3-3.
Chemical Analyses for Sediment and Elutriate Samples

Analyte	Analysis Method	Sediment Target Detection Limits[a,b]	Elutriate Target Detection Limits[a,b]
Total Solids	SM 2540 B	0.1%	N/A
Total Organic Carbon	9060	0.1%	N/A
Total Ammonia	SM 4500-NH3 B/C (M)[c]	0.2 mg/kg	N/A
Total sulfides	376.2M[c]	0.5 mg/kg	N/A
Soluble sulfides	SM 4500 S2 - D	0.5 mg/kg	N/A
Oil and Grease	EPA 413.2M	10 mg/kg	N/A
Arsenic	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Cadmium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Chromium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Copper	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Lead	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Mercury	7471A[d]	0.02 mg/kg	0.0002 mg/L
Nickel	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Selenium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Silver	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Zinc	6020/6010B[d]	1.0 mg/kg	0.005 mg/L
TPH (C6-C44)	EPA 8015B(M)/8015B	5.0 mg/kg	N/A
TRPH	418.1M[d]	10 mg/kg	N/A
PAHs[e]	8270C SIM/ GC/TQ[d]	10 µg/kg	0.2 µg/L
Chlorinated Pesticides[f]	8081A[d]	1.0 - 20 µg/kg	0.1 µg/L
PCB Congeners[g]	8270C SIM PCB [d]	0.5 µg/kg	0.02 µg/L
Phenols	8270C SIM[d]	20 - 100 µg/kg	N/A
Phthalates	8270C SIM[d]	10 µg/kg	N/A
Pyrethroids	GC/MS/MS[h]	0.5 – 1.0 µg/kg	~~N/A~~ Add
Organotins	Rice/Krone[i]	3.0 µg/kg	3.0 ng/L

Notes:

[a] Sediment minimum detection limits are on a dry-weight basis.

[b] Reporting limits were provided by Calscience Environmental Laboratories, Inc.

[c] Standard Methods for the Examination of Water and Wastewater, 19th edition, American Public Health Association et al. 1995.

[d] EPA 1986-1996. SW -846. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, 3rd Edition.

[e] Includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene.

[f] Includes aldrin, α-benzene hexachloride (BHC), β-BHC, γ-BHC (lindane), δ-BHC, chlordane, 2,4- and 4,4-dichlorodiphenyldiethane (DDD), 2,4- and 4,4- dichlorodiphenylethylene (DDE), 2,4- and 4,4- dichlorodiphenyltrichloroethane (DDT), dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene.

[g] PCBs (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)

[h] Allethrin (Bioallethrin), Bifenthrin, Cyfluthrin-beta (Baythroid), Cyhalothrin-Lamba, Cypermethrin, Deltamethrin (Decamethrin), Esfenvalerate, Fenpropathrin (Danitol), Fenvalerate (sanmarton), Fluvalinate Permethrin (cis and trans), Resmethrin (Bioresmethrin), Resmethrin, Sumithrin (Phenothrin}, Tetramethrin, and Tralomethrin

[i] Rice et al. 1987 or similar (e.g., Krone et al. 1989)

[j] except toxaphene which is 1,000 µg/kg

µg/kg - micrograms per kilogram (parts per billion)
µg/L - micrograms per liter
N/A - not applicable?
PCB - polychlorinated biphenyl
SOP - standard operating procedure
TRPH - total recoverable petroleum hydrocarbons
mg/kg - milligrams per kilogram (parts per million)
mg/L - milligrams per liter
ng/L - nanograms per liter
PAH - polycyclic aromatic hydrocarbon
SM - Standard Methods
TPH - total petroleum hydrocarbons

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-06-1677

SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: AMEC

DATE: 06/25/13

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 4.2 °C - 0.2 °C (CF) = 4.0 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: JN

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: JN

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOAh ☐VOAna_2 ☐125AGB ☐125AGBh ☐125AGBp ☑1AGB* ☐1AGBna_2 ☐1AGBs

☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB

☑250PB* ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna_2 ☑5Gallon cube ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** HH

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope **Reviewed by:** NC

Preservative: h: HCL n: HNO_3 na_2:$Na_2S_2O_3$ na: NaOH p: H_3PO_4 s: H_2SO_4 u: Ultra-pure znna: $ZnAc_2$+NaOH f: Filtered **Scanned by:** NC

(-5) Prepared at the Lab.

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-06-1677

SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: AMEC DATE: 06/25/13

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 3.9 °C - 0.2 °C (CF) = 3.7 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: JN

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: JN

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☑plastic bag

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** HH

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** HH

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** h.c

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Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-07-1447

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: AMEC Environment & Infrastructure

Client Project Name: POLA - B161

Attention: Barry Snyder
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Approved for release on 08/12/2013 by:
Danielle Gonsman
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: POLA - B161
Work Order Number: 13-07-1447

Calscience Environmental Laboratories, Inc.

CASE NARRATIVE

Calscience Work Order No.: 13-07-1447
Project ID: Berth 161

Provided below is a narrative of our analytical effort, including any unique features or anomalies encountered as part of the analysis of the sediment samples.

Sample Condition on Receipt

Three sediment samples were received for this project on July 22, 2013. The sample was transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody (COC) procedures. The temperature of the sample upon receipt at the laboratory was 1.6°C. The sample was logged into the Laboratory Information Management System (LIMS), given laboratory identification numbers and then stored in refrigeration units pending chemistry.

COC discrepancies (if any) were noted in the Sample Anomaly Form.

Tests Performed

Total Solids by SM 2540B
Ammonia by SM 4500-NH3-B/C (M)
Grain Size by ASTM D4464
Total Organic Carbon by EPA 9060A
Trace Metals by EPA 6020/7471
Chlorinated Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
Dissolved and Total Sulfide by EPA 376.2M
Oil and Grease by EPA 413.2M
TRPH by EPA 418.1M
TPH C6-C44 by EPA 8015B (M)
PAHs, Phenols and Phthalates by EPA 8270C SIM
Pyrethroids by EPA 8270D (M)/TQ/EI
Organotins by Krone et al.

Data Summary

The sediment sample was homogenized prior to analysis.

Holding times

All holding times were met with the following exceptions.

The samples were received and/or analyzed outside the EPA Method recommended holding time for all analyses except metals and particle size. However, the samples were frozen after collection (prior to holding time expiration) at -20^{o}C. Calscience follows standard industry

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Calscience Environmental Laboratories, Inc.

practice and the Puget Sound protocol for holding times in sediment samples, which states holding time may be extended up to one year if kept frozen after collection. Therefore, the results have not been flagged as exceeding the EPA recommended holding time.

Blanks

Concentrations of target analytes in the method blank were found to be below reporting limits for all testing.

Reporting Limits

The Method Detection Limits were met.

Laboratory Control Samples

A Laboratory Control Sample (LCS) analysis was performed for each applicable test. All parameters were within established control limits.

Matrix Spikes

Matrix spiking was performed on project and non-project samples. All matrix spike parameters outside the acceptable control limits were noted below.

For TRPH by EPA 418.1M, the recoveries were outside of the control limits. Since the LCS recoveries were in control, the results are released with no further action.

For Pyrethroids by EPA 8270D (M)/TQ/EI, several of the recoveries were outside of the control limits. Since the LCS recovery was in control, the results are released with no further action.

For Metals by EPA 6020, the Zinc MSD recovery was outside the control limits. Since the LCS recovery was in control the results are released with no further action.

For Chlorinated Pesticides by EPA 8081A, the Endrin aldehyde recoveries were outside the control limits. Since the LCS recovery was in control, the results are released with no further action.

For Organotins by Krone et al., the recoveries were outside the control limits. Since the LCS recoveries were in control the results are released with no further action.

Surrogates

Surrogate recoveries for all applicable tests and samples were within acceptable control limits with the following exceptions.

For Chlorinated Pesticides by EPA 8081A, the surrogate recoveries for samples B161-P1 Z-Layer and B161-P3 Z Layer were outside the acceptable control limits.

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Calscience Environmental Laboratories, Inc.

For PCB congeners by EPA 8270C SIM, the 2-Fluorobiphenyl recovery was outside of acceptable control limits for sample B161-P3 Z Layer.

For Organotins by Krone et al., the recoveries of both surrogates for samples B161-P1 Z-Layer and B161-P3 Z Layer were outside the control limits.

Acronyms

LCS - Laboratory Control Sample
PDS - Post Digestion Spike
MS/MSD- Matrix Spike/Matrix Spike Duplicate
ME-Marginal Exceedance
RPD- Relative Percent Difference

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Calscience Environmental Laboratories, Inc.

Work Order Narrative

Work Order: 13-07-1447 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 07/22/13. They were assigned to Work Order 13-07-1447.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Calscience Environmental Laboratories, Inc.

Sample Summary

Client:	AMEC Environment & Infrastructure	Work Order:	13-07-1447
	9210 Sky Park Court, Suite 200	Project Name:	POLA - B161
	San Diego, CA 92123-4302	PO Number:	1015101928
		Date Received:	07/22/13
Attn:	Barry Snyder		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B161-P1 Z-Layer	13-07-1447-1	06/24/13 14:45	1	Sediment
B161-P2 Z-Layer	13-07-1447-2	06/25/13 08:45	1	Sediment
B161-P3 Z-Layer	13-07-1447-3	06/24/13 16:00	1	Sediment

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: EPA 376.2M
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**N/A**	**07/29/13**	**07/29/13 12:04**	**D0729SL4**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	4.6	0.38	0.6	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**N/A**	**07/29/13**	**07/29/13 12:04**	**D0729SL4**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	5.1	0.39	0.6	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**N/A**	**07/29/13**	**07/29/13 12:04**	**D0729SL4**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	4.4	0.37	0.6	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-001-4757**	**N/A**	**Soil**	**N/A**	**07/29/13**	**07/29/13 12:04**	**D0729SL4**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Total	ND	0.10	0.2	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: EPA 376.2M
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**N/A**	**07/22/13**	**07/22/13 20:20**	**D0722DSL1**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**N/A**	**07/22/13**	**07/22/13 20:20**	**D0722DSL1**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**N/A**	**07/22/13**	**07/22/13 20:20**	**D0722DSL1**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-001-4758**	**N/A**	**Soil**	**N/A**	**07/22/13**	**07/22/13 20:20**	**D0722DSL1**

Parameter	Result	RL	DF	Qualifiers
Sulfide, Dissolved	ND	0.10	0.2	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: EPA 9060A
Units: %

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**TOC 5**	**07/29/13**	**07/30/13 12:46**	**D0729TOCL1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	1.0	0.063	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**TOC 5**	**07/29/13**	**07/30/13 12:46**	**D0729TOCL1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	0.18	0.065	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**TOC 5**	**07/29/13**	**07/30/13 12:46**	**D0729TOCL1**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	3.5	0.061	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-891**	**N/A**	**Soil**	**TOC 5**	**07/29/13**	**07/30/13 12:46**	**D0729TOCL1**

Parameter	Result	RL	DF	Qualifiers
Carbon, Total Organic	ND	0.050	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: SM 2540 B (M)
Units: %

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**N/A**	**07/23/13**	**07/23/13 20:00**	**D0723TSB2**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	79.0	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**N/A**	**07/23/13**	**07/23/13 20:00**	**D0723TSB2**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	76.8	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**N/A**	**07/23/13**	**07/23/13 20:00**	**D0723TSB2**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	81.4	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-2279**	**N/A**	**Soil**	**N/A**	**07/23/13**	**07/23/13 20:00**	**D0723TSB2**

Parameter	Result	RL	DF	Qualifiers
Solids, Total	ND	0.100	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: SM 4500-NH3 B/C (M)
Units: mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**BUR05**	**07/29/13**	**07/29/13 14:26**	**D0729NH3L4**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	18	13	2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**BUR05**	**07/29/13**	**07/29/13 14:26**	**D0729NH3L4**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	18	13	2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**BUR05**	**07/29/13**	**07/29/13 14:26**	**D0729NH3L4**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	41	12	2	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-812-545**	**N/A**	**Soil**	**BUR05**	**07/29/13**	**07/29/13 14:26**	**D0729NH3L4**

Parameter	Result	RL	DF	Qualifiers
Ammonia (as N)	ND	5.0	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: Extraction
Method: EPA 413.2M
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 11:30**	**130729L03**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	6200	630	50	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 11:30**	**130729L03**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	54	13	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 11:30**	**130729L03**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	19000	1200	100	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-019-145**	**N/A**	**Soil**	**IR 2**	**07/29/13**	**07/30/13 11:30**	**130729L03**

Parameter	Result	RL	DF	Qualifiers
Oil and Grease	ND	10	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: Extraction
Method: EPA 418.1M
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 13:00**	**130729L04**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
TRPH	4800	630	50	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 13:00**	**130729L04**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
TRPH	50	13	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 13:00**	**130729L04**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
TRPH	15000	1200	100	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1941**	**N/A**	**Soil**	**IR 2**	**07/29/13**	**07/30/13 13:00**	**130729L04**

Parameter	Result	RL	DF	Qualifiers
TRPH	ND	10	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GC 46**	**07/23/13**	**07/24/13 05:57**	**130723B07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
C6	ND	63	10	
C7	ND	63	10	
C8	ND	63	10	
C9-C10	ND	63	10	
C11-C12	ND	63	10	
C13-C14	ND	63	10	
C15-C16	120	63	10	
C17-C18	150	63	10	
C19-C20	170	63	10	
C21-C22	160	63	10	
C23-C24	210	63	10	
C25-C28	360	63	10	
C29-C32	480	63	10	
C33-C36	410	63	10	
C37-C40	320	63	10	
C41-C44	200	63	10	
C6-C44 Total	2600	63	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	107	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**GC 46**	**07/23/13**	**07/23/13 17:54**	**130723B07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
C6	ND	6.5	1	
C7	ND	6.5	1	
C8	ND	6.5	1	
C9-C10	ND	6.5	1	
C11-C12	ND	6.5	1	
C13-C14	ND	6.5	1	
C15-C16	ND	6.5	1	
C17-C18	ND	6.5	1	
C19-C20	ND	6.5	1	
C21-C22	ND	6.5	1	
C23-C24	ND	6.5	1	
C25-C28	ND	6.5	1	
C29-C32	ND	6.5	1	
C33-C36	ND	6.5	1	
C37-C40	ND	6.5	1	
C41-C44	ND	6.5	1	
C6-C44 Total	ND	6.5	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	96	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**GC 46**	**07/23/13**	**07/24/13 06:13**	**130723B07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
C6	ND	61	10	
C7	ND	61	10	
C8	ND	61	10	
C9-C10	ND	61	10	
C11-C12	ND	61	10	
C13-C14	140	61	10	
C15-C16	460	61	10	
C17-C18	720	61	10	
C19-C20	760	61	10	
C21-C22	730	61	10	
C23-C24	630	61	10	
C25-C28	990	61	10	
C29-C32	1100	61	10	
C33-C36	850	61	10	
C37-C40	560	61	10	
C41-C44	320	61	10	
C6-C44 Total	7200	61	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	110	61-145	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-490-422**	**N/A**	**Soil**	**GC 46**	**07/23/13**	**07/23/13 16:48**	**130723B07**

Parameter	Result	RL	DF	Qualifiers
C6	ND	5.0	1	
C7	ND	5.0	1	
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C28	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C37-C40	ND	5.0	1	
C41-C44	ND	5.0	1	
C6-C44 Total	ND	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	95	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GCTQ 1**	**07/23/13**	**07/26/13 13:43**	**130723L01**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.63	0.32	1	
Bifenthrin	1.4	0.63	0.12	1	
Cyfluthrin	ND	0.63	0.11	1	
Cypermethrin	ND	0.63	0.087	1	
Deltamethrin/Tralomethrin	ND	0.63	0.26	1	
Fenpropathrin	ND	0.63	0.046	1	
Fenvalerate/Esfenvalerate	ND	0.63	0.045	1	
Fluvalinate	ND	0.63	0.073	1	
Permethrin (cis/trans)	11	1.3	0.14	1	
Phenothrin	ND	0.63	0.087	1	
Resmethrin/Bioresmethrin	ND	0.63	0.12	1	
Tetramethrin	ND	0.63	0.048	1	
lambda-Cyhalothrin	ND	0.63	0.055	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	73	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**GCTQ 1**	**07/23/13**	**07/26/13 14:19**	**130723L01**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.65	0.33	1	
Bifenthrin	ND	0.65	0.12	1	
Cyfluthrin	ND	0.65	0.11	1	
Cypermethrin	ND	0.65	0.090	1	
Deltamethrin/Tralomethrin	ND	0.65	0.27	1	
Fenpropathrin	ND	0.65	0.047	1	
Fenvalerate/Esfenvalerate	ND	0.65	0.046	1	
Fluvalinate	ND	0.65	0.075	1	
Permethrin (cis/trans)	0.25	1.3	0.14	1	J
Phenothrin	ND	0.65	0.089	1	
Resmethrin/Bioresmethrin	ND	0.65	0.12	1	
Tetramethrin	ND	0.65	0.049	1	
lambda-Cyhalothrin	ND	0.65	0.057	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	54	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**GCTQ 1**	**07/23/13**	**07/26/13 14:56**	**130723L01**

Comment(s): - Results are reported on a dry weight basis.
- Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.61	0.31	1	
Bifenthrin	1.8	0.61	0.12	1	
Cyfluthrin	ND	0.61	0.10	1	
Cypermethrin	ND	0.61	0.084	1	
Deltamethrin/Tralomethrin	ND	0.61	0.26	1	
Fenpropathrin	ND	0.61	0.045	1	
Fenvalerate/Esfenvalerate	ND	0.61	0.044	1	
Fluvalinate	ND	0.61	0.071	1	
Permethrin (cis/trans)	14	1.2	0.14	1	
Phenothrin	ND	0.61	0.084	1	
Resmethrin/Bioresmethrin	ND	0.61	0.11	1	
Tetramethrin	ND	0.61	0.047	1	
lambda-Cyhalothrin	ND	0.61	0.054	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	64	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-403-40**	**N/A**	**Sediment**	**GCTQ 1**	**07/23/13**	**07/26/13 13:06**	**130723L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.50	0.26	1	
Bifenthrin	ND	0.50	0.094	1	
Cyfluthrin	ND	0.50	0.085	1	
Cypermethrin	ND	0.50	0.069	1	
Deltamethrin/Tralomethrin	ND	0.50	0.21	1	
Fenpropathrin	ND	0.50	0.036	1	
Fenvalerate/Esfenvalerate	ND	0.50	0.036	1	
Fluvalinate	ND	0.50	0.057	1	
Permethrin (cis/trans)	ND	1.0	0.11	1	
Phenothrin	ND	0.50	0.069	1	
Resmethrin/Bioresmethrin	ND	0.50	0.092	1	
Tetramethrin	ND	0.50	0.038	1	
lambda-Cyhalothrin	ND	0.50	0.044	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	72	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**ICP/MS 03**	**07/23/13**	**07/23/13 20:49**	**130723L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Arsenic	9.31	0.127	1	
Cadmium	1.08	0.127	1	
Chromium	13.2	0.127	1	
Copper	144	0.127	1	
Lead	73.3	0.127	1	
Nickel	11.1	0.127	1	
Selenium	ND	0.127	1	
Silver	ND	0.127	1	
Zinc	282	1.27	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**ICP/MS 03**	**07/23/13**	**07/23/13 20:52**	**130723L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Arsenic	8.24	0.130	1	
Cadmium	ND	0.130	1	
Chromium	19.9	0.130	1	
Copper	35.2	0.130	1	
Lead	7.13	0.130	1	
Nickel	14.8	0.130	1	
Selenium	0.136	0.130	1	
Silver	ND	0.130	1	
Zinc	55.2	1.30	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3050B
Method: EPA 6020
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**ICP/MS 03**	**07/23/13**	**07/23/13 20:55**	**130723L03E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Arsenic	5.97	0.123	1	
Cadmium	1.36	0.123	1	
Chromium	14.7	0.123	1	
Copper	322	0.123	1	
Lead	1110	0.123	1	
Nickel	11.8	0.123	1	
Selenium	0.291	0.123	1	
Silver	0.154	0.123	1	
Zinc	605	1.23	1	

Method Blank	099-15-254-134	N/A	Soil	ICP/MS 03	07/23/13	07/23/13 16:52	130723L03E

Parameter	Result	RL	DF	Qualifiers
Arsenic	ND	0.100	1	
Cadmium	ND	0.100	1	
Chromium	ND	0.100	1	
Copper	ND	0.100	1	
Lead	ND	0.100	1	
Nickel	ND	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Zinc	ND	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 7471A Total
Method: EPA 7471A
Units: mg/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**Mercury**	**07/23/13**	**07/23/13 16:48**	**130723L05E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Mercury	0.846	0.0254	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**Mercury**	**07/23/13**	**07/23/13 16:51**	**130723L05E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Mercury	0.0398	0.0261	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**Mercury**	**07/23/13**	**07/23/13 16:53**	**130723L05E**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Mercury	0.522	0.0246	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-400**	**N/A**	**Soil**	**Mercury**	**07/23/13**	**07/23/13 14:19**	**130723L05E**

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: ASTM D4464 (M)
Units: %

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-A**	**06/24/13 14:45**	**Sediment**	**LPSA 1**	**N/A**	**07/31/13 16:12**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	7.09	
Silt (0.00391 to 0.0625mm)	32.38	
Total Silt and Clay (0 to 0.0625mm)	39.47	
Very Fine Sand (0.0625 to 0.125mm)	26.28	
Fine Sand (0.125 to 0.25mm)	29.38	
Medium Sand (0.25 to 0.5mm)	4.87	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-A**	**06/25/13 08:45**	**Sediment**	**LPSA 1**	**N/A**	**07/31/13 16:17**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	17.56	
Silt (0.00391 to 0.0625mm)	55.79	
Total Silt and Clay (0 to 0.0625mm)	73.35	
Very Fine Sand (0.0625 to 0.125mm)	17.30	
Fine Sand (0.125 to 0.25mm)	9.35	
Medium Sand (0.25 to 0.5mm)	0.010	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-A**	**06/24/13 16:00**	**Sediment**	**LPSA 1**	**N/A**	**07/31/13 16:23**	

Parameter	Result	Qualifiers
Clay (less than 0.00391mm)	13.15	
Silt (0.00391 to 0.0625mm)	47.39	
Total Silt and Clay (0 to 0.0625mm)	60.55	
Very Fine Sand (0.0625 to 0.125mm)	19.10	
Fine Sand (0.125 to 0.25mm)	17.30	
Medium Sand (0.25 to 0.5mm)	3.06	
Coarse Sand (0.5 to 1mm)	ND	
Very Coarse Sand (1 to 2mm)	ND	
Gravel (greater than 2mm)	ND	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GC 66**	**07/24/13**	**07/27/13 17:04**	**130724L05**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.3	1	
Alpha-BHC	ND	1.3	1	
Beta-BHC	ND	1.3	1	
Delta-BHC	ND	1.3	1	
Gamma-BHC	ND	1.3	1	
Chlordane	ND	13	1	
Dieldrin	ND	1.3	1	
Trans-nonachlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1	
2,4'-DDE	ND	1.3	1	
2,4'-DDT	ND	1.3	1	
4,4'-DDD	ND	1.3	1	
4,4'-DDE	ND	1.3	1	
4,4'-DDT	ND	1.3	1	
Endosulfan I	ND	1.3	1	
Endosulfan II	ND	1.3	1	
Endosulfan Sulfate	ND	1.3	1	
Endrin	ND	1.3	1	
Endrin Aldehyde	ND	1.3	1	
Endrin Ketone	ND	1.3	1	
Heptachlor	ND	1.3	1	
Heptachlor Epoxide	ND	1.3	1	
Methoxychlor	ND	1.3	1	
Toxaphene	ND	25	1	
Alpha Chlordane	ND	1.3	1	
Gamma Chlordane	ND	1.3	1	
Cis-nonachlor	ND	1.3	1	
Oxychlordane	ND	1.3	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	133	50-130	2,7
Decachlorobiphenyl	202	50-130	2,7

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**GC 66**	**07/24/13**	**07/27/13 16:50**	**130724L05**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.3	1	
Alpha-BHC	ND	1.3	1	
Beta-BHC	ND	1.3	1	
Delta-BHC	ND	1.3	1	
Gamma-BHC	ND	1.3	1	
Chlordane	ND	13	1	
Dieldrin	ND	1.3	1	
Trans-nonachlor	ND	1.3	1	
2,4'-DDD	ND	1.3	1	
2,4'-DDE	ND	1.3	1	
2,4'-DDT	ND	1.3	1	
4,4'-DDD	ND	1.3	1	
4,4'-DDE	ND	1.3	1	
4,4'-DDT	ND	1.3	1	
Endosulfan I	ND	1.3	1	
Endosulfan II	ND	1.3	1	
Endosulfan Sulfate	ND	1.3	1	
Endrin	ND	1.3	1	
Endrin Aldehyde	ND	1.3	1	
Endrin Ketone	ND	1.3	1	
Heptachlor	ND	1.3	1	
Heptachlor Epoxide	ND	1.3	1	
Methoxychlor	ND	1.3	1	
Toxaphene	ND	26	1	
Alpha Chlordane	ND	1.3	1	
Gamma Chlordane	ND	1.3	1	
Cis-nonachlor	ND	1.3	1	
Oxychlordane	ND	1.3	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	102	50-130	
Decachlorobiphenyl	103	50-130	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**GC 66**	**07/24/13**	**07/27/13 17:18**	**130724L05**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.2	1	
Alpha-BHC	ND	1.2	1	
Beta-BHC	ND	1.2	1	
Delta-BHC	ND	1.2	1	
Gamma-BHC	ND	1.2	1	
Chlordane	ND	12	1	
Dieldrin	ND	1.2	1	
Trans-nonachlor	ND	1.2	1	
2,4'-DDD	ND	1.2	1	
2,4'-DDE	ND	1.2	1	
2,4'-DDT	ND	1.2	1	
4,4'-DDD	ND	1.2	1	
4,4'-DDE	ND	1.2	1	
4,4'-DDT	ND	1.2	1	
Endosulfan I	ND	1.2	1	
Endosulfan II	ND	1.2	1	
Endosulfan Sulfate	ND	1.2	1	
Endrin	ND	1.2	1	
Endrin Aldehyde	ND	1.2	1	
Endrin Ketone	ND	1.2	1	
Heptachlor	ND	1.2	1	
Heptachlor Epoxide	ND	1.2	1	
Methoxychlor	ND	1.2	1	
Toxaphene	ND	25	1	
Alpha Chlordane	ND	1.2	1	
Gamma Chlordane	ND	1.2	1	
Cis-nonachlor	ND	1.2	1	
Oxychlordane	ND	1.2	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	101	50-130	
Decachlorobiphenyl	48	50-130	2,6

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8081A
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-217**	**N/A**	**Soil**	**GC 66**	**07/24/13**	**07/27/13 14:57**	**130724L05**

Parameter	Result	RL	DF	Qualifiers
Aldrin	ND	1.0	1	
Alpha-BHC	ND	1.0	1	
Beta-BHC	ND	1.0	1	
Delta-BHC	ND	1.0	1	
Gamma-BHC	ND	1.0	1	
Chlordane	ND	10	1	
Dieldrin	ND	1.0	1	
Trans-nonachlor	ND	1.0	1	
2,4'-DDD	ND	1.0	1	
2,4'-DDE	ND	1.0	1	
2,4'-DDT	ND	1.0	1	
4,4'-DDD	ND	1.0	1	
4,4'-DDE	ND	1.0	1	
4,4'-DDT	ND	1.0	1	
Endosulfan I	ND	1.0	1	
Endosulfan II	ND	1.0	1	
Endosulfan Sulfate	ND	1.0	1	
Endrin	ND	1.0	1	
Endrin Aldehyde	ND	1.0	1	
Endrin Ketone	ND	1.0	1	
Heptachlor	ND	1.0	1	
Heptachlor Epoxide	ND	1.0	1	
Methoxychlor	ND	1.0	1	
Toxaphene	ND	20	1	
Alpha Chlordane	ND	1.0	1	
Gamma Chlordane	ND	1.0	1	
Cis-nonachlor	ND	1.0	1	
Oxychlordane	ND	1.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,5,6-Tetrachloro-m-Xylene	94	50-130	
Decachlorobiphenyl	97	50-130	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GC/MS MM**	**07/26/13**	**07/29/13 23:45**	**130726L10**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	130	25	2	
2,4,5-Trichlorophenol	ND	25	2	
2,4,6-Trichlorophenol	ND	25	2	
2,4-Dichlorophenol	ND	25	2	
2,4-Dimethylphenol	ND	25	2	
2,4-Dinitrophenol	ND	1300	2	
2-Chlorophenol	ND	25	2	
2-Methylnaphthalene	150	25	2	
2-Methylphenol	ND	25	2	
2-Nitrophenol	ND	25	2	
3/4-Methylphenol	31	25	2	
4,6-Dinitro-2-Methylphenol	ND	1300	2	
4-Chloro-3-Methylphenol	ND	25	2	
4-Nitrophenol	ND	1300	2	
Acenaphthene	630	25	2	
Acenaphthylene	230	25	2	
Anthracene	1300	25	2	
Benzo (a) Anthracene	2000	25	2	
Benzo (a) Pyrene	3400	25	2	
Benzo (b) Fluoranthene	3600	25	2	
Benzo (g,h,i) Perylene	1200	25	2	
Benzo (k) Fluoranthene	1800	25	2	
Bis(2-Ethylhexyl) Phthalate	160	25	2	
Butyl Benzyl Phthalate	ND	25	2	
Chrysene	2100	25	2	
Di-n-Butyl Phthalate	ND	25	2	
Di-n-Octyl Phthalate	ND	25	2	
Dibenz (a,h) Anthracene	420	25	2	
Diethyl Phthalate	ND	25	2	
Dimethyl Phthalate	ND	25	2	
Fluoranthene	4100	25	2	
Fluorene	580	25	2	
Indeno (1,2,3-c,d) Pyrene	1200	25	2	
Naphthalene	180	25	2	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
Pentachlorophenol	ND	1300	2	
Phenanthrene	4700	25	2	
Phenol	ND	25	2	
1,6,7-Trimethylnaphthalene	60	25	2	
2,3,4,6-Tetrachlorophenol	ND	25	2	
2,6-Dichlorophenol	ND	25	2	
Dibenzothiophene	130	25	2	
1-Methylphenanthrene	390	25	2	
Perylene	860	25	2	
Biphenyl	41	25	2	
2,6-Dimethylnaphthalene	100	25	2	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	67	32-143	
2-Fluorobiphenyl	57	14-146	
2-Fluorophenol	50	15-138	
Nitrobenzene-d5	37	18-162	
p-Terphenyl-d14	78	34-148	
Phenol-d6	56	17-141	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GC/MS MM**	**07/26/13**	**07/29/13 22:53**	**130726L10**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Pyrene	6100	130	10	
Benzo (e) Pyrene	2100	130	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	53	32-143	
2-Fluorobiphenyl	49	14-146	
2-Fluorophenol	41	15-138	
Nitrobenzene-d5	31	18-162	
p-Terphenyl-d14	68	34-148	
Phenol-d6	48	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**GC/MS MM**	**07/26/13**	**07/29/13 20:44**	**130726L10**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	ND	13	1	
2,4,5-Trichlorophenol	ND	13	1	
2,4,6-Trichlorophenol	ND	13	1	
2,4-Dichlorophenol	ND	13	1	
2,4-Dimethylphenol	ND	13	1	
2,4-Dinitrophenol	ND	650	1	
2-Chlorophenol	ND	13	1	
2-Methylnaphthalene	ND	13	1	
2-Methylphenol	ND	13	1	
2-Nitrophenol	ND	13	1	
3/4-Methylphenol	ND	13	1	
4,6-Dinitro-2-Methylphenol	ND	650	1	
4-Chloro-3-Methylphenol	ND	13	1	
4-Nitrophenol	ND	650	1	
Acenaphthene	ND	13	1	
Acenaphthylene	ND	13	1	
Anthracene	ND	13	1	
Benzo (a) Anthracene	ND	13	1	
Benzo (a) Pyrene	20	13	1	
Benzo (b) Fluoranthene	34	13	1	
Benzo (g,h,i) Perylene	14	13	1	
Benzo (k) Fluoranthene	24	13	1	
Bis(2-Ethylhexyl) Phthalate	160	13	1	
Butyl Benzyl Phthalate	16	13	1	
Chrysene	ND	13	1	
Di-n-Butyl Phthalate	51	13	1	
Di-n-Octyl Phthalate	ND	13	1	
Dibenz (a,h) Anthracene	ND	13	1	
Diethyl Phthalate	ND	13	1	
Dimethyl Phthalate	ND	13	1	
Fluoranthene	13	13	1	
Fluorene	ND	13	1	
Indeno (1,2,3-c,d) Pyrene	ND	13	1	
Naphthalene	ND	13	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
Pentachlorophenol	ND	650	1	
Phenanthrene	ND	13	1	
Phenol	ND	13	1	
Pyrene	49	13	1	
1,6,7-Trimethylnaphthalene	ND	13	1	
2,3,4,6-Tetrachlorophenol	ND	13	1	
2,6-Dichlorophenol	ND	13	1	
Dibenzothiophene	ND	13	1	
1-Methylphenanthrene	ND	13	1	
Benzo (e) Pyrene	18	13	1	
Perylene	ND	13	1	
Biphenyl	ND	13	1	
2,6-Dimethylnaphthalene	ND	13	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	77	32-143	
2-Fluorobiphenyl	60	14-146	
2-Fluorophenol	43	15-138	
Nitrobenzene-d5	45	18-162	
p-Terphenyl-d14	84	34-148	
Phenol-d6	60	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**GC/MS MM**	**07/26/13**	**07/29/13 23:19**	**130726L10**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	ND	250	20	
2,4,5-Trichlorophenol	ND	250	20	
2,4,6-Trichlorophenol	ND	250	20	
2,4-Dichlorophenol	ND	250	20	
2,4-Dimethylphenol	ND	250	20	
2,4-Dinitrophenol	ND	12000	20	
2-Chlorophenol	ND	250	20	
2-Methylnaphthalene	ND	250	20	
2-Methylphenol	ND	250	20	
2-Nitrophenol	ND	250	20	
3/4-Methylphenol	ND	250	20	
4,6-Dinitro-2-Methylphenol	ND	12000	20	
4-Chloro-3-Methylphenol	ND	250	20	
4-Nitrophenol	ND	12000	20	
Acenaphthene	ND	250	20	
Acenaphthylene	340	250	20	
Anthracene	800	250	20	
Benzo (a) Anthracene	1300	250	20	
Benzo (a) Pyrene	2700	250	20	
Benzo (b) Fluoranthene	3600	250	20	
Benzo (g,h,i) Perylene	670	250	20	
Benzo (k) Fluoranthene	3000	250	20	
Bis(2-Ethylhexyl) Phthalate	2500	250	20	
Butyl Benzyl Phthalate	ND	250	20	
Chrysene	1200	250	20	
Di-n-Butyl Phthalate	ND	250	20	
Di-n-Octyl Phthalate	ND	250	20	
Dibenz (a,h) Anthracene	270	250	20	
Diethyl Phthalate	ND	250	20	
Dimethyl Phthalate	ND	250	20	
Fluoranthene	7400	250	20	
Fluorene	ND	250	20	
Indeno (1,2,3-c,d) Pyrene	670	250	20	
Naphthalene	560	250	20	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
Pentachlorophenol	ND	12000	20	
Phenanthrene	620	250	20	
Phenol	ND	250	20	
Pyrene	25000	250	20	
1,6,7-Trimethylnaphthalene	ND	250	20	
2,3,4,6-Tetrachlorophenol	ND	250	20	
2,6-Dichlorophenol	ND	250	20	
Dibenzothiophene	ND	250	20	
1-Methylphenanthrene	ND	250	20	
Benzo (e) Pyrene	2100	250	20	
Perylene	2200	250	20	
Biphenyl	ND	250	20	
2,6-Dimethylnaphthalene	ND	250	20	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	62	32-143	
2-Fluorobiphenyl	54	14-146	
2-Fluorophenol	47	15-138	
Nitrobenzene-d5	43	18-162	
p-Terphenyl-d14	79	34-148	
Phenol-d6	56	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-256-48**	**N/A**	**Soil**	**GC/MS MM**	**07/26/13**	**07/29/13 17:42**	**130726L10**

Parameter	Result	RL	DF	Qualifiers
1-Methylnaphthalene	ND	10	1	
2,4,5-Trichlorophenol	ND	10	1	
2,4,6-Trichlorophenol	ND	10	1	
2,4-Dichlorophenol	ND	10	1	
2,4-Dimethylphenol	ND	10	1	
2,4-Dinitrophenol	ND	500	1	
2-Chlorophenol	ND	10	1	
2-Methylnaphthalene	ND	10	1	
2-Methylphenol	ND	10	1	
2-Nitrophenol	ND	10	1	
3/4-Methylphenol	ND	10	1	
4,6-Dinitro-2-Methylphenol	ND	500	1	
4-Chloro-3-Methylphenol	ND	10	1	
4-Nitrophenol	ND	500	1	
Acenaphthene	ND	10	1	
Acenaphthylene	ND	10	1	
Anthracene	ND	10	1	
Benzo (a) Anthracene	ND	10	1	
Benzo (a) Pyrene	ND	10	1	
Benzo (b) Fluoranthene	ND	10	1	
Benzo (g,h,i) Perylene	ND	10	1	
Benzo (k) Fluoranthene	ND	10	1	
Bis(2-Ethylhexyl) Phthalate	ND	10	1	
Butyl Benzyl Phthalate	ND	10	1	
Chrysene	ND	10	1	
Di-n-Butyl Phthalate	ND	10	1	
Di-n-Octyl Phthalate	ND	10	1	
Dibenz (a,h) Anthracene	ND	10	1	
Diethyl Phthalate	ND	10	1	
Dimethyl Phthalate	ND	10	1	
Fluoranthene	ND	10	1	
Fluorene	ND	10	1	
Indeno (1,2,3-c,d) Pyrene	ND	10	1	
Naphthalene	ND	10	1	
Pentachlorophenol	ND	500	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
Units: ug/kg

Parameter	Result	RL	DF	Qualifiers
Phenanthrene	ND	10	1	
Phenol	ND	10	1	
Pyrene	ND	10	1	
1,6,7-Trimethylnaphthalene	ND	10	1	
2,3,4,6-Tetrachlorophenol	ND	10	1	
2,6-Dichlorophenol	ND	10	1	
Dibenzothiophene	ND	10	1	
1-Methylphenanthrene	ND	10	1	
Benzo (e) Pyrene	ND	10	1	
Perylene	ND	10	1	
Biphenyl	ND	10	1	
2,6-Dimethylnaphthalene	ND	10	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2,4,6-Tribromophenol	93	32-143	
2-Fluorobiphenyl	73	14-146	
2-Fluorophenol	58	15-138	
Nitrobenzene-d5	47	18-162	
p-Terphenyl-d14	102	34-148	
Phenol-d6	58	17-141	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

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9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GC/MS HHH**	**07/24/13**	**07/29/13 15:04**	**130724L07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
PCB018	7.4	0.63	1	
PCB028	7.2	0.63	1	
PCB037	ND	0.63	1	
PCB044	3.7	0.63	1	
PCB049	46	0.63	1	
PCB052	5.5	0.63	1	
PCB066	ND	0.63	1	
PCB070	ND	0.63	1	
PCB074	ND	0.63	1	
PCB077	ND	0.63	1	
PCB081	ND	0.63	1	
PCB087	ND	0.63	1	
PCB099	ND	0.63	1	
PCB101	ND	0.63	1	
PCB105	ND	0.63	1	
PCB110	ND	0.63	1	
PCB114	ND	0.63	1	
PCB118	ND	0.63	1	
PCB119	ND	0.63	1	
PCB123	ND	0.63	1	
PCB126	ND	0.63	1	
PCB128	ND	0.63	1	
PCB138/158	ND	1.3	1	
PCB149	ND	0.63	1	
PCB151	ND	0.63	1	
PCB153	ND	0.63	1	
PCB156	ND	0.63	1	
PCB157	ND	0.63	1	
PCB167	ND	0.63	1	
PCB168	ND	0.63	1	
PCB169	ND	0.63	1	
PCB170	ND	0.63	1	
PCB177	ND	0.63	1	
PCB180	ND	0.63	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB183	ND	0.63	1	
PCB187	ND	0.63	1	
PCB189	ND	0.63	1	
PCB194	ND	0.63	1	
PCB201	ND	0.63	1	
PCB206	ND	0.63	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	76	50-125	
p-Terphenyl-d14	69	50-125	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**GC/MS HHH**	**07/24/13**	**07/30/13 18:53**	**130724L07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.65	1	
PCB028	ND	0.65	1	
PCB037	ND	0.65	1	
PCB044	ND	0.65	1	
PCB049	ND	0.65	1	
PCB052	ND	0.65	1	
PCB066	ND	0.65	1	
PCB070	ND	0.65	1	
PCB074	ND	0.65	1	
PCB077	ND	0.65	1	
PCB081	ND	0.65	1	
PCB087	ND	0.65	1	
PCB099	ND	0.65	1	
PCB101	ND	0.65	1	
PCB105	ND	0.65	1	
PCB110	ND	0.65	1	
PCB114	ND	0.65	1	
PCB118	ND	0.65	1	
PCB119	ND	0.65	1	
PCB123	ND	0.65	1	
PCB126	ND	0.65	1	
PCB128	ND	0.65	1	
PCB138/158	ND	1.3	1	
PCB149	ND	0.65	1	
PCB151	ND	0.65	1	
PCB153	ND	0.65	1	
PCB156	ND	0.65	1	
PCB157	ND	0.65	1	
PCB167	ND	0.65	1	
PCB168	ND	0.65	1	
PCB169	ND	0.65	1	
PCB170	ND	0.65	1	
PCB177	ND	0.65	1	
PCB180	ND	0.65	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB183	ND	0.65	1	
PCB187	ND	0.65	1	
PCB189	ND	0.65	1	
PCB194	ND	0.65	1	
PCB201	ND	0.65	1	
PCB206	ND	0.65	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	54	50-125	
p-Terphenyl-d14	76	50-125	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**GC/MS HHH**	**07/24/13**	**07/30/13 20:48**	**130724L07**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
PCB018	43	1.2	2	
PCB028	ND	1.2	2	
PCB037	ND	1.2	2	
PCB044	22	1.2	2	
PCB049	160	1.2	2	
PCB052	69	1.2	2	
PCB066	ND	1.2	2	
PCB070	ND	1.2	2	
PCB074	1.9	1.2	2	
PCB077	ND	1.2	2	
PCB081	ND	1.2	2	
PCB087	35	1.2	2	
PCB099	ND	1.2	2	
PCB101	ND	1.2	2	
PCB105	ND	1.2	2	
PCB110	19	1.2	2	
PCB114	ND	1.2	2	
PCB118	ND	1.2	2	
PCB119	ND	1.2	2	
PCB123	ND	1.2	2	
PCB126	ND	1.2	2	
PCB128	ND	1.2	2	
PCB138/158	ND	2.5	2	
PCB149	ND	1.2	2	
PCB151	ND	1.2	2	
PCB153	ND	1.2	2	
PCB156	ND	1.2	2	
PCB157	ND	1.2	2	
PCB167	ND	1.2	2	
PCB168	ND	1.2	2	
PCB169	ND	1.2	2	
PCB170	ND	1.2	2	
PCB177	ND	1.2	2	
PCB180	ND	1.2	2	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Parameter	Result	RL	DF	Qualifiers
PCB183	ND	1.2	2	
PCB187	ND	1.2	2	
PCB189	ND	1.2	2	
PCB194	ND	1.2	2	
PCB201	ND	1.2	2	
PCB206	ND	1.2	2	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	150	50-125	1,2,7
p-Terphenyl-d14	56	50-125	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-113**	**N/A**	**Soil**	**GC/MS HHH**	**07/24/13**	**07/29/13 14:34**	**130724L07**

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.50	1	
PCB028	ND	0.50	1	
PCB037	ND	0.50	1	
PCB044	ND	0.50	1	
PCB049	ND	0.50	1	
PCB052	ND	0.50	1	
PCB066	ND	0.50	1	
PCB070	ND	0.50	1	
PCB074	ND	0.50	1	
PCB077	ND	0.50	1	
PCB081	ND	0.50	1	
PCB087	ND	0.50	1	
PCB099	ND	0.50	1	
PCB101	ND	0.50	1	
PCB105	ND	0.50	1	
PCB110	ND	0.50	1	
PCB114	ND	0.50	1	
PCB118	ND	0.50	1	
PCB119	ND	0.50	1	
PCB123	ND	0.50	1	
PCB126	ND	0.50	1	
PCB128	ND	0.50	1	
PCB138/158	ND	1.0	1	
PCB149	ND	0.50	1	
PCB151	ND	0.50	1	
PCB153	ND	0.50	1	
PCB156	ND	0.50	1	
PCB157	ND	0.50	1	
PCB167	ND	0.50	1	
PCB168	ND	0.50	1	
PCB169	ND	0.50	1	
PCB170	ND	0.50	1	
PCB177	ND	0.50	1	
PCB180	ND	0.50	1	
PCB183	ND	0.50	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
Units: ug/kg

Parameter	Result	RL	DF	Qualifiers
PCB187	ND	0.50	1	
PCB189	ND	0.50	1	
PCB194	ND	0.50	1	
PCB201	ND	0.50	1	
PCB206	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
2-Fluorobiphenyl	94	50-125	
p-Terphenyl-d14	76	50-125	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P1 Z-Layer	**13-07-1447-1-B**	**06/24/13 14:45**	**Sediment**	**GC/MS JJJ**	**07/24/13**	**07/30/13 12:41**	**130724L15**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.8	1	
Monobutyltin	ND	3.8	1	
Tetrabutyltin	ND	3.8	1	
Tributyltin	ND	3.8	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	194	48-126	2,7

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P2 Z-Layer	**13-07-1447-2-B**	**06/25/13 08:45**	**Sediment**	**GC/MS JJJ**	**07/24/13**	**07/30/13 13:11**	**130724L15**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.9	1	
Monobutyltin	ND	3.9	1	
Tetrabutyltin	ND	3.9	1	
Tributyltin	ND	3.9	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	59	48-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B161-P3 Z-Layer	**13-07-1447-3-B**	**06/24/13 16:00**	**Sediment**	**GC/MS JJJ**	**07/24/13**	**07/30/13 16:24**	**130724L15**

Comment(s): - Results are reported on a dry weight basis.

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.7	1	
Monobutyltin	ND	3.7	1	
Tetrabutyltin	ND	3.7	1	
Tributyltin	ND	3.7	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	305	48-126	2,7

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
Units: ug/kg

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-1042**	**N/A**	**Soil**	**GC/MS JJJ**	**07/24/13**	**07/30/13 11:11**	**130724L15**

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1	
Tetrabutyltin	ND	3.0	1	
Tributyltin	ND	3.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	80	48-126	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

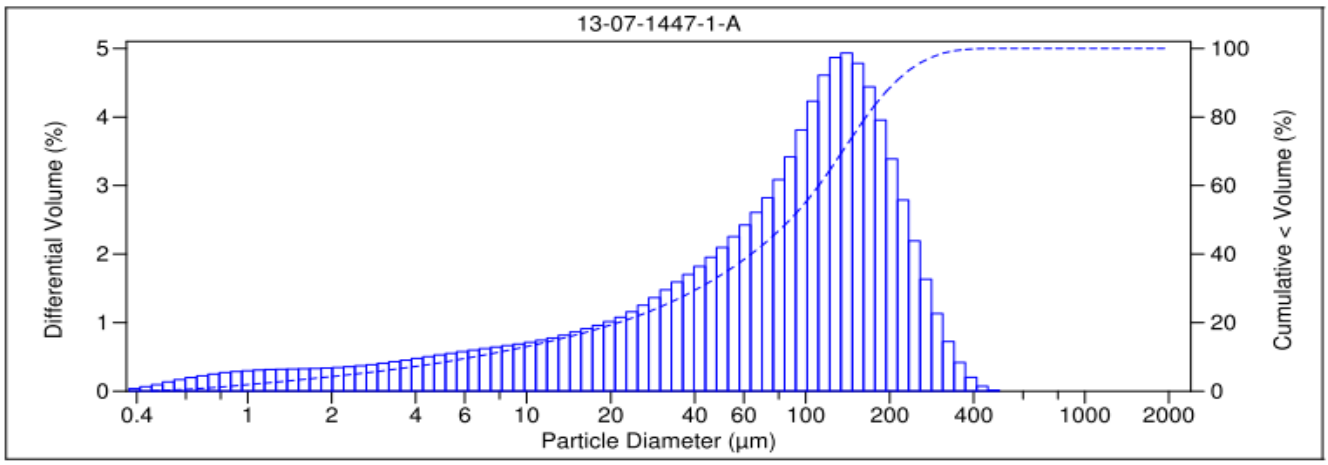
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

AMEC Environment & Infrastructure		Date Sampled:	6/24/2013
9210 Sky Park Court, Suite 200		Date Received:	7/22/2013
San Diego, CA 92123-4302		Work Order No:	13-07-1447
		Date Analyzed:	7/31/2013
		Method:	ASTM D4464M
Project:	Berth 161		Page 1 of 3

Sample ID	Depth ft	Description	Mean Grain Size mm
B161-P1 Z-Layer		Very Fine Sand	0.099

Particle Size Distribution, wt by percent								
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	Total Silt & Clay
0.00	0.00	0.00	4.87	29.38	26.28	32.38	7.09	39.47



Calscience Environmental Laboratories, Inc.

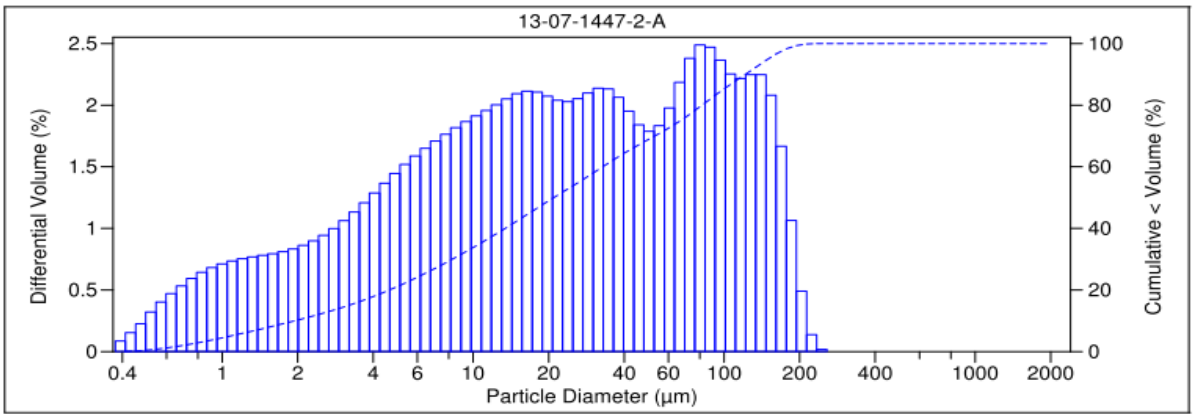
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

AMEC Environment & Infrastructure		Date Sampled:	6/25/2013
9210 Sky Park Court, Suite 200		Date Received:	7/22/2013
San Diego, CA 92123-4302		Work Order No:	13-07-1447
		Date Analyzed:	7/31/2013
		Method:	ASTM D4464M
Project:	Berth 161		Page 2 of 3

Sample ID	Depth ft	Description	Mean Grain Size mm
B161-P2 Z-Layer		Silt	0.043

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	0.01	9.35	17.30	55.79	17.56	73.35



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Calscience Environmental Laboratories, Inc.

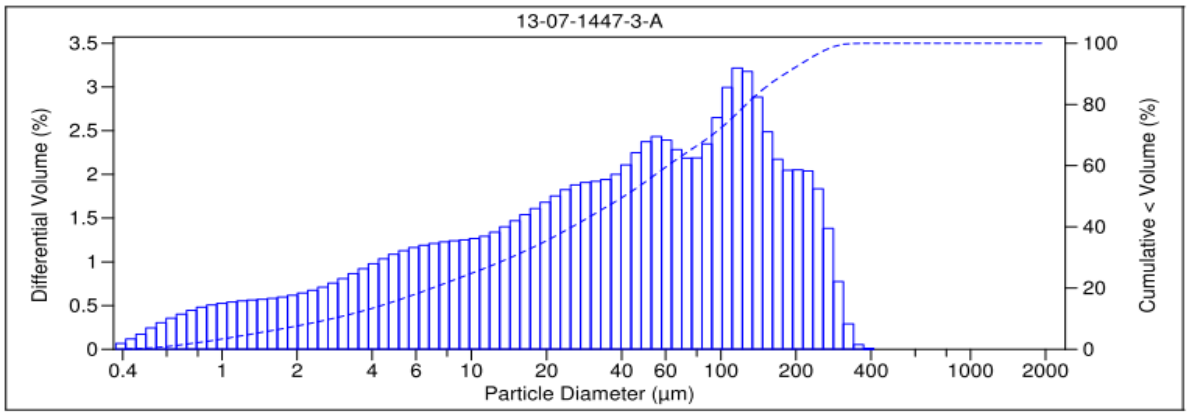
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

AMEC Environment & Infrastructure		Date Sampled:	6/24/2013
9210 Sky Park Court, Suite 200		Date Received:	7/22/2013
San Diego, CA 92123-4302		Work Order No:	13-07-1447
		Date Analyzed:	7/31/2013
		Method:	ASTM D4464M
Project:	Berth 161		Page 3 of 3

Sample ID	Depth ft	Description	Mean Grain Size mm
B161-P3 Z-Layer		Very Fine Sand	0.069

Particle Size Distribution, wt by percent								Total Silt & Clay
Total Gravel	Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt	Clay	
0.00	0.00	0.00	3.06	17.30	19.10	47.39	13.15	60.55



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Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: EPA 9060A

Project: POLA - B161

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B161-P1 Z-Layer	**Sediment**	**TOC 5**	**07/29/13**	**07/30/13 12:46**	**D0729TOCS1**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.8100	3.000	3.860	102	3.230	81	75-125	18	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: Extraction
Method: EPA 413.2M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B161-P2 Z-Layer	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 11:30**	**130729S03**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Oil and Grease	41.72	100.0	125.4	84	132.3	91	55-135	5	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: Extraction
Method: EPA 418.1M
Page 3 of 11

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B161-P2 Z-Layer	**Sediment**	**IR 2**	**07/29/13**	**07/30/13 13:00**	**130729S04**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TRPH	38.31	500.0	118.8	16	119.6	16	55-135	1	0-30	3

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B
Method: EPA 8015B (M)
Page 4 of 11

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B161-P2 Z-Layer	**Sediment**	**GC 46**	**07/23/13**	**07/23/13 17:20**	**130723S07**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TPH as Diesel	ND	400.0	408.7	102	429.6	107	64-130	5	0-15	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-1448-2	**Sediment**	**GCTQ 1**	**07/23/13**	**07/26/13 16:46**	**130723S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Allethrin	ND	5.000	3.189	64	3.588	72	25-200	12	0-30	
Bifenthrin	ND	5.000	3.566	71	3.765	75	25-200	5	0-30	
Cyfluthrin	ND	5.000	1.150	23	1.232	25	25-200	7	0-30	3
Cypermethrin	ND	5.000	1.134	23	1.223	24	25-200	8	0-30	3
Deltamethrin/Tralomethrin	ND	5.000	1.186	24	1.176	24	25-200	1	0-30	3
Fenpropathrin	ND	5.000	2.249	45	2.357	47	25-200	5	0-30	
Fenvalerate/Esfenvalerate	ND	10.00	2.454	25	2.674	27	25-200	9	0-30	
Fluvalinate	ND	5.000	0.5739	11	0.5047	10	25-200	13	0-30	3
Permethrin (cis/trans)	ND	5.000	3.356	67	3.418	68	25-200	2	0-30	
Phenothrin	ND	5.000	4.204	84	4.497	90	25-200	7	0-30	
Resmethrin/Bioresmethrin	ND	5.000	4.647	93	4.943	99	25-200	6	0-30	
Tetramethrin	ND	5.000	3.505	70	3.567	71	25-200	2	0-30	
lambda-Cyhalothrin	ND	5.000	1.430	29	1.605	32	25-200	12	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3050B
Method: EPA 6020

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-1448-2	**Sediment**	**ICP/MS 03**	**07/23/13**	**07/23/13 16:58**	**130723S03**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Arsenic	2.222	25.00	28.11	104	30.21	112	80-120	7	0-20	
Cadmium	0.4508	25.00	26.61	105	27.17	107	80-120	2	0-20	
Chromium	21.06	25.00	45.91	99	48.54	110	80-120	6	0-20	
Copper	13.14	25.00	38.41	101	41.43	113	80-120	8	0-20	
Lead	6.742	25.00	32.47	103	33.99	109	80-120	5	0-20	
Nickel	10.47	25.00	36.24	103	38.21	111	80-120	5	0-20	
Selenium	0.4570	25.00	25.18	99	26.30	103	80-120	4	0-20	
Silver	0.1615	12.50	13.28	105	13.45	106	80-120	1	0-20	
Zinc	39.48	25.00	66.42	108	70.60	124	80-120	6	0-20	3

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 7471A Total
Method: EPA 7471A
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-1463-1	**Soil**	**Mercury**	**07/23/13**	**07/23/13 14:31**	**130723S05**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	0.8350	0.8109	97	0.7627	91	71-137	6	0-14	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8081A

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-1448-2	**Sediment**	**GC 66**	**07/24/13**	**07/27/13 16:22**	**130724S05A**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Aldrin	ND	5.000	3.180	64	3.226	65	50-135	1	0-25	
Alpha-BHC	ND	5.000	4.155	83	4.227	85	50-135	2	0-25	
Beta-BHC	ND	5.000	4.191	84	4.276	86	50-135	2	0-25	
Delta-BHC	ND	5.000	3.817	76	3.890	78	50-135	2	0-25	
Gamma-BHC	ND	5.000	3.324	66	3.390	68	50-135	2	0-25	
Dieldrin	ND	5.000	3.512	70	3.583	72	50-135	2	0-25	
4,4'-DDD	ND	5.000	4.047	81	4.007	80	50-135	1	0-25	
4,4'-DDE	ND	5.000	4.628	93	4.727	95	50-135	2	0-25	
4,4'-DDT	ND	5.000	3.470	69	3.748	75	50-135	8	0-25	
Endosulfan I	ND	5.000	3.521	70	3.594	72	50-135	2	0-25	
Endosulfan II	ND	5.000	3.575	72	3.644	73	50-135	2	0-25	
Endosulfan Sulfate	ND	5.000	3.724	74	3.765	75	50-135	1	0-25	
Endrin	ND	5.000	3.983	80	4.069	81	50-135	2	0-25	
Endrin Aldehyde	ND	5.000	1.613	32	1.633	33	50-135	1	0-25	3
Endrin Ketone	ND	5.000	3.636	73	3.755	75	50-135	3	0-25	
Heptachlor	ND	5.000	3.736	75	3.840	77	50-135	3	0-25	
Heptachlor Epoxide	ND	5.000	3.732	75	3.797	76	50-135	2	0-25	
Methoxychlor	ND	5.000	3.404	68	3.657	73	50-135	7	0-25	
Alpha Chlordane	ND	5.000	3.560	71	3.631	73	50-135	2	0-25	
Gamma Chlordane	ND	5.000	3.653	73	3.733	75	50-135	2	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B161-P2 Z-Layer	**Sediment**	**GC/MS MM**	**07/26/13**	**07/29/13 21:10**	**130726S10**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	ND	1000	842.5	84	839.6	84	40-160	0	0-20	
2,4-Dichlorophenol	ND	1000	674.3	67	682.1	68	40-160	1	0-20	
2-Methylphenol	ND	1000	739.8	74	755.6	76	40-160	2	0-20	
2-Nitrophenol	ND	1000	628.6	63	643.5	64	40-160	2	0-20	
4-Chloro-3-Methylphenol	ND	1000	765.0	76	775.4	78	40-160	1	0-20	
Acenaphthene	ND	1000	834.0	83	827.3	83	40-106	1	0-20	
Benzo (a) Pyrene	15.03	1000	1066	105	1062	105	17-163	0	0-20	
Chrysene	ND	1000	971.5	97	997.3	100	17-168	3	0-20	
Di-n-Butyl Phthalate	39.01	1000	855.4	82	831.9	79	40-160	3	0-20	
Dimethyl Phthalate	ND	1000	843.0	84	835.4	84	40-160	1	0-20	
Fluoranthene	10.12	1000	922.1	91	944.1	93	26-137	2	0-20	
Fluorene	ND	1000	899.8	90	892.4	89	59-121	1	0-20	
Naphthalene	ND	1000	718.9	72	734.8	73	21-133	2	0-20	
Phenanthrene	ND	1000	872.0	87	892.2	89	54-120	2	0-20	
Phenol	ND	1000	510.9	51	529.2	53	40-160	4	0-20	
Pyrene	37.77	1000	1034	100	1054	102	6-156	2	0-46	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-1448-2	**Sediment**	**GC/MS HHH**	**07/24/13**	**07/29/13 17:58**	**130724S07**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
PCB018	ND	25.00	18.78	75	16.26	65	50-125	14	0-30	
PCB028	ND	25.00	19.16	77	16.81	67	50-125	13	0-30	
PCB044	ND	25.00	20.76	83	17.93	72	50-125	15	0-30	
PCB052	ND	25.00	18.86	75	16.26	65	50-125	15	0-30	
PCB066	ND	25.00	21.52	86	18.78	75	50-125	14	0-30	
PCB077	ND	25.00	20.72	83	17.84	71	50-125	15	0-30	
PCB101	ND	25.00	22.48	90	19.33	77	50-125	15	0-30	
PCB105	ND	25.00	21.61	86	18.60	74	50-125	15	0-30	
PCB118	ND	25.00	23.24	93	19.97	80	50-125	15	0-30	
PCB126	ND	25.00	20.49	82	17.68	71	50-125	15	0-30	
PCB128	ND	25.00	21.27	85	18.06	72	50-125	16	0-30	
PCB153	ND	25.00	22.57	90	19.54	78	50-125	14	0-30	
PCB170	ND	25.00	18.63	75	16.00	64	50-125	15	0-30	
PCB180	ND	25.00	23.75	95	20.33	81	50-125	16	0-30	
PCB187	ND	25.00	22.22	89	19.02	76	50-125	16	0-30	
PCB206	ND	25.00	21.87	87	18.76	75	50-125	15	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-1448-2	**Sediment**	**GC/MS JJJ**	**07/24/13**	**07/30/13 16:54**	**130724S15**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	ND	100.0	69.40	69	55.73	56	79-175	22	0-31	3
Tributyltin	ND	100.0	80.22	80	65.12	65	69-135	21	0-29	3

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - PDS/PDSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3050B
Method: EPA 6020

Project: POLA - B161

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number
13-07-1448-2	**Sediment**	**ICP/MS 03**	**07/23/13 00:00**	**07/23/13 17:04**	**130723S03**

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS %Rec.	%Rec. CL	Qualifiers
Arsenic	2.222	25.00	28.77	106	75-125	
Cadmium	0.4508	25.00	25.39	100	75-125	
Chromium	21.06	25.00	83.28	249	75-125	5
Copper	13.14	25.00	39.87	107	75-125	
Lead	6.742	25.00	31.48	99	75-125	
Nickel	10.47	25.00	37.04	106	75-125	
Selenium	0.4570	25.00	24.61	97	75-125	
Silver	0.1615	12.50	11.49	91	75-125	
Zinc	39.48	25.00	67.57	112	75-125	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - PDS/PDSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 7471A Total
Method: EPA 7471A
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number
13-07-1463-1	**Soil**	**Mercury**	**07/23/13 00:00**	**07/23/13 14:35**	**130723S05**

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS %Rec.	PDSD Conc.	PDSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	0.8350	0.8717	104	0.8910	107	75-125	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Sample Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: EPA 376.2M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
13-07-1862-5	**Sediment**	**N/A**	**07/29/13 00:00**	**07/29/13 12:04**	**D0729SD4**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Sulfide, Total	56.00	56.00	0	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Sample Duplicate

AMEC Environment & Infrastructure		Date Received:	07/22/13
9210 Sky Park Court, Suite 200		Work Order:	13-07-1447
San Diego, CA 92123-4302		Preparation:	N/A
		Method:	EPA 376.2M
Project: POLA - B161			Page 2 of 3

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
B161-P3 Z-Layer	**Sediment**	**N/A**	**07/22/13 00:00**	**07/22/13 20:20**	**D0722DSD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Sulfide, Dissolved	ND	ND	N/A	0-25	

RPD: Relative Percent Difference. CL: Control Limits

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Calscience Environmental Laboratories, Inc.

Quality Control - Sample Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: SM 2540 B (M)
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
B161-P1 Z-Layer	**Sediment**	**N/A**	**07/23/13 00:00**	**07/23/13 20:00**	**D0723TSD2**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total	79.00	79.50	1	0-10	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: EPA 9060A

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-891	**Soil**	**TOC 5**	**07/29/13**	**07/30/13 12:46**	**D0729TOCL1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.6000	0.5801	97	0.5898	98	80-120	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: N/A
Method: SM 4500-NH3 B/C (M)

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-812-545	**Soil**	**BUR05**	**07/29/13**	**07/29/13 14:26**	**D0729NH3L4**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Ammonia (as N)	250.0	224.0	90	229.6	92	80-120	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: Extraction
Method: EPA 413.2M
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Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-07-019-145	**Soil**	**IR 2**	**07/30/13 11:30**	**130729L03**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Oil and Grease	100.0	106.1	106	70-130	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure	Date Received:	07/22/13
9210 Sky Park Court, Suite 200	Work Order:	13-07-1447
San Diego, CA 92123-4302	Preparation:	Extraction
	Method:	EPA 418.1M
Project: POLA - B161		Page 4 of 12

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-07-015-1941	**Soil**	**IR 2**	**07/30/13 13:00**	**130729L04**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
TRPH	100.0	100.9	101	70-130	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure		Date Received:	07/22/13
9210 Sky Park Court, Suite 200		Work Order:	13-07-1447
San Diego, CA 92123-4302		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
Project: POLA - B161			Page 5 of 12

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-15-490-422	**Soil**	**GC 46**	**07/23/13 17:04**	**130723B07**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
TPH as Diesel	400.0	415.5	104	75-123	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3540C
Method: EPA 8270D (M)/TQ/EI

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-14-403-40	**Sediment**	**GCTQ 1**	**07/26/13 12:29**	**130723L01**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Allethrin	5.000	4.843	97	25-200	0-229	
Bifenthrin	5.000	3.845	77	25-200	0-229	
Cyfluthrin	5.000	4.405	88	25-200	0-229	
Cypermethrin	5.000	4.402	88	25-200	0-229	
Deltamethrin/Tralomethrin	5.000	5.360	107	25-200	0-229	
Fenpropathrin	5.000	4.382	88	25-200	0-229	
Fenvalerate/Esfenvalerate	10.00	9.012	90	25-200	0-229	
Fluvalinate	5.000	2.899	58	25-200	0-229	
Permethrin (cis/trans)	5.000	4.304	86	25-200	0-229	
Phenothrin	5.000	3.636	73	25-200	0-229	
Resmethrin/Bioresmethrin	5.000	4.096	82	25-200	0-229	
Tetramethrin	5.000	4.045	81	25-200	0-229	
lambda-Cyhalothrin	5.000	4.087	82	25-200	0-229	

Total number of LCS compounds: 13
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3050B
Method: EPA 6020

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-15-254-134	**Soil**	**ICP/MS 03**	**07/23/13 16:55**	**130723L03E**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Arsenic	25.00	25.61	102	80-120	
Cadmium	25.00	25.34	101	80-120	
Chromium	25.00	24.82	99	80-120	
Copper	25.00	27.15	109	80-120	
Lead	25.00	25.32	101	80-120	
Nickel	25.00	26.18	105	80-120	
Selenium	25.00	24.14	97	80-120	
Silver	12.50	11.90	95	80-120	
Zinc	25.00	26.78	107	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure		Date Received:	07/22/13
9210 Sky Park Court, Suite 200		Work Order:	13-07-1447
San Diego, CA 92123-4302		Preparation:	EPA 7471A Total
		Method:	EPA 7471A
Project: POLA - B161			Page 8 of 12

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-12-452-400	**Soil**	**Mercury**	**07/23/13 14:26**	**130723L05E**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	0.8350	0.8778	105	82-124	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8081A

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-12-858-217	**Soil**	**GC 66**	**07/27/13 18:41**	**130724L05**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
Aldrin	5.000	4.786	96	50-135	36-149	
Alpha-BHC	5.000	4.869	97	50-135	36-149	
Beta-BHC	5.000	4.489	90	50-135	36-149	
Delta-BHC	5.000	4.677	94	50-135	36-149	
Gamma-BHC	5.000	4.843	97	50-135	36-149	
Dieldrin	5.000	4.736	95	50-135	36-149	
4,4'-DDD	5.000	4.734	95	50-135	36-149	
4,4'-DDE	5.000	4.810	96	50-135	36-149	
4,4'-DDT	5.000	4.589	92	50-135	36-149	
Endosulfan I	5.000	4.679	94	50-135	36-149	
Endosulfan II	5.000	4.664	93	50-135	36-149	
Endosulfan Sulfate	5.000	4.445	89	50-135	36-149	
Endrin	5.000	4.585	92	50-135	36-149	
Endrin Aldehyde	5.000	4.704	94	50-135	36-149	
Endrin Ketone	5.000	4.925	99	50-135	36-149	
Heptachlor	5.000	5.054	101	50-135	36-149	
Heptachlor Epoxide	5.000	4.650	93	50-135	36-149	
Methoxychlor	5.000	5.365	107	50-135	36-149	
Alpha Chlordane	5.000	4.585	92	50-135	36-149	
Gamma Chlordane	5.000	4.478	90	50-135	36-149	

Total number of LCS compounds: 20
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM
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Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-14-256-48	**Soil**	**GC/MS MM**	**07/29/13 17:16**	**130726L10**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
2,4,6-Trichlorophenol	1000	780.2	78	40-160	20-180	
2,4-Dichlorophenol	1000	629.5	63	40-160	20-180	
2-Methylphenol	1000	569.2	57	40-160	20-180	
2-Nitrophenol	1000	607.7	61	40-160	20-180	
4-Chloro-3-Methylphenol	1000	585.6	59	40-160	20-180	
Acenaphthene	1000	879.9	88	48-108	38-118	
Benzo (a) Pyrene	1000	1100	110	17-163	0-187	
Chrysene	1000	1012	101	17-168	0-193	
Di-n-Butyl Phthalate	1000	954.6	95	40-160	20-180	
Dimethyl Phthalate	1000	765.5	77	40-160	20-180	
Fluoranthene	1000	976.9	98	26-137	8-156	
Fluorene	1000	919.8	92	59-121	49-131	
Naphthalene	1000	730.2	73	21-133	2-152	
Phenanthrene	1000	913.3	91	54-120	43-131	
Phenol	1000	451.2	45	40-160	20-180	
Pyrene	1000	983.2	98	28-106	15-119	

Total number of LCS compounds: 16
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-14-341-113	**Soil**	**GC/MS HHH**	**07/29/13 17:29**	**130724L07**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	ME CL	Qualifiers
PCB018	25.00	22.65	91	50-125	38-138	
PCB028	25.00	22.97	92	50-125	38-138	
PCB044	25.00	24.25	97	50-125	38-138	
PCB052	25.00	21.55	86	50-125	38-138	
PCB066	25.00	25.68	103	50-125	38-138	
PCB077	25.00	24.95	100	50-125	38-138	
PCB101	25.00	25.08	100	50-125	38-138	
PCB105	25.00	25.55	102	50-125	38-138	
PCB118	25.00	26.55	106	50-125	38-138	
PCB126	25.00	24.73	99	50-125	38-138	
PCB128	25.00	24.94	100	50-125	38-138	
PCB153	25.00	25.53	102	50-125	38-138	
PCB170	25.00	22.43	90	50-125	38-138	
PCB180	25.00	28.07	112	50-125	38-138	
PCB187	25.00	25.99	104	50-125	38-138	
PCB206	25.00	25.99	104	50-125	38-138	

Total number of LCS compounds: 16
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 07/22/13
Work Order: 13-07-1447
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.
Page 12 of 12

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-07-016-1042	**Soil**	**GC/MS JJJ**	**07/31/13 10:30**	**130724L15**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Tetrabutyltin	100.0	103.4	103	79-151	
Tributyltin	100.0	102.2	102	51-129	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order: 13-07-1447

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 07/22/13

PAGE: 1 OF 2

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: Berth 161
P.O. NO.: 1015101928
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
QUOTE NO.:
SAMPLER(S): (SIGNATURE)
LAB USE ONLY: 13-07-1447

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS
See attached sheet for analysis.
Please report all applicable totals (ie. PCBs, PAHs, etc)

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	See attached	HOLD	Total Suspended Solids	Grain Size	Total Solids (SM 2540 B)	Total Organic Carbon	Total Ammonia	Total & Soluble Sulifides	Oil and Grease	Metals including Mercury	TPH	TRPH	PCB Congeners (List of 41)	PAHs	Chlorinated Pesticides	Phenols	Phathalates	Pyrethroids	Organotins	Elutiriate
1	B161-P1 Z-Layer		06/24/13	1445	Sed	1	x																			
2	B161-P2 Z-Layer		06/25/13	845	sed	1	x																			
3	B161-P3 Z-Layer		06/24/13	1600	sed	1	x																			

Relinquished by: (Signature)	Received by: (Signature)	Date: 07/22/13	Time: 1600
Relinquished by: (Signature)	Received by: (Signature)	Date: 7/22/13	Time: 1852
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

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Port of Los Angeles
Berth 161 Dredging Project
Final Sampling and Analysis Plan
AMEC Project No. 1015101928
May 2013

Table 3-3.
Chemical Analyses for Sediment and Elutriate Samples

Analyte	Analysis Method	Sediment Target Detection Limits[a,b]	Elutriate Target Detection Limits[a,b]
Total Solids	SM 2540 B	0.1%	N/A
Total Organic Carbon	9060	0.1%	N/A
Total Ammonia	SM 4500-NH3 B/C (M)[c]	0.2 mg/kg	N/A
Total sulfides	376.2M[c]	0.5 mg/kg	N/A
Soluble sulfides	SM 4500 S2 - D	0.5 mg/kg	N/A
Oil and Grease	EPA 413.2M	10 mg/kg	N/A
Arsenic	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Cadmium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Chromium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Copper	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Lead	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Mercury	7471A[d]	0.02 mg/kg	0.0002 mg/L
Nickel	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Selenium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Silver	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Zinc	6020/6010B[d]	1.0 mg/kg	0.005 mg/L
TPH (C6-C44)	EPA 8015B(M)/8015B	5.0 mg/kg	N/A
TRPH	418.1M[d]	10 mg/kg	N/A
PAHs[e]	8270C SIM/ GC/TQ[d]	10 µg/kg	0.2 µg/L
Chlorinated Pesticides[f]	8081A[d]	1.0 - 20 µg/kg	0.1 µg/L
PCB Congeners[g]	8270C SIM PCB[d]	0.5 µg/kg	0.02 µg/L
Phenols	8270C SIM[d]	20 - 100 µg/kg	N/A
Phthalates	8270C SIM[d]	10 µg/kg	N/A
Pyrethroids	GC/MS/MS[h]	0.5 – 1.0 µg/kg	~~N/A~~ Add
Organotins	Rice/Krone[i]	3.0 µg/kg	3.0 ng/L

Notes:
[a] Sediment minimum detection limits are on a dry-weight basis.
[b] Reporting limits were provided by Calscience Environmental Laboratories, Inc.
[c] Standard Methods for the Examination of Water and Wastewater, 19th edition, American Public Health Association et al. 1995.
[d] EPA 1986-1996. SW -846. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, 3rd Edition.
[e] Includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene.
[f] Includes aldrin, α-benzene hexachloride (BHC), β-BHC, γ-BHC (lindane), δ-BHC, chlordane, 2,4- and 4,4-dichlorodiphenyldiethane (DDD), 2,4- and 4,4- dichlorodiphenylethylene (DDE), 2,4- and 4,4- dichlorodiphenyltrichloroethane (DDT), dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene.
[g] PCBs (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)
[h] Allethrin (Bioallethrin), Bifenthrin, Cyfluthrin-beta (Baythroid), Cyhalothrin-Lamba, Cypermethrin, Deltamethrin (Decamethrin), Esfenvalerate, Fenpropathrin (Danitol), Fenvalerate (sanmarton), Fluvalinate Permethrin (cis and trans), Resmethrin (Bioresmethrin), Resmethrin, Sumithrin (Phenothrin}, Tetramethrin, and Tralomethrin
[i] Rice et al. 1987 or similar (e.g., Krone et al. 1989)
[j] except toxaphene which is 1,000 µg/kg

µg/kg - micrograms per kilogram (parts per billion)
µg/L - micrograms per liter
N/A - not applicable?
PCB - polychlorinated biphenyl
SOP - standard operating procedure
TRPH - total recoverable petroleum hydrocarbons
mg/kg - milligrams per kilogram (parts per million)
mg/L - milligrams per liter
ng/L - nanograms per liter
PAH - polycyclic aromatic hydrocarbon
SM - Standard Methods
TPH - total petroleum hydrocarbons

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-07-1 4 4 7

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: AMEC DATE: 07/22/13

TEMPERATURE: Thermometer ID: SC3 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 1.8 °C - 0.2 °C (CF) = 1.6 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter **Initial:** [illegible]

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A **Initial:** [illegible]

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Initial:** [illegible]

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH/Res. Cl/Diss. Sulfide/Diss. Oxygen received within 15-min holding time	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☑8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** [illegible]

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** [illegible]

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** [illegible]

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Calscience Environmental Laboratories, Inc.

Supplemental Report 3

Additional requested analyses are reported as a stand-alone report.

CALSCIENCE

WORK ORDER NUMBER: 13-06-1677

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: AMEC Environment & Infrastructure

Client Project Name: POLA - B161

Attention: Barry Snyder
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Approved for release on 10/16/2013 by:
Danielle Gonsman
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: POLA - B161
Work Order Number: 13-06-1677

Calscience Environmental Laboratories, Inc.

Work Order Narrative

Work Order: 13-06-1677 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 06/25/13. They were assigned to Work Order 13-06-1677.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Calscience Environmental Laboratories, Inc.

Sample Summary

Client:	AMEC Environment & Infrastructure	Work Order:	13-06-1677
	9210 Sky Park Court, Suite 200	Project Name:	POLA - B161
	San Diego, CA 92123-4302	PO Number:	1015101928
		Date/Time Received:	06/25/13 18:45
		Number of Containers:	17
Attn:	Barry Snyder		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B161-P1	13-06-1677-1	06/24/13 14:00	1	Sediment
B161-P2	13-06-1677-2	06/25/13 08:45	1	Sediment
B161-P3	13-06-1677-3	06/24/13 16:00	1	Sediment
B161-P4	13-06-1677-4	06/24/13 17:15	1	Sediment
B161-Sitewater	13-06-1677-5	06/25/13 13:25	1	Sea Water
COMPOSITE A	13-06-1677-6	06/24/13 00:00	1	Sediment
COMPOSITE B	13-06-1677-7	06/24/13 00:00	1	Sediment
Berth 161 Dredge Area Composite	13-06-1677-8	06/24/13 00:00	10	Sediment

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: T22.11.5. AII
Method: EPA 6010B
Units: mg/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**ICP 7300**	**10/01/13**	**10/04/13 11:38**	**131003LA1**

Parameter	Result	RL	DF	Qualifiers
Copper	32.0	0.100	1	
Lead	10.2	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**ICP 7300**	**10/01/13**	**10/04/13 11:40**	**131003LA1**

Parameter	Result	RL	DF	Qualifiers
Copper	0.250	0.100	1	
Lead	14.5	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**097-05-006-6942**	**N/A**	**Aqueous**	**ICP 7300**	**10/01/13**	**10/03/13 17:45**	**131003LA1**

Parameter	Result	RL	DF	Qualifiers
Copper	ND	0.100	1	
Lead	ND	0.100	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 1311
Method: EPA 6010B
Units: mg/L

Project: POLA - B161

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE A	**13-06-1677-6-B**	**06/24/13 00:00**	**Sediment**	**ICP 7300**	**10/01/13**	**10/03/13 17:42**	**131002LA3**

Parameter	Result	RL	DF	Qualifiers
Lead	0.330	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
COMPOSITE B	**13-06-1677-7-B**	**06/24/13 00:00**	**Sediment**	**ICP 7300**	**10/11/13**	**10/14/13 14:15**	**131014LA3**

Parameter	Result	RL	DF	Qualifiers
Lead	0.181	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-021-976**	**N/A**	**Aqueous**	**ICP 7300**	**10/01/13**	**10/02/13 15:16**	**131002LA3**

Parameter	Result	RL	DF	Qualifiers
Lead	ND	0.100	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-021-983**	**N/A**	**Aqueous**	**ICP 7300**	**10/11/13**	**10/14/13 13:52**	**131014LA3**

Parameter	Result	RL	DF	Qualifiers
Lead	ND	0.100	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: T22.11.5. AII
Method: EPA 6010B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-10-0173-1	**Aqueous**	**ICP 7300**	**10/03/13**	**10/03/13 17:55**	**131003SA1**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Copper	ND	5.000	5.226	105	5.071	101	75-125	3	0-20	
Lead	ND	5.000	5.223	104	5.096	102	75-125	2	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 1311
Method: EPA 6010B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-10-0016-1	**Solid**	**ICP 7300**	**10/01/13**	**10/02/13 15:20**	**131002SA3**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	ND	5.000	5.049	101	5.368	107	84-120	6	0-7	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: EPA 1311
Method: EPA 6010B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-10-0954-3	**Concrete**	**ICP 7300**	**10/11/13**	**10/14/13 14:00**	**131014SA3**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	ND	5.000	5.253	105	4.996	100	84-120	5	0-7	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161

Date Received: 06/25/13
Work Order: 13-06-1677
Preparation: T22.11.5. AII
Method: EPA 6010B

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
097-05-006-6942	**Aqueous**	**ICP 7300**	**10/03/13 17:47**	**131003LA1**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Copper	5.000	5.093	102	80-120	
Lead	5.000	5.059	101	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure		Date Received:	06/25/13
9210 Sky Park Court, Suite 200		Work Order:	13-06-1677
San Diego, CA 92123-4302		Preparation:	EPA 1311
		Method:	EPA 6010B
Project: POLA - B161			Page 2 of 3

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-14-021-976	**Aqueous**	**ICP 7300**	**10/02/13 15:17**	**131002LA3**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Lead	5.000	5.241	105	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure		Date Received:	06/25/13
9210 Sky Park Court, Suite 200		Work Order:	13-06-1677
San Diego, CA 92123-4302		Preparation:	EPA 1311
		Method:	EPA 6010B
Project: POLA - B161			Page 3 of 3

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-14-021-983	**Aqueous**	**ICP 7300**	**10/14/13 13:53**	**131014LA3**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Lead	5.000	5.189	104	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order: 13-06-1677 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Date 6/25/13

Page 1 of 5

☒ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

LABORATORY CLIENT: AMEC

ADDRESS: 9210 Sky Park ct #200

CITY: San Diego, STATE: CA ZIP: 92123

TEL: (858) 445-2334 E-MAIL: tyler.huff@amec.com

CLIENT PROJECT NAME / NUMBER: POLA - B161

P.O. NO.:

PROJECT CONTACT: Barry Snyder

LAB USE ONLY: 13-06-1677

SAMPLER(S): (PRINT) Tyler Huff

COELT LOG CODE

COOLER RECEIPT TEMP= °C

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐ _____

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (g)	TPH (d) or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260B) or ( )	VOCs (8260B)	Oxygenates (8260B)	Encore Prep (5035)	SVOCs (8270C)	Pesticides (8081A)	PCBs (8082)	PNAs (8310) or (8270C)	T22 Metals (6010B/747X)	Cr(VI) [7196A or 7199 or 218.6]	VOCs (TO-14A) or (TO-15)	TPH (g) [TO-3]+	See attached		
1	B161-P1		6/24/13	1400	sed	1																X	
2	B161-P2		6/25/13	0845		1																X	
3	B161-P3 (3)		6/24/13	1600		1																X	
4	B161-P4		6/24/13	1715	↓	1																X	
5	B161-Sitewater		6/25/13	1325	SW	1																X	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
	Amec	6/25/13	1845
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

05/01/07 Revision

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B 161 Instructions

1677

(1) take an individual bag/site sample (ex B161-P1) and Homogenize it only with itself.

↳ (1.1) ~~Take~~ Jar an 8oz archive Jar from homogenized sample. set aside Remaining Sample

↳ (1.2) Repeat for all 4 bags / sites (B161-P2, B161-P3, B161-P4)

(2) make "composite Area A" by combining material from B161-P1 & B161-P2. Homogenize / composite thoroughly.

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↳ (2.1) Jar an 8oz archive ~~Jar~~, a 16oz chem test Jar, and 1x grainsize ziplock, test the 16oz Jar + grainsize, test via table 3.3 (attached)

~~↳ (2.2) repeat~~

(3) make "composite Area B" by combining material from B161-P3, B161-P4. Homogenize / composite thoroughly.

↳ (3.1) Jar an 8oz archive Jar, a 16oz chem test Jar + grainsize, test ~~this~~ 16oz Jar + grainsize as per table 3.3 (attached)

(see next page)

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B161 Instructions (Continued)

3 of 5

(1677)

Page 7-4

(4) ~~Label~~ Combine all remaining sediment material into one. This material will be named "Berth 161 Dredge Area Composite" Jar all of this material into 16 oz Jars. This material will be used with the B161-site water to create the EET/MET elutriate test.

any questions, have Danielle Gonsman Contact Barry Snyder @ (858) 354-8340

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3.4.1 Test Sediment Compositing

All push cores collected will be sent directly to Calscience for compositing. There will be two sediment composites (Composite Area A and Composite Area B) created by Calscience at the culmination of sampling at the Project site. Once collected, each core will be marked with its final length and the location of the Z-layer (if able to be sampled) will be indicated on each tube.

Test sediment composites will be prepared by Calscience by first removing the Z-layer, if present. The remainder of each core sample (up to 2 ft) and the Z-layer from each core sample (if collected) will then be homogenized separately in clean, stainless-steel mixing vessels. An archive sample will be collected from each core and Z-layer sample.

step 0

Once individual core archives have been collected, the remainder of each sample will be thoroughly combined into two separate composite samples, Composite A and Composite B. Composite A will be composed of material from core samples B161-P1 and B161-P2 and Composite Area B will be composed of core samples B161-P3 and B161-P4.

step 2

step 3

3.4.2 Z-layer Sediment Compositing

If collected, there will be no compositing of Z-layer samples or initial analysis of individual z-layer samples. Archives from any Z-layer samples collected will be retained and frozen, should there be a need for additional testing in the future.

3.4.3 Elutriate Preparation and Testing

Site water from the proposed dredge area will be used to prepare the sediment elutriates for chemical analyses. Site water will be stored in polyethylene cubitainers and sampled at the end of the effort to minimize holding times.

Elutriate testing will be conducted to predict potential water quality compliance issues during dredging and disposal operations. Only one elutriate analysis will be performed for Project sediments. The elutriate test will be performed using sediment from all four core samples. This sediment composite from all four core samples will be known as the Berth 161 Dredge Area Composite (no Z-layer samples will be included). The elutriate samples will be prepared by combining a subsample of the Berth 161 Dredge Area Composite sediment with harbor water collected from the Project dredge footprint at a 1:4 part sediment to water ratio. The elutriate sample will be prepared by Calscience according to the procedures outlined in the Inland Testing Manual (ITM USEPA/USACE, 1998).

step 4

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Table 3-3.
Chemical Analyses for Sediment and Elutriate Samples

Analyte	Analysis Method	Sediment Target Detection Limits[a,b]	Elutriate Target Detection Limits[a,b]
Total Solids	SM 2540 B	0.1%	N/A
Total Organic Carbon	9060	0.1%	N/A
Total Ammonia	SM 4500-NH3 B/C (M)[c]	0.2 mg/kg	N/A
Total sulfides	376.2M[c]	0.5 mg/kg	N/A
Soluble sulfides	SM 4500 S2 - D	0.5 mg/kg	N/A
Oil and Grease	EPA 413.2M	10 mg/kg	N/A
Arsenic	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Cadmium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Chromium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Copper	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Lead	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Mercury	7471A[d]	0.02 mg/kg	0.0002 mg/L
Nickel	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Selenium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Silver	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Zinc	6020/6010B[d]	1.0 mg/kg	0.005 mg/L
TPH (C6-C44)	EPA 8015B(M)/8015B	5.0 mg/kg	N/A
TRPH	418.1M[d]	10 mg/kg	N/A
PAHs[e]	8270C SIM/ GC/TQ[d]	10 µg/kg	0.2 µg/L
Chlorinated Pesticides[f]	8081A[d]	1.0 - 20 µg/kg	0.1 µg/L
PCB Congeners[g]	8270C SIM PCB [d]	0.5 µg/kg	0.02 µg/L
Phenols	8270C SIM[d]	20 - 100 µg/kg	N/A
Phthalates	8270C SIM[d]	10 µg/kg	N/A
Pyrethroids	GC/MS/MS[h]	0.5 – 1.0 µg/kg	~~N/A~~ Add
Organotins	Rice/Krone[i]	3.0 µg/kg	3.0 ng/L

Notes:
[a] Sediment minimum detection limits are on a dry-weight basis.
[b] Reporting limits were provided by Calscience Environmental Laboratories, Inc.
[c] Standard Methods for the Examination of Water and Wastewater, 19th edition, American Public Health Association et al. 1995.
[d] EPA 1986-1996. SW -846. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, 3rd Edition.
[e] Includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene.
[f] Includes aldrin, α-benzene hexachloride (BHC), β-BHC, γ-BHC (lindane), δ-BHC, chlordane, 2,4- and 4,4-dichlorodiphenyldiethane (DDD), 2,4- and 4,4- dichlorodiphenylethylene (DDE), 2,4- and 4,4- dichlorodiphenyltrichloroethane (DDT), dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene.
[g] PCBs (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)
[h] Allethrin (Bioallethrin), Bifenthrin, Cyfluthrin-beta (Baythroid), Cyhalothrin-Lamba, Cypermethrin, Deltamethrin (Decamethrin), Esfenvalerate, Fenpropathrin (Danitol), Fenvalerate (sanmarton), Fluvalinate Permethrin (cis and trans), Resmethrin (Bioresmethrin), Resmethrin, Sumithrin (Phenothrin}, Tetramethrin, and Tralomethrin
[i] Rice et al. 1987 or similar (e.g., Krone et al. 1989)
[j] except toxaphene which is 1,000 µg/kg

µg/kg - micrograms per kilogram (parts per billion)
µg/L - micrograms per liter
N/A - not applicable?
PCB - polychlorinated biphenyl
SOP - standard operating procedure
TRPH - total recoverable petroleum hydrocarbons
mg/kg - milligrams per kilogram (parts per million)
mg/L - milligrams per liter
ng/L - nanograms per liter
PAH - polycyclic aromatic hydrocarbon
SM - Standard Methods
TPH - total petroleum hydrocarbons

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-06-1677

SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: AMEC DATE: 06/25/13

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 4.2 °C - 0.2 °C (CF) = 4.0 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: JN

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: JN

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOAh ☐VOAna_2 ☐125AGB ☐125AGBh ☐125AGBp ☑1AGB* ☐1AGBna_2 ☐1AGBs

☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB

☑250PB* ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna_2 ☑5Gallon cube ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** HH

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope **Reviewed by:** NC

Preservative: h: HCL n: HNO_3 na_2:$Na_2S_2O_3$ na: NaOH p: H_3PO_4 s: H_2SO_4 u: Ultra-pure znna: $ZnAc_2$+NaOH f: Filtered **Scanned by:**

(-5) Prepared at the Lab.

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-06-1677

SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: AMEC DATE: 06/25/13

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 3.9 °C - 0.2 °C (CF) = 3.7 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: JN

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: JN

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☑plastic bag

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** HH

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** HH

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** h.c

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Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 09/30/13

PAGE: 1 OF 1

LABORATORY CLIENT: AMEC

ADDRESS: 9210 Sky Park Ct # 200

CITY: San Diego, CA 92123

TEL: 858-300-4300 | E-Mail: kimbrie.gobbi@gmail.com | E-MAIL: tyler.huff@gmail.com

CLIENT PROJECT NAME / NUMBER: Berth 161 Port of Los Angeles

P.O. NO.: 1315102706

PROJECT CONTACT: Tyler Huff/Kimbrie Gobbi

QUOTE NO.: 956781

SAMPLER(S): (SIGNATURE)

LAB USE ONLY

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

Please refer to work order 13-06-1677 for explicit compositing instructions included on COC from Tyler Huff.

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Please list tests required		STLC (Cu and Pb only)	TCLP (Pb only)													
	Composite A	Berth 161	06/24/13		sediment	1			X	X													13-06-1677-6
	Composite B	Berth 161	06/24/13		sediment	1			X	X													13-06-1677-7
	B161-P3-Z-layer	Berth 161	06/24/13	1600	sediment	1			X	X													13-07-1447-3
	B161-P1-Z-layer	Berth 161	06/24/13	1400	sediment	1			X	X													13-07-1447-1

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

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Danielle Gonsman

From: Gobbi, Kimbrie [kimbrie.gobbi@amec.com]
Sent: Monday, September 30, 2013 5:16 PM
To: Danielle Gonsman
Cc: Bowman, Michelle
Subject: RE: Berth 161 Archives

No problem!

Let's just run the composite samples and none of the individual cores.

Thanks so much!

Kimbrie Gobbi, M. Sc.
Marine and Environmental Scientist
AMEC
Environment & Infrastructure
9210 Sky Park Court, Suite 200, San Diego, CA 92123, USA
Tel +1 (858) 300 4300, Fax +1 (858) 300 4301
Direct +1 (858) 300 4326, Mobile (858) 869.9410
kimbrie.gobbi@amec.com
amec.com

I speak for the trees! Please consider the environment before printing this email!

From: Danielle Gonsman [mailto:dgonsman@calscience.com]
Sent: Monday, September 30, 2013 4:41 PM
To: Gobbi, Kimbrie
Cc: Bowman, Michelle
Subject: RE: Berth 161 Archives

Hi Kimbrie,

When you had asked about the P3 and P1 sediments, I'm sorry, I thought you were referring to the samples that were received under 13-06-1677 to create the composites, not the Z-layer samples (rec. under 13-07-1447). Turns out we have no sample left at all for any of the Z-layer samples. We only received an 8-oz jar, and that was barely enough to run all the tests. Do you have additional sample that you can provide for these?

STLC/TCLP for lead and copper on Composite A sediments, Composite B sediments, P3, and P1 sediments?

Thanks.

Danielle Gonsman
Project Manager
(714) 895-5494

The difference is service

From: Gobbi, Kimbrie [mailto:kimbrie.gobbi@amec.com]
Sent: Monday, September 30, 2013 11:35 AM
To: Danielle Gonsman

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APPENDIX D

ELUTRIATE CHEMISTRY

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Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-07-0159

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: AMEC Environment & Infrastructure

Client Project Name: POLA - B161 (EET)

Attention: Barry Snyder
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Approved for release on 07/18/2013 by:
Danielle Gonsman
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: POLA - B161 (EET)
Work Order Number: 13-07-0159

Calscience Environmental Laboratories, Inc.

CASE NARRATIVE

Calscience Work Order No.: 13-07-0159
Project ID: POLA Berth 161 (EET)

Provided below is a narrative of our analytical effort, including any unique features or anomalies encountered as part of the analysis of the sediment and water samples.

Sample Condition on Receipt

One seawater sample and four sediment samples were received for this project on June 25, 2013 under CEL Work Order #13-06-1677. The samples were transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody (COC) procedures. The temperature of the samples upon receipt at the laboratory ranged from 2.2-3.7°C. All samples were logged into the Laboratory Information Management System (LIMS), given laboratory identification numbers and then stored in refrigeration units pending compositing and (EET) elutriate testing.

COC discrepancies (if any) were noted in the Sample Anomaly Form.

Elutriate Preparation

The four sediment samples were composited together to create sample Berth 161 Dredge Area Composite. The composite sample and the Berth 161 Site water sample were used to create the elutriate sample.

The elutriate sample(s) were prepared in accordance with the Effluent Elutriate Test as presented in the Inland Testing Manual (1998). This procedure is also referred to as the Modified Elutriate Test Procedure as presented by Palermo (1986).

Prior to use, all labware was thoroughly cleaned in accordance with standard laboratory operating procedures (detergent wash, acid bath, rinse and flush with D.I. water). In accordance with the method, a slurry concentration of 150 g/L (dry weight basis) was used. The calculated volumes of sediment (or treated sediment) and seawater from the site were mixed, aerated, then allowed to settle before the supernatant was siphoned for analysis. The particulars are described as follows.

At room temperature, the slurry mixture was mixed vigorously for 5 minutes in a large HDPE jar. Following mixing, the slurry was poured into a plastic 4-liter graduated cylinder. The slurry was aerated vigorously using compressed air delivered via Teflon tubing to the bottom of the cylinder for one hour, then allowed to settle for twenty-four hours. The supernatant was then siphoned off using Teflon tubing and collected in clean containers.

The supernatant was then filtered using a 0.45 micron filter (for metals) and centrifuged (for organics) and transferred to new plastic and glass containers. The samples were given a new COC (with a new collection date/time) and new laboratory identification numbers, logged in to LIMS and then stored in refrigeration units pending analysis.

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Calscience Environmental Laboratories, Inc.

Tests Performed

Total Suspended Solids by SM 2540
Trace Metals by EPA 1640/7471
Chlorinated Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
PAHs by EPA 8270C SIM
Pyrethroids by EPA 8270D (M)/TQ/EI
Organotins by Krone et al.

Data Summary

Holding times

All holding times were met.

Calibration

Frequency and control criteria for initial and continuing calibration verifications were met.

Blanks

Concentrations of target analytes in the method blank were found to be below reporting limits for all testing.

Reporting Limits

The Method Detection Limits were met.

Laboratory Control Samples

A Laboratory Control Sample (LCS) analysis was performed for each applicable test.

Matrix Spikes

Due to limited volume, matrix spiking was performed only on the non-project samples.

Surrogates

Surrogate recoveries for all applicable tests and samples were within acceptable control limits.

Acronyms

LCS - Laboratory Control Sample
MS/MSD- Matrix Spike/Matrix Spike Duplicate
ME-Marginal Exceedance
RPD- Relative Percent Difference

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Calscience Environmental Laboratories, Inc.

Work Order Narrative

Work Order: 13-07-0159 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 07/02/13. They were assigned to Work Order 13-07-0159.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with an immediate holding time (HT </= 15 minutes --40CFR-136.3 Table II footnote 4), is considered a "field" test and reported samples results are not flagged unless the analysis is performed beyond 24 hours of the time of collection.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

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Calscience Environmental Laboratories, Inc.

Sample Summary

Client:	AMEC Environment & Infrastructure	Work Order:	13-07-0159
	9210 Sky Park Court, Suite 200	Project Name:	POLA - B161 (EET)
	San Diego, CA 92123-4302	PO Number:	
		Date Received:	07/02/13
Attn:	Barry Snyder		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
Berth 161 Dredge Area Composite (Elutriate)	13-07-0159-1	07/02/13 13:00	9	Sea Water
Blank	13-07-0159-2	07/02/13 13:30	3	Sea Water

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: N/A
Method: SM 2540 D
Units: mg/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-A**	**07/02/13 13:00**	**Sea Water**	**N/A**	**07/05/13**	**07/05/13 16:00**	**D0705TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	11	1.0	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-09-010-6344**	**N/A**	**Aqueous**	**N/A**	**07/05/13**	**07/05/13 16:00**	**D0705TSSL1**

Parameter	Result	RL	DF	Qualifiers
Solids, Total Suspended	ND	1.0	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270D (M)/TQ/EI
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-J**	**07/02/13 13:00**	**Sea Water**	**GCTQ 1**	**07/09/13**	**07/10/13 00:09**	**130709L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.0020	0.0012	1	
Bifenthrin	ND	0.0020	0.00015	1	
Cyfluthrin	ND	0.0020	0.00069	1	
Cypermethrin	ND	0.0020	0.0016	1	
Deltamethrin/Tralomethrin	ND	0.0020	0.00047	1	
Fenpropathrin	ND	0.0020	0.00037	1	
Fenvalerate/Esfenvalerate	ND	0.0020	0.00074	1	
Fluvalinate	ND	0.0020	0.0015	1	
Permethrin (cis/trans)	0.0056	0.0040	0.0018	1	
Phenothrin	ND	0.0020	0.00072	1	
Resmethrin/Bioresmethrin	ND	0.0020	0.00014	1	
Tetramethrin	ND	0.0020	0.00074	1	
lambda-Cyhalothrin	ND	0.0020	0.00046	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	79	25-200	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270D (M)/TQ/EI
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-553-9**	**N/A**	**Aqueous**	**GCTQ 1**	**07/09/13**	**07/09/13 22:55**	**130709L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qualifiers
Allethrin	ND	0.0020	0.0012	1	
Bifenthrin	ND	0.0020	0.00015	1	
Cyfluthrin	ND	0.0020	0.00069	1	
Cypermethrin	ND	0.0020	0.0016	1	
Deltamethrin/Tralomethrin	ND	0.0020	0.00047	1	
Fenpropathrin	ND	0.0020	0.00037	1	
Fenvalerate/Esfenvalerate	ND	0.0020	0.00074	1	
Fluvalinate	ND	0.0020	0.0015	1	
Permethrin (cis/trans)	ND	0.0040	0.0018	1	
Phenothrin	ND	0.0020	0.00072	1	
Resmethrin/Bioresmethrin	ND	0.0020	0.00014	1	
Tetramethrin	ND	0.0020	0.00074	1	
lambda-Cyhalothrin	ND	0.0020	0.00046	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
trans-Permethrin(C13)	114	25-200	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3005A Total
Method: EPA 1640
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-C**	**07/02/13 13:00**	**Sea Water**	**ICP/MS 05**	**07/11/13**	**07/12/13 20:30**	**130711L01**

Parameter	Result	RL	DF	Qualifiers
Arsenic	3.50	0.0300	1	
Selenium	ND	0.0500	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-C**	**07/02/13 13:00**	**Sea Water**	**ICP/MS 05**	**07/11/13**	**07/11/13 21:22**	**130711L01**

Parameter	Result	RL	DF	Qualifiers
Cadmium	0.581	0.0300	1	
Chromium	ND	0.500	1	
Copper	10.9	0.0300	1	
Lead	1.38	0.0300	1	
Nickel	8.17	0.0500	1	
Zinc	101	0.500	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-C**	**07/02/13 13:00**	**Sea Water**	**ICP/MS 05**	**07/11/13**	**07/12/13 11:51**	**130711L01**

Parameter	Result	RL	DF	Qualifiers
Silver	ND	0.0500	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-13-067-337**	**N/A**	**Aqueous**	**ICP/MS 05**	**07/11/13**	**07/11/13 18:36**	**130711L01**

Parameter	Result	RL	DF	Qualifiers
Arsenic	ND	0.0300	1	
Cadmium	ND	0.0300	1	
Chromium	ND	0.500	1	
Copper	ND	0.0300	1	
Lead	ND	0.0300	1	
Nickel	ND	0.0500	1	
Selenium	ND	0.0500	1	
Silver	ND	0.0500	1	
Zinc	ND	0.500	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 7470A Total
Method: EPA 7470A
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-A**	**07/02/13 13:00**	**Sea Water**	**Mercury**	**07/03/13**	**07/05/13 10:43**	**130703L1L**

Parameter	Result	RL	DF	Qualifiers
Mercury	0.166	0.0500	1	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-510-367**	**N/A**	**Aqueous**	**Mercury**	**07/03/13**	**07/03/13 16:04**	**130703L1L**

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0500	1	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8081A
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-E**	**07/02/13 13:00**	**Sea Water**	**GC 44**	**07/03/13**	**07/05/13 13:53**	**130703L02**

Parameter	Result	RL	DF	Qualifiers
Oxychlordane	ND	0.0096	0.962	
Aldrin	ND	0.0096	0.962	
Alpha Chlordane	ND	0.0096	0.962	
Alpha-BHC	ND	0.0096	0.962	
Beta-BHC	ND	0.0096	0.962	
Chlordane	ND	0.024	0.962	
Cis-nonachlor	ND	0.0096	0.962	
2,4'-DDD	ND	0.0096	0.962	
4,4'-DDD	ND	0.0096	0.962	
4,4'-DDE	ND	0.0096	0.962	
2,4'-DDE	ND	0.0096	0.962	
2,4'-DDT	ND	0.0096	0.962	
4,4'-DDT	ND	0.0096	0.962	
Delta-BHC	ND	0.0096	0.962	
Dieldrin	ND	0.0096	0.962	
Endosulfan I	ND	0.0096	0.962	
Endosulfan II	ND	0.0096	0.962	
Endosulfan Sulfate	ND	0.0096	0.962	
Endrin	ND	0.0096	0.962	
Endrin Aldehyde	ND	0.0096	0.962	
Endrin Ketone	ND	0.0096	0.962	
Gamma Chlordane	ND	0.0096	0.962	
Gamma-BHC	ND	0.0096	0.962	
Heptachlor	ND	0.0096	0.962	
Heptachlor Epoxide	ND	0.0096	0.962	
Methoxychlor	ND	0.0096	0.962	
Mirex	ND	0.0096	0.962	
Toxaphene	ND	0.12	0.962	
Trans-nonachlor	ND	0.0096	0.962	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	71	50-150	
2,4,5,6-Tetrachloro-m-Xylene	63	50-150	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8081A
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-435-92**	**N/A**	**Aqueous**	**GC 44**	**07/03/13**	**07/05/13 13:39**	**130703L02**

Parameter	Result	RL	DF	Qualifiers
Oxychlordane	ND	0.010	1	
Aldrin	ND	0.010	1	
Alpha Chlordane	ND	0.010	1	
Alpha-BHC	ND	0.010	1	
Beta-BHC	ND	0.010	1	
Chlordane	ND	0.025	1	
Cis-nonachlor	ND	0.010	1	
2,4'-DDD	ND	0.010	1	
4,4'-DDD	ND	0.010	1	
4,4'-DDE	ND	0.010	1	
2,4'-DDE	ND	0.010	1	
2,4'-DDT	ND	0.010	1	
4,4'-DDT	ND	0.010	1	
Delta-BHC	ND	0.010	1	
Dieldrin	ND	0.010	1	
Endosulfan I	ND	0.010	1	
Endosulfan II	ND	0.010	1	
Endosulfan Sulfate	ND	0.010	1	
Endrin	ND	0.010	1	
Endrin Aldehyde	ND	0.010	1	
Endrin Ketone	ND	0.010	1	
Gamma Chlordane	ND	0.010	1	
Gamma-BHC	ND	0.010	1	
Heptachlor	ND	0.010	1	
Heptachlor Epoxide	ND	0.010	1	
Methoxychlor	ND	0.010	1	
Mirex	ND	0.010	1	
Toxaphene	ND	0.12	1	
Trans-nonachlor	ND	0.010	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Decachlorobiphenyl	76	50-150	
2,4,5,6-Tetrachloro-m-Xylene	76	50-150	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-G**	**07/02/13 13:00**	**Sea Water**	**GC/MS AAA**	**07/03/13**	**07/05/13 20:55**	**130703L16**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	0.20	1	
2-Methylnaphthalene	ND	0.20	1	
1-Methylnaphthalene	ND	0.20	1	
Acenaphthylene	ND	0.20	1	
Acenaphthene	ND	0.20	1	
Fluorene	ND	0.20	1	
Phenanthrene	ND	0.20	1	
Anthracene	ND	0.20	1	
Fluoranthene	ND	0.20	1	
Pyrene	0.32	0.20	1	
Benzo (a) Anthracene	ND	0.20	1	
Chrysene	ND	0.20	1	
Benzo (k) Fluoranthene	ND	0.20	1	
Benzo (b) Fluoranthene	ND	0.20	1	
Benzo (a) Pyrene	ND	0.20	1	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	1	
Dibenz (a,h) Anthracene	ND	0.20	1	
Benzo (g,h,i) Perylene	ND	0.20	1	
Benzo (e) Pyrene	ND	0.20	1	
Perylene	ND	0.20	1	
Biphenyl	ND	0.20	1	
1-Methylphenanthrene	ND	0.20	1	
2,6-Dimethylnaphthalene	ND	0.20	1	
1,6,7-Trimethylnaphthalene	ND	0.20	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	85	28-139	
2-Fluorobiphenyl	87	33-144	
p-Terphenyl-d14	102	23-160	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-280-39**	**N/A**	**Aqueous**	**GC/MS AAA**	**07/03/13**	**07/05/13 20:29**	**130703L16**

Parameter	Result	RL	DF	Qualifiers
Naphthalene	ND	0.20	1	
2-Methylnaphthalene	ND	0.20	1	
1-Methylnaphthalene	ND	0.20	1	
Acenaphthylene	ND	0.20	1	
Acenaphthene	ND	0.20	1	
Fluorene	ND	0.20	1	
Phenanthrene	ND	0.20	1	
Anthracene	ND	0.20	1	
Fluoranthene	ND	0.20	1	
Pyrene	ND	0.20	1	
Benzo (a) Anthracene	ND	0.20	1	
Chrysene	ND	0.20	1	
Benzo (k) Fluoranthene	ND	0.20	1	
Benzo (b) Fluoranthene	ND	0.20	1	
Benzo (a) Pyrene	ND	0.20	1	
Indeno (1,2,3-c,d) Pyrene	ND	0.20	1	
Dibenz (a,h) Anthracene	ND	0.20	1	
Benzo (g,h,i) Perylene	ND	0.20	1	
Benzo (e) Pyrene	ND	0.20	1	
Perylene	ND	0.20	1	
Biphenyl	ND	0.20	1	
1-Methylphenanthrene	ND	0.20	1	
2,6-Dimethylnaphthalene	ND	0.20	1	
1,6,7-Trimethylnaphthalene	ND	0.20	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	80	28-139	
2-Fluorobiphenyl	78	33-144	
p-Terphenyl-d14	103	23-160	

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RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-H**	**07/02/13 13:00**	**Sea Water**	**GC/MS HHH**	**07/08/13**	**07/15/13 19:47**	**130708L03**

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.020	1	
PCB028	ND	0.020	1	
PCB037	ND	0.020	1	
PCB044	ND	0.020	1	
PCB049	ND	0.020	1	
PCB052	ND	0.020	1	
PCB066	ND	0.020	1	
PCB070	ND	0.020	1	
PCB074	ND	0.020	1	
PCB077	ND	0.020	1	
PCB081	ND	0.020	1	
PCB087	ND	0.020	1	
PCB099	ND	0.020	1	
PCB101	ND	0.020	1	
PCB105	ND	0.020	1	
PCB110	ND	0.020	1	
PCB114	ND	0.020	1	
PCB118	ND	0.020	1	
PCB119	ND	0.020	1	
PCB123	ND	0.020	1	
PCB126	ND	0.020	1	
PCB128	ND	0.020	1	
PCB138/158	ND	0.040	1	
PCB149	ND	0.020	1	
PCB151	ND	0.020	1	
PCB153	ND	0.020	1	
PCB156	ND	0.020	1	
PCB157	ND	0.020	1	
PCB167	ND	0.020	1	
PCB168	ND	0.020	1	
PCB169	ND	0.020	1	
PCB170	ND	0.020	1	
PCB177	ND	0.020	1	
PCB180	ND	0.020	1	
PCB183	ND	0.020	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161 (EET)

Parameter	Result	RL	DF	Qualifiers
PCB187	ND	0.020	1	
PCB189	ND	0.020	1	
PCB194	ND	0.020	1	
PCB201	ND	0.020	1	
PCB206	ND	0.020	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
p-Terphenyl-d14	99	50-150	
2-Fluorobiphenyl	56	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-433-55**	**N/A**	**Aqueous**	**GC/MS HHH**	**07/08/13**	**07/15/13 15:53**	**130708L03**

Parameter	Result	RL	DF	Qualifiers
PCB018	ND	0.020	1	
PCB028	ND	0.020	1	
PCB037	ND	0.020	1	
PCB044	ND	0.020	1	
PCB049	ND	0.020	1	
PCB052	ND	0.020	1	
PCB066	ND	0.020	1	
PCB070	ND	0.020	1	
PCB074	ND	0.020	1	
PCB077	ND	0.020	1	
PCB081	ND	0.020	1	
PCB087	ND	0.020	1	
PCB099	ND	0.020	1	
PCB101	ND	0.020	1	
PCB105	ND	0.020	1	
PCB110	ND	0.020	1	
PCB114	ND	0.020	1	
PCB118	ND	0.020	1	
PCB119	ND	0.020	1	
PCB123	ND	0.020	1	
PCB126	ND	0.020	1	
PCB128	ND	0.020	1	
PCB138/158	ND	0.040	1	
PCB149	ND	0.020	1	
PCB151	ND	0.020	1	
PCB153	ND	0.020	1	
PCB156	ND	0.020	1	
PCB157	ND	0.020	1	
PCB167	ND	0.020	1	
PCB168	ND	0.020	1	
PCB169	ND	0.020	1	
PCB170	ND	0.020	1	
PCB177	ND	0.020	1	
PCB180	ND	0.020	1	
PCB183	ND	0.020	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners
Units: ug/L

Project: POLA - B161 (EET)

Parameter	Result	RL	DF	Qualifiers
PCB187	ND	0.020	1	
PCB189	ND	0.020	1	
PCB194	ND	0.020	1	
PCB201	ND	0.020	1	
PCB206	ND	0.020	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
p-Terphenyl-d14	71	50-150	
2-Fluorobiphenyl	54	50-150	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: Organotins by Krone et al.
Units: ng/L

Project: POLA - B161 (EET)

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Berth 161 Dredge Area Composite (Elutriate)	**13-07-0159-1-D**	**07/02/13 13:00**	**Sea Water**	**GC/MS JJJ**	**07/05/13**	**07/10/13 21:46**	**130705L05**

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	100	3.0	1	
Monobutyltin	ND	3.0	1	
Tetrabutyltin	ND	3.0	1	
Tributyltin	27	3.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	57	30-120	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-035-234**	**N/A**	**Aqueous**	**GC/MS JJJ**	**07/05/13**	**07/09/13 14:40**	**130705L05**

Parameter	Result	RL	DF	Qualifiers
Dibutyltin	ND	3.0	1	
Monobutyltin	ND	3.0	1	
Tetrabutyltin	ND	3.0	1	
Tributyltin	ND	3.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tripentyltin	97	30-120	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3005A Filt.
Method: EPA 1640

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-0353-1	**Sea Water**	**ICP/MS 05**	**07/11/13**	**07/11/13 19:44**	**130711S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Arsenic	1.424	0.5000	2.091	133	2.070	129	50-150	1	0-20	
Cadmium	0.07691	0.5000	0.5995	105	0.6063	106	50-150	1	0-20	
Chromium	ND	5.000	6.186	124	6.232	125	50-150	1	0-20	
Copper	2.639	0.5000	2.919	4X	3.068	4X	50-150	4X	0-20	Q
Lead	0.05715	0.5000	0.5524	99	0.5595	100	50-150	1	0-20	
Nickel	0.6822	0.5000	1.141	92	1.253	114	50-150	9	0-20	
Selenium	ND	0.5000	0.6124	122	0.5723	114	50-150	7	0-20	
Silver	ND	0.2500	0.06443	26	0.08339	33	50-150	26	0-20	3,4
Zinc	9.295	5.000	13.15	77	13.48	84	50-150	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 7470A Filt.
Method: EPA 7470A
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-0160-5	**Aqueous**	**Mercury**	**07/03/13**	**07/03/13 16:24**	**130703S01**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Mercury	ND	10.00	10.48	105	10.52	105	66-126	0	0-20	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: Organotins by Krone et al.

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-07-0079-8	**Sea Water**	**GC/MS JJJ**	**07/05/13**	**07/10/13 19:46**	**130705S05**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	ND	200.0	153.4	77	149.0	75	50-130	3	0-20	
Tributyltin	ND	200.0	205.5	103	193.4	97	50-130	6	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Sample Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: N/A
Method: SM 2540 D

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
13-07-0263-4	**Aqueous**	**N/A**	**07/05/13 00:00**	**07/05/13 16:00**	**D0705TSSD1**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total Suspended	8820	8890	1	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: N/A
Method: SM 2540 D

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-09-010-6344	**Aqueous**	**N/A**	**07/05/13**	**07/05/13 16:00**	**D0705TSSL1**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Solids, Total Suspended	100.0	95.00	95	98.00	98	80-120	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270D (M)/TQ/EI

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-553-9	**Aqueous**	**GCTQ 1**	**07/09/13**	**07/09/13 21:42**	**130709L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Allethrin	0.1000	0.09619	96	0.1044	104	25-200	0-229	8	0-25	
Bifenthrin	0.1000	0.09081	91	0.09329	93	25-200	0-229	3	0-25	
Cyfluthrin	0.1000	0.09295	93	0.1027	103	25-200	0-229	10	0-25	
Cypermethrin	0.1000	0.09665	97	0.1130	113	25-200	0-229	16	0-25	
Deltamethrin/Tralomethrin	0.1000	0.1187	119	0.1322	132	25-200	0-229	11	0-25	
Fenpropathrin	0.1000	0.1157	116	0.1219	122	25-200	0-229	5	0-25	
Fenvalerate/Esfenvalerate	0.2000	0.1954	98	0.2194	110	25-200	0-229	12	0-25	
Fluvalinate	0.1000	0.05862	59	0.06538	65	25-200	0-229	11	0-25	
Permethrin (cis/trans)	0.1000	0.09101	91	0.09800	98	25-200	0-229	7	0-25	
Phenothrin	0.1000	0.08778	88	0.09262	93	25-200	0-229	5	0-25	
Resmethrin/Bioresmethrin	0.1000	0.1000	100	0.1029	103	25-200	0-229	3	0-25	
Tetramethrin	0.1000	0.1129	113	0.1176	118	25-200	0-229	4	0-25	
lambda-Cyhalothrin	0.1000	0.09785	98	0.1154	115	25-200	0-229	16	0-25	

Total number of LCS compounds: 13
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3005A Total
Method: EPA 1640
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Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-13-067-337	**Aqueous**	**ICP/MS 05**	**07/11/13 18:51**	**130711L01**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Arsenic	0.5000	0.5348	107	70-130	
Cadmium	0.5000	0.5271	105	70-130	
Chromium	5.000	5.231	105	70-130	
Copper	0.5000	0.5559	111	70-130	
Lead	0.5000	0.5313	106	70-130	
Nickel	0.5000	0.5598	112	70-130	
Selenium	0.5000	0.5081	102	70-130	
Silver	0.2500	0.2313	93	70-130	
Zinc	5.000	5.244	105	70-130	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

AMEC Environment & Infrastructure		Date Received:	07/02/13
9210 Sky Park Court, Suite 200		Work Order:	13-07-0159
San Diego, CA 92123-4302		Preparation:	EPA 7470A Total
		Method:	EPA 7470A
Project: POLA - B161 (EET)			Page 4 of 8

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-12-510-367	**Aqueous**	**Mercury**	**07/03/13 16:09**	**130703L1L**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Mercury	10.00	10.34	103	85-121	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8081A

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-435-92	**Aqueous**	**GC 44**	**07/03/13**	**07/05/13 14:20**	**130703L02**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Aldrin	0.2500	0.2215	89	0.2210	88	50-150	33-167	0	0-25	
Alpha Chlordane	0.2500	0.2131	85	0.2147	86	50-150	33-167	1	0-25	
Alpha-BHC	0.2500	0.2140	86	0.2174	87	50-150	33-167	2	0-25	
Beta-BHC	0.2500	0.2129	85	0.2131	85	50-150	33-167	0	0-25	
4,4'-DDD	0.2500	0.2153	86	0.2178	87	50-150	33-167	1	0-25	
4,4'-DDE	0.2500	0.2205	88	0.2222	89	50-150	33-167	1	0-25	
4,4'-DDT	0.2500	0.2145	86	0.2138	86	50-150	33-167	0	0-25	
Delta-BHC	0.2500	0.2044	82	0.2064	83	50-150	33-167	1	0-25	
Dieldrin	0.2500	0.2170	87	0.2197	88	50-150	33-167	1	0-25	
Endosulfan I	0.2500	0.2233	89	0.2264	91	50-150	33-167	1	0-25	
Endosulfan II	0.2500	0.2153	86	0.2169	87	50-150	33-167	1	0-25	
Endosulfan Sulfate	0.2500	0.2100	84	0.2148	86	50-150	33-167	2	0-25	
Endrin	0.2500	0.2122	85	0.2130	85	50-150	33-167	0	0-25	
Endrin Aldehyde	0.2500	0.2151	86	0.2187	87	50-150	33-167	2	0-25	
Gamma Chlordane	0.2500	0.2050	82	0.2057	82	50-150	33-167	0	0-25	
Gamma-BHC	0.2500	0.2093	84	0.2098	84	50-150	33-167	0	0-25	
Heptachlor	0.2500	0.2283	91	0.2287	91	50-150	33-167	0	0-25	
Heptachlor Epoxide	0.2500	0.2162	86	0.2175	87	50-150	33-167	1	0-25	
Methoxychlor	0.2500	0.2084	83	0.2101	84	50-150	33-167	1	0-25	

Total number of LCS compounds: 19
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

RPD: Relative Percent Difference. CL: Control Limits

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Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
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Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-280-39	**Aqueous**	**GC/MS AAA**	**07/03/13**	**07/05/13 19:36**	**130703L16**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Naphthalene	2.000	1.557	78	1.802	90	21-133	2-152	15	0-25	
2-Methylnaphthalene	2.000	1.585	79	1.821	91	21-140	1-160	14	0-25	
1-Methylnaphthalene	2.000	1.505	75	1.683	84	20-140	0-160	11	0-25	
Acenaphthylene	2.000	1.505	75	1.693	85	33-145	14-164	12	0-25	
Acenaphthene	2.000	1.618	81	1.807	90	55-121	44-132	11	0-25	
Fluorene	2.000	1.659	83	1.808	90	59-121	49-131	9	0-25	
Phenanthrene	2.000	1.568	78	1.683	84	54-120	43-131	7	0-25	
Anthracene	2.000	1.538	77	1.634	82	27-133	9-151	6	0-25	
Fluoranthene	2.000	1.617	81	1.706	85	26-137	8-156	5	0-25	
Pyrene	2.000	1.635	82	1.713	86	45-129	31-143	5	0-25	
Benzo (a) Anthracene	2.000	1.607	80	1.664	83	33-143	15-161	3	0-25	
Chrysene	2.000	1.678	84	1.753	88	17-168	0-193	4	0-25	
Benzo (k) Fluoranthene	2.000	1.656	83	1.736	87	24-159	2-182	5	0-25	
Benzo (b) Fluoranthene	2.000	1.686	84	1.753	88	24-159	2-182	4	0-25	
Benzo (a) Pyrene	2.000	1.744	87	1.790	90	17-163	0-187	3	0-25	
Indeno (1,2,3-c,d) Pyrene	2.000	1.692	85	1.739	87	25-175	0-200	3	0-25	
Dibenz (a,h) Anthracene	2.000	1.453	73	1.514	76	25-175	0-200	4	0-25	
Benzo (g,h,i) Perylene	2.000	1.375	69	1.422	71	25-157	3-179	3	0-25	

Total number of LCS compounds: 18
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: EPA 8270C SIM PCB Congeners

Project: POLA - B161 (EET)

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-433-55	**Aqueous**	**GC/MS HHH**	**07/08/13**	**07/15/13 12:57**	**130708L03**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
PCB008	1.000	0.5566	56	0.5355	54	50-150	33-167	4	0-25	
PCB018	1.000	0.6749	67	0.6368	64	50-150	33-167	6	0-25	
PCB028	1.000	0.7534	75	0.7023	70	50-150	33-167	7	0-25	
PCB044	1.000	0.7279	73	0.6658	67	50-150	33-167	9	0-25	
PCB052	1.000	0.6961	70	0.6435	64	50-150	33-167	8	0-25	
PCB066	1.000	0.7780	78	0.7119	71	50-150	33-167	9	0-25	
PCB077	1.000	0.8078	81	0.7229	72	50-150	33-167	11	0-25	
PCB101	1.000	0.7386	74	0.6755	68	50-150	33-167	9	0-25	
PCB105	1.000	0.7774	78	0.7065	71	50-150	33-167	10	0-25	
PCB118	1.000	0.8237	82	0.7581	76	50-150	33-167	8	0-25	
PCB126	1.000	0.7407	74	0.6654	67	50-150	33-167	11	0-25	
PCB128	1.000	0.7252	73	0.6544	65	50-150	33-167	10	0-25	
PCB153	1.000	0.7104	71	0.6513	65	50-150	33-167	9	0-25	
PCB170	1.000	0.6683	67	0.6040	60	50-150	33-167	10	0-25	
PCB180	1.000	0.7331	73	0.6749	67	50-150	33-167	8	0-25	
PCB187	1.000	0.7274	73	0.6479	65	50-150	33-167	12	0-25	
PCB195	1.000	0.5757	58	0.5096	51	50-150	33-167	12	0-25	
PCB206	1.000	0.5715	57	0.5212	52	50-150	33-167	9	0-25	
PCB209	1.000	0.4016	40	0.3745	37	50-150	33-167	7	0-25	ME

Total number of LCS compounds: 19
Total number of ME compounds: 1
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: POLA - B161 (EET)

Date Received: 07/02/13
Work Order: 13-07-0159
Preparation: EPA 3510C
Method: Organotins by Krone et al.

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-035-234	**Aqueous**	**GC/MS JJJ**	**07/05/13**	**07/09/13 13:40**	**130705L05**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	200.0	175.0	88	179.7	90	56-140	3	0-20	
Tributyltin	200.0	199.5	100	213.5	107	52-112	7	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order: 13-07-0159 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	For any analysis identified as a "field" test with a holding time (HT) </= 15 minutes where the sample is received outside of HT, Calscience will adhere to its internal HT of 24 hours. In cases where sample analysis does not meet Calscience's internal HT, results will be appropriately qualified.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 7/2/13

PAGE: 1 OF 1

LABORATORY CLIENT: AMEC Earth & Environmental

ADDRESS: 9210 Sky Park Court, Suite 200

CITY: San Diego, CA 92123

TEL: 858-300-4320 E-MAIL: Barry.Synder@amec.com

CLIENT PROJECT NAME / NUMBER: POLA - B161 (EET)

PROJECT CONTACT: Barry Snyder/Tyler Huff

SAMPLER(S): (SIGNATURE)

P.O. NO.:

Temp Blank.:

LAB USE ONLY: 13-07-0159

TURNAROUND TIME

___ SAME DAY ___24 HR ___48HR ___72 HR _X_STANDARD

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS:

Samples received originally under CEL #13-06-1677 on 6/25/13.

*As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	EPA 1640/7470A Metals*	EPA 8270C SIM PAHS	EPA 8270C SIM PCB CONGENERS	EPA 8081A OC PESTICIDES	ORGANOTINS by Krone et al.	PYRETHROIDS by GC/TQ	TSS by SM 2540	COMMENTS
1	Berth 161 Dredge Area Composite (Elutriate)		7/2/13	13:00	SW	9	X	X	X	X	X	X	X	
2	Blank		↓	13:30	SW	3								HOLD

Relinquished by: (Signature)	Received by: (Signature)	Date: 7/2/13	Time: 17:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-07-0 1 5 9

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: AMEC Earth & Env'l

DATE: 07/02/13

TEMPERATURE: Thermometer ID: SC3 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.4 °C - 0.2 °C (CF) = 2.2 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: D.C

CUSTODY SEALS INTACT:

☐ Cooler	☐_____	☐ No (Not Intact)	☑ Not Present	☐ N/A	Initial: D.C
☐ Sample	☐_____	☐ No (Not Intact)	☑ Not Present		Initial: D.C

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☐	☑	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☑1AGB 6 ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☑1PB 2 ☐1PB**na** ☐500PB

☑250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** D.C

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** _____

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** _____

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Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

☒ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

Date 6/25/13

Page 1 of 5

LABORATORY CLIENT: AMEC

ADDRESS: 9210 Sky Park ct #200

CITY San Diego, STATE CA ZIP 92123

TEL: (858) 445-2334 E-MAIL: tyler.huff@amec.com

CLIENT PROJECT NAME / NUMBER: POLA - B161

P.O. NO.:

PROJECT CONTACT: Barry Snyder

SAMPLER(S): (PRINT) Tyler Huff

COELT LOG CODE

LAB USE ONLY 13-06-1677

COOLER RECEIPT TEMP= °C

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐ _____

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (g)	TPH (d) or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260B) or ( )	VOCs (8260B)	Oxygenates (8260B)	Encore Prep (5035)	SVOCs (8270C)	Pesticides (8081A)	PCBs (8082)	PNAs (8310) or (8270C)	T22 Metals (6010B/747X)	Cr(VI) [7196A or 7199 or 218.6]	VOCs (TO-14A) or (TO-15)	TPH (g) [TO-3]+	See attached		
1	B161-P1		6/24/13	1400	sed	1																X		
2	B161-P2		6/25/13	0845		1																X		
3	B161-P3 (3)		6/24/13	1600		1																X		
4	B161-P4		6/24/13	1715	↓	1																X		
5	B161-Sitewater		6/25/13	1325	See H2O	1																X		

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
	Amec	6/25/13	1845
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

05/01/07 Revision

B161 Instructions

amec

1677

(1) take an individual bag/site sample (ex B161-P1) and Homogenize it only with itself.

↳ (1.1) ~~Fill~~ Jar an 8oz archive Jar from homogenized sample. set aside Remaining Sample

↳ (1.2) Repeat for all 4 bags / sites (B161-P2, B161-P3, B161-P4)

(2) make "composite Area A" by combining material from B161-P1 & B161-P2. Homogenize / composite thoroughly.

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↳ (2.1) Jar an 8oz archive ~~Jar~~, a 16oz chem test Jar, and 1x grainsize ziplock, test the 16oz Jar + grainsize, test via table 3.3 (attached)

~~↳ (2.2) repeat~~

(3) make "composite Area B" by combining material from B161-P3, B161-P4. Homogenize / composite thoroughly.

↳ (3.1) Jar an 8oz archive Jar, a 16oz chem test Jar + grainsize, test ~~this~~ 16oz Jar + grainsize as per table 3.3 (attached)

(see next page)

B161 Instructions (Continued) 3 of 5

(1677)

(4) ~~Label~~ Combine all remaining sediment material into one. This material will be named "Berth 161 Dredge Area Composite" Jar all of this material into 16 oz Jars. This material will be used with the B161-site water to create the EET/MET elutriate test.

any questions, have Danielle Gonsman Contact Barry Snyder @ (858) 354-8340

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3.4.1 Test Sediment Compositing

All push cores collected will be sent directly to Calscience for compositing. There will be two sediment composites (Composite Area A and Composite Area B) created by Calscience at the culmination of sampling at the Project site. Once collected, each core will be marked with its final length and the location of the Z-layer (if able to be sampled) will be indicated on each tube.

Test sediment composites will be prepared by Calscience by first removing the Z-layer, if present. The remainder of each core sample (up to 2 ft) and the Z-layer from each core sample (if collected) will then be homogenized separately in clean, stainless-steel mixing vessels. An archive sample will be collected from each core and Z-layer sample.

Step 0

Step 2

Once individual core archives have been collected, the remainder of each sample will be thoroughly combined into two separate composite samples, Composite A and Composite B. Composite A will be composed of material from core samples B161-P1 and B161-P2 and Composite Area B will be composed of core samples B161-P3 and B161-P4.

Step 3

3.4.2 Z-layer Sediment Compositing

If collected, there will be no compositing of Z-layer samples or initial analysis of individual z-layer samples. Archives from any Z-layer samples collected will be retained and frozen, should there be a need for additional testing in the future.

3.4.3 Elutriate Preparation and Testing

Site water from the proposed dredge area will be used to prepare the sediment elutriates for chemical analyses. Site water will be stored in polyethylene cubitainers and sampled at the end of the effort to minimize holding times.

Elutriate testing will be conducted to predict potential water quality compliance issues during dredging and disposal operations. Only one elutriate analysis will be performed for Project sediments. The elutriate test will be performed using sediment from all four core samples. This sediment composite from all four core samples will be known as the Berth 161 Dredge Area Composite (no Z-layer samples will be included). The elutriate samples will be prepared by combining a subsample of the Berth 161 Dredge Area Composite sediment with harbor water collected from the Project dredge footprint at a 1:4 part sediment to water ratio. The elutriate sample will be prepared by Calscience according to the procedures outlined in the Inland Testing Manual (ITM USEPA/USACE, 1998).

Step 4

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Table 3-3.
Chemical Analyses for Sediment and Elutriate Samples

Analyte	Analysis Method	Sediment Target Detection Limits[a,b]	Elutriate Target Detection Limits[a,b]
Total Solids	SM 2540 B	0.1%	N/A
Total Organic Carbon	9060	0.1%	N/A
Total Ammonia	SM 4500-NH3 B/C (M)[c]	0.2 mg/kg	N/A
Total sulfides	376.2M[c]	0.5 mg/kg	N/A
Soluble sulfides	SM 4500 S2 - D	0.5 mg/kg	N/A
Oil and Grease	EPA 413.2M	10 mg/kg	N/A
Arsenic	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Cadmium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Chromium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Copper	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Lead	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Mercury	7471A[d]	0.02 mg/kg	0.0002 mg/L
Nickel	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Selenium	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Silver	6020/6010B[d]	0.1 mg/kg	0.001 mg/L
Zinc	6020/6010B[d]	1.0 mg/kg	0.005 mg/L
TPH (C6-C44)	EPA 8015B(M)/8015B	5.0 mg/kg	N/A
TRPH	418.1M[d]	10 mg/kg	N/A
PAHs[e]	8270C SIM/ GC/TQ[d]	10 µg/kg	0.2 µg/L
Chlorinated Pesticides[f]	8081A[d]	1.0 - 20 µg/kg	0.1 µg/L
PCB Congeners[g]	8270C SIM PCB [d]	0.5 µg/kg	0.02 µg/L
Phenols	8270C SIM[d]	20 - 100 µg/kg	N/A
Phthalates	8270C SIM[d]	10 µg/kg	N/A
Pyrethroids	GC/MS/MS[h]	0.5 – 1.0 µg/kg	~~N/A~~ Add
Organotins	Rice/Krone[i]	3.0 µg/kg	3.0 ng/L

Notes:

[a] Sediment minimum detection limits are on a dry-weight basis.

[b] Reporting limits were provided by Calscience Environmental Laboratories, Inc.

[c] Standard Methods for the Examination of Water and Wastewater, 19th edition, American Public Health Association et al. 1995.

[d] EPA 1986-1996. SW -846. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, 3rd Edition.

[e] Includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene.

[f] Includes aldrin, α-benzene hexachloride (BHC), β-BHC, γ-BHC (lindane), δ-BHC, chlordane, 2,4- and 4,4-dichlorodiphenyldiethane (DDD), 2,4- and 4,4- dichlorodiphenylethylene (DDE), 2,4- and 4,4- dichlorodiphenyltrichloroethane (DDT), dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene.

[g] PCBs (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)

[h] Allethrin (Bioallethrin), Bifenthrin, Cyfluthrin-beta (Baythroid), Cyhalothrin-Lamba, Cypermethrin, Deltamethrin (Decamethrin), Esfenvalerate, Fenpropathrin (Danitol), Fenvalerate (sanmarton), Fluvalinate Permethrin (cis and trans), Resmethrin (Bioresmethrin), Resmethrin, Sumithrin (Phenothrin}, Tetramethrin, and Tralomethrin

[i] Rice et al. 1987 or similar (e.g., Krone et al. 1989)

[j] except toxaphene which is 1,000 µg/kg

µg/kg - micrograms per kilogram (parts per billion)
µg/L - micrograms per liter
N/A - not applicable?
PCB - polychlorinated biphenyl
SOP - standard operating procedure
TRPH - total recoverable petroleum hydrocarbons
mg/kg - milligrams per kilogram (parts per million)
mg/L - milligrams per liter
ng/L - nanograms per liter
PAH - polycyclic aromatic hydrocarbon
SM - Standard Methods
TPH - total petroleum hydrocarbons

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-06-1 6 7 7

SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: AMEC DATE: 06/25/13

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 4.2 °C - 0.2 °C (CF) = 4.0 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: JN

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: JN

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☑1AGB* ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☑250PB* ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☑5Gallon cube ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** HH

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** NC

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:**

(-5) Prepared at the Lab.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-06-1677

SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: AMEC DATE: 06/25/13

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 3.9 °C - 0.2 °C (CF) = 3.7 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: JN

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: JN

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☑plastic bag

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** HH

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** HC

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** h.c