APPENDIX D

SEDIMENT ANALYSIS REPORT

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, US ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE, 4th FLOOR
SAN FRANCISCO CALIFORNIA 94102

March 31, 2020

[redacted]
Chairwoman, Dredged Material Management Office
U.S. Army Corps of Engineers San Francisco District
450 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102

Dear [redacted]:

USACE is pleased to provide you with the revised figures to the final Sampling and Analysis Results (SAR) for Sediment Samples Collected from the Military Ocean Terminal Concord (MOTCO) Sampling and Analysis Report (SAR).

At the March 11, 2020 meeting, DMMO determined that

1. The first episode of dredging must go to beneficial reuse
2. All material is suitable for SF-DODS
3. All material except in areas represented by DU3-02 and DU4-03 is suitable for Montezuma (Cover) and Cullinan. Material in DU3-02 and DU4-03 exceeded the bioaccumulation thresholds for PAHs
4. Material in DU3-02 and DU4-03 is suitable as foundation material only at Montezuma

To complete the determination, DMMO requested that Figures 1 and 2 of the SAR be revised to delineate the dredge polygons where DU-3-02 and DU4-03 are located.

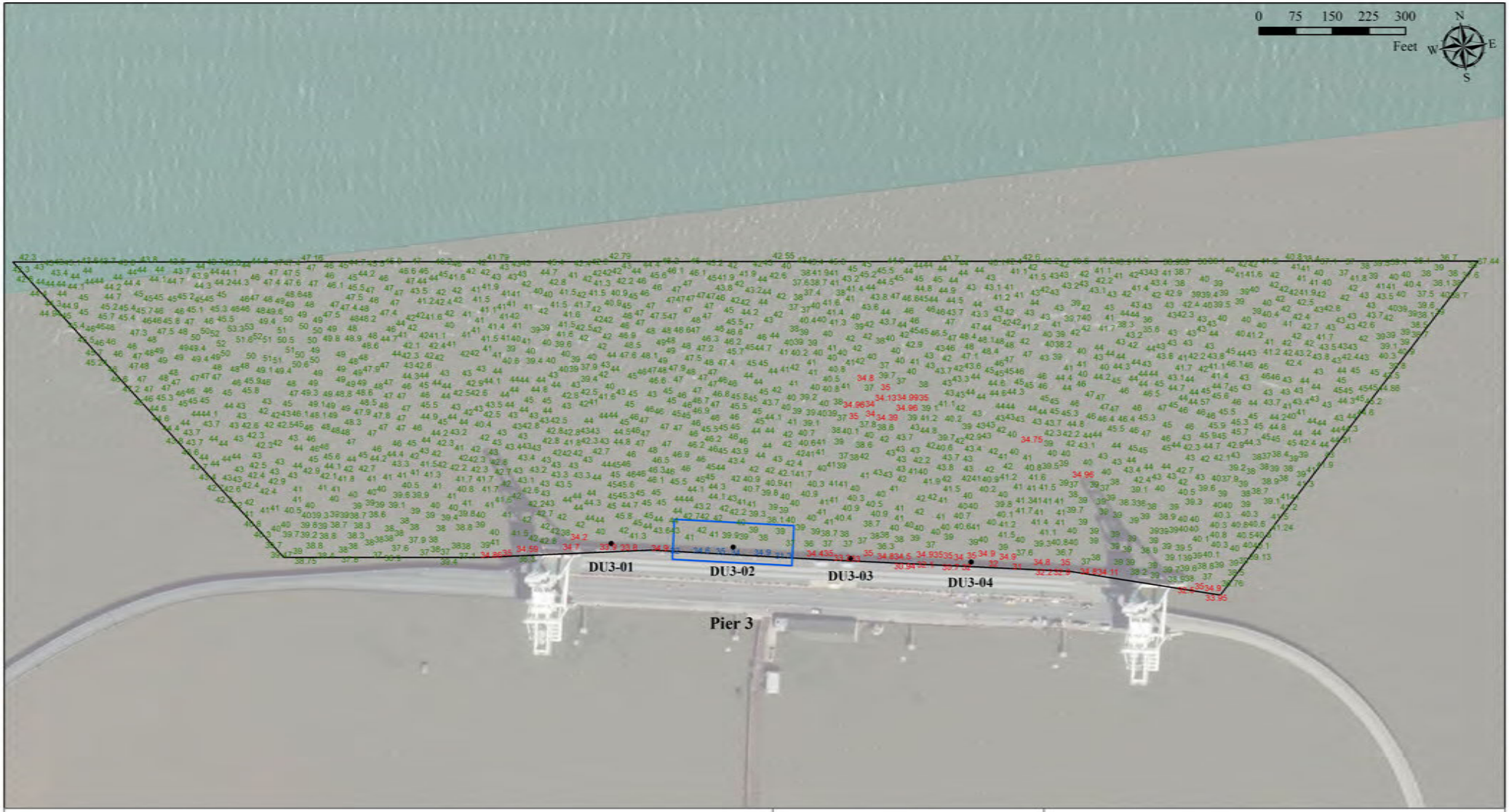
USACE is pleased to submit these revised figures to the DMMO. It is our understanding that these are the final deliverables and that a revised SAR is not required for this project.

I am forwarding a copy of this letter to the other DMMO members: Ms. Brenda Goeden of the San Francisco Bay Conservation and Development Commission, Mr. Brian Ross and Ms. Jennifer Siu of the U.S. Environmental Protection Agency, and Ms. Selina Louie of the San Francisco Bay Regional Water Quality Control Board. If you have any further questions or concerns, please contact [redacted] (415) 503-6868 or via email at Christopher.K.Eng@usace.army.mil.

Sincerely,

[redacted]
Chief, Environmental Section

Enclosure



LEGEND

- Actual Sample Locations
- Suitable for Placement at SF-DODS and MWRP Foundation *Half the Distance from Adjacent Core*
- Suitable for Placement In-Bay, SF-DODS, CRRP, and MWRP Cover
- Dredge Boundary *35.2 Acres*

NOTES

1.HORIZONTAL DATUM/PROJECTION:
NAD83/SPCS CA ZONE 3 - US SURVEY FEET
2. MAP CREATED BY PACIFIC ECORISK 3/30/20.

FIGURE 1.

DU3 SITE MAP: MILITARY OCEAN TERMINAL CONCORD (MOTCO)
SUITABILITY RECOMMENDATIONS

PACIFIC ECORISK | ENVIRONMENTAL CONSULTING & TESTING



LEGEND

- Actual Sample Locations
- Suitable for Placement at SF-DODS and MWRP Foundation *Half the Distance from Adjacent Core*
- Suitable for Placement In-Bay, SF-DODS, CRRP, and MWRP Cover
- Dredge Boundary *45.2 Acres*

NOTES

1.HORIZONTAL DATUM/PROJECTION:
NAD83/SPCS CA ZONE 3 - US SURVEY FEET
2. MAP CREATED BY PACIFIC ECORISK 3/30/20.

FIGURE 2.

DU4 SITE MAP: MILITARY OCEAN TERMINAL CONCORD (MOTCO)
SUITABILITY RECOMMENDATIONS

PACIFIC ECORISK | ENVIRONMENTAL CONSULTING & TESTING

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, US ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE, 4th FLOOR
SAN FRANCISCO CALIFORNIA 94102

March 4, 2020

SUBJECT: Military Ocean Terminal Concord – Tier III Evaluation

Ms. Jessica Vargas
Chairwoman, Dredged Material Management Office
U.S. Army Corps of Engineers San Francisco District
450 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102

Dear Ms. Vargas:

The US Army Corps of Engineers (USACE) is pleased to provide you with the Military Ocean Terminal Concord (MOTCO) 2019 Maintenance Dredging Final Sampling and Analysis Report (SAR). USACE is submitting this SAR to you on behalf of MOTCO for your review and comment. I request that this project be added to the agenda for discussion at the March 11, 2020 DMMO meeting.

At the August 7, 2019 DMMO meeting, a Sampling and Analysis Plan for this effort was reviewed, discussed and found to be appropriate for confirming the suitability of sediment to be dredged for this project. Because of the variable state of the metals chemistry, four analytes were chosen for the bioaccumulation tests (Arsenic, Selenium, Silver and PAHs) at the request of the US Environmental Protection Agency.

USACE believes that the data presented in this report supports a determination of SUAD for in-Bay sites, SUAD at SF-DODS, suitable for Montezuma Wetlands Restoration Project, and that some of the material is suitable for placement at the Cullinan Ranch Restoration Project.

I am forwarding a copy of this letter to the other DMMO members: Ms. Brenda Goeden of the San Francisco Bay Conservation and Development Commission, Mr. Brian Ross and Ms. Jennifer Siu of the U.S. Environmental Protection Agency, and Ms. Selina Louie of the San Francisco Bay Regional Water Quality Control Board. If you have any further questions or concerns, please contact Mr. Chris Eng at Christopher.K.Eng@usace.army.mil.

Sincerely,



Chief, Environmental Section

MILITARY OCEAN TERMINAL CONCORD (MOTCO) 2019 MAINTENANCE DREDGING FINAL SAMPLING AND ANALYSIS REPORT

March 2020



Prepared for	Prepared by	Prepared by
U.S. Army Corps of Engineers 450 Golden Gate Ave, 4th Floor San Francisco, CA 94102-3406	**Pacific EcoRisk** 2250 Cordelia Road Fairfield, CA 94534	**DR Reed and Associates Inc.** 4207 SE Woodstock Blvd #484 Portland, Oregon 97206

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List of Acronyms

ASTM	American Society for Testing and Materials
Bay	San Francisco Bay
CBR	Critical body residue
COC	Chain-of-custody
CRRP	Cullinan Ranch Restoration Project
DDT	dichlorodiphenyltrichloroethane
DMMO	Dredged Material Management Office
DOD	Department of Defense
ERED	Environmental Residue Effects Database
ESC	Elutriate Suitability Concentrations
Eurofins	Eurofins Calscience
ft	foot
g/L	grams per liter
GPS	Global positioning system
HDPE	high-density polyethylene
ISTD	Internal Standard
ITM	Inland Testing Manual
KCl	potassium chloride
KLI	Kinnetics Laboratories, Inc.
LC	lethal concentration (e.g., LC_{50})
LOEC	Lowest observed-effect concentration
LOED	Lowest observed-effect dose
LTMS	Long Term Management Strategy
MD	Matrix Spike
MDL	method detection limit
ME	Marginal Exceedance
MET	Modified Elutriate Test
mg/kg	milligram/kilogram
mg/L	milligrams per liter
mL	milliliters
MLLW	Mean lower low water
MOTCO	Military Ocean Terminal Concord
MRL	method reporting limits

MSD	Matrix Spike Duplicate
mWET	De-ionized water waste extraction test
MWRP	Montezuma Wetlands Restoration Project
ng/kg	nanogram per kilogram
NOED	No observed effective dose
OTM	Ocean Testing Manual
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PER	Pacific EcoRisk
QA/QC	quality assurance/quality control
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SDDC	Surface Deployment and Distribution Command
SET	sediment elutriate test
SF-10	San Pablo Bay Disposal Site
SF-DODS	Deep Ocean Disposal Site
SFRWQCB	San Francisco Regional Water Quality Control Board
SOP	Standard Operating Procedures
SPP	Suspended particulate phase
SUAD	Suitable for unconfined disposal
TEF	Toxicity equivalency factors
TEQ	Toxicity equivalency quotients
TMDL	Total maximum daily load
TSS	Total suspended solids
USACE	U.S. Army Corps of Engineers
USFDA	U.S. Food and Drug Administration
WAAS	Wide Angle Augmentation System
WET	waste extraction test
WHO	World Health Organization
WQO	Water quality objectives
yds^3	Cubic yards

1. INTRODUCTION

Military Ocean Terminal Concord (MOTCO) is an Army Military Surface Deployment and Distribution Command (SDDC) munitions and general cargo transshipment facility located at a strategic site in north central Contra Costa County, California. This Department of Defense (DOD) installation is the primary West Coast common-user ammunition terminal and is home to the SDDC's 834th Transportation Battalion. MOTCO intends to dredge the approaches and berths at its facility in Concord to historic operational depths so it can fulfill its mission and provide round the clock access to its berths (Figures 1-1 through 1-3). MOTCO is in the East San Francisco Bay region, approximately 10 nautical miles inland past the Carquinez Strait that connects Suisun Bay to San Pablo Bay. San Francisco is 30 miles to the southwest, Oakland is 20 miles to the southwest, Sacramento is 65 miles to the northeast, and the City of Concord is located approximately 5 miles south.

In order to provide the chemical and biological characterization needed to obtain regulatory approval for this dredging, the USACE contracted Pacific EcoRisk (PER) to perform characterization of the MOTCO sediments as per regional and federal guidance. PER conducted sampling and analyses of these sediments in accordance with the *Military Ocean Terminal Concord (MOTCO), Concord, California Pre-dredge Sediment Characterization Sampling and Analysis Plan/Quality Assurance Project Plan for Operations and Maintenance Dredging – Barge Pier 1, Pier 2, Pier 3 and Pier 4* (USACE 2019), Inland Testing Manual (ITM [USEPA/USACE 1998]), Ocean Testing Manual (OTM [USEPA/USACE 1991]), beneficial reuse site permit conditions, and San Francisco Dredged Material Management Office (DMMO) guidance.

The sampling and analyses covered agency requirements for placement of dredged material at in-Bay disposal sites (i.e., SF-10), at the San Francisco Deep Ocean Disposal Site (SF-DODS), the Cullinan Ranch Restoration Project (CRRP), and the Montezuma Wetlands Restoration Project (MWRP) wetland beneficial reuse site.

1.1 Project Description

MOTCO requires maintenance dredging of the approaches and berth areas at it SDDC facility. The operational depth of the Barge Pier (DU1) is -20.0 ft mean lower low water (MLLW) + 2.0 ft over-dredge; this area was accordingly sampled and tested to a total depth of -22.0 ft MLLW. The authorized depth of the Pier 2, 3, and 4 areas (DU2a, DU2b, DU3, and DU4) is -35.0 ft MLLW + 2.0 ft over-dredge; these areas were sampled and tested to a total depth of -37.0 ft MLLW.

In addition, "Z-layer" samples consisting of the top 6 inches of the post-dredged mudline project depth were collected at -22 to -22.5 ft MLLW at DU1 and -37 to -37.5 ft MLLW at DU2a, DU2b, DU3, and DU4.

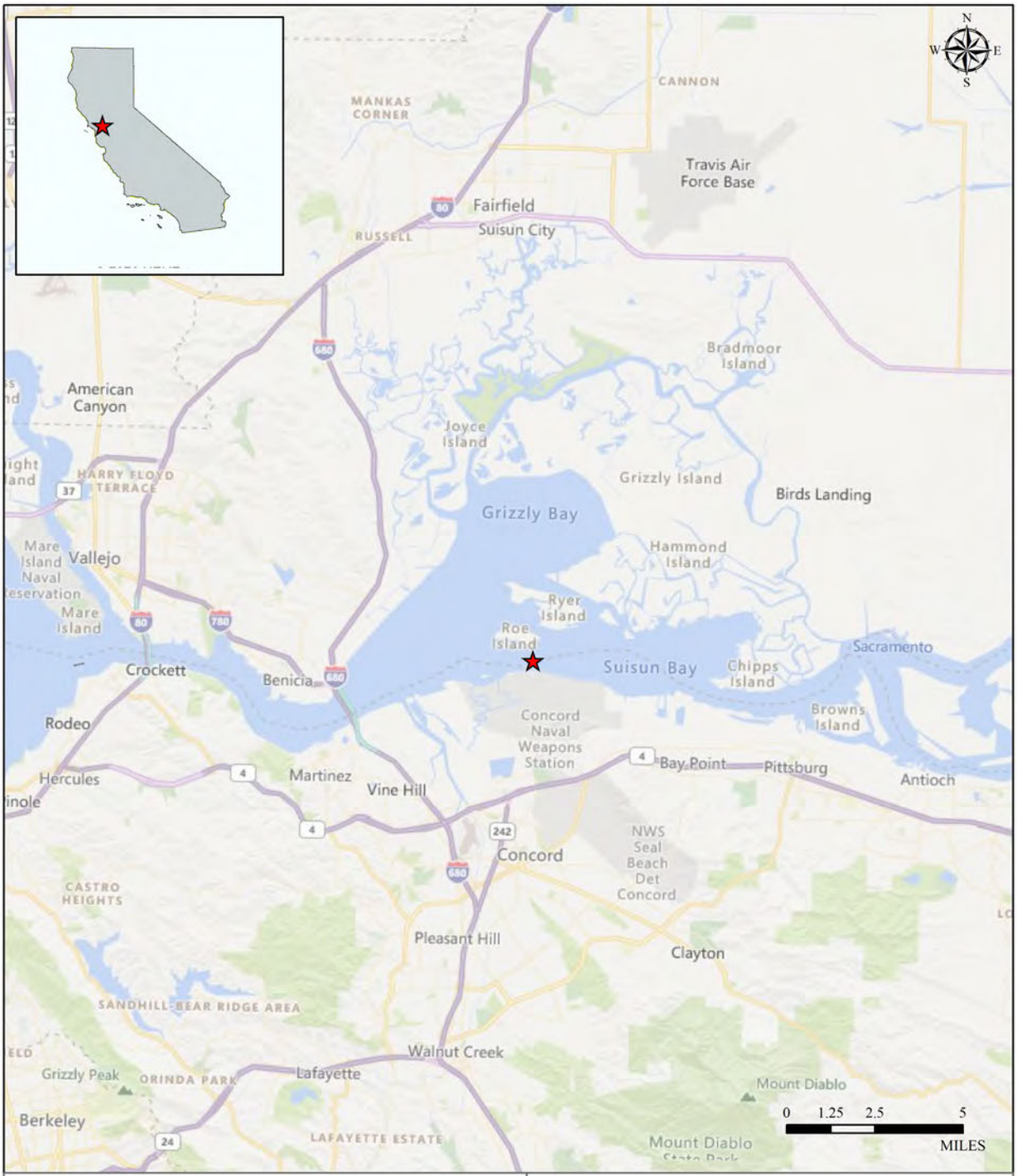
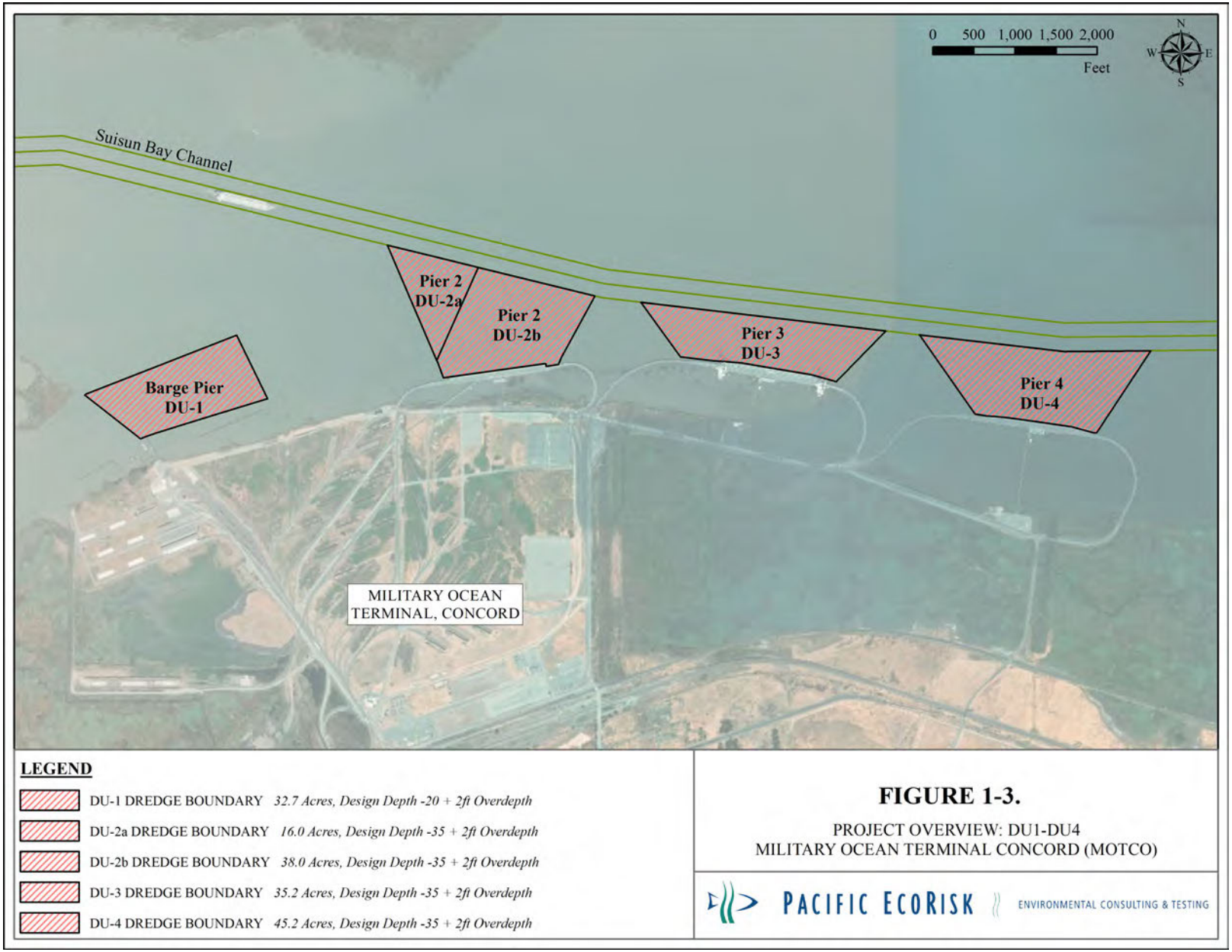


FIGURE 1-1.
LOCATION MAP:
MILITARY OCEAN TERMINAL CONCORD (MOTCO)

PACIFIC ECORISK ENVIRONMENTAL CONSULTING & TESTING


0 0.5 1 2
MILES
N
W
E
S
Grizzly Bay
RYER ISLAND
ROE ISLAND
Suisun Bay
MOTCO
POINT EDITH WILDLIFE AREA
CONCORD
Napa
Fairfield
Benicia
Richmond
Walnut Creek
Berkeley
Oakland
LEGEND
DREDGE BOUNDARY
FIGURE 1-2.
VICINITY MAP:
MILITARY OCEAN TERMINAL CONCORD (MOTCO)
PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING


0 500 1,000 1,500 2,000
Feet
N
W
E
S
Suisun Bay Channel
Pier 2
DU-2a
Pier 2
DU-2b
Pier 3
DU-3
Pier 4
DU-4
Barge Pier
DU-1
MILITARY OCEAN
TERMINAL, CONCORD
LEGEND
DU-1 DREDGE BOUNDARY 32.7 Acres, Design Depth -20 + 2ft Overdepth
DU-2a DREDGE BOUNDARY 16.0 Acres, Design Depth -35 + 2ft Overdepth
DU-2b DREDGE BOUNDARY 38.0 Acres, Design Depth -35 + 2ft Overdepth
DU-3 DREDGE BOUNDARY 35.2 Acres, Design Depth -35 + 2ft Overdepth
DU-4 DREDGE BOUNDARY 45.2 Acres, Design Depth -35 + 2ft Overdepth
FIGURE 1-3.
PROJECT OVERVIEW: DU1-DU4
MILITARY OCEAN TERMINAL CONCORD (MOTCO)
PACIFIC ECORISK
ENVIRONMENTAL CONSULTING & TESTING

Based on a bathymetric survey performed on March 13, 2019, the total volume of the material within the MOTCO approaches and berths requiring dredging is estimated to be approximately 99,118 cubic yards (yds^3) consisting of 19,883 yds^3 above project depth and 79,235 yds^3 of allowable over-depth (cumulatively termed 'maintenance depth' or 'project depth plus over-depth'). Estimated dredge depths and estimated volumes of dredged material to be removed, including over-depth, are summarized in Table 1-1.

Table 1-1. Proposed Maintenance Dredging for Military Ocean Terminal Concord (MOTCO).

Location	Volume (yds^3) of Shoaled Material			Total Estimated Volume
	Project Depth	1st ft Overdepth	2nd ft Overdepth	
MOTCO-2019-DU1-Comp[A]	2,053	2,284	3,498	7,835
MOTCO-2019-DU2-Comp[B]	13,312	22,788	39,125	75,225
MOTCO-2019-DU3-Comp[B]	1,017	886	1,584	3,487
MOTCO-2019-DU4-Comp[B]	3,501	3,091	5,979	12,571
Total Volume =	**19,883**	**29,049**	**50,186**	**99,118**

MLLW - Mean Lower Low Water
yds^3 - Cubic Yards
A – Project depth = -20 ft MLLW
B - Project depth = -35 ft MLLW

1.2 Objectives of the Sediment Investigation

The objective of the current sampling and testing was to evaluate the proposed dredged material to determine whether any potential adverse impacts may occur during removal operations and/or placement at permitted disposal and beneficial reuse sites. The procedures for sediment sample collection, sample processing and preparation, physical and chemical analyses, biological testing, and data analyses were presented in the SAP (USACE 2019) and approved Master SAP *Master Sampling and Analysis Plan USACE SF-District O&M Dredging* (USACE 2014). The specific objectives of the SAP scope-of-work were as follows:

- Collect core samples from within the designated sampling areas following field protocol detailed in the SAP; and
- Conduct chemical and biological analyses of the collected sediments to determine whether they are suitable for unconfined aquatic disposal (SUAD) at in-Bay sites, SF-DODS, or for beneficial reuse at CRRP and MWRP.

1.3 Organization of this Document

Sample collection and handling procedures are discussed in Sections 2 and 3 of this report. Results of chemical analyses and biological toxicity testing are provided in Sections 4-6. Section 7 discusses quality control (QC), and Section 8 presents the conclusions regarding suitability of the material for placement at SF-10, SF-DODS, CRRP, and MWRP.

2. FIELD SEDIMENT SAMPLE COLLECTION

2.1 Collection of Military Ocean Terminal Concord (MOTCO) Sediment Cores

All sediments (and site water, used in the preparation of the sediment elutriates) were collected in accordance with guidelines and procedures outlined in the SAP (USACE 2019). All field sampling activities were performed on October 28, 30, and 31, 2019, under the direction of Mr. Jeffrey Cotsifas (of PER). Kinnetics Laboratories Inc. (KLI) provided the sampling vessel, on-board positioning system, and sampling equipment. PER provided Field Scientists to assist in sediment core collection and collection of site water. Sediment cores were collected from 20 designated sites; Table 2-1 lists station identifiers, GPS coordinates, mudline elevations, and core penetration depths for all stations. A total of 20 sediment cores were collected from within the proposed dredge limits (Figures 2-1 through 2-4) for five management units (termed DU1, DU2a, DU2b, DU3, and DU4). In addition, "Z-layer" samples consisting of the top 6 inches of the post-dredged mudline were collected at each of the 20 sampling locations.

Final sample site positions were determined with a global positioning system (GPS) that uses U.S. Government Wide Angle Augmentation System (WAAS) differential correction data to identify each sampling location.

Sediment was also collected from SF-10 for use as a reference sediment in the bioassay testing.

2.1.1 Field Equipment Decontamination Procedure

The deck of the vessel was rinsed clean with site water between stations. All sampling equipment coming in contact with collected sediments was decontaminated between stations using the following procedures:

1. Rinse with site water and wash with scrub brush until free of sediment;
2. Wash with phosphate-free biodegradable soap solution; and
3. Rinse with site water taken from 3 ft. below the surface.

Any sampling equipment that could not be properly cleaned was not used for subsequent sampling activities.

2.1.2 On-Board Sample Processing and Labeling

All sediment cores were collected to the project depth plus over-depth, or until refusal was met, using an appropriate coring device. Additionally, 0.5 ft core sections were collected at each sample station.

Each sediment core was extruded on board the sampling vessel, and the maintenance depth and Z-layer depth profiles were separated and placed into individual food-grade polyethylene bags. While aboard the vessel, samples were temporarily stored on ice (or frozen "blue ice") within insulated coolers until transport to the laboratory in Fairfield, CA, by PER staff.

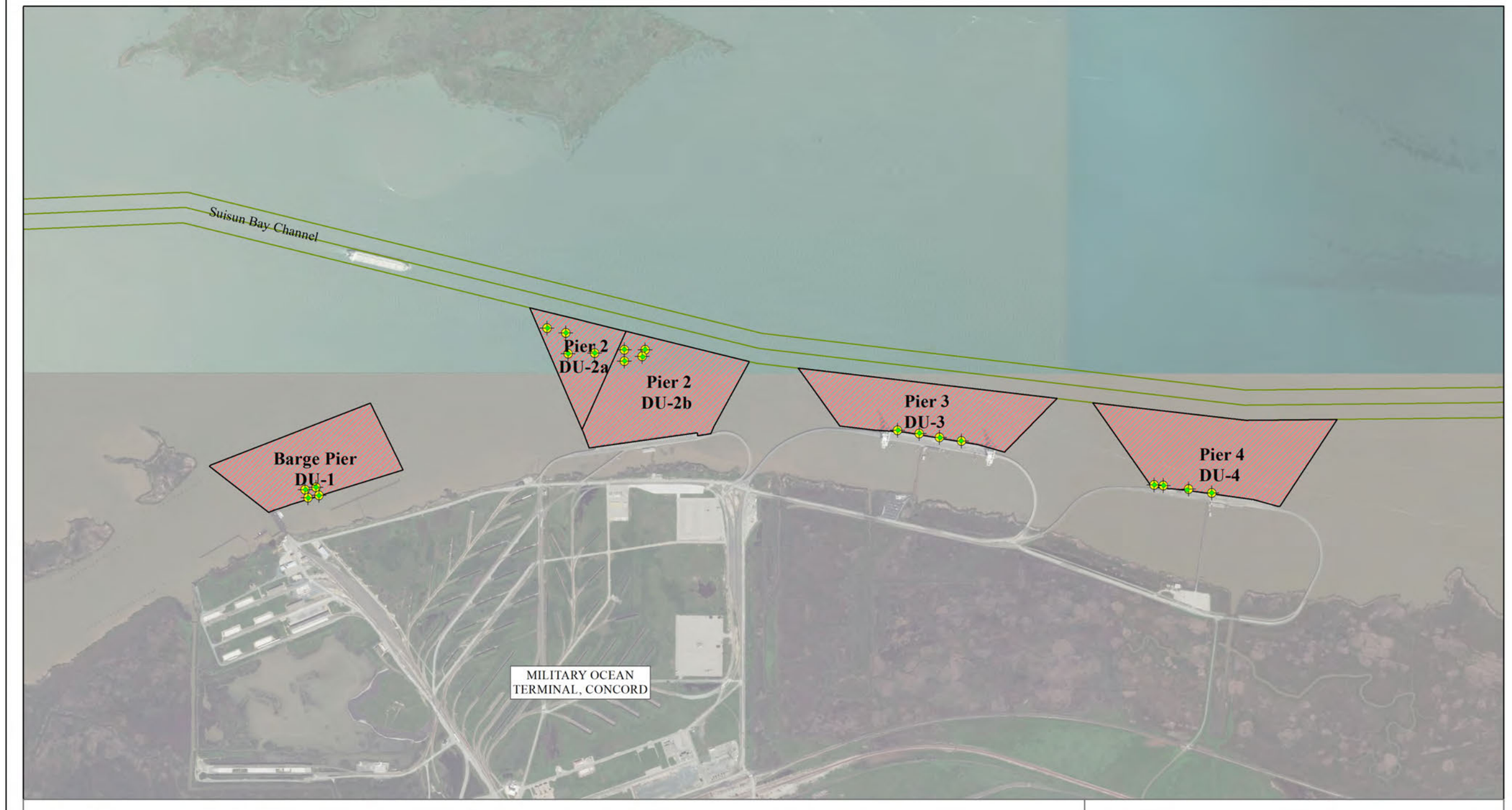
2.2 Deviations from the Sampling and Analysis Plan

There were no unusual circumstances encountered during the fieldwork, and no major deviations from the SAP (USACE 2019). The proposed and actual station locations are presented in Figure 2-1. The Core Collection Forms are presented in Appendix A.

Table 2-1. MOTCO Sampling Station Locations and Core Depths Achieved.

SAMPLE ID	Sample Date	Latitude (decimal-deg minutes)[A]	Longitude (decimal-deg minutes)[A]	Mudline Elevation (ft MLLW)[B]	Core Penetration Depth (ft) Including Z-Layer	Total Depth Cored for: Project Depth + Overdredge + Z-Layer (ft MLLW)
MOTCO-2019-DU1-1	10/31/19	38.05719º	-122.03862º	-18.3	4.2	-22.5
MOTCO-2019-DU1-2	10/31/19	38.05727º	-122.03821º	-18.9	3.6	-22.5
MOTCO-2019-DU1-3	10/31/19	38.05693º	-122.03851º	-17.9	4.6	-22.5
MOTCO-2019-DU1-4	10/31/19	38.05700º	-122.03808º	-17.7	4.8	-22.5
MOTCO-2019-DU2a-1	10/28/19	38.06231º	-122.02895º	-34.2	3.3	-37.5
MOTCO-2019-DU2a-2	10/28/19	38.06216º	-122.02821º	-34.7	2.8	-37.5
MOTCO-2019-DU2a-3	10/28/19	38.06150º	-122.02812º	-33.8	3.7	-37.5
MOTCO-2019-DU2a-4	10/28/19	38.06152º	-122.02705º	-32.9	4.6	-37.5
MOTCO-2019-DU2b-1	10/31/19	38.06163º	-122.02588º	-34.0	3.5	-37.5
MOTCO-2019-DU2b-2	10/31/19	38.06126º	-122.02586º	-34.0	3.5	-37.5
MOTCO-2019-DU2b-3	10/31/19	38.06163º	-122.02504º	-34.6	2.9	-37.5
MOTCO-2019-DU2b-4	10/31/19	38.06140º	-122.02514º	-34.7	2.8	-37.5
MOTCO-2019-DU3-1	10/30/19	38.05908º	-122.01493º	-34.9	2.6	-37.5
MOTCO-2019-DU3-2	10/30/19	38.05898º	-122.01407º	-34.7	2.8	-37.5
MOTCO-2019-DU3-3	10/30/19	38.05884º	-122.01325º	-33.6	3.9	-37.5
MOTCO-2019-DU3-4	10/30/19	38.05874º	-122.01240º	-32.4	5.1	-37.5
MOTCO-2019-DU4-1	10/30/19	38.05735º	-122.00467º	-32.4	5.1	-37.5
MOTCO-2019-DU4-2	10/30/19	38.05733º	-122.00431º	-32.4	5.0	-37.4*
MOTCO-2019-DU4-3	10/30/19	38.05719º	-122.00337º	-32.0	5.5	-37.5
MOTCO-2019-DU4-4	10/30/19	38.05709º	-122.00238º	-32.1	5.4	-37.5

NOTES:
A - State Plane Coordinate System, California Zone 3, NAD 83.
B - Mudline elevations were determined using a lead- line.
* - Refusal encountered after 0.3 ft of penetration into Z-layer.


Suisun Bay Channel
Pier 2
DU-2a
Pier 2
DU-2b
Pier 3
DU-3
Pier 4
DU-4
Barge Pier
DU-1
MILITARY OCEAN
TERMINAL, CONCORD
LEGEND
ACTUAL SAMPLE LOCATIONS
PROPOSED SAMPLE LOCATIONS
PROPOSED DREDGE BOUNDARIES
0 750 1,500 2,250 3,000
Feet
N
W
E
S
FIGURE 2-1.
DU1-DU4 PROPOSED AND ACTUAL
SAMPLE LOCATIONS
PACIFIC ECORISK
Environmental Consulting & Testing

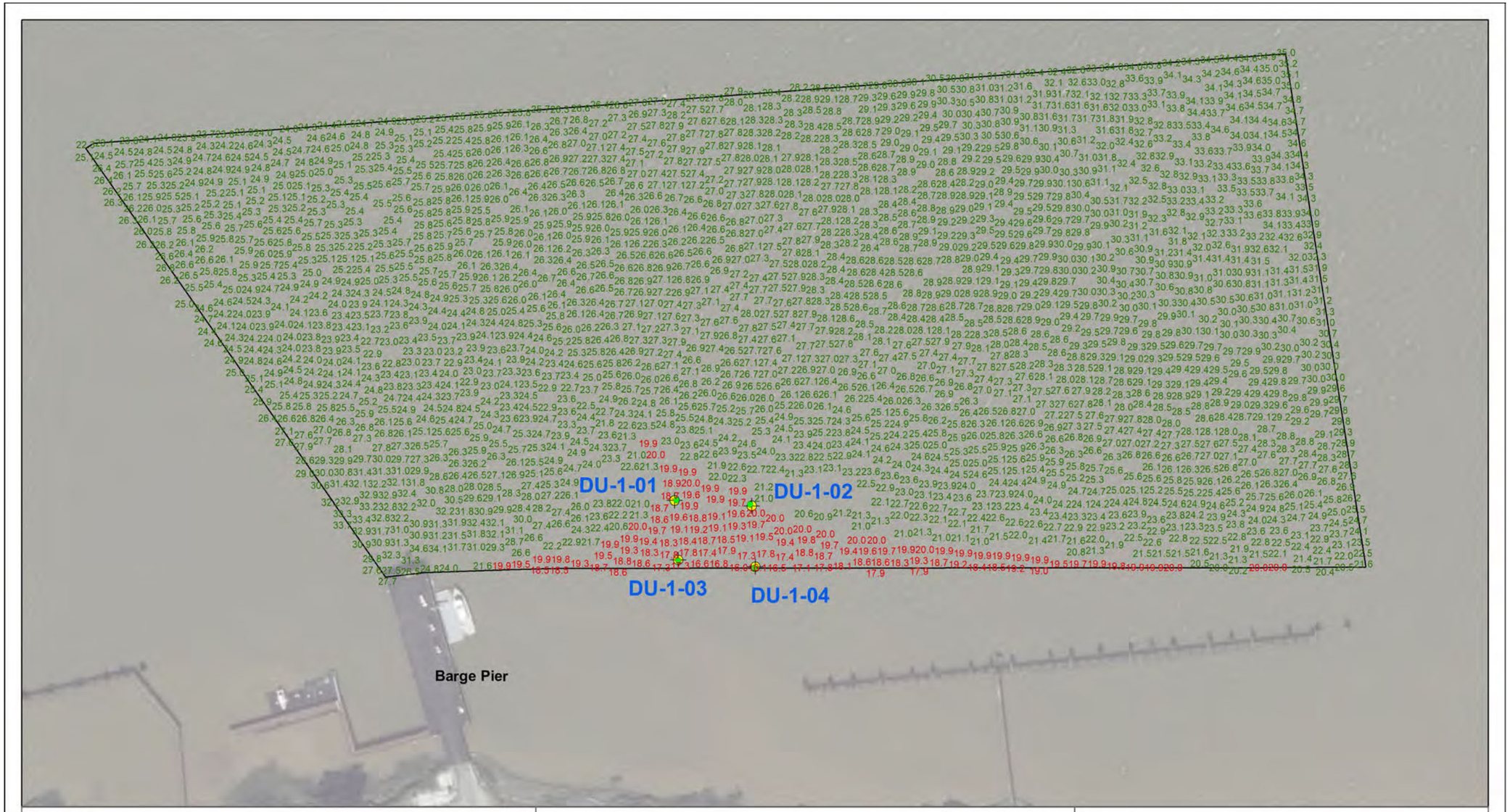
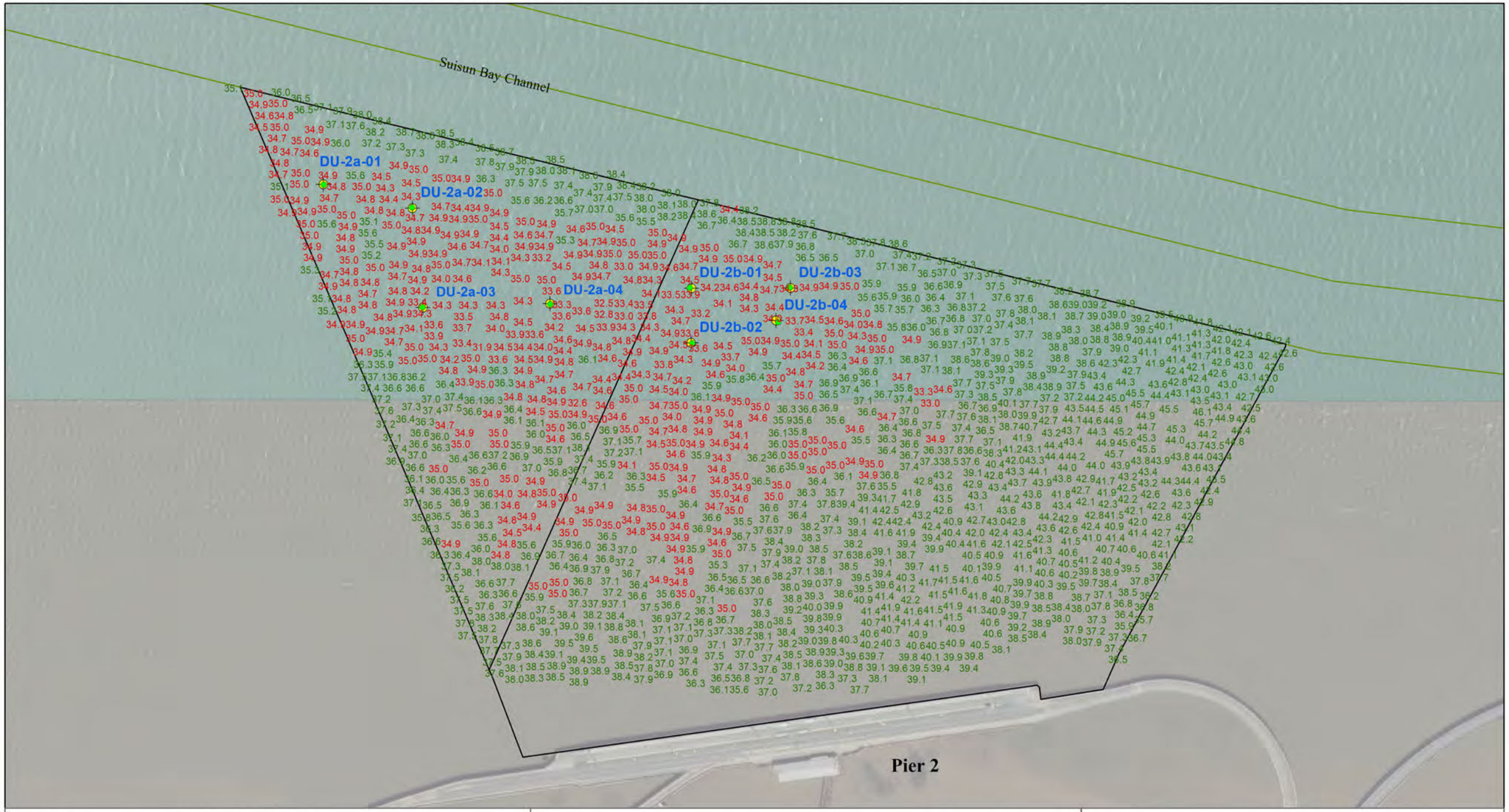


FIGURE 2-2.

DU1 PROPOSED AND ACTUAL SAMPLE LOCATIONS

PACIFIC ECORISK » Environmental Consulting & Testing



LEGEND

- ACTUAL SAMPLE LOCATIONS
- PROPOSED SAMPLE LOCATIONS
- PROPOSED DREDGE BOUNDARY

NOTES

1.HORIZONTAL COORDINATE SYSTEM NORTH AMERICAN DATUM OF 1983 (NAD83).
2. PROJECTED TO THE STATE PLANE COORDINATE SYSTEM (SPCS), CALIFORNIA ZONE II.
3. DISTANCE UNITS IN U.S. SURVEY FEET.
4. MAP MADE BY PACIFIC ECORISK.

N W E S

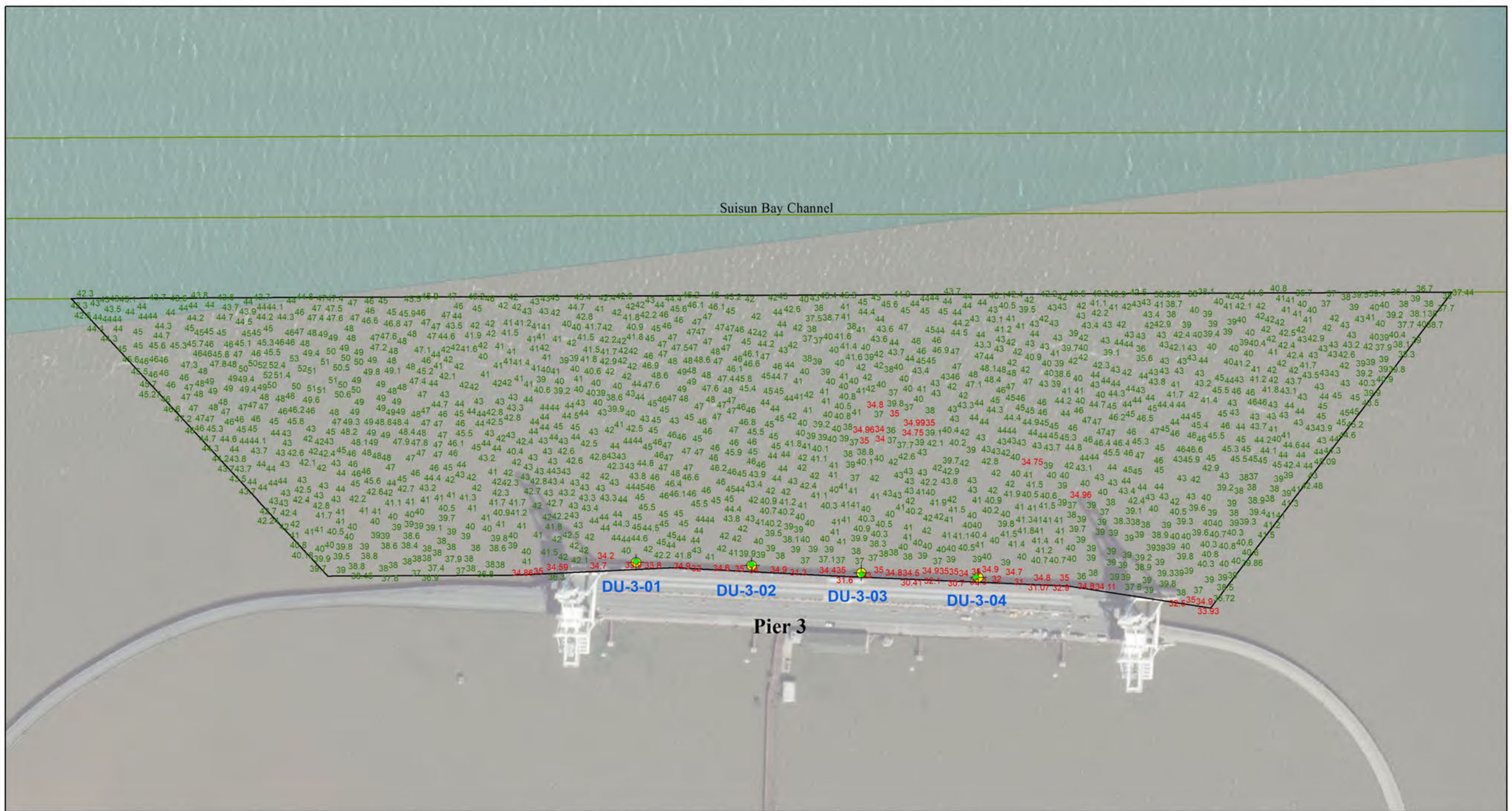
0 100 200 300 400

Feet

FIGURE 2-3.

DU2a & DU2b PROPOSED AND ACTUAL SAMPLE LOCATIONS.

PACIFIC ECORISK » *Environmental Consulting & Testing*



LEGEND

- ACTUAL SAMPLE LOCATIONS
- PROPOSED SAMPLE LOCATIONS
- PROPOSED DREDGE BOUNDARY

NOTES

1.HORIZONTAL COORDINATE SYSTEM
NORTH AMERICAN DATUM OF 1983 (NAD83).
2. PROJECTED TO THE STATE PLANE
COORDINATE SYSTEM (SPCS), CALIFORNIA ZONE II.
3. DISTANCE UNITS IN U.S. SURVEY FEET.
4. MAP MADE BY PACIFIC ECORISK.

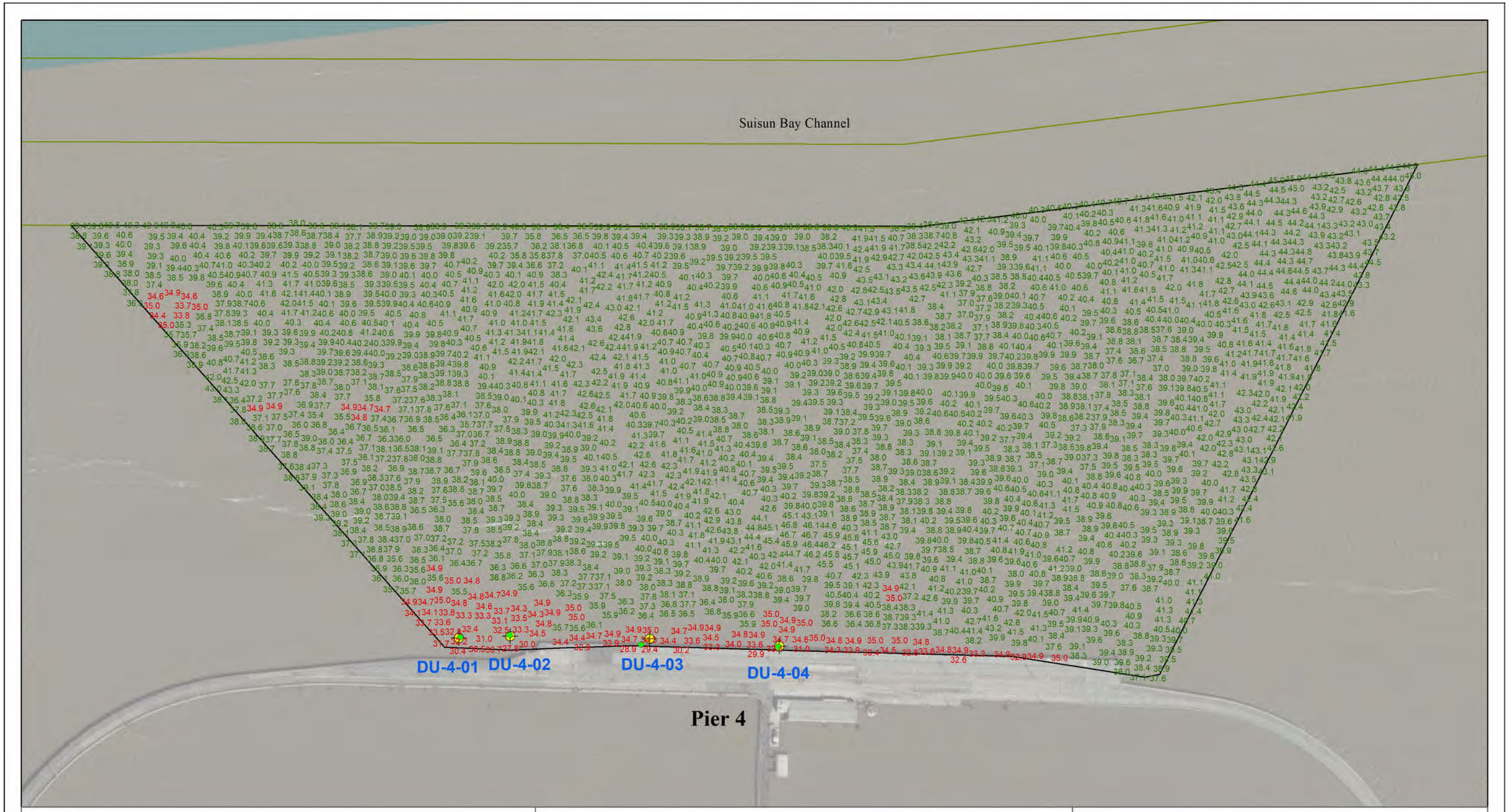
N W E S

0 100 200 300 400
Feet

FIGURE 2-4.

DU3 PROPOSED AND ACTUAL SAMPLE LOCATIONS

PACIFIC ECORISK » *Environmental Consulting & Testing*


Suisun Bay Channel
DU-4-01
DU-4-02
DU-4-03
DU-4-04
Pier 4
LEGEND
ACTUAL SAMPLE LOCATIONS
PROPOSED SAMPLE LOCATIONS
PROPOSED DREDGE BOUNDARY
NOTES
1.HORIZONTAL COORDINATE SYSTEM
NORTH AMERICAN DATUM OF 1983 (NAD83).
2. PROJECTED TO THE STATE PLANE
COORDINATE SYSTEM (SPCS), CALIFORNIA ZONE II.
3. DISTANCE UNITS IN U.S. SURVEY FEET.
4. MAP MADE BY PACIFIC ECORISK.
N
W
E
S
0 100 200 300 400
Feet
FIGURE 2-5.
DU4 PROPOSED AND ACTUAL SAMPLE LOCATIONS
PACIFIC ECORISK
Environmental Consulting & Testing

3. SAMPLE PROCESSING

3.1 Homogenization and Compositing of Sediments

Homogenization and compositing of individual sediment core sections was performed at the PER laboratory facility in Fairfield, CA. The project dredge depth section from each individual core was individually homogenized in a stainless-steel bowl or high-density polyethylene (HDPE) container. A 500-mL sub-sample of the resulting homogenized sediment was archived to allow for additional chemical analyses, if necessary; archived samples are being stored frozen at ≤-20˚C for up to one [1] year after sample collection.

Proportionate amounts of the homogenized sediment from each of the MOTCO-2019-DU1-Comp maintenance depth sediment core sections were composited and homogenized to form the "MOTCO-2019-DU1" composite sediment. The DU2a, DU2b, DU3 and DU4 maintenance depth sediment core sections were similarly processed to form the "MOTCO-2019-DU2a", "MOTCO-2019-DU2b", "MOTCO-2019-DU3", and "MOTCO-2019-DU4" composite sediments. Sub-samples of each of the composited sediments were frozen for archival storage as described above. Samples of the composited project dredge depth sediments for each dredge unit were submitted for chemical and conventional analyses and toxicity testing. Sub-samples of the individual core sediment samples were also submitted for chemical and conventional analyses.

The Z-layer samples were similarly processed, with each individual Z-layer core section being individually homogenized and archived. Subsamples of each Z-Layer sample were submitted for selected chemical and conventional analyses. The remaining individual Z-layer core sample volumes were frozen for archival storage as described above.

3.2 Shipping of Sediment Samples to the Analytical Laboratories

Prior to shipping to the analytical laboratory, sample containers were wrapped in bubble wrap and securely packed inside a cooler with ice packs or crushed ice. A temperature blank was included in each cooler. The original signed chain-of-custody (COC) forms were placed inside the lid of each cooler and packaging tape was wrapped completely around each cooler. *This Side Up* arrow labels and a *Glass-Handle with Care* label were attached on each side and to the top of each cooler, respectively. Each cooler was then sealed with custody seals on both the front and the back-lid seams.

The sediment samples were shipped by overnight delivery. The sub-contracting analytical laboratories have been instructed to not dispose of any samples for this project unless notified by PER in writing.

3.2.1 Chain-of-Custody (COC) Protocol

COC procedures were followed for all samples throughout the collection, handling, and analyses activities. The Sampling and Analysis Project Manager, or a designee, was responsible for all sample tracking and COC procedures. This person was responsible for final sample inventory, maintenance of sample custody documentation, and completion of COC forms prior to transferring samples to the analytical laboratory. A COC form accompanied each cooler of samples to the respective analytical laboratories. Each custodian of the samples signed the COC form; copies of the COC forms are retained in the project file.

3.3 Deviations from the Sampling and Analysis Plan

No deviations from the SAP occurred for sample processing.

4. RESULTS OF LABORATORY ANALYSES

Sediment physical and chemical characteristics provide information about chemicals of concern present in the sediment and their potential bioavailability, and about non-chemical factors that could affect toxicity. The MOTCO composite sediments were analyzed by Eurofins Calscience (Eurofins), located in Garden Grove, CA, for all conventional and chemical parameters specified in the SAP (USACE 2019). Chemical analyses included trace metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), organochlorine (OCl) pesticides, butyltins (also referred to as organotins), and dioxins/furans. The results of these analyses are presented in Table 4-1; the full Data Reports submitted by Eurofins are provided in Appendix B.

Each of the individual sediment cores were analyzed by Eurofins for trace metals, PCBs, PAHs, OCl pesticides, butyltins, and dioxins/furans. The results of these analyses are presented in Table 4-2; the full Data Report submitted by Eurofins is provided in Appendix B.

Each of the Z-layer composite samples were analyzed by Eurofins for trace metals, PCBs, PAHs, OCl pesticides, butyltins, and dioxins/furans. The results of these analyses are presented in Table 4-3; the full Data Report submitted by Eurofins is provided in Appendix B.

Due to elevated total PAHs in the the DU3-02-Z-and -DU4-03 individual core samples, the corresponding DU3-02-Z-layer and -DU4-03-Z-Layer individual core samples were analyzed by Eurofins for PAHs. The results of these analyses are presented in Table 4-4; the full Data Report submitted by Eurofins is provided in Appendix C.

Modified Elutriate Test (MET) samples were prepared for the MOTCO composite samples and analyzed for metals; the results of these analyses are presented in Table 4-5. The full Data Report submitted by Eurofins for the MET analyses is provided in Appendix D. The MET elutriates were also evaluated for toxicity; the results of those analyses are presented in Section 5.

Table 4-1. Results of Chemical Analyses of MOTCO Composited Sediments.

Analyte	SF-10 Benchmark Data	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
											Cover	Foundation
Grain Size (%, dry wt)												
Gravel (>2.00 mm)	0.00	0.00	0.00	0.00	0.00	0.00	<100% fines	-	16-60	NA	NA	NA
Sand (0.0625-2.00 mm)	18.25	67.51	12.29	6.52	24.48	24.31		-				
Silt (0.0039-0.0625 mm)	56.18	23.30	63.44	66.28	53.50	52.09		-	25-62			
Clay (< 0.0039 mm)	25.56	9.19	24.27	27.20	22.02	23.60		-	13-24			
Percent fines (Silt+Clay)	81.75	32.49	87.71	93.48	75.52	75.69		-	-			
% Solids	60.9	73.1	58.6	54.1	54.9	64.3	-	-	-	-	-	-
TOC	0.650	0.628	1.50	1.84	1.90	0.774	-	-	0.63-1.45	-	-	-
Metals (mg/kg, dry wt)												
Arsenic	7.61[B] J	9.40[B]	4.93 J	6.02[B] J	8.84[B]	6.40[B]	13.9	-	2.2-5.33	15.3	15.3	70
Cadmium	<0.961	<0.789 / 0.173[b] J	<1.02 / <0.203[b]	<1.08 / 0.226[b] J	0.291 J	0.286 J	0.33	-	0.3-0.6	0.7	0.33	9.6
Chromium	51.0	38.9	50.1	54.9	52.6	54.4	112	-	69.2-283	112	112	370
Copper	25.0	16.7	21.0	28.3	46.1	45.5	53.9	-	18.3-86.3	68.1	68.1	270
Lead	17.1	9.44	6.10 J	7.41 J	23.0	11.2	25.1	-	5.1-26	43.2	43.2	218
Mercury	0.000698	0.0797 J	0.0367 J	0.0449 J	0.132 J	0.119 J	0.33 (0.47[a])	-	0.1-0.2	0.43	0.43	1.3
Nickel	64.8	56.5	62.3	67.7	76.4	79.4	98.3	-	50.9-238	112	112	200
Selenium	<2.12	2.19[A,C] J / 0.640[A,b] J	<2.24 / 0.446[A,b]	<2.37 / 0.701[A,b]	1.03[A] J	0.805[A] J	0.36	-	0.6-2.6	0.64	0.64	1.4
Silver	<1.14	<0.934 / <0.199[b]	<1.20 / 0.240[b]	<1.27 / <0.257[b]	<0.267	<0.225	0.32	-	0.2-1.0	0.58	0.58	3.7
Zinc	76.2	60.3	64.1	65.6	97.6	96.8	136	-	60.8-288	158	158	410
Butyltins (µg/kg, dry wt)												
Tetrabutyltin	<1.1	<1.0	<1.3	<0.12	<1.3	<1.1	-	-	-	-	-	-
Tributyltin	<2.3	<2.0	<2.5	<0.25	<2.6	<2.3	-	-	-	-	-	-
Dibutyltin	<1.1	<1.0	<1.2	<0.12	1.9 J	<1.1	-	-	-	-	-	-
Monobutyltin	<2.1	<1.9	<2.3	<0.23	<2.4	<2.1	-	-	-	-	-	-
∑ detected Butyltins	**0**	**0**	**0**	**0**	**1.9[B] J**	**0**	**-**	**-**	**nd-1.3**	**-**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015)
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
b - Results of the reanalysis using 20 X dilution factor (DF). Reported concentrations are estimates due to the internal standard failure observed during the initial run.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015,) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).
C - Value exceeds wetland foundation screening value.

Table 4-1 (*continued*). Results of Chemical Analyses of MOTCO Composited Sediments.

Analyte	SF-10 Benchmark Data	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
											Cover	Foundation
PCBs (µg/kg, dry wt)												
PCB 005/008	<0.13	<0.10	<0.13	<0.14	<0.14	<0.12	0.14	-	-	-	-	-
PCB 018	<0.11	<0.088	<0.11	<0.12	<0.12	<0.10	0.07	-	-	-	-	-
PCB 028	<0.11	<0.094	<0.12	<0.13	<0.13	<0.11	0.28	-	-	-	-	-
PCB 031	<0.083	<0.069	<0.086	<0.094	<0.092	<0.078	0.13	-	-	-	-	-
PCB 033	<0.063	<0.052	<0.065	<0.071	<0.069	<0.059	0.08	-	-	-	-	-
PCB 044	<0.25	<0.21	<0.26	<0.28	<0.28	<0.24	0.33	-	-	-	-	-
PCB 049	<0.081	1.2[A]	<0.084	<0.092	<0.090	<0.077	0.25	-	-	-	-	-
PCB 052	<0.31	0.95[A]	<0.32	<0.35	<0.34	<0.29	0.39	-	-	-	-	-
PCB 056	<0.12	<0.10	<0.13	<0.14	<0.14	<0.12	0.14	-	-	-	-	-
PCB 060	<0.086	<0.071	<0.089	<0.097	<0.095	<0.081	0.07	-	-	-	-	-
PCB 066	<0.20	<0.17	<0.21	<0.23	<0.22	<0.19	0.48	-	-	-	-	-
PCB 070	<0.12	<0.097	<0.12	<0.13	<0.13	<0.11	0.59	-	-	-	-	-
PCB 074	<0.15	<0.12	<0.15	<0.17	<0.16	<0.14	-	-	-	-	-	-
PCB 087	<0.18	<0.15	<0.19	<0.21	<0.20	<0.17	0.46	-	-	-	-	-
PCB 095	<0.18	1.5[A]	<0.18	<0.20	<0.19	<0.17	0.60	-	-	-	-	-
PCB 097	<0.076	<0.063	<0.078	<0.085	<0.084	<0.071	-	-	-	-	-	-
PCB 099	<0.078	0.37	<0.080	<0.088	<0.086	<0.073	0.65	-	-	-	-	-
PCB 101	<0.073	0.97	<0.075	<0.082	<0.080	<0.069	1.15	-	-	-	-	-
PCB 105	<0.088	<0.073	<0.091	<0.099	<0.097	<0.083	0.36	-	-	-	-	-
PCB 110	<0.056	<0.046	<0.057	<0.063	<0.061	<0.052	1.04	-	-	-	-	-
PCB 118	<0.057	<0.047	<0.059	<0.064	<0.063	<0.054	0.98	-	-	-	-	-
PCB 128	<0.20	<0.16	<0.20	<0.22	<0.22	<0.19	0.28	-	-	-	-	-
PCB 132/153	<0.27	<0.22	<0.28	<0.30	<0.29	3.1[A]	2.11	-	-	-	-	-
PCB 138/158	<0.58	<0.48	<0.60	<0.65	<0.64	1.9	1.98	-	-	-	-	-
PCB 141	<0.080	<0.067	<0.083	<0.091	<0.089	<0.076	0.20	-	-	-	-	-
PCB 149	<0.19	0.75	<0.20	<0.22	<0.21	1.5[A]	1.25	-	-	-	-	-
PCB 151	<0.14	<0.12	<0.15	<0.16	<0.16	<0.14	0.56	-	-	-	-	-
PCB 156	<0.13	<0.11	<0.13	<0.14	<0.14	<0.12	0.16	-	-	-	-	-
PCB 170	<0.18	<0.15	<0.19	<0.21	<0.20	1.6[A]	0.47	-	-	-	-	-
PCB 174	<0.069	<0.057	<0.071	<0.078	<0.076	<0.065	0.49	-	-	-	-	-
PCB 177	<0.19	<0.16	<0.20	<0.22	<0.21	<0.18	0.36	-	-	-	-	-
PCB 180	<0.15	<0.13	<0.16	<0.17	<0.17	3.1[A]	1.02	-	-	-	-	-
PCB 183	<0.15	<0.13	<0.16	<0.17	<0.17	0.86[A]	0.37	-	-	-	-	-
PCB 187	<0.17	<0.14	<0.17	<0.19	<0.19	1.3[A]	0.87	-	-	-	-	-
PCB 194	<0.12	<0.10	<0.13	<0.14	<0.13	<0.11	0.33	-	-	-	-	-
PCB 195	<0.099	<0.082	<0.10	<0.11	<0.11	<0.093	0.11	-	-	-	-	-
PCB 201	<0.056	<0.046	<0.058	<0.063	<0.062	<0.053	0.05	-	-	-	-	-
PCB 203	<0.095	<0.079	<0.098	<0.11	<0.10	<0.089	0.17	-	-	-	-	-
∑ detected PCBs	**0**	**5.74[A]**	**0**	**0**	**0**	**13.4[A]**	**18.3, 29.5[a]**	**18**	**<MDL**	**22.7**	**22.7**	**180**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
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4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Total PCB concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-1 (*continued*). Results of Chemical Analyses of MOTCO Composited Sediments.

Analyte	SF-10 Benchmark Data	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
											Cover	Foundation
Organochlorine Pesticides (µg/kg, dry wt)												
Aldrin	<0.29	<0.24	<0.30	<0.32	<0.31	<0.27	0.03	-	nd	-	-	-
alpha-BHC	<1.8	<1.5	<1.8	<2.0	<1.9	<1.7	-	-	nd	-	-	-
beta-BHC	<1.2	<0.97	<1.2	<1.3	<1.3	<1.1	-	-	nd	-	-	-
delta-BHC	<1.2	<1.3	<1.6	<1.7	<1.7	<1.5	-	-	nd	-	-	-
gamma-BHC (lindane)	<0.31	<0.26	<0.33	<0.35	<0.34	<0.30	-	-	nd	-	-	-
Total BHCs	0	0	0	0	0	0	0.78	-	-	0.99	-	-
Chlordane	<1.1	<0.93	<1.2	<1.2	<1.2	<1.1	0.34	37	nd	1.1	2.3	4.8
Dieldrin	<0.16	<0.14	<0.17	<0.18	<0.18	<0.15	0.16	1.9	nd	0.72	0.70	4.3
Endosulfan I	<0.17	<0.15	<0.18	<0.19	<0.19	<0.16	-	-	nd	-	-	-
Endosulfan II	<0.32	<0.27	<0.33	<0.36	<0.35	<0.30	-	-	nd	-	-	-
Endosulfan sulfate	<0.45	<0.37	<0.46	<0.50	<0.49	<0.42	-	-	nd	-	-	-
Endrin	<0.17	0.18[A] J	<0.18	<0.19	<0.19	1.5[A]	0.01	-	nd	-	-	-
Endrin aldehyde	<1.8	<1.5	<1.9	<2.1	<2.0	<1.7	-	-	-	-	-	-
Heptachlor	<0.24	<0.20	<0.25	<0.27	<0.26	<0.23	-	-	nd	-	-	-
Heptachlor epoxide	<0.20	<0.17	<0.21	<0.23	<0.22	<0.19	-	-	nd	-	-	-
Toxaphene	<5.1	<4.3	<5.3	<5.7	<5.6	<4.8	-	-	nd	-	-	-
2,4'-DDD	0.29 J	<0.20	<0.25	<0.27	<0.26	<0.23	0.51	-	-	-	-	-
2,4'-DDE	<1.4	<1.1	<1.4	<1.5	<1.5	<1.3	0.11	-	-	-	-	-
2,4'-DDT	0.24 J	<0.19	<0.23	<0.25	<0.24	<0.21	0.04	-	-	-	-	-
4,4'-DDD	1.7	1.7	<0.41	<0.44	1.4 J	1.6	1.98	-	-	-	-	-
4,4'-DDE	0.97 J	0.71 J	<0.29	<0.31	1.5 J	1.3 J	1.98	-	-	-	-	-
4,4'-DDT	<0.49	<0.41	<0.51	<0.55	<0.54	<0.47	0.27	-	-	-	-	-
∑ detected DDTs	**3.2[B]**	**2.41[B]**	**0**	**0**	**2.9[B] J**	**2.9[B]**	**4.68**	**50**	**≤2.1**	**7.0**	**7.0**	**100**

Notes:
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4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.

B - Value exceeds SF-DODS Database (USEPA 2020)

Table 4-1 (*continued*). Results of Chemical Analyses of MOTCO Composited Sediments.

Analyte	SF-10 Benchmark Data	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
											Cover	Foundation
PAHs (µg/kg, dry wt)												
1,6,7-Trimethylnaphthalene	<3.2	<2.6	<3.3	<3.6	5.5 J	7.0 J	7.43	-	-	-	-	-
1-Methylnaphthalene	2.9 J	<0.98	<1.2	1.6 J	3.8 J	3.1 J	13.4	-	-	-	-	-
1-Methylphenanthrene	4.9 J	<2.9	<3.6	<3.9	20	13 J	37.6	-	-	-	-	-
2,6-Dimethylnaphthalene	4.5 J	<2.3	4.8 J	9.2 J	6.8 J	7.2 J	13	-	-	-	-	-
2-Methylnaphthalene	4.6 J	1.1 J	1.8 J	2.1 J	6.3 J	4.8 J	20.8	-	-	-	-	-
Acenaphthene	3.3 J	4.7 J	<0.86	<0.93	110[A]	230[A]	13.5	-	-	-	-	-
Acenaphthylene	<14	<12	<14	<16	<15	<13	32.6	-	-	-	-	-
Anthracene	12 J	6.5 J	<1.1	2.0 J	73	68	80.1	-	-	-	-	-
Benzo(a)anthracene	32	14	<1.9	<2.0	94	81	212	-	-	-	-	-
Benzo(a)pyrene	45	4.5 J	<2.3	<2.5	27	27	428	-	-	-	-	-
Benzo(b)fluoranthene	43	7.3 J	<2.5	<2.7	41	37	227	-	-	-	-	-
Benzo(e)pyrene	28	3.9 J	<3.3	<3.6	23	20	244	-	-	-	-	-
Benzo(g,h,i)perylene	29	<2.0	<2.5	3.0 J	6.1 J	4.5 J	416	-	-	-	-	-
Benzo(k)fluoranthene	26	3.9 J	<2.7	<3.0	31	27	231	-	-	-	-	-
Chrysene	35	16	3.2 J	<1.4	110	74	252	-	-	-	-	-
Dibenz(a,h)anthracene	2.2 J	<1.4	<1.8	<2.0	<1.9	<1.6	49.9	-	-	-	-	-
Dibenzothiophene	<2.2	<1.8	<2.3	<2.5	10 J	15	16.3	-	-	-	-	-
Fluoranthene	70	65	5.3 J	8.5 J	470	510	620	-	-	-	-	-
Fluorene	4.6	3.3 J	3.5 J	4.8 J	41[A]	47[A]	27.1	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	24	<1.7	<2.1	<2.3	5.6 J	5.2 J	337	-	-	-	-	-
Naphthalene	15 J	2.3 J	8.4 J	4.8 J	11 J	10 J	56.4	-	-	-	-	-
Perylene	37	8.7 J	150	210	34	28	216	-	-	-	-	-
Phenanthrene	33	20	7.5 J	12 J	220[A]	340[A]	176	-	-	-	-	-
Pyrene	100	78	5.4 J	8.2 J	410	420	791	-	-	-	-	-
Biphenyl	<3.1	<2.5	<3.2	<3.4	4.2 J	<2.9	11.7	-	-	-	-	-
∑ detected PAHs	**556[B]**	**239[B]**	**190**	**266[B]**	**1,763[B]**	**1,979[B]**	**4,540**	**4,500**	**≤192**	**3,390**	**3,390**	**44,792**

Notes:
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4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.

B - Value exceeds SF-DODS Database (USEPA 2020)

Table 4-1 (*continued*). Results of Chemical Analyses of MOTCO Composited Sediments.

Analyte	TEF	Sample ID												Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
		SF-10 Benchmark Data		MOTCO-2019-DU1-Comp		MOTCO-2019-DU2a-Comp		MOTCO-2019-DU2b-Comp		MOTCO-2019-DU3-Comp		MOTCO-2019-DU4-Comp						Cover	Foundation
Dioxins and Furans (ng/kg, dry wt)		**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**						
2,3,7,8-TCDD	1.0	<0.0331	0	<0.0331	0	<0.0331	0	<0.0331	0	0.268 J	0.268	<0.0331	0	-	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	<0.0536	0	<0.0536	0	<0.0536	0	0.396 J	0.396	0.229 J	0.229	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	<0.0540	0	<0.0540	0	<0.0540	0	0.482 J	0.0482	<0.0536	0	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	1.64 J	0.164	1.73 J	0.173	<0.0538	0	<0.0538	0	2.10 J	0.21	1.77 J	0.177	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	1.07 J	0.107	0.958 J	0.0958	<0.0518	0	<0.0518	0	1.18 J	0.118	0.872 J	0.0872	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	0.010	20.4	0.204	13.9	0.139	0.229 J	0.00229	0.299 J	0.00299	55.9	0.559	35.9	0.359	-	-	-	-	-	-
OCDD	0.0003	155	0.0465	135	0.0405	0.890 J	0.00027	1.10 J	0.00033	538	0.1614	343	0.1029	-	-	-	-	-	-
2,3,7,8-TCDF	0.10	0.865 J	0.0865	0.607	0.0607	<0.0345	0	<0.0345	0	1.24	0.124	0.737	0.0737	-	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	0.416 J	0.0125	0.206 J	0.00618	<0.0417	0	<0.0417	0	0.910 J	0.0273	0.217 J	0.00651	-	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	0.870 J	0.261	0.465 J	0.1395	<0.0449	0	<0.0449	0	0.908 J	0.2724	0.455 J	0.1365	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	0.950 J	0.0950	0.540 J	0.054	<0.0351	0	<0.0351	0	2.57	0.257	0.545 J	0.0545	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	0.351 J	0.0351	0.248 J	0.0248	<0.0382	0	<0.0382	0	0.689 J	0.0689	0.344 J	0.0344	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	0.652 J	0.0652	0.280 J	0.028	<0.0379	0	<0.0379	0	0.673 J	0.0673	0.398 J	0.0398	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	0.291 J	0.0291	<0.0423	0	<0.0423	0	<0.0423	0	0.440 J	0.044	<0.0423	0	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	4.83 J	0.0483	3.03	0.0303	<0.0415	0	<0.0415	0	6.87	0.0687	4.87	0.0487	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	0.478 J	0.00478	0.304 J	0.00304	<0.0532	0	<0.0532	0	0.994 J	0.00994	0.376 J	0.00376	-	-	-	-	-	-
OCDF	0.0003	9.04 J	0.00271	5.43	0.00163	<0.0833	0	<0.0833	0	16.5	0.00495	8.97	0.00269	-	-	-	-	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**1.16**	**NA**	**0.796**	**NA**	**0.003**	**NA**	**0.003**	**NA**	**2.71**	**NA**	**1.36**	**2.90**	**10**	**-**	**20**	**-**	**-**

Notes:
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5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.

Table 4-2. Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU1-01	MOTCO-2019-DU1-02	MOTCO-2019-DU1-03	MOTCO-2019-DU1-04	MOTCO-2019-DU2a-01	MOTCO-2019-DU2a-02	MOTCO-2019-DU2a-03	MOTCO-2019-DU2a-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
Grain Size (%, dry wt)														
Gravel (>2.00 mm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<100% fines	-	16-60	NA	NA	NA
Sand (0.0625-2.00 mm)	69.1	94.23	70.15	20.13	9.11	12.16	0.95	7.78		-				
Silt (0.0039-0.0625 mm)	23.26	4.43	22.89	60.81	72.66	67.42	75.25	70.76		-	25-62			
Clay (< 0.0039 mm)	7.64	1.35	6.95	19.06	18.23	20.42	23.80	21.46		-	13-24			
Percent fines (Silt+Clay)	30.91	5.78	29.84	79.87	90.89	87.84	99.05	92.22		-	-			
% Solids	72.7	74.3	65.0	61.1	56.0	61.4	60.0	62.7	-	-	-	-	-	-
TOC	0.223	0.307	0.631	0.778	2.27	1.01	1.33	1.52	-	-	0.63-1.45	-	-	-
Metals (mg/kg, dry wt)														
Arsenic	6.85[B]	5.53[B] J	9.01[B]	22.4[A,B]	6.03[B] J	6.49[B] J	<3.22	4.01 J	13.9	-	2.2-5.33	15.3	15.3	70
Cadmium	<0.798 / <0.165[b]	<0.796/ <0.160[b]	<0.957/ 0.212[b]	<0.987/ 0.369[A,b] J	<1.03 / <0.226[b]	<1.02 / <0.190[b]	<0.994 / 0.192[b]	<0.929 / 0.185[b]	0.33	-	0.3-0.6	0.7	0.33	9.6
Chromium	32.2	26.7	32.9	49.7	47.1	64.3	1.17 J	47.2	112	-	69.2-283	112	112	370
Copper	10.2	10.1	20.0	37.2	22.2	25.6	<0.961	20.7	53.9	-	18.3-86.3	68.1	68.1	270
Lead	6.40 J	6.70	9.66	23.2	5.59 J	6.60 J	<1.14	5.71 J	25.1	-	5.1-26	43.2	43.2	218
Mercury	0.0387 J	0.0245 J	0.0952 J	0.295	0.0363 J	0.0334 J	<0.00962	0.0352 J	0.33 (0.47[a])	-	0.1-0.2	0.43	0.43	1.3
Nickel	51.3	52.5	54.3	62.3	59.6	77.8	<1.06	58.2	98.3	-	50.9-238	112	112	200
Selenium	<1.75 / 0.494[A,b] J	<1.75 / <0.352[b]	<2.10 / 0.400[A,b] J	<2.17 / 0.874[A,b] J	2.36 J [A,C] / 0.534[A,b] J	<2.24 / 0.576[A,b] J	<2.19 / <0.423[b]	<2.04 / 0.467[A,b] J	0.36	-	0.6-2.6	0.64	0.64	1.4
Silver	<0.944 / 0.806[A,b] J	<0.942 / 0.446[A,b] J	<1.13 / 0.384[A,b] J	<1.17 / 0.333[A,b] J	<1.22 / 0.676[A,b] J	<1.21 / 0.776[A,b] J	<1.18 / 0.310[b] J	<1.10 / <0.219[b]	0.32	-	0.2-1.0	0.58	0.58	3.7
Zinc	47.9	50.6	66.1	96.2	57.2	68.8	<6.57	55.2	136	-	60.8-288	158	158	410
Butyltins (µg/kg, dry wt)														
Tetrabutyltin	<0.98	<0.98	<1.1	<1.2	<1.3	<1.2	<1.2	<1.2	-	-	-	-	-	-
Tributyltin	<2.0	<2.0	<2.3	<2.3	<2.7	<2.3	<2.4	<2.4	-	-	-	-	-	-
Dibutyltin	<0.97	<0.96	1.6 J	<1.1	<1.3	<1.1	<1.2	<1.2	-	-	-	-	-	-
Monobutyltin	<1.8	<1.8	<2.1	<2.2	<2.5	<2.2	<2.3	<2.2	-	-	-	-	-	-
∑ detected Butyltins	**0**	**0**	**1.6[B] J**	**0**	**0**	**0**	**0**	**0**	**-**	**-**	**nd-1.3**	**-**	**-**	**-**

Notes:
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2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
b - Results of the reanalysis using 20 X dilution factor (DF). Reported concentrations are estimates due to the internal standard failure observed during the initial run.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015), or wetland cover screening value.

B - Value exceeds SF-DODS Database (USEPA 2020)

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU2b-01	MOTCO-2019-DU2b-02	MOTCO-2019-DU2b-03	MOTCO-2019-DU2b-04	MOTCO-2019-DU3-01	MOTCO-2019-DU3-02	MOTCO-2019-DU3-03	MOTCO-2019-DU3-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
Grain Size (%, dry wt)														
Gravel (>2.00 mm)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<100% fines	-	16-60	NA	NA	NA
Sand (0.0625-2.00 mm)	7.91	8.35	6.94	7.28	89.21	38.81	19.23	12.38		-				
Silt (0.0039-0.0625 mm)	69.53	72.70	72.43	72.15	8.25	46.44	58.71	64.10		-	25-62			
Clay (< 0.0039 mm)	22.56	18.95	20.63	20.57	2.55	14.76	22.06	23.53		-	13-24			
Percent fines (Silt+Clay)	92.09	91.65	93.06	92.72	10.80	61.19	80.77	87.62		-	-			
% Solids	57.4	52.7	50.5	52.9	67.1	56.8	49.8	47.6	-	-	-	-	-	-
TOC	1.45	1.82	2.00	1.79	0.476	1.92	2.28	2.62	-	-	0.63-1.45	-	-	-
Metals (mg/kg, dry wt)														
Arsenic	5.48[B] J	6.66[B] J	5.09 J	5.98[B] J	4.37 J	8.78[B] J	14.1[A,B]	11.2[B]	13.9	-	2.2-5.33	15.3	15.3	70
Cadmium	<1.03 / 0.213[b] J	<1.13 / 0.255[b] J	<1.17 / <0.238[b]	<1.11 / <0.230[b]	<0.886 / <0.183[b]	<1.07 / 0.348[A,b] J	<1.24 / 0.390[A,b] J	<1.21 / 0.409[A,b] J	0.33	-	0.3-0.6	0.7	0.33	9.6
Chromium	56.3	60.9	51.6	62.4	40.1	48.3	63.3	65.9	112	-	69.2-283	112	112	370
Copper	27.2	29.3	23.8	30.9	15.2	38.4	56.2	54.6	53.9	-	18.3-86.3	68.1	68.1	270
Lead	6.61 J	7.65 J	6.99 J	7.57 J	3.98 J	11.1	17.9	16.3	25.1	-	5.1-26	43.2	43.2	218
Mercury	0.0347 J	0.0431 J	0.146 J	0.0418 J	0.0217 J	0.145	0.114 J	0.162 J	0.33 (0.47[a])	-	0.1-0.2	0.43	0.43	1.3
Nickel	68.3	71.8	61.2	81.1	56.7	64.4	81.2	85.3	98.3	-	50.9-238	112	112	200
Selenium	<2.26 / 0.550[A,b] J	<2.49 / 0.763[A,b] J	<2.57 / 0.600[A,b] J	<2.44 / 0.596[A,b] J	<1.95 / 0.515[A,b] J	2.52[A,C] J / 0.465[A,b] J	<2.73 / <0.517[b]	3.53 [A,B,C]J/ 0.927[A,b] J	0.36	-	0.6-2.6	0.64	0.64	1.4
Silver	<1.21 / <0.250[b]	<1.34 / <0.263[b]	<1.38 / <0.281[b]	<1.31 / 0.378[A,b] J	<1.05 / <0.216[b]	<1.26 / <0.247[b]	<1.47 / <0.278[b]	<1.43 / <0.285[b]	0.32	-	0.2-1.0	0.58	0.58	3.7
Zinc	66.0	69.2	61.0	70.6	53.4	82.7	115	110	136	-	60.8-288	158	158	410
Butyltins (µg/kg, dry wt)														
Tetrabutyltin	<1.3	<1.4	<1.5	<1.4	<1.1	<1.3	<1.4	<1.5	-	-	-	-	-	-
Tributyltin	<2.5	<2.8	<2.9	<2.8	<2.2	<2.6	<2.9	<3.0	-	-	-	-	-	-
Dibutyltin	<1.2	<1.4	<1.4	<1.4	<1.1	1.7 J	2.8 J	3.1 J	-	-	-	-	-	-
Monobutyltin	<2.3	<2.6	<2.7	<2.6	<2.0	<2.4	<2.7	<2.8	-	-	-	-	-	-
∑ detected Butyltins	**0**	**0**	**0**	**0**	**0**	**1.7[B] J**	**2.8[B] J**	**3.1[B] J**	**-**	**-**	**nd-1.3**	**-**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
b - Results of the reanalysis using 20 X dilution factor (DF). Reported concentrations are estimates due to the internal standard failure observed during the initial run.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015), or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020)
C - Value exceeds wetland foundation screening value.

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU4-01	MOTCO-2019-DU4-02	MOTCO-2019-DU4-03	MOTCO-2019-DU4-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
									Cover	Foundation
Grain Size (%, dry wt)										
Gravel (>2.00 mm)	0.00	0.00	0.00	0.00	<100% fines	-	16-60	NA	NA	NA
Sand (0.0625-2.00 mm)	42.28	31.83	20.03	55.95		-				
Silt (0.0039-0.0625 mm)	43.13	50.15	58.95	34.98		-	25-62			
Clay (< 0.0039 mm)	14.59	18.02	21.01	9.08		-	13-24			
Percent fines (Silt+Clay)	57.72	68.17	79.97	44.06		-	-			
% Solids	71.8	60.7	49.1	65.0	-	-	-	-	-	-
TOC	0.275	1.16	2.48	0.664	-	-	0.63-1.45	-	-	-
Metals (mg/kg, dry wt)										
Arsenic	4.78	7.52[B] J	9.47[B]	6.44[B]	13.9	-	2.2-5.33	15.3	15.3	70
Cadmium	0.204 J	<0.994 / 0.640[A,B,b] J	0.442[A] J	0.229 J	0.33	-	0.3-0.6	0.7	0.33	9.6
Chromium	48.2	63.2	55.3	56.1	112	-	69.2-283	112	112	370
Copper	32.1	54.6	57.4[A]	44.2	53.9	-	18.3-86.3	68.1	68.1	270
Lead	7.56	14.0	24.1	14.9	25.1	-	5.1-26	43.2	43.2	218
Mercury	0.0857 J	0.128 J	0.199	0.153	0.33 (0.47[a])	-	0.1-0.2	0.43	0.43	1.3
Nickel	85.8	85.2	72.5	91.8	98.3	-	50.9-238	112	112	200
Selenium	<0.385	<2.19 / <0.416[b]	0.662[A] J	<0.419	0.36	-	0.6-2.6	0.64	0.64	1.4
Silver	<0.207	<1.18 / 0.224[b]	<0.288	<0.225	0.32	-	0.2-1.0	0.58	0.58	3.7
Zinc	67.9	111	229[A]	102	136	-	60.8-288	158	158	410
Butyltins (µg/kg, dry wt)										
Tetrabutyltin	<1.0	<1.2	<1.5	<1.1	-	-	-	-	-	-
Tributyltin	<2.1	<2.4	11	<2.3	-	-	-	-	-	-
Dibutyltin	<1.0	2.1 J	4.5 J	1.1 J	-	-	-	-	-	-
Monobutyltin	<1.9	<2.3	<2.7	<2.1	-	-	-	-	-	-
∑ detected Butyltins	**0**	**2.1[B] J**	**15.5[B]**	**1.1 J**	**-**	**-**	**nd-1.3**	**-**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Mercury concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
b - Results of the reanalysis using 20 X dilution factor (DF). Reported concentrations are estimates due to the internal standard failure observed during analysis.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2020), or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020)

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU1-01	MOTCO-2019-DU1-02	MOTCO-2019-DU1-03	MOTCO-2019-DU1-04	MOTCO-2019-DU2a-01	MOTCO-2019-DU2a-02	MOTCO-2019-DU2a-03	MOTCO-2019-DU2a-04	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
PCBs (µg/kg, dry wt)														
PCB 005/008	<0.11	<0.10	<0.12	<0.13	<0.14	<0.13	<0.13	<0.12	0.14	-	-	-	-	-
PCB 018	<0.089	<0.087	<0.099	<0.11	<0.12	<0.11	<0.11	<0.10	0.07	-	-	-	-	-
PCB 028	<0.096	<0.093	<0.11	<0.11	<0.12	<0.11	<0.12	<0.11	0.28	-	-	-	-	-
PCB 031	<0.070	<0.068	<0.078	<0.083	<0.090	<0.083	<0.084	<0.080	0.13	-	-	-	-	-
PCB 033	<0.053	<0.051	<0.058	<0.063	<0.068	<0.062	<0.063	<0.060	0.08	-	-	-	-	-
PCB 044	<0.21	<0.20	<0.23	<0.25	<0.27	<0.25	<0.25	<0.24	0.33	-	-	-	-	-
PCB 049	<0.068	<0.067	0.36[A]	1.7[A]	<0.088	<0.081	<0.082	<0.078	0.25	-	-	-	-	-
PCB 052	<0.26	<0.26	0.51[A]	2.4[A]	<0.34	<0.31	<0.32	<0.30	0.39	-	-	-	-	-
PCB 056	<0.10	<0.10	<0.12	<0.12	<0.13	<0.12	<0.13	<0.12	0.14	-	-	-	-	-
PCB 060	<0.072	<0.071	<0.080	<0.086	<0.093	<0.085	<0.087	<0.083	0.07	-	-	-	-	-
PCB 066	<0.17	<0.17	<0.19	<0.20	<0.22	<0.20	<0.20	<0.19	0.48	-	-	-	-	-
PCB 070	<0.098	<0.096	<0.11	<0.12	<0.13	<0.12	<0.12	<0.11	0.59	-	-	-	-	-
PCB 074	<0.12	<0.12	<0.14	<0.15	<0.16	<0.15	<0.15	<0.14	-	-	-	-	-	-
PCB 087	<0.15	<0.15	<0.17	<0.18	<0.20	<0.18	<0.18	<0.18	0.46	-	-	-	-	-
PCB 095	<0.15	<0.14	<0.16	2.6[A]	<0.19	<0.17	<0.18	<0.17	0.60	-	-	-	-	-
PCB 097	<0.064	<0.062	<0.071	0.076	<0.082	<0.075	<0.077	<0.073	-	-	-	-	-	-
PCB 099	<0.065	<0.064	0.59	2.0[A]	<0.084	<0.077	<0.079	<0.075	0.65	-	-	-	-	-
PCB 101	<0.061	<0.060	0.76	2.4[A]	<0.079	<0.072	<0.073	<0.070	1.15	-	-	-	-	-
PCB 105	<0.074	<0.072	<0.082	<0.088	<0.095	<0.087	<0.089	<0.084	0.36	-	-	-	-	-
PCB 110	<0.047	<0.046	<0.052	0.88	<0.060	<0.055	<0.056	<0.053	1.04	-	-	-	-	-
PCB 118	<0.048	<0.047	<0.053	<0.057	<0.061	<0.056	<0.057	<0.055	0.98	-	-	-	-	-
PCB 128	<0.17	<0.16	<0.18	<0.20	<0.21	<0.20	<0.20	<0.19	0.28	-	-	-	-	-
PCB 132/153	<0.22	<0.22	<0.25	2.3[A]	<0.29	<0.26	<0.27	<0.26	2.11	-	-	-	-	-
PCB 138/158	<0.48	<0.47	<0.54	<0.58	<0.63	<0.57	<0.58	<0.56	1.98	-	-	-	-	-
PCB 141	<0.067	<0.066	<0.075	<0.80	<0.087	<0.080	<0.081	<0.077	0.20	-	-	-	-	-
PCB 149	<0.16	0.55	0.65	3.4[A]	<0.21	<0.19	<0.20	<0.19	1.25	-	-	-	-	-
PCB 151	<0.12	<0.12	<0.13	<0.14	<0.16	<0.14	<0.15	<0.14	0.56	-	-	-	-	-
PCB 156	<0.11	<0.10	<0.12	<0.13	<0.14	<0.13	<0.13	<0.12	0.16	-	-	-	-	-
PCB 170	<0.15	<0.15	<0.17	<0.18	<0.20	<0.18	<0.18	<0.18	0.47	-	-	-	-	-
PCB 174	<0.058	<0.056	<0.064	<0.069	<0.075	<0.068	<0.070	<0.066	0.49	-	-	-	-	-
PCB 177	<0.16	<0.16	<0.18	<0.19	<0.21	<0.19	<0.19	<0.19	0.36	-	-	-	-	-
PCB 180	<0.13	<0.12	<0.14	<0.15	<0.16	<0.15	<0.15	<0.15	1.02	-	-	-	-	-
PCB 183	<0.13	<0.13	<0.14	<0.15	<0.17	<0.15	<0.15	<0.15	0.37	-	-	-	-	-
PCB 187	<0.14	<0.14	<0.16	<0.17	<0.18	<0.17	<0.17	<0.16	0.87	-	-	-	-	-
PCB 194	<0.10	<0.10	<0.11	<0.12	<0.13	<0.12	<0.12	<0.12	0.33	-	-	-	-	-
PCB 195	<0.083	<0.081	<0.092	<0.098	<0.11	<0.098	<0.10	<0.095	0.11	-	-	-	-	-
PCB 201	<0.047	<0.046	<0.052	<0.056	<0.060	<0.055	<0.056	<0.054	0.05	-	-	-	-	-
PCB 203	<0.079	<0.078	<0.088	<0.094	<0.10	<0.094	<0.096	<0.091	0.17	-	-	-	-	-
∑ detected PCBs	**0**	**0.55[B]**	**2.87[B]**	**17.7[B]**	**0**	**0**	**0**	**0**	**18.3, 29.5[a]**	**18**	**<MDL**	**22.7**	**22.7**	**180**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
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4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Total PCB concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU2b-01	MOTCO-2019-DU2b-02	MOTCO-2019-DU2b-03	MOTCO-2019-DU2b-04	MOTCO-2019-DU3-01	MOTCO-2019-DU3-02	MOTCO-2019-DU3-03	MOTCO-2019-DU3-04	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
PCBs (µg/kg, dry wt)														
PCB 005/008	<0.13	<0.15	<0.15	<0.14	<0.11	<0.13	<0.15	<0.16	0.14	-	-	-	-	-
PCB 018	<0.11	<0.12	<0.13	<0.12	<0.096	<0.11	<0.13	<0.14	0.07	-	-	-	-	-
PCB 028	<0.12	<0.13	<0.14	<0.13	<0.10	<0.12	<0.14	<0.15	0.28	-	-	-	-	-
PCB 031	<0.088	<0.096	<0.10	<0.095	<0.075	<0.089	<0.10	<0.11	0.13	-	-	-	-	-
PCB 033	<0.067	<0.072	<0.075	<0.072	<0.057	<0.067	<0.076	<0.080	0.08	-	-	-	-	-
PCB 044	<0.27	<0.29	<0.30	<0.29	<0.23	<0.27	<0.30	<0.32	0.33	-	-	-	-	-
PCB 049	<0.086	<0.094	<0.098	<0.093	0.59[A]	<0.87	0.68[A]	<0.10	0.25	-	-	-	-	-
PCB 052	<0.33	<0.36	<0.37	<0.36	0.58[A]	<0.33	1.1[A]	<0.40	0.39	-	-	-	-	-
PCB 056	<0.13	<0.14	<0.15	<0.14	<0.11	<0.13	<0.15	<0.16	0.14	-	-	-	-	-
PCB 060	<0.091	<0.099	<0.10	<0.098	<0.078	<0.092	<0.10	<0.11	0.07	-	-	-	-	-
PCB 066	<0.22	<0.23	<0.24	<0.23	<0.18	<0.22	<0.25	<0.26	0.48	-	-	-	-	-
PCB 070	<0.12	<0.14	<0.14	<0.13	<0.11	<0.13	<0.14	<0.15	0.59	-	-	-	-	-
PCB 074	<0.16	<0.17	<0.18	<0.17	<0.13	<0.16	<0.18	<0.19	-	-	-	-	-	-
PCB 087	<0.19	<0.21	<0.22	<0.21	<0.17	<0.20	<0.22	<0.23	0.46	-	-	-	-	-
PCB 095	<0.19	<0.20	<0.21	<0.20	<0.16	<0.19	<0.21	<0.22	0.60	-	-	-	-	-
PCB 097	<0.081	<0.087	<0.091	<0.087	<0.069	<0.081	<0.092	<0.097	-	-	-	-	-	-
PCB 099	<0.083	<0.090	<0.093	<0.089	<0.070	<0.083	<0.095	<0.10	0.65	-	-	-	-	-
PCB 101	<0.077	<0.084	<0.087	<0.083	<0.066	<0.078	<0.088	<0.093	1.15	-	-	-	-	-
PCB 105	<0.093	<0.10	<0.11	<0.10	<0.079	<0.094	<0.11	<0.11	0.36	-	-	-	-	-
PCB 110	<0.059	<0.064	<0.067	<0.063	<0.050	<0.059	<0.068	<0.071	1.04	-	-	-	-	-
PCB 118	<0.060	<0.065	<0.068	<0.065	<0.051	<0.061	<0.069	<0.073	0.98	-	-	-	-	-
PCB 128	<0.21	<0.23	<0.24	<0.22	<0.18	<0.21	<0.24	<0.25	0.28	-	-	-	-	-
PCB 132/153	<0.28	<0.31	<0.32	<0.30	<0.24	<0.28	<0.32	<0.34	2.11	-	-	-	-	-
PCB 138/158	<0.61	<0.67	<0.69	<0.66	<0.52	<0.62	<0.70	<0.74	1.98	-	-	-	-	-
PCB 141	<0.085	<0.093	<0.096	<0.092	<0.073	<0.086	<0.098	<0.10	0.20	-	-	-	-	-
PCB 149	<0.21	<0.22	<0.23	<0.22	<0.18	<0.21	<0.24	<0.25	1.25	-	-	-	-	-
PCB 151	<0.15	<0.17	<0.17	<0.16	<0.13	<0.15	<0.17	<0.18	0.56	-	-	-	-	-
PCB 156	<0.13	<0.15	<0.15	<0.14	<0.11	<0.14	<0.15	<0.16	0.16	-	-	-	-	-
PCB 170	<0.19	<0.21	<0.22	<0.21	<0.16	<0.19	<0.22	<0.23	0.47	-	-	-	-	-
PCB 174	<0.073	<0.079	<0.083	<0.079	<0.062	<0.073	<0.084	<0.088	0.49	-	-	-	-	-
PCB 177	<0.20	<0.22	<0.23	<0.22	<0.17	<0.21	<0.23	<0.25	0.36	-	-	-	-	-
PCB 180	<0.16	<0.17	<0.18	<0.17	<0.14	<0.16	<0.18	<0.19	1.02	-	-	-	-	-
PCB 183	<0.16	<0.18	<0.18	<0.18	<0.14	<0.16	<0.19	<0.20	0.37	-	-	-	-	-
PCB 187	<0.18	<0.19	<0.20	<0.19	<0.15	<0.18	<0.20	<0.22	0.87	-	-	-	-	-
PCB 194	<0.13	<0.14	<0.15	<0.14	<0.11	<0.13	<0.15	<0.16	0.33	-	-	-	-	-
PCB 195	<0.10	<0.11	<0.12	<0.11	<0.089	<0.11	<0.12	<0.13	0.11	-	-	-	-	-
PCB 201	<0.059	<0.064	<0.067	<0.064	<0.050	<0.060	<0.068	<0.071	0.05	-	-	-	-	-
PCB 203	<0.10	<0.11	<0.11	<0.11	<0.086	<0.10	<0.12	<0.12	0.17	-	-	-	-	-
∑ detected PCBs	**0**	**0**	**0**	**0**	**1.17[B]**	**0**	**1.78[B]**	**0**	**18.3, 29.5[a]**	**18**	**<MDL**	**22.7**	**22.7**	**180**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Total PCB concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU4-01	MOTCO-2019-DU4-02	MOTCO-2019-DU4-03	MOTCO-2019-DU4-04	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
									Cover	Foundation
PCBs (µg/kg, dry wt)										
PCB 005/008	<0.11	<0.13	<0.16	<0.12	0.14	-	-	-	-	-
PCB 018	<0.090	<0.11	<0.13	<0.099	0.07	-	-	-	-	-
PCB 028	<0.097	<0.11	<0.14	<0.11	0.28	-	-	-	-	-
PCB 031	<0.071	<0.083	<0.10	<0.078	0.13	-	-	-	-	-
PCB 033	<0.053	<0.063	<0.078	<0.058	0.08	-	-	-	-	-
PCB 044	<0.21	<0.25	<0.31	<0.23	0.33	-	-	-	-	-
PCB 049	<0.069	<0.081	<0.10	<0.076	0.25	-	-	-	-	-
PCB 052	<0.27	<0.31	<0.39	<0.29	0.39	-	-	-	-	-
PCB 056	<0.11	<0.12	<0.15	<0.12	0.14	-	-	-	-	-
PCB 060	<0.073	<0.086	<0.11	<0.080	0.07	-	-	-	-	-
PCB 066	<0.17	<0.20	<0.25	<0.19	0.48	-	-	-	-	-
PCB 070	<0.10	<0.12	<0.15	<0.11	0.59	-	-	-	-	-
PCB 074	<0.13	<0.15	<0.18	<0.14	-	-	-	-	-	-
PCB 087	<0.16	<0.18	<0.23	<0.17	0.46	-	-	-	-	-
PCB 095	<0.15	<0.18	<0.22	<0.16	0.60	-	-	-	-	-
PCB 097	<0.064	<0.076	<0.094	<0.071	-	-	-	-	-	-
PCB 099	<0.066	<0.078	0.60	<0.073	0.65	-	-	-	-	-
PCB 101	<0.062	<0.073	0.94	<0.068	1.15	-	-	-	-	-
PCB 105	<0.074	<0.088	<0.11	<0.082	0.36	-	-	-	-	-
PCB 110	<0.047	<0.056	0.72	<0.052	1.04	-	-	-	-	-
PCB 118	<0.048	<0.057	<0.070	<0.053	0.98	-	-	-	-	-
PCB 128	<0.17	<0.20	<0.24	<0.18	0.28	-	-	-	-	-
PCB 132/153	<0.23	<0.27	2.1	1.3	2.11	-	-	-	-	-
PCB 138/158	<0.49	<0.58	<0.71	<0.54	1.98	-	-	-	-	-
PCB 141	<0.068	<0.080	<0.099	<0.075	0.20	-	-	-	-	-
PCB 149	<0.16	<0.19	1.9[A]	0.71	1.25	-	-	-	-	-
PCB 151	<0.12	<0.14	<0.18	<0.13	0.56	-	-	-	-	-
PCB 156	<0.11	<0.13	<0.16	<0.12	0.16	-	-	-	-	-
PCB 170	<0.15	<0.18	<0.23	<0.17	0.47	-	-	-	-	-
PCB 174	<0.058	<0.069	<0.085	<0.064	0.49	-	-	-	-	-
PCB 177	<0.16	<0.19	<0.24	<0.18	0.36	-	-	-	-	-
PCB 180	<0.13	<0.15	<0.19	<0.14	1.02	-	-	-	-	-
PCB 183	<0.13	<0.15	<0.19	<0.14	0.37	-	-	-	-	-
PCB 187	<0.14	<0.17	<0.21	<0.16	0.87	-	-	-	-	-
PCB 194	<0.10	<0.12	<0.15	<0.11	0.33	-	-	-	-	-
PCB 195	<0.084	<0.099	<0.12	<0.092	0.11	-	-	-	-	-
PCB 201	<0.047	<0.056	<0.069	<0.052	0.05	-	-	-	-	-
PCB 203	<0.080	<0.095	<0.12	<0.088	0.17	-	-	-	-	-
∑ detected PCBs	**0**	**0**	**6.26[B]**	**2.01[B]**	**18.3, 29.5[a]**	**18**	**<MDL**	**22.7**	**22.7**	**180**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
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5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Total PCB concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU1-01	MOTCO-2019-DU1-02	MOTCO-2019-DU1-03	MOTCO-2019-DU1-04	MOTCO-2019-DU2a-01	MOTCO-2019-DU2a-02	MOTCO-2019-DU2a-03	MOTCO-2019-DU2a-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
Organochlorine Pesticides (µg/kg, dry wt)														
Aldrin	<0.24	<0.24	<0.27	<0.28	<0.31	<0.28	<0.29	<1.6	0.03	-	nd	-	-	-
alpha-BHC	<1.5	<1.5	<1.7	<1.8	<1.9	<1.7	<1.8	<1.7	-	-	nd	-	-	-
beta-BHC	<0.96	<0.95	<1.1	<1.1	<1.2	<1.1	<1.2	<1.1	-	-	nd	-	-	-
delta-BHC	<1.3	<1.3	<1.4	<1.5	<1.6	<1.5	<1.5	<1.5	-	-	nd	-	-	-
gamma-BHC (lindane)	<0.26	<0.26	<0.29	<0.31	<0.34	<0.31	<1.6	<0.30	-	-	nd	-	-	-
Total BHCs	0	0	0	0	0	0	0	0	0.78	-	-	0.99	-	-
Chlordane	<0.93	<0.91	<1.0	<1.1	<1.2	<1.1	<1.1	<1.1	0.34	37	nd	1.1	2.3	4.8
Dieldrin	<0.14	<0.13	<0.15	<0.16	<0.18	<0.16	<0.16	<0.16	0.16	1.9	nd	0.72	0.70	4.3
Endosulfan I	<0.14	<0.14	<0.16	<0.17	<0.19	<0.17	<0.17	<0.17	-	-	nd	-	-	-
Endosulfan II	<0.26	<0.26	<0.30	<0.31	<0.34	<0.31	<0.32	<0.31	-	-	nd	-	-	-
Endosulfan sulfate	<0.37	<0.37	<0.42	<0.44	<0.48	<0.44	<0.45	<0.43	-	-	nd	-	-	-
Endrin	<0.14	<0.14	0.26[A] J	0.49[A] J	<0.19	<0.17	<0.17	<0.17	0.01	-	nd	-	-	-
Endrin aldehyde	<1.5	<1.5	<1.7	<1.8	<2.0	<1.8	<1.8	<1.8	-	-	-	-	-	-
Heptachlor	<0.20	<0.20	<0.22	<0.24	<0.26	<0.24	<0.24	<0.23	-	-	nd	-	-	-
Heptachlor epoxide	<0.17	<0.17	<0.19	<0.20	<0.22	<0.20	<0.20	<0.20	-	-	nd	-	-	-
Toxaphene	<4.3	<4.2	<4.8	<5.1	<5.5	<5.0	<5.1	<4.9	-	-	nd	-	-	-
2,4'-DDD	<0.20	<0.20	<0.23	<0.24	<0.26	<0.24	<0.24	<0.23	0.51	-	-	-	-	-
2,4'-DDE	<1.1	<1.1	<1.3	<1.4	<1.5	<1.3	<1.4	<1.3	0.11	-	-	-	-	-
2,4'-DDT	<0.18	<0.18	<0.21	<0.22	<0.24	<0.22	<0.22	<0.21	0.04	-	-	-	-	-
4,4'-DDD	<0.33	<0.33	2.5[A]	5.1[A]	<0.43	<0.39	<0.40	<0.38	1.98	-	-	-	-	-
4,4'-DDE	0.46 J	<0.23	0.94 J	1.3 J	<0.30	<0.27	<0.27	<0.27	1.98	-	nd	-	-	-
4,4'-DDT	<0.41	<0.40	<0.46	<0.49	<0.53	<0.48	<0.49	<0.48	0.27	-	-	-	-	-
∑ detected DDTs	**0.46 J**	**0**	**3.44[B]**	**6.4[A,B]**	**0**	**0**	**0**	**0**	**4.68**	**50**	**≤2.1**	**7.0**	**7.0**	**100**

Notes:
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3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU2b-01	MOTCO-2019-DU2b-02	MOTCO-2019-DU2b-03	MOTCO-2019-DU2b-04	MOTCO-2019-DU3-01	MOTCO-2019-DU3-02	MOTCO-2019-DU3-03	MOTCO-2019-DU3-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
Organochlorine Pesticides (µg/kg, dry wt)														
Aldrin	<0.30	<0.33	<0.34	<0.33	<0.26	<0.30	<0.35	<0.36	0.03	-	nd	-	-	-
alpha-BHC	<1.9	<2.0	<2.1	<2.0	<1.6	<1.9	<2.2	<2.3	-	-	nd	-	-	-
beta-BHC	<1.2	<1.3	<1.4	<1.3	<1.0	<1.2	<1.4	<1.5	-	-	nd	-	-	-
delta-BHC	<1.6	<1.8	<1.8	<1.8	<1.4	<1.6	<1.9	<1.9	-	-	nd	-	-	-
gamma-BHC (lindane)	<0.33	<0.36	<0.38	<0.36	<0.28	<0.33	<0.39	<0.40	-	-	nd	-	-	-
Total BHCs	0	0	0	0	0	0	0	0	0.78	-	-	0.99	-	-
Chlordane	<1.2	<1.3	<1.3	<1.3	<1.0	<1.2	<1.4	<1.4	0.34	37	nd	1.1	2.3	4.8
Dieldrin	<0.17	<0.19	<0.20	<0.19	<0.15	<0.17	<0.20	<0.21	0.16	1.9	nd	0.72	0.70	4.3
Endosulfan I	<0.18	<0.20	<0.21	<0.20	<0.16	<0.18	<0.21	0.23 J	-	-	nd	-	-	-
Endosulfan II	<0.33	<0.36	<0.38	<0.36	<0.29	<0.34	<0.39	<0.40	-	-	nd	-	-	-
Endosulfan sulfate	<0.47	<0.51	<0.54	<0.51	<0.40	<0.47	<0.55	<0.57	-	-	nd	-	-	-
Endrin	0.59 J	<0.20	<0.21	<0.20	<0.16	<0.18	<0.21	<0.22	0.01	-	nd	-	-	-
Endrin aldehyde	<1.9	<2.1	<2.2	<2.1	<1.7	<1.9	<2.3	<2.3	-	-	-	-	-	-
Heptachlor	<0.25	<0.28	<0.29	<0.28	<0.22	<0.25	<0.29	<0.30	-	-	nd	-	-	-
Heptachlor epoxide	<0.22	<0.23	<0.24	<0.23	<0.18	<0.22	<0.25	<0.26	-	-	nd	-	-	-
Toxaphene	<5.4	<5.9	<6.1	<5.9	<4.6	<5.4	<6.3	<6.5	-	-	nd	-	-	-
2,4'-DDD	<0.25	<0.28	<0.29	<0.28	<0.22	<0.26	<0.30	<0.31	0.51	-	-	-	-	-
2,4'-DDE	<1.4	<1.6	<1.6	<1.6	<1.2	<1.4	<1.7	<1.7	0.11	-	-	-	-	-
2,4'-DDT	<0.23	<0.25	<0.27	<0.25	<0.20	<0.23	<0.27	<0.28	0.04	-	-	-	-	-
4,4'-DDD	<0.42	<0.46	<0.48	<0.45	<0.36	1.1 J	1.3 J	1.0 J	1.98	-	-	-	-	-
4,4'-DDE	<0.29	<0.32	<0.33	<0.31	<0.25	2.7[A]	2.7[A]	2.6[A]	1.98	-	nd	-	-	-
4,4'-DDT	<0.52	<0.57	<0.59	<0.57	<0.45	<0.52	<0.61	<0.62	0.27	-	-	-	-	-
∑ detected DDTs	**0**	**0**	**0**	**0**	**0**	**3.8[B]**	**4.0[B]**	**3.6[B]**	**4.68**	**50**	**≤2.1**	**7.0**	**7.0**	**100**

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5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU4-01	MOTCO-2019-DU4-02	MOTCO-2019-DU4-03	MOTCO-2019-DU4-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
									Cover	Foundation
Organochlorine Pesticides (µg/kg, dry wt)										
Aldrin	<0.24	<0.29	<0.35	<0.27	0.03	-	nd	-	-	-
alpha-BHC	<1.5	<1.8	<2.2	<1.7	-	-	nd	-	-	-
beta-BHC	<0.97	<1.2	<1.4	<1.1	-	-	nd	-	-	-
delta-BHC	<1.3	<1.5	<1.9	<1.4	-	-	nd	-	-	-
gamma-BHC (lindane)	<0.27	<0.31	<0.39	<0.29	-	-	nd	-	-	-
Total BHCs	0	0	0	0	0.78	-	-	0.99	-	-
Chlordane	<0.94	<1.1	<1.4	<1.0	0.34	37	nd	1.1	2.3	4.8
Dieldrin	<0.14	<0.16	<0.20	<0.15	0.16	1.9	nd	0.72	0.70	4.3
Endosulfan I	<0.15	0.20 J	<0.21	<0.16	-	-	nd	-	-	-
Endosulfan II	<0.27	<0.32	<0.39	<0.30	-	-	nd	-	-	-
Endosulfan sulfate	<0.38	<0.45	<0.55	<0.42	-	-	nd	-	-	-
Endrin	<0.15	<0.17	<0.21	<0.16	0.01	-	nd	-	-	-
Endrin aldehyde	<1.6	<1.8	<2.3	<1.7	-	-	-	-	-	-
Heptachlor	<0.20	<0.24	<0.30	<0.22	-	-	nd	-	-	-
Heptachlor epoxide	<0.17	<0.20	<0.25	<0.19	-	-	nd	-	-	-
Toxaphene	<4.3	<5.1	<6.3	<4.8	-	-	nd	-	-	-
2,4'-DDD	<0.20	0.46 J	2.6[A]	<0.23	0.51	-	-	-	-	-
2,4'-DDE	<1.2	<1.4	<1.7	<1.3	0.11	-	-	-	-	-
2,4'-DDT	<0.19	<0.22	<0.27	<0.21	0.04	-	-	-	-	-
4,4'-DDD	0.77 J	3.4[A]	2.2[A]	1.7	1.98	-	-	-	-	-
4,4'-DDE	<0.23	3.3[A]	3.1[A]	1.1 J	1.98	-	nd	-	-	-
4,4'-DDT	<0.42	1.8[A]	<0.61	<0.46	0.27	-	-	-	-	-
∑ detected DDTs	**0.77 J**	**8.96[A,B]**	**7.9[A,B]**	**2.8[B]**	**4.68**	**50**	**≤2.1**	**7.0**	**7.0**	**100**

Notes:
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2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.
B - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU1-01	MOTCO-2019-DU1-02	MOTCO-2019-DU1-03	MOTCO-2019-DU1-04	MOTCO-2019-DU2a-01	MOTCO-2019-DU2a-02	MOTCO-2019-DU2a-03	MOTCO-2019-DU2a-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
PAHs (µg/kg, dry wt)														
1,6,7-Trimethylnaphthalene	<2.7	<2.6	<3.0	6.8 J	<3.5	<3.2	<3.2	<3.1	7.43	-	-	-	-	-
1-Methylnaphthalene	<0.99	<0.97	<1.1	<1.2	1.6 J	<1.2	1.3 J	1.5 J	13.4	-	-	-	-	-
1-Methylphenanthrene	<2.9	<2.8	<3.2	17	<3.7	<3.4	<3.5	<3.3	37.6	-	-	-	-	-
2,6-Dimethylnaphthalene	<2.4	<2.3	<2.6	2.9 J	5.6 J	5.8 J	7.7 J	7.2 J	13	-	-	-	-	-
2-Methylnaphthalene	<0.99	<0.97	1.8 J	1.9 J	2.2 J	1.6 J	2.0 J	1.9 J	20.8	-	-	-	-	-
Acenaphthene	1.1 J	<0.68	4.4 J	9.6 J	<0.90	<0.82	<0.84	<0.80	13.5	-	-	-	-	-
Acenaphthylene	<12	<11	<13	<14	<15	<14	<14	<13	32.6	-	-	-	-	-
Anthracene	5.8 J	<0.90	10 J	14 J	<1.2	1.1 J	<1.1	<1.1	80.1	-	-	-	-	-
Benzo(a)anthracene	13 J	<1.5	29	25	<2.0	<1.8	<1.8	<1.7	212	-	-	-	-	-
Benzo(a)pyrene	6.9 J	<1.8	10 J	9.9 J	<2.4	<2.2	<2.2	<2.1	428	-	-	-	-	-
Benzo(b)fluoranthene	17	2.0 J	18	12 J	<2.6	<2.4	<2.4	<2.3	227	-	-	-	-	-
Benzo(e)pyrene	7.8 J	<2.6	9.7 J	10 J	<3.5	<3.2	<3.3	<3.1	244	-	-	-	-	-
Benzo(g,h,i)perylene	<2.0	<2.0	<2.2	<2.4	<2.6	<2.4	<2.4	<2.3	416	-	-	-	-	-
Benzo(k)fluoranthene	9.1 J	<2.2	12 J	7.4 J	<2.9	<2.6	<2.7	<2.5	231	-	-	-	-	-
Chrysene	38	2.7 J	47	32	<1.4	<1.3	<1.3	<1.2	252	-	-	-	-	-
Dibenz(a,h)anthracene	<1.5	<1.4	<1.6	<1.7	<1.9	<1.7	<1.8	<1.7	49.9	-	-	-	-	-
Dibenzothiophene	<1.9	<1.8	<2.1	<2.2	<2.4	<2.2	<2.2	<2.1	16.3	-	-	-	-	-
Fluoranthene	15	6.4 J	100	110	6.0 J	5.1 J	6.1 J	4.8 J	620	-	-	-	-	-
Fluorene	2.7 J	<1.1	4.7 J	4.6 J	3.8 J	3.3 J	4.2 J	3.0 J	27.1	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	<1.7	<1.7	<1.9	<2.0	<2.2	<2.0	<2.1	<2.0	337	-	-	-	-	-
Naphthalene	1.7 J	1.1 J	4.1 J	4.4 J	14 J	7.5 J	7.4 J	3.6 J	56.4	-	-	-	-	-
Perylene	<3.3	<3.2	6.0 J	17	150	160	140	140	216	-	-	-	-	-
Phenanthrene	5.9 J	1.8 J	18	25	7.6 J	7.8 J	9.5 J	6.5 J	176	-	-	-	-	-
Pyrene	37	12 J	140	140	5.9 J	4.8 J	6.1 J	4.8 J	791	-	-	-	-	-
Biphenyl	<2.6	<2.5	<2.9	<3.1	<3.3	<3.0	<3.1	<2.9	11.7	-	-	-	-	-
∑ detected PAHs	**161**	**26 J**	**415[A]**	**450[A]**	**197[A]**	**197[A]**	**184**	**173**	**4,540**	**4,500**	**≤192**	**3,390**	**3,390**	**44,792**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds SF-DODS Database (USEPA 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU2b-01	MOTCO-2019-DU2b-02	MOTCO-2019-DU2b-03	MOTCO-2019-DU2b-04	MOTCO-2019-DU3-01	MOTCO-2019-DU3-02	MOTCO-2019-DU3-03	MOTCO-2019-DU3-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
													Cover	Foundation
PAHs (µg/kg, dry wt)														
1,6,7-Trimethylnaphthalene	<3.4	<3.7	<3.8	<3.6	<2.9	8.9[A] J	11[A] J	<4.1	7.43	-	-	-	-	-
1-Methylnaphthalene	<1.3	2.5 J	2.0 J	1.7 J	<1.1	6.9 J	4.7 J	2.5 J	13.4	-	-	-	-	-
1-Methylphenanthrene	<3.7	<4.0	<4.1	<3.9	<3.1	100[A]	41[A]	<4.4	37.6	-	-	-	-	-
2,6-Dimethylnaphthalene	4.7 J	9.1 J	11 J	7.7 J	<2.5	8.8 J	14[A] J	4.7 J	13	-	-	-	-	-
2-Methylnaphthalene	1.4 J	3.0 J	2.7 J	2.2 J	<1.1	11 J	7.7 J	5.2 J	20.8	-	-	-	-	-
Acenaphthene	<0.88	<0.95	<0.99	<0.95	25[A]	80[A]	390[A]	39[A]	13.5	-	-	-	-	-
Acenaphthylene	<15	<16	<17	<16	<13	<15	<17	<18	32.6	-	-	-	-	-
Anthracene	1.3 J	<1.3	1.5 J	<1.3	<0.99	260[A]	180[A]	30	80.1	-	-	-	-	-
Benzo(a)anthracene	<1.9	<2.1	<2.2	<2.1	<1.6	1600[A]	210	97	212	-	-	-	-	-
Benzo(a)pyrene	<2.4	<2.6	<2.7	<2.5	<2.0	920[A]	110	18 J	428	-	-	-	-	-
Benzo(b)fluoranthene	<2.5	<2.7	<2.9	<2.7	<2.2	970[A]	160	30	227	-	-	-	-	-
Benzo(e)pyrene	<3.4	<3.7	3.9 J	<3.7	<2.9	560[A]	83	18 J	244	-	-	-	-	-
Benzo(g,h,i)perylene	<2.5	3.1 J	3.9 J	<2.7	<2.2	200	46	3.4 J	416	-	-	-	-	-
Benzo(k)fluoranthene	<2.8	<3.1	<3.2	<3.0	<2.4	740[A]	110	23	231	-	-	-	-	-
Chrysene	<1.4	<1.5	<1.5	<1.5	4.0 J	1600[A]	340[A]	85	252	-	-	-	-	-
Dibenz(a,h)anthracene	<1.8	<2.0	<2.1	<2.0	<1.6	150[A]	6.3 J	<2.2	49.9	-	-	-	-	-
Dibenzothiophene	<2.3	<2.5	<2.7	<2.5	<2.0	27[A]	23[A]	7.0 J	16.3	-	-	-	-	-
Fluoranthene	5.5 J	7.1 J	9.3 J	6.4 J	21	2900[A]	940[A]	410	620	-	-	-	-	-
Fluorene	3.3 J	4.8 J	5.8 J	5.1 J	1.2 J	69[A]	83[A]	25	27.1	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	<2.2	<2.4	<2.5	<2.3	<1.8	260	48	3.1 J	337	-	-	-	-	-
Naphthalene	3.8 J	10 J	8.4 J	3.8 J	<1.1	16 J	16 J	9.9 J	56.4	-	-	-	-	-
Perylene	130	260[A]	280[A]	180	42	220[A]	140	26	216	-	-	-	-	-
Phenanthrene	8.4 J	11 J	14 J	10 J	4.1 J	500[A]	530[A]	79	176	-	-	-	-	-
Pyrene	5.3 J	6.7 J	8.8 J	6.3 J	18	2800[A]	820[A]	370	791	-	-	-	-	-
Biphenyl	<3.3	<3.5	<3.7	<3.5	<2.8	6.9 J	6.4 J	4.3 J	11.7	-	-	-	-	-
∑ detected PAHs	**164**	**317[B]**	**351[B]**	**223[B]**	**115**	**14,015[A,B,C]**	**4,320[B]**	**1,290[B]**	**4,540**	**4,500**	**≤192**	**3,390**	**3,390**	**44,792**

Notes:
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4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.

B - Value exceeds SF-DODS Database (USEPA 2020).

C - Value exceeds Bay Bioaccumulation Trigger (SFEI 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	MOTCO-2019-DU4-01	MOTCO-2019-DU4-02	MOTCO-2019-DU4-03	MOTCO-2019-DU4-04	Bay Background[1]	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
									Cover	Foundation
PAHs (µg/kg, dry wt)										
1,6,7-Trimethylnaphthalene	<2.7	<3.2	<39	4.9 J	7.43	-	-	-	-	-
1-Methylnaphthalene	<1.0	3.2 J	25[A] J	1.2 J	13.4	-	-	-	-	-
1-Methylphenanthrene	<2.9	8.2 J	240[A]	<3.2	37.6	-	-	-	-	-
2,6-Dimethylnaphthalene	<2.4	6.0 J	48[A] J	15[A]	13	-	-	-	-	-
2-Methylnaphthalene	1.3 J	6.3 J	58[A] J	2.5 J	20.8	-	-	-	-	-
Acenaphthene	15[A]	59[A]	1600[A]	320[A]	13.5	-	-	-	-	-
Acenaphthylene	<12	<14	<170	<13	32.6	-	-	-	-	-
Anthracene	6.7 J	21	1000[A]	55	80.1	-	-	-	-	-
Benzo(a)anthracene	6.7 J	37	1200[A]	35	212	-	-	-	-	-
Benzo(a)pyrene	3.1 J	32	230	5.2 J	428	-	-	-	-	-
Benzo(b)fluoranthene	4.1 J	32	340[A]	11 J	227	-	-	-	-	-
Benzo(e)pyrene	2.7 J	21	170 J	6.0 J	244	-	-	-	-	-
Benzo(g,h,i)perylene	<2.0	26	<30	<2.2	416	-	-	-	-	-
Benzo(k)fluoranthene	<2.3	19	300[A]	5.1 J	231	-	-	-	-	-
Chrysene	6.0 J	43	1300[A]	42	252	-	-	-	-	-
Dibenz(a,h)anthracene	<1.5	<1.7	<22	<1.6	49.9	-	-	-	-	-
Dibenzothiophene	<1.9	7.1 J	210[A]	11 J	16.3	-	-	-	-	-
Fluoranthene	22	180	6200[A]	430	620	-	-	-	-	-
Fluorene	2.1 J	27	830[A]	15	27.1	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	<1.7	18	44 J	<1.9	337	-	-	-	-	-
Naphthalene	3.8 J	12 J	100[A] J	5.3 J	56.4	-	-	-	-	-
Perylene	15	95	73 J	4.2 J	216	-	-	-	-	-
Phenanthrene	16	150	6800[A]	270[A]	176	-	-	-	-	-
Pyrene	21	180	5400[A]	340	791	-	-	-	-	-
Biphenyl	<2.6	4.7 J	<38	<2.9	11.7	-	-	-	-	-
∑ detected PAHs	**126**	**988[B]**	**26,168[A,B,C]**	**1,578[B]**	**4,540**	**4,500**	**≤192**	**3,390**	**3,390**	**44,792**

Notes:
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2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
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4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015) or wetland cover screening value.

B - Value exceeds SF-DODS Database (USEPA 2020).

C - Value exceeds Bay Bioaccumulation Trigger (SFEI 2020).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	TEF	Sample ID								Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
		MOTCO-2019-DU1-01		MOTCO-2019-DU1-02		MOTCO-2019-DU1-03		MOTCO-2019-DU1-04						Cover	Foundation
Dioxins and Furans **(**ng/kg, dry wt)		**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**						
2,3,7,8-TCDD	1.0	<0.0331	0	<0.0331	0	<0.0331	0	0.173 J	0.173	-	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	<0.0536	0	0.266 J	0.266	0.329 J	0.329	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	<0.0540	0	0.387 J	0.0387	0.287 J	0.0287	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	1.05 J	0.105	1.06 J	0.106	2.52	0.252	2.84	0.284	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	0.649 J	0.0649	0.495 J	0.0495	1.32 J	0.132	1.50 J	0.15	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	0.010	5.88	0.0588	23.4	0.234	21.7	0.217	17.3	0.173	-	-	-	-	-	-
OCDD	0.0003	45.9	0.01377	161	0.0483	181	0.0543	115	0.0345	-	-	-	-	-	-
2,3,7,8-TCDF	0.10	0.471 J	0.0471	0.323 J	0.0323	0.983	0.0983	1.11	0.111	-	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	<0.186	0	<0.186	0	0.280 J	0.0084	0.598 J	0.01794	-	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	<0.201	0	0.268 J	0.0804	0.635 J	0.1905	1.18 J	0.354	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	<0.132	0	0.229 J	0.0229	0.680 J	0.068	2.09 J	0.209	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	<0.134	0	<0.113	0	0.348 J	0.0348	0.626 J	0.0626	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	<0.140	0	<0.119	0	0.445 J	0.0445	0.798 J	0.0798	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	<0.178	0	<0.134	0	0.142 J	0.0142	0.329 J	0.0329	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	1.05 J	0.00105	1.41 J	0.0141	4.71	0.0471	7.95	0.0795	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	<0.150	0	<0.128	0	0.394 J	0.00394	0.826 J	0.00826	-	-	-	-	-	-
OCDF	0.0003	1.89 J	0.00057	1.91 J	0.00057	7.27	0.00218	9.74	0.00292	-	-	-	-	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**0.291**	**NA**	**0.588**	**NA**	**1.47**	**NA**	**2.13**	**2.90**	**10**	**-**	**20**	**-**	**-**

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5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	TEF	Sample ID								Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
		MOTCO-2019-DU2a-01		MOTCO-2019-DU2a-02		MOTCO-2019-DU2a-03		MOTCO-2019-DU2a-04						Cover	Foundation
Dioxins and Furans **(**ng/kg, dry wt)		**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**						
2,3,7,8-TCDD	1.0	<0.0331	0	<0.0331	0	<0.0331	0	<0.0331	0	-	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	<0.0536	0	<0.0536	0	<0.0536	0	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	<0.0540	0	<0.0540	0	<0.0540	0	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	<0.0538	0	<0.0538	0	<0.0538	0	<0.0538	0	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	<0.0518	0	<0.0518	0	<0.0518	0	<0.0518	0	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	0.010	0.195 J	0.00195	0.158 J	0.00158	0.297 J	0.00297	0.212 J	0.00212	-	-	-	-	-	-
OCDD	0.0003	0.924 J	0.000277	0.881 J	0.000264	1.25 J	0.000375	0.993 J	0.000298	-	-	-	-	-	-
2,3,7,8-TCDF	0.10	<0.0345	0	<0.0345	0	<0.0345	0	<0.0345	0	-	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	<0.0417	0	<0.0417	0	<0.0417	0	<0.0417	0	-	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	<0.0449	0	<0.0449	0	<0.0449	0	<0.0449	0	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	<0.0351	0	<0.0351	0	<0.0351	0	<0.0351	0	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	<0.0382	0	<0.0382	0	<0.0382	0	<0.0382	0	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	<0.0379	0	<0.0379	0	<0.0379	0	<0.0379	0	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	<0.0423	0	<0.0423	0	<0.0423	0	<0.0423	0	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	<0.0415	0	<0.0415	0	<0.0415	0	<0.0415	0	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	<0.0532	0	<0.0532	0	<0.0532	0	<0.0532	0	-	-	-	-	-	-
OCDF	0.0003	<0.0833	0	<0.0833	0	<0.0833	0	<0.0833	0	-	-	-	-	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**0.002**	**NA**	**0.002**	**NA**	**0.003**	**NA**	**0.002**	**2.90**	**10**	**-**	**20**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	TEF	Sample ID								Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
		MOTCO-2019-DU2b-01		MOTCO-2019-DU2b-02		MOTCO-2019-DU2b-03		MOTCO-2019-DU2b-04						Cover	Foundation
Dioxins and Furans (ng/kg, dry wt)		Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ						
2,3,7,8-TCDD	1.0	<0.0331	0	<0.0331	0	<0.0331	0	<0.0331	0	-	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	<0.0536	0	<0.0536	0	<0.0536	0	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	<0.0540	0	<0.0540	0	<0.0540	0	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	<0.0538	0	<0.0538	0	<0.0538	0	<0.0538	0	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	<0.0518	0	<0.0518	0	<0.0518	0	<0.0518	0	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	0.010	0.365 J	0.00365	0.320 J	0.0032	0.256 J	0.00256	0.449 J	0.00449	-	-	-	-	-	-
OCDD	0.0003	1.56 J	0.00047	1.78 J	0.00053	1.07 J	0.00032	2.52 J	0.00076	-	-	-	-	-	-
2,3,7,8-TCDF	0.10	<0.0345	0	<0.0345	0	<0.0345	0	<0.0345	0	-	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	<0.0417	0	<0.0417	0	<0.0417	0	<0.0417	0	-	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	<0.0449	0	<0.0449	0	<0.0449	0	<0.0449	0	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	<0.0351	0	<0.0351	0	<0.0351	0	<0.0351	0	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	<0.0382	0	<0.0382	0	<0.0382	0	<0.0382	0	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	<0.0379	0	<0.0379	0	<0.0379	0	<0.0379	0	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	<0.0423	0	<0.0423	0	<0.0423	0	<0.0423	0	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	<0.0415	0	<0.0415	0	<0.0415	0	<0.0415	0	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	<0.0532	0	<0.0532	0	<0.0532	0	<0.0532	0	-	-	-	-	-	-
OCDF	0.0003	<0.0833	0	<0.0833	0	<0.0833	0	<0.0833	0	-	-	-	-	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**0.004**	**NA**	**0.004**	**NA**	**0.003**	**NA**	**0.005**	**2.90**	**10**	**-**	**20**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	TEF	Sample ID								Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
		MOTCO-2019-DU3-01		MOTCO-2019-DU3-02		MOTCO-2019-DU3-03		MOTCO-2019-DU3-04						Cover	Foundation
Dioxins and Furans (ng/kg, dry wt)		Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ						
2,3,7,8-TCDD	1.0	<0.0331	0	0.181 J	0.181	0.394 J	0.394	0.292 J	0.292	-	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	0.326 J	0.326	0.561 J	0.561	0.430 J	0.43	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	0.590 J	0.059	0.819 J	0.0819	0.533 J	0.0533	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	<0.0538	0	2.40 J	0.24	2.52	0.252	1.72 J	0.172	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	<0.0518	0	1.24 J	0.124	1.45 J	0.145	1.21 J	0.121	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	0.010	2.26 J	0.0226	88.8	0.888	49.3	0.493	29.1	0.291	-	-	-	-	-	-
OCDD	0.0003	17.1	0.00513	966	0.2898	341	0.1023	270	0.081	-	-	-	-	-	-
2,3,7,8-TCDF	0.10	0.138 J	0.0138	0.919	0.0919	1.39	0.139	1.11	0.111	-	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	<0.0417	0	0.392 J	0.0118	0.581 J	0.01743	0.574 J	0.0172	-	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	<0.0449	0	0.786 J	0.2358	1.08 J	0.324	0.877 J	0.2631	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	<0.0351	0	1.03 J	0.103	1.43 J	0.143	1.02 J	0.102	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	<0.0382	0	0.567 J	0.0567	0.657 J	0.0657	0.479 J	0.0479	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	<0.0379	0	0.675 J	0.0675	0.926 J	0.0926	0.573 J	0.0573	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	<0.0423	0	0.349 J	0.0349	0.467 J	0.0467	0.332 J	0.0332	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	0.609 J	0.00609	8.45	0.0845	7.10	0.071	5.28	0.0528	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	<0.0532	0	0.689 J	0.0069	0.903 J	0.00903	0.550 J	0.0055	-	-	-	-	-	-
OCDF	0.0003	1.18 J	0.00035	23.8	0.0071	16.5	0.00495	11.1	0.0033	-	-	-	-	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**0.048**	**NA**	**2.81**	**NA**	**2.94[A]**	**NA**	**2.13**	**2.90**	**10**	**-**	**20**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.
A - Value exceeds Bay Background (SFEI 2015).

Table 4-2 (*continued*). Results of Chemical Analyses of MOTCO Individual Core Sediments.

Analyte	TEF	Sample ID								Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]	SF DODs Reference[3]	CRRP Screening Criteria[4]	MWRP Screening Criteria[5]	
		MOTCO-2019-DU4-01		MOTCO-2019-DU4-02		MOTCO-2019-DU4-03		MOTCO-2019-DU4-04						Cover	Foundation
Dioxins and Furans (ng/kg, dry wt)		Conc.	TEQ	Conc.	TEQ	Conc.	TEQ	Conc.	TEQ						
2,3,7,8-TCDD	1.0	<0.0331	0	0.292 J	0.292	0.533	0.533	<0.0331	0	-	-	-	-	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	0.214 J	0.214	0.744 J	0.744	0.383 J	0.383	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	<0.0540	0	0.817 J	0.0817	0.495 J	0.0495	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	0.10	<0.0538	0	1.90 J	0.19	3.33	0.333	2.76	0.276	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	0.10	<0.0518	0	1.14 J	0.114	1.69 J	0.169	1.31 J	0.131	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	0.010	0.628 J	0.00628	12.4	0.124	40.2	0.402	66.1	0.661	-	-	-	-	-	-
OCDD	0.0003	4.61 J	0.00138	105	0.0315	250	0.075	531	0.1593	-	-	-	-	-	-
2,3,7,8-TCDF	0.10	<0.0345	0	1.57	0.157	2.31	0.231	0.867	0.0867	-	-	-	-	-	-
1,2,3,7,8-PeCDF	0.030	<0.0417	0	0.240 J	0.0072	0.729 J	0.0219	0.318 J	0.00954	-	-	-	-	-	-
2,3,4,7,8-PeCDF	0.30	<0.0449	0	0.518 J	0.1554	1.38 J	0.414	0.651 J	0.1953	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	0.10	<0.0351	0	0.370 J	0.037	1.23 J	0.123	0.780 J	0.078	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	0.10	<0.0382	0	0.341 J	0.0341	0.749 J	0.0749	0.462 J	0.0462	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	0.10	<0.0379	0	0.304 J	0.0304	1.15 J	0.115	0.572 J	0.0572	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	0.10	<0.0423	0	0.188 J	0.0188	0.473 J	0.0473	0.219 J	0.0219	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	0.010	0.239 J	0.0024	2.03 J	0.0203	6.37	0.0637	6.41	0.0641	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	0.010	<0.0532	0	0.252 J	0.00252	0.787 J	0.0079	0.538 J	0.00538	-	-	-	-	-	-
OCDF	0.0003	0.334 J	0.0024	4.71 J	0.00141	16.1	0.0048	17.4	0.00522	-	-	-	-	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**0.012**	**NA**	**1.43**	**NA**	**3.44[A]**	**NA**	**2.23**	**2.90**	**10**	**-**	**20**	**-**	**-**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate. All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.
A - Value exceeds Bay Background (SFEI 2015)

Table 4-3. Results of Chemical Analyses of MOTCO Z-Layer Composite Sediments.

Analyte	MOTCO-2019-DU1-Z-Layer-Comp	MOTCO-2019-DU2a-Z-Layer-Comp	MOTCO-2019-DU2b-Z-Layer-Comp	MOTCO-2019-DU3-Z-Layer-Comp	MOTCO-2019-DU4-Z-Layer-Comp	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]
Grain Size (%, dry wt)							
Gravel (>2.00 mm)	0.00	0.00	0.00	0.00	0.00	<100% fines	-
Sand (0.0625-2.00 mm)	96.46	15.3	5.89	35.35	39.2		-
Silt (0.0039-0.0625 mm)	2.99	62.82	70.73	46.97	45.01		-
Clay (< 0.0039 mm)	0.55	21.89	23.39	17.67	15.79		-
Percent fines (Silt+Clay)	3.54	84.71	94.11	64.64	60.80		-
% Solids	66.6	57.2	53.7	57.4	68.8	-	-
TOC	0.359	1.98	1.75	2.12	0.362	-	-
Metals (mg/kg, dry wt)							
Arsenic	12.8	5.88 J	4.59 J	14.9[A]	4.23	13.9	-
Cadmium	<0.875 / <0.174[a]	<1.05 / 0.227 J[a]	<1.11 / <0.235[a]	0.451[A] J	<0.166	0.33	-
Chromium	25.6	54.6	59.9	43.6	56.4	112	-
Copper	7.82	23.4	26.6	36.7	37.5	53.9	-
Lead	4.33 J	6.28 J	7.42 J	10.0	7.34	25.1	-
Mercury	0.0174 J	0.0318 J	0.0388 J	0.124 J	0.0660 J	0.33 (0.47[a])	-
Nickel	45.3	68.1	72.6	66.9	91.3	98.3	-
Selenium	<1.93 / 0.391[A,a] J	<2.31 / 0.856[A,a] J	<2.44 / 0.660[A,a] J	<0.451	<0.366	0.36	-
Silver	<1.04 / 0.989[A,a] J	<1.24 / <0.260[a]	<1.31 / <0.278[a]	0.946[A] J	<0.197	0.32	-
Zinc	42.0	62.6	69.1	89.3	77.1	136	-
Butyltins (µg/kg, dry wt)							
Tetrabutyltin	<1.1	<1.2	<1.3	<1.3	<1.0	-	-
Tributyltin	<2.2	<2.5	<2.7	9.4	<2.1	-	-
Dibutyltin	<1.1	<1.2	<1.3	15	<1.0	-	-
Monobutyltin	<2.0	<2.3	<2.5	<2.4	<1.9	-	-
∑ detected Butyltins	**0**	**0**	**0**	**24.4**	**0**	-	-

Notes:

1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).

2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).

J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.

a - Results of the reanalysis using 20 X dilution factor (DF). Reported concentrations are estimates due to the internal standard failure observed during the initial run.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

A - Value exceeds Bay Background (SFEI 2015).

Table 4-3 (*continued*). Results of Chemical Analyses of MOTCO Z-Layer Composite Sediments.

Analyte	MOTCO-2019-DU1-Z-Layer-Comp	MOTCO-2019-DU2a-Z-Layer-Comp	MOTCO-2019-DU2b-Z-Layer-Comp	MOTCO-2019-DU3-Z-Layer-Comp	MOTCO-2019-DU4-Z-Layer-Comp	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]
PCBs (µg/kg, dry wt)							
PCB 005/008	<0.11	<0.13	<0.14	<0.13	<0.11	0.14	-
PCB 018	<0.097	<0.11	<0.12	<0.11	<0.094	0.07	-
PCB 028	<0.10	<0.12	<0.13	<0.12	<0.10	0.28	-
PCB 031	<0.076	<0.089	<0.094	<0.088	<0.074	0.13	-
PCB 033	<0.057	<0.067	<0.071	<0.066	<0.056	0.08	-
PCB 044	<0.23	<0.27	<0.28	<0.26	<0.22	0.33	-
PCB 049	<0.074	<0.087	<0.092	<0.086	<0.072	0.25	-
PCB 052	<0.28	<0.33	<0.35	<0.33	<0.28	0.39	-
PCB 056	<0.11	<0.13	<0.14	<0.13	<0.11	0.14	-
PCB 060	<0.078	<0.092	<0.097	<0.091	<0.076	0.07	-
PCB 066	<0.18	<0.22	<0.23	<0.21	<0.18	0.48	-
PCB 070	<0.11	<0.13	<0.13	<0.12	<0.10	0.59	-
PCB 074	<0.13	<0.16	<0.17	<0.16	<0.13	-	-
PCB 087	<0.17	<0.20	<0.21	<0.19	<0.16	0.46	-
PCB 095	<0.16	<0.19	<0.20	<0.19	<0.16	0.60	-
PCB 097	<0.069	<0.081	<0.086	<0.080	<0.067	-	-
PCB 099	<0.071	<0.083	<0.088	<0.082	<0.069	0.65	-
PCB 101	<0.066	<0.077	<0.082	<0.077	<0.064	1.15	-
PCB 105	<0.080	<0.093	<0.099	<0.093	<0.078	0.36	-
PCB 110	<0.051	<0.059	<0.063	<0.059	<0.049	1.04	-
PCB 118	<0.052	<0.060	<0.064	<0.060	<0.050	0.98	-
PCB 128	<0.18	<0.21	<0.22	<0.21	<0.17	0.28	-
PCB 132/153	<0.24	<0.28	<0.30	<0.28	<0.24	2.11	-
PCB 138/158	<0.53	<0.62	<0.65	<0.61	<0.51	1.98	-
PCB 141	<0.073	<0.086	<0.091	<0.085	<0.071	0.20	-
PCB 149	<0.18	<0.21	<0.22	<0.20	<0.17	1.25	-
PCB 151	<0.13	<0.15	<0.16	<0.15	<0.13	0.56	-
PCB 156	<0.12	<0.14	<0.14	<0.13	<0.11	0.16	-
PCB 170	<0.17	<0.19	<0.21	<0.19	<0.16	0.47	-
PCB 174	<0.063	<0.073	<0.078	<0.073	<0.061	0.49	-
PCB 177	<0.18	<0.21	<0.22	<0.20	<0.17	0.36	-
PCB 180	<0.14	<0.16	<0.17	<0.16	<0.13	1.02	-
PCB 183	<0.14	<0.16	<0.17	<0.16	<0.14	0.37	-
PCB 187	<0.15	<0.18	<0.19	<0.18	<0.15	0.87	-
PCB 194	<0.11	<0.13	<0.14	<0.13	<0.11	0.33	-
PCB 195	<0.090	<0.11	<0.11	<0.10	<0.087	0.11	-
PCB 201	<0.051	<0.059	<0.063	<0.059	<0.049	0.05	-
PCB 203	<0.086	<0.10	<0.11	<0.10	<0.084	0.17	-
∑ detected PCBs	**0**	**0**	**0**	**0**	**0**	**18.3, 29.5[a]**	**18**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2019).
a - Total PCB concentration SF Bay TMDL threshold (= 99th percentile for San Francisco Bay [SFEI 2020]).
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.

Table 4-3 (*continued*). Results of Chemical Analyses of MOTCO Z-Layer Composite Sediments.

Analyte	MOTCO-2019-DU1-Z-Layer-Comp	MOTCO-2019-DU2a-Z-Layer-Comp	MOTCO-2019-DU2b-Z-Layer-Comp	MOTCO-2019-DU3-Z-Layer-Comp	MOTCO-2019-DU4-Z-Layer-Comp	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]
Organochlorine Pesticides (µg/kg, dry wt)							
Aldrin	<0.26	<0.31	<0.32	<0.30	<0.25	0.03	-
alpha-BHC	<1.6	<1.9	<2.0	<1.9	<1.6	-	-
beta-BHC	<1.1	<1.2	<1.3	<1.2	<1.0	-	-
delta-BHC	<1.4	<1.6	<1.7	<1.6	<1.3	-	-
gamma-BHC (lindane)	<0.29	<0.33	<0.35	<0.33	<0.28	-	-
Total BHCs	0	0	0	0	0	0.78	-
Chlordane	<1.0	<1.2	<1.2	<1.2	<0.97	0.34	37
Dieldrin	<0.15	<0.17	<0.18	<0.17	<0.14	0.16	1.9
Endosulfan I	<0.16	<0.18	<0.19	<0.18	<0.15	-	-
Endosulfan II	<0.29	<0.34	<0.35	<0.34	<0.28	-	-
Endosulfan sulfate	<0.41	<0.48	<0.50	<0.47	<0.39	-	-
Endrin	<0.16	<0.18	<0.19	<0.18	<0.15	0.01	-
Endrin aldehyde	<1.7	<2.0	<2.1	<2.0	<1.6	-	-
Heptachlor	<0.22	<0.26	<0.27	<0.25	<0.21	-	-
Heptachlor epoxide	<0.19	<0.22	<0.23	<0.22	<0.18	-	-
Toxaphene	<4.7	<5.4	<5.7	<5.4	<4.5	-	-
2,4'-DDD	<0.22	<0.26	<0.27	0.39 J	<0.21	0.51	-
2,4'-DDE	<1.2	<1.5	<1.5	<1.4	<1.2	0.11	-
2,4'-DDT	<0.20	<0.24	<0.25	<0.23	<0.19	0.04	-
4,4'-DDD	0.62 J	<0.42	<0.44	1.7	<0.35	1.98	-
4,4'-DDE	<0.25	<0.29	<0.31	2.6[A]	<0.24	1.98	-
4,4'-DDT	<0.45	<0.53	<0.55	<0.52	<0.43	0.27	-
∑ detected DDTs	**0.62 J**	**0**	**0**	**4.69[A]**	**0**	**4.68**	**50**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015).

Table 4-3 (*continued*). Results of Chemical Analyses of MOTCO Z-Layer Composite Sediments.

Analyte	MOTCO-2019-DU1-Z-Layer-Comp	MOTCO-2019-DU2a-Z-Layer-Comp	MOTCO-2019-DU2b-Z-Layer-Comp	MOTCO-2019-DU3-Z-Layer-Comp	MOTCO-2019-DU4-Z-Layer-Comp	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]
PAHs (µg/kg, dry wt)							
1,6,7-Trimethylnaphthalene	<2.9	<3.4	<3.6	13[A] J	<2.8	7.43	-
1-Methylnaphthalene	<1.1	2.1 J	2.4 J	4.1 J	1.5 J	13.4	-
1-Methylphenanthrene	<3.1	<3.7	<3.9	20	<3.1	37.6	-
2,6-Dimethylnaphthalene	<2.6	6.3 J	11 J	25[A]	4.5 J	13	-
2-Methylnaphthalene	<1.1	3.1 J	3.4 J	5.2 J	1.4 J	20.8	-
Acenaphthene	3.3 J	<0.88	<0.94	880[A]	140[A]	13.5	-
Acenaphthylene	<13	<15	<16	<15	<12	32.6	-
Anthracene	7.6 J	<1.2	3.2 J	120[A]	11 J	80.1	-
Benzo(a)anthracene	9.4 J	<1.9	<2.0	120[A]	9.3 J	212	-
Benzo(a)pyrene	5.7 J	<2.4	<2.5	78	4.2 J	428	-
Benzo(b)fluoranthene	6.1 J	<2.5	<2.7	92	5.5 J	227	-
Benzo(e)pyrene	3.9 J	<3.4	<3.6	59	3.2 J	244	-
Benzo(g,h,i)perylene	<2.2	2.7 J	3.7 J	59	<2.1	416	-
Benzo(k)fluoranthene	5.3 J	<2.8	<3.0	64	3.6 J	231	-
Chrysene	12 J	<1.4	<1.4	130	7.3 J	252	-
Dibenz(a,h)anthracene	<1.6	<1.9	<2.0	15 J	<1.5	49.9	-
Dibenzothiophene	<2.0	<2.4	<2.5	20[A]	4.1 J	16.3	-
Fluoranthene	31	6.2 J	9.7 J	700[A]	61	620	-
Fluorene	4.4 J	4.1 J	7.4 J	38[A]	12 J	27.1	-
Indeno(1,2,3-cd)pyrene	<1.9	<2.2	<2.3	45	<1.8	337	-
Naphthalene	4.6 J	31	15 J	19	2.6 J	56.4	-
Perylene	10 J	210	260[A]	160	56	216	-
Phenanthrene	16	8.6 J	17 J	460[A]	68	176	-
Pyrene	44	5.9 J	8.9 J	630	50	791	-
Biphenyl	<2.8	<3.3	<3.5	4.6 J	<2.7	11.7	-
∑ detected PAHs	**163**	**280**	**342**	**3,761**	**445**	**4,540**	**4,500**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015).

Table 4-3 (*continued*). Results of Chemical Analyses of MOTCO Z-Layer Composite Sediments.

Analyte	TEF	Sample ID										Bay Background[1] <100% fines	Bay Bioaccumulation Trigger[2]
		MOTCO-2019-DU1-Z-Layer-Comp		MOTCO-2019-DU2a-Z-Layer-Comp		MOTCO-2019-DU2b-Z-Layer-Comp		MOTCO-2019-DU3-Z-Layer-Comp		MOTCO-2019-DU4-Z-Layer-Comp			
Dioxins and Furans **(**ng/kg, dry wt)		**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**	**Conc.**	**TEQ**		
2,3,7,8-TCDD	1.0	<0.0331	0	<0.0331	0	<0.0331	0	0.218 J	0.218	<0.0331	0	-	-
1,2,3,7,8-PeCDD	1.0	<0.0536	0	<0.0536	0	<0.0536	0	0.433 J	0.433	<0.0536	0	-	-
1,2,3,4,7,8-HxCDD	0.10	<0.0540	0	<0.0540	0	<0.0540	0	0.707 J	0.0707	<0.0540	0	-	-
1,2,3,6,7,8-HxCDD	0.10	<0.0538	0	<0.0538	0	<0.0538	0	3.54	0.354	0.264 J	0.0264	-	-
1,2,3,7,8,9-HxCDD	0.10	<0.0518	0	<0.0518	0	<0.0518	0	1.44 J	0.144	<0.0518	0	-	-
1,2,3,4,6,7,8-HpCDD	0.010	0.736 J	0.00736	0.242 J	0.00242	0.172 J	0.00172	128	1.28	3.84	0.0384	-	-
OCDD	0.0003	6.81	0.002043	1.16 J	0.00035	0.811 J	0.000243	2580	0.774	37.9	0.01137	-	-
2,3,7,8-TCDF	0.10	<0.0345	0	<0.0345	0	<0.0345	0	0.789	0.0789	<0.0345	0	-	-
1,2,3,7,8-PeCDF	0.030	<0.0417	0	<0.0417	0	<0.0417	0	0.397 J	0.0119	<0.0417	0	-	-
2,3,4,7,8-PeCDF	0.30	<0.0449	0	<0.0449	0	<0.0449	0	0.700 J	0.21	<0.0449	0	-	-
1,2,3,4,7,8-HxCDF	0.10	0.152 J	0.0152	<0.0351	0	<0.0351	0	1.28 J	0.128	<0.0351	0	-	-
1,2,3,6,7,8-HxCDF	0.10	<0.0835	0	<0.0382	0	<0.0382	0	0.882 J	0.0882	<0.0382	0	-	-
2,3,4,6,7,8-HxCDF	0.10	<0.0835	0	<0.0379	0	<0.0379	0	1.16 J	0.116	<0.0379	0	-	-
1,2,3,7,8,9-HxCDF	0.10	<0.0885	0	<0.0423	0	<0.0423	0	0.408 J	0.0408	<0.0423	0	-	-
1,2,3,4,6,7,8-HpCDF	0.010	0.595 J	0.00595	<0.0415	0	<0.0415	0	19.2	0.192	0.420 J	0.0042	-	-
1,2,3,4,7,8,9-HpCDF	0.010	<0.0532	0	<0.0532	0	<0.0532	0	1.38 J	0.0138	<0.0532	0	-	-
OCDF	0.0003	0.723 J	0.000217	<0.0833	0	<0.0833	0	60.5	0.0182	0.797 J	0.000239	-	-
∑ Dioxin/Furan TEQ	**NA**	**NA**	**0.031**	**NA**	**0.003**	**NA**	**0.002**	**NA**	**4.17[A]**	**NA**	**0.081**	**2.90**	**10**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
3 - SF–DODS Reference Database (USEPA 2020).
4 - U.S. Fish and Wildlife Service Biological Opinion on the Effects of the Proposed Cullinan Ranch Restoration Project, Napa and Solano Counties, California (USFWS 2010).
5 - Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
TEF = Toxicity Equivalency Factor.
TEQ = Toxicity Equivalency Quotient.
A - Value exceeds Bay Background (SFEI 2015)

Table 4-4. Results of Chemical Analyses of MOTCO Z-Layer Individual Core Sediments.

Analyte	MOTCO-2019-DU3-02-Z-Layer	MOTCO-2019-DU4-03-Z-Layer	Bay Background[1] (<100% fines)	Bay Bioaccumulation Trigger[2]
% Solids	54.5	52.2	-	-
PAHs (µg/kg, dry wt)				
1,6,7-Trimethylnaphthalene	20 J[A]	30 J[A]	7.43	-
1-Methylnaphthalene	18 J[A]	15 J[A]	13.4	-
1-Methylphenanthrene	21 J	49 J[A]	37.6	-
2,6-Dimethylnaphthalene	77 J[A]	38 J[A]	13	-
2-Methylnaphthalene	13 J	18 J	20.8	-
Acenaphthene	1900[A]	560[A]	13.5	-
Acenaphthylene	<78	<81	32.6	-
Anthracene	130[A]	330[A]	80.1	-
Benzo(a)anthracene	94	600[A]	212	-
Benzo(a)pyrene	26 J	330	428	-
Benzo(b)fluoranthene	33 J	390[A]	227	-
Benzo(e)pyrene	23 J	230	244	-
Benzo(g,h,i)perylene	<13	150	416	-
Benzo(k)fluoranthene	30 J	370[A]	231	-
Chrysene	76 J	790[A]	252	-
Dibenz(a,h)anthracene	<9.7	17 J	49.9	-
Dibenzothiophene	56 J[A]	44 J[A]	16.3	-
Fluoranthene	730[A]	2100[A]	620	-
Fluorene	140[A]	290[A]	27.1	-
Indeno(1,2,3-cd)pyrene	<11	140	337	-
Naphthalene	39 J	58 J[A]	56.4	-
Perylene	410[A]	260[A]	216	-
Phenanthrene	890[A]	850[A]	176	-
Pyrene	610	1800[A]	791	-
Biphenyl	<17	<18	11.7	-
∑ detected PAHs	**5,336**[A,B]	**9,459**[A,B]	**4,540**	**4,500**

Notes:
1 - San Francisco Estuary Institute: Updated Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments (SFEI 2015).
2 - San Francisco Bay Bioaccumulation Trigger Level (SFEI 2020).
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A - Value exceeds Bay Background (SFEI 2015).
B - Value exceeds Bay Bioaccumulation Trigger (SFEI 2020).

Table 4-5. MOTCO Modified Elutriate Chemistry Results.

Analyte	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp	MWRP Surface Water Discharge Screening Criteria[1]
Metals (µg/L)						
Dissolved Arsenic	4.63	3.12	2.99	11.6	2.14	69
Dissolved Cadmium	<0.018	<0.018	<0.018	<0.018	<0.018	3.9[a]
Dissolved Chromium	0.34	0.50	0.49	0.78	0.56	16[b]
Dissolved Copper	0.88	1.82	1.26	1.54	1.40	9.4
Dissolved Lead	<0.027	<0.027	0.061	<0.027	<0.027	65
Total Mercury	0.00669	0.00294	0.00263	0.00325	0.00543	2.1
Dissolved Nickel	1.70	1.31	1.51	0.90	0.96	74
Total Selenium	0.08	0.24	0.26	0.13	0.11	20
Dissolved Silver	<0.015	0.018	0.018	0.031	<0.015	1.9
Dissolved Zinc	0.85	1.40	1.13	0.83	1.54	90
Total Suspended Solids (TSS) (mg/L)	20.6	29.5	28.7	13.3	19.5	-

1- Montezuma Wetlands Restoration Project Waste Discharge Requirements Order No. R2-2012-0087 (SFRWQCB 2012).
a - Assumes a hardness of 100 mg/L as CaCO3.
b - WQO is for Chromium VI; however, it may be met as total Chromium.
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MRL are reported above as < the MRL.

Table 4-6a. Sediment Analytes Measured Above Regional and Federal Regulatory Screening Levels in Composite Samples.

Management Unit	Analytes Exceeding SF Bay Ambient and/or Wetland Cover Screening Concentrations	Analytes Exceeding SF-DODS Reference Database	Analytes Exceeding SF Bay Bioaccumulation Trigger	Analytes Exceeding MWRP Wetland Foundation Sediment Screening Levels	Analytes Exceeding MET Screening Levels
MOTCO-2019-DU1-Comp	Selenium & Endrin	Arsenic, PCBs, Endrin, DDTs, & PAHs	none	none	none
MOTCO-2019-DU2a-Comp	Selenium	none	none	none	none
MOTCO-2019-DU2b-Comp	Selenium	Arsenic & PAHs	none	none	none
MOTCO-2019-DU3-Comp	Selenium	Arsenic, Butyltins, DDTs, & PAHs	none	none	none
MOTCO-2019-DU4-Comp	Selenium & Endrin	Arsenic, PCBs, DDTs, & PAHs	none	none	none

Table 4-6b. Sediment Analytes Measured Above Regional and Federal Regulatory Screening Levels in Individual Sediment Cores.

Management Unit	Analytes Exceeding SF Bay Ambient and/or Wetland Cover Screening Concentrations	Analytes Exceeding SF-DODS Reference Database	Analytes Exceeding SF Bay Bioaccumulation Trigger	Analytes Exceeding MWRP Wetland Foundation Sediment Screening Levels
MOTCO-2019-DU1-01	Silver & Selenium	Arsenic	none	none
MOTCO-2019-DU1-02	Silver	Arsenic & Total PCBs	none	none
MOTCO-2019-DU1-03	Selenium, Silver, & Endrin	Arsenic, Total Butyltins, Total PCBs, Total DDTs, & Total PAHs	none	none
MOTCO-2019-DU1-04	Cadmium, Selenium, Silver, Total DDTs, & Endrin	Arsenic, Total PCBs, Total DDTs, & Total PAHs	none	none
MOTCO-2019-DU2a-01	Silver	Arsenic & Total PAHs	none	none
MOTCO-2019-DU2a-02	Silver	Arsenic & Total PAHs	none	none
MOTCO-2019-DU2a-03	none	none	none	none
MOTCO-2019-DU2a-04	Selenium	none	none	none
MOTCO-2019-DU2b-01	Selenium	Arsenic	none	none
MOTCO-2019-DU2b-02	Selenium	Arsenic & Total PAHs	none	none
MOTCO-2019-DU2b-03	Selenium	Total PAHs	none	none
MOTCO-2019-DU2b-04	Selenium	Arsenic & Total PAHs	none	none
MOTCO-2019-DU3-01	Selenium	Total PCBs	none	none
MOTCO-2019-DU3-02	Cadmium, Selenium, & Total PAHs	Arsenic, Total Butyltins, Total DDTs, & Total PAHs	Total PAHs	none
MOTCO-2019-DU3-03	Cadmium & Dioxins/Furans	Arsenic, Total Butyltins, Total PCBs, Total DDTs, & Total PAHs	none	none
MOTCO-2019-DU3-04	Cadmium & Selenium	Arsenic, Total Butyltins, Total DDTs, & Total PAHs	none	none
MOTCO-2019-DU4-01	none	none	none	none
MOTCO-2019-DU4-02	Cadmium & Total DDTs	Arsenic, Cadmium, Total Butyltins, Total DDTs, & Total PAHs	none	none
MOTCO-2019-DU4-03	Cadmium, Copper, Selenium, Zinc, Total DDTs, Total PAHs, & Dioxins/Furans	Arsenic, Total Butyltins, Total PCBs, Total DDTs, & Total PAHs	Total PAHs	none
MOTCO-2019-DU4-04	none	Arsenic, Total PCBs, Total DDTs, & Total PAHs	none	none

The results of the physical and chemical analyses of the sediments were compared to:

- San Francisco (SF) Bay ambient sediment concentrations (SFEI 2015);
- SF-DODS reference site database (USEPA 2020);
- SF Bay sediment Bioaccumulation Trigger (BT) Levels (SFEI 2020);
- SF Bay sediment mercury and PCB TMDL Thresholds (SFEI 2020);
- CRRP sediment screening levels (USFWS 2010), where they differ from the SF Bay ambient concentrations; and
- MWRP sediment screening levels (where they differ from the SF Bay ambient concentrations) and sediment elutriate screening levels (SFRWQCB 2012).

Analytes whose reported concentrations exceeded the above screening levels are presented in Tables 4-6a and 4-6b.

4.1 MOTCO Composited Sediments: Results of Physical/Chemical Analyses

The results of the analyses of the composite sediment cores are presented in Table 4-1 and in Sections 4.1.1 through 4.1.8.

4.1.1. Total Solids and Total Organic Carbon

The results of these analyses are summarized in Table 4-1. Total solids in all composite samples ranged from 54.1 - 73.1%. The TOC concentrations ranged from 0.63 - 1.9%.

4.1.2. Particle Size Distribution

Particle size distribution in all composite samples ranged from 32.5 - 93.5% fines (silt and clay). Total sand and gravel ranged from 6.5 - 67.5%.

4.1.3. Metals

- MOTCO-2019-DU1-Comp: The arsenic concentration was measured above SF-DODS reference site database concentration but below remaining screening criteria. The selenium concentration was measured above the SF Bay ambient concentration, and wetland cover screening criteria, but below remaining screening criteria.
- MOTCO-2019-DU2a-Comp: The selenium concentration was measured above the SF Bay ambient concentration, and wetland cover screening criteria, but below remaining screening criteria.
- MOTCO-2019-DU2b-Comp: The arsenic concentration was measured above SF-DODS reference site database concentration but below remaining screening criteria. The selenium concentration was measured above the SF Bay ambient concentration, and wetland cover screening criteria, but below remaining screening criteria.
- MOTCO-2019-DU3-Comp: The arsenic concentration was measured above SF-DODS reference site database concentration but below remaining screening criteria. The selenium concentration was measured above the SF Bay ambient concentration, and wetland cover screening criteria, but below remaining screening criteria.

- MOTCO-2019-DU4-Comp: The arsenic concentration was measured above SF-DODS reference site database concentration but below remaining screening criteria. The selenium concentration was measured above the SF Bay ambient concentration, and wetland cover screening criteria, but below remaining screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all composite samples.

4.1.4. Butyltins

Total butyltins ranged from <MDL - 1.9 µg/kg. MOTCO-2019-DU3-Comp total butyltins concentration was measured above the SF-DODS reference database.

All remaining total butyltins concentrations were below all screening criteria in all composite samples.

4.1.5. Polychlorinated Biphenyls (PCBs)

Total PCBs ranged from <MDL – 13.4 µg/kg. MOTCO-2019-DU1-Comp and MOTCO-2019-DU4-Comp total PCB concentrations were measured above the SF-DODS reference database, but below remaining screening criteria.

All remaining total PCB analyte concentrations were below all screening criteria in all composite samples.

4.1.6. Organochlorine (OCl) Pesticides

Total DDT concentrations ranged from <MDL - 2.9 µg/kg.

- MOTCO-2019-DU1-Comp, MOTCO-2019-DU3-Comp, and MOTCO-2019-DU4-Comp total DDT concentrations were measured above the SF-DODS reference database concentration, but below remaining screening criteria.
- MOTCO-2019-DU4-Comp endrin concentration was measured above the SF Bay ambient concentration.

All remaining OCl pesticide analyte concentrations were below all screening criteria in all composite samples.

4.1.7. Polycyclic Aromatic Hydrocarbons (PAHs)

Total PAH concentrations in all composite areas ranged from 190 - 1,979 µg/kg. MOTCO-2019-DU1-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU3-Comp, and MOTCO-2019-DU4-Comp total PAH concentrations were measured above the SF-DODS reference database concentration, but below remaining screening criteria.

All remaining total PAH analyte concentrations were below all screening criteria in all composite samples.

4.1.8. Dioxins and Furans

Dioxins and furans concentrations were adjusted according to applicable World Health Organization (WHO) toxicity equivalency factors (TEFs) and are expressed as toxicity equivalency quotients (TEQs). Dioxins and furans concentrations in all composites ranged from 0.003 - 2.71 ng/kg. All dioxins and furans concentrations were below all screening criteria in all composite samples.

4.2 Individual Sediment Core Samples: Results of Physical/Chemical Analyses

All individual sediment core samples from MOTCO-2019-DU1-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU3-Comp, and MOTCO-2019-DU4-Comp were analyzed for grain size, total solids, TOC, PCB Congeners, OCl pesticides, and PAHs. These results are summarized below in Sections 4.2.1 through 4.2.5 and in Table 4-2.

4.2.1 MOTCO-2019-DU1-Comp Individual Sediment Cores

Total Solids and Total Organic Carbon

Total solids in the MOTCO-2019-DU1 samples ranged from 61.1 - 74.3%. The TOC concentrations ranged from 0.22 - 0.78%.

Particle Size Distribution

Particle size distribution in the MOTCO-2019-DU1 samples ranged from:

- 5.78 - 79.9% fines (silt and clay); and
- 20.1 - 94.2% sand and gravel.

Metals

- MOTCO-2019-DU1-01 sediment core arsenic concentration was above SF-DODS reference site database concentration, but below remaining screening criteria. The silver concentration was above the SF Bay ambient concentration and wetland cover screening criteria, but below the SF-DODS reference site database concentration, and MWRP foundation screening criteria. The selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU1-02 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria. The silver concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU1-03 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria. The selenium and silver concentrations were above the SF Bay ambient concentrations, but below the remaining screening criteria.
- MOTCO-2019-DU1-04 sediment core arsenic concentration was above the SF Bay ambient concentration, SF-DODS reference site concentration, and wetland cover screening criteria, but below the MWRP foundation screening criteria. The cadmium concentration was above the SF Bay ambient concentration and MWRP cover screening criteria, but below the SF-DODS

reference site database concentration, CRRP cover screening criteria, and MWRP foundation screening criteria. The selenium and silver concentrations were above the SF Bay ambient concentration and wetland cover screening criteria, but below the SF-DODS reference site database concentration, and MWRP foundation screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all MOTCO-2019-DU1 samples.

Butyltins

Total butyltins ranged from <MDL – 1.6 µg/kg. MOTCO-2019-DU1-03 total butyltin concentration was measured above the SF-DODS reference database.

All remaining total butyltins concentrations were below all screening criteria in all MOTCO-2019-DU1 samples.

Total PCBs

The individual sediment core total PCB concentrations ranged from <MDL-17.7 µg/kg. MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, and MOTCO-2019-DU1-04 sediment core total PCB concentrations were above SF-DODS reference site database concentrations, but below remaining screening criteria.

All remaining total PCB concentrations were below all screening criteria in all MOTCO-2019-DU1 samples.

OCl Pesticides

The individual sediment core total DDTs concentrations ranged from <MDL – 6.4 µg/kg.

- MOTCO-2019-DU1-04 sediment core total DDT concentration was above SF Bay ambient concentration and SF-DODS reference site database concentration, but below remaining screening criteria.
- MOTCO-2019-DU1-03 total DDT concentration was above the SF-DODS reference site database concentration, but below remaining screening criteria.
- MOTCO-2019-DU1-03 and MOTCO-2019-DU1-04 sediment core endrin concentrations was above SF Bay ambient concentrations.

All remaining OCl analyte concentrations were below all screening criteria in all MOTCO-2019-DU1 samples.

Total PAHs

The individual sediment core total PAH concentrations ranged from 26 – 450 µg/kg. MOTCO-2019-DU1-03 and MOTCO-2019-DU1-04 sediment core total PAH concentrations were above SF-DODS reference site database concentrations, but below remaining screening criteria.

All remaining total PAH concentrations were below all screening criteria in all MOTCO-2019-DU1 samples.

Dioxins and Furans

Dioxins and furans concentrations were adjusted according to applicable WHO TEFs and are expressed as TEQs. Dioxins and furans concentrations in all MOTCO-2019-DU1 sediment cores ranged from 0.291 – 2.13 ng/kg. All dioxins and furans concentrations were below all screening criteria in all MOTCO-2019-DU1 samples.

4.2.2 MOTCO-2019-DU2a-Comp Individual Sediment Core Samples

Total Solids and Total Organic Carbon

Total solids in the MOTCO-2019-DU2a core samples ranged from 56.0 – 62.7%. The TOC concentrations ranged from 1.0 – 2.3%.

Particle Size Distribution

Particle size distribution in the MOTCO-2019-DU2a core samples ranged from:
- 87.8 – 99.0% fines (silt and clay), and
- 0.95 – 12.2% sand and gravel%.

Metals

- MOTCO-2019-DU2a-01 sediment core arsenic concentration was above SF-DODS reference site database concentration, but below remaining screening criteria. The silver concentration was above the SF Bay ambient concentration and wetland cover screening criteria, but below the SF-DODS reference site database concentration, and MWRP foundation screening criteria. Selenium was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU2a-02 sediment core arsenic concentration was above SF-DODS reference site database concentration, but below remaining screening criteria. The silver concentration was above the SF Bay ambient concentration and wetland cover screening criteria, but below the SF-DODS reference site database concentration, and MWRP foundation screening criteria. The selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU2a-04 sediment core selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all MOTCO-2019-DU2a samples.

Butyltins

Total butyltins were <MDL in all MOTCO-2019-DU2a samples.

Total PCBs
Total PCB concentrations were <MDL in all MOTCO-2019-DU2a samples.

OCl Pesticides
All OCl analyte concentrations were <MDL in all MOTCO-2019-DU2a samples.

Total PAHs
The individual sediment core total PAH concentrations ranged from 173 – 197 µg/kg. MOTCO-2019-DU2a-01 and MOTCO-2019-DU2a-02 sediment core total PAH concentrations were above SF-DODS reference site database concentrations, but below remaining screening criteria.

All remaining total PAH concentrations were below all screening criteria in all MOTCO-2019-DU2a samples.

Dioxins and Furans
Dioxins and furans concentrations were adjusted according to applicable WHO TEFs and are expressed as TEQs. Dioxins and furans concentrations in all MOTCO-2019-DU1 sediment cores ranged from 0.002 – 0.003 ng/kg. All dioxins and furans concentrations were below all screening criteria in all MOTCO-2019-DU2a samples.

4.2.3 MOTCO-2019-DU2b-Comp Individual Sediment Core Samples

Total Solids and Total Organic Carbon
Total solids in the MOTCO-2019-DU2b-Comp core samples ranged from 50.5 – 57.4%. The TOC concentrations ranged from 1.45 – 2.0%.

Particle Size Distribution
Particle size distribution in the MOTCO-2019-DU2b-Comp samples ranged from:
- 91.6 –93.1% fines (silt and clay); and
- 6.9 – 8.4% sand and gravel.

Metals
- MOTCO-2019-DU1-02b-01 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria. The selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU1-02b-02 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria. The selenium concentration was above the SF Bay ambient concentration and wetland cover screening criteria, but below the remaining screening criteria.
- MOTCO-2019-DU2b-03 sediment core selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.

- MOTCO-2019-DU1-02b-04 sediment core arsenic concentration was above SF-DODS reference site database concentration, but below remaining screening criteria. The selenium and silver concentrations were above the SF Bay ambient concentrations, but below the remaining screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all MOTCO-2019-DU2b samples.

Butyltins
Total butyltins were <MDL in all MOTCO-2019-DU2b samples.

Total PCBs
Total PCB concentrations were <MDL in all MOTCO-2019-DU2b samples.

OCl Pesticides
All OCl analyte concentrations were <MDL in all MOTCO-2019-DU2b samples.

Total PAHs
The individual sediment cores total PAH concentrations ranged from 164 – 351 µg/kg. MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, and MOTCO-2019-DU2b-04 sediment core total PAH concentrations were above SF-DODS reference site database concentrations, but below remaining screening criteria.

All remaining total PAH concentrations were below all screening criteria in all MOTCO-2019-DU2b samples.

Dioxins and Furans
Dioxins and furans concentrations were adjusted according to applicable WHO TEFs and are expressed as TEQs. Dioxins and furans concentrations in all MOTCO-2019-DU2b sediment cores ranged from 0.003 – 0.005 ng/kg. All dioxins and furans concentrations were below all screening criteria in all MOTCO-2019-DU2b samples.

4.2.4 MOTCO-2019-DU3-Comp Individual Sediment Core Samples

Total Solids and Total Organic Carbon
Total solids in the MOTCO-2019-DU3-Comp samples ranged from 47.6 – 67.1%. The TOC concentrations ranged from 0.48 – 2.6%.

Particle Size Distribution
Particle size distribution in the MOTCO-2019-DU3-Comp samples ranged from:
- 10.8 – 87.6% fines (silt and clay); and
- 12.4 – 89.2% sand and gravel.

Metals

- MOTCO-2019-DU3-01 sediment core selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU3-02 sediment cores arsenic concentration was above the SF-DODS reference site database concentration, but below remaining screening criteria. The cadmium concentration was above the SF Bay ambient concentration and MWRP cover screening criteria, but below the remaining screening criteria. The selenium concentration was above the SF Bay ambient concentration, but below the remaining screening criteria.
- MOTCO-2019-DU3-03 sediment core arsenic concentration was above the SF Bay ambient concentration and SF-DODS reference site database concentrations, but below remaining screening criteria. The cadmium concentration was above the SF Bay ambient concentration and MWRP cover screening criteria, but below the remaining screening criteria.
- MOTCO-2019-DU3-04 sediment core arsenic concentration was above SF-DODS reference site database concentration, but below remaining screening criteria. The cadmium concentration was above the SF Bay ambient concentration and MWRP cover screening criteria, but below the remaining screening criteria. The selenium concentration was above the SF Bay ambient concentration and wetland cover screening criteria, but below the remaining screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all MOTCO-2019-DU3 samples.

Butyltins

Total butyltins ranged from <MDL – 3.1 µg/kg. MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, and MOTCO-2019-DU3-04 total butyltin concentrations were measured above the SF-DODS reference database.

All remaining total butyltins concentrations were below all screening criteria in all MOTCO-2019-DU3 samples.

Total PCBs

The individual sediment cores total PCB concentrations ranged from <MDL – 1.78 µg/kg. MOTCO-2019-DU3-01 and MOTCO-2019-DU3-03 sediment core total PCB concentrations were above the SF-DODS reference site database concentration, but below remaining screening criteria.

All remaining total PCB concentrations were below all screening criteria in all MOTCO-2019-DU3 samples.

OCl Pesticides

The individual sediment cores total DDT concentrations ranged from <MDL – 4.0 µg/kg. MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, and MOTCO-2019-DU3-04 sediment core

total DDT concentrations were above the SF-DODS reference site database concentration, but below remaining screening criteria.

All remaining OCl analyte concentrations were below all screening criteria in all MOTCO-2019-DU3 samples.

Total PAHs

The individual sediment core total PAH concentrations ranged from 115 – 14,015 µg/kg.

- MOTCO-2019-DU3-02 sediment core total PAH concentrations was above SF Bay ambient concentrations, the SF Bay Bioaccumulation trigger, SF-DODS reference site database concentrations, and wetland cover screening criteria, but below MWRP foundation screening criteria.
- MOTCO-2019-DU3-03 and MOTCO-2019-DU3-04 sediment cores total PAH concentrations were above SF-DODS reference site database concentration, but below remaining screening criteria.

All remaining total PAH analyte concentrations were below all screening criteria in all MOTCO-2019-DU3 samples.

Dioxins and Furans

Dioxins and furans concentrations were adjusted according to applicable WHO TEFs and are expressed as TEQs. Dioxins and furans concentrations in all MOTCO-2019-DU3 sediment cores ranged from 0.048 – 2.94 ng/kg. MOTCO-2019-DU3-03 dioxins and furans TEQ was above SF Bay ambient concentration, but below remaining screening criteria.

All remaining dioxins and furans concentrations were below all screening criteria in all MOTCO-2019-DU3 samples.

4.2.5 MOTCO-2019-DU4-Comp Individual Sediment Core Samples

Total Solids and Total Organic Carbon

Total solids in the MOTCO-2019-DU4-Comp samples ranged from 49.1 – 71.8%. The TOC concentrations ranged from 0.28 – 2.5%.

Particle Size Distribution

Particle size distribution in the MOTCO-2019-DU4-Comp samples ranged from:

- 44.1 – 80.0% fines (silt and clay); and
- 20.0 – 56.0% sand and gravel.

Metals

- MOTCO-2019-DU4-02 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria. The cadmium

concentration was above the SF Bay ambient concentration, the SF-DODS reference site database concentration, and the MWRP cover screening criteria, but below remaining screening criteria.
- MOTCO-2019-DU4-03 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria. The cadmium and copper concentrations were above the SF Bay ambient concentrations, but below remaining screening criteria. The selenium and zinc concentrations were above the SF Bay ambient concentrations and wetland cover screening criteria, but below remaining screening criteria.
- MOTCO-2019-DU4-04 sediment core arsenic concentration was above SF-DODS reference site database concentrations, but below remaining screening criteria.

All remaining metal analyte concentrations were below all screening criteria in all MOTCO-2019-DU4 samples.

Butyltins

Total butyltins ranged from <MDL – 15.5 µg/kg. MOTCO-2019-DU4-02 and MOTCO-2019-DU4-03 total butyltin concentrations were measured above the SF-DODS reference database.

All remaining total butyltins concentrations were below all screening criteria in all MOTCO-2019-DU4 samples.

Total PCBs

The individual sediment core total PCB concentrations ranged from <MDL – 6.26 µg/kg. MOTCO-2019-DU4-03 and MOTCO-2019-DU4-04 sediment core total PCB concentrations were above SF-DODS reference site database concentrations, but below remaining screening criteria.

All remaining total PCB concentrations were below all screening criteria in all MOTCO-2019-DU4 samples.

OCl Pesticides

The individual sediment core total DDT concentrations ranged from 0.77 – 9.0 µg/kg.
- MOTCO-2019-DU4-02 and MOTCO-2019-DU4-03 sediment core total DDT concentrations were above SF Bay ambient concentrations, SF-DODS reference site database concentrations, and wetland cover screening criteria, but below remaining screening criteria.
- MOTCO-2019-DU4-04 sediment core total DDT concentration was above SF-DODS reference site database concentration, but below remaining screening criteria.

All remaining OCl analyte concentrations were below all screening criteria in all composite samples.

Total PAHs

The individual sediment core total PAH concentrations ranged from 126 - 26,168 µg/kg.

- MOTCO-2019-DU4-03 sediment core total PAH concentration was above SF Bay ambient concentrations, the SF Bay Bioaccumulation trigger, SF-DODS reference site database concentration, and wetland cover screening criteria, but below MWRP foundation screening criteria. As the total PAH concentration was above the SF Bay Bioaccumulation trigger, the corresponding Z-layer for this sediment was evaluated for total PAHs; the results of this analysis are reported in Section 4.4.
- MOTCO-2019-DU4-02 and MOTCO-2019-DU4-04 sediment core total PAH concentrations were above SF-DODS reference site database concentration, but below remaining screening criteria.

The total PAH concentrations for the remaining sediment cores were below all screening criteria.

Dioxins and Furans

Dioxins and furans concentrations were adjusted according to applicable WHO TEFs and are expressed as TEQs. Dioxins and furans concentrations in all MOTCO-2019-DU4 sediment cores ranged from 0.012 – 3.44 ng/kg. MOTCO-2019-DU4-03 dioxins and furans TEQ was above SF Bay ambient concentration, but below remaining screening criteria.

All remaining dioxins and furans concentrations were below all screening criteria in all MOTCO-2019-DU4 samples.

4.3 MOTCO Composited Z-Layer Sediments: Results of Physical/Chemical Analyses

The results of the analyses of the composite Z-layer sediment cores are presented in Table 4-3 and in Sections 4.3.1 through 4.3.8.

4.3.1. Z-Layer Total Solids and Total Organic Carbon

The results of these analyses are summarized in Table 4-3. Total solids in all composite samples ranged from 53.7 –68.8%. The TOC concentrations ranged from 0.36 – 2.1%.

4.3.2. Z-Layer Particle Size Distribution

Particle size distribution in all composite samples ranged from 3.5 – 94.1% fines (silt and clay). Total sand and gravel ranged from 5.9 – 96.5%.

4.3.3. Z-Layer Metals

- MOTCO-2019-DU1-Z-Layer-Comp sediment core selenium and silver concentrations were above the SF Bay ambient concentrations.
- MOTCO-2019-DU2-Z-Layer-Comp sediment core selenium concentration was above the SF Bay ambient concentration.

- MOTCO-2019-DU3-Z-Layer-Comp sediment core selenium concentration was above the SF Bay ambient concentration.
- MOTCO-2019- DU4-Z-Layer-Comp sediment core arsenic, cadmium, and silver concentrations were above the SF Bay ambient concentration.

All remaining metal analyte concentrations were below the SF Bay ambient concentrations in all composite Z-Layer samples.

4.3.4. Z-Layer Butyltins

MOTCO-2019-DU3-Z-Layer-Comp total butyltin concentration was measured at 24.4 µg/kg. All remaining total butyltins concentrations were <MDL.

4.3.5. Z-Layer Polychlorinated Biphenyls (PCBs)

Total PCBs were measured at <MDL in all composite Z-Layer samples.

4.3.6. Z-Layer Organochlorine (OCl) Pesticides

Total DDT concentrations ranged from <MDL – 4.7 µg/kg. MOTCO-2019-DU3-Z-Layer-Comp total DDT concentration was measured above the SF Bay ambient concentration, but below but the SF Bay Bioaccumulation trigger.

All remaining OCl analyte concentrations were below the SF Bay ambient concentration and SF Bay Bioaccumulation trigger in all composite samples.

4.3.7. Z-Layer Polycyclic Aromatic Hydrocarbons (PAHs)

Total PAH concentrations ranged from 163 – 3,761 µg/kg. All total PAH concentrations were below the SF Bay ambient concentration and SF Bay Bioaccumulation trigger in all composite Z-Layer samples.

4.3.8. Z-Layer Dioxins and Furans

Dioxins and furans concentrations were adjusted according to applicable WHO TEFs and are expressed as TEQs. Dioxins and furans concentrations in all Z-Layer composite sediment cores ranged from 0.002 – 4.17 ng/kg. MOTCO-2019-DU3-Z-Layer-Comp dioxins and furans TEQ was above SF Bay ambient concentration, but below the SF Bay Bioaccumulation trigger.

All remaining dioxins and furans concentrations were below the SF Bay ambient concentration and SF Bay Bioaccumulation trigger in all composite samples.

4.4 MOTCO Individual Z-Layer Sediments: Results of Physical/Chemical Analyses

4.4.1. MOTCO-2019-DU3-02-Z-Layer Percent Solids and PAHs

The results of these analyses are summarized in Table 4-4. Total solids in MOTCO-2019- DU3-02-Z-Layer were 54.5%. The total PAHs were 5,336 µg/kg. Total PAH concentrations were

above the SF Bay ambient concentration and SF Bay Bioaccumulation trigger, but below the total PAH concentration measured in the overlying sediments proposed for dredging.

4.4.2. MOTCO-2019-DU4-03-Z-Layer Percent Solids and PAHs

The results of these analyses are summarized in Table 4-4. Total solids in MOTCO-2019-DU4-03-Z-Layer were 52.2%. The total PAHs were 9,459 µg/kg. Total PAH concentrations were above the SF Bay ambient concentration and SF Bay Bioaccumulation Trigger, but below the total PAH concentration measured in the sediments proposed for dredging.

4.5 Results of Chemical Analyses of MOTCO Modified Elutriates

The MOTCO MET elutriates were prepared using the MOTCO composited sediment samples and were analyzed and evaluated to predict the concentrations of metals that would be present in decant water discharged from a wetland beneficial reuse site following the upland placement of dredged material; the results of these analyses are summarized in Table 4-5. All MOTCO MET elutriate samples analyte concentrations were below the MWRP screening criteria.

5. RESULTS OF BIOLOGICAL TESTING

Eight different biological tests were performed for each site composite sample:

1. A 10-day amphipod survival test with the amphipod *Leptocheirus plumulosus,*
2. A 10-day juvenile polychaete survival test with the polychaete *Neanthes arenaceodentata,*
3. A 48-hr bivalve embryo survival and development standard elutriate test with the mussel *Mytilus galloprovincialis,*
4. A 96-hr mysid survival standard elutriate test with the mysid shrimp *Americamysis bahia,*
5. A 96-hr larval fish survival standard elutriate test with the estuarine fish *Menidia beryllina,*
6. A 96-hr modified (MET) elutriate mysid survival test with *Americamysis bahia,*
7. A 28-day bioaccumulation test with the clam *Macoma nasuta,* and
8. A 28-day bioaccumulation test with the polychaete *Nereis virens.*

All tests were performed following appropriate protocols as outlined in the SAP (USACE 2019). Test data and summaries of the statistical analyses for the bioassay results are provided in Appendices F-V. Summaries of test conditions and test acceptability criteria are provided in Appendix W.

5.1 Benthic (Solid-Phase Sediment) Toxicity Testing

Solid-phase bioassays were conducted with the amphipod *L. plumulosus* and the polychaete *N. arenaceodentata*. Positive and negative Control treatments were tested concurrently with the bioassays. The positive Control for both species consisted of a 96-hr waterborne reference toxicant test; the results of these tests were compared to PER's in-house reference toxicant test response databases to determine whether these test organisms were responding to toxic stress in a typical fashion. The negative Control (termed "Lab Control") for the *L. plumulosus* and *N. arenaceodentata* tests consisted of sediment collected from Paradise Cove, which is located in Central SF Bay. An additional 'reference' treatment consisting of sediment collected from SF-10 was also tested. Toxicity testing with ammonia was also performed. It should be noted that the amphipod, *Ampelisca abdita* was initially tested; however, the negative control did not meet test acceptability and *L. plumulosus* was used for the second round of testing.

ITM/OTM guidance requires that site sediment results be compared with disposal site and/or reference site sediment results or a reference site database (if available) to determine the potential impact of whole sediment on benthic organisms at and beyond the boundaries of the disposal site (USEPA/USACE 1991 and 1998). As detailed in the ITM/OTM, comparative guidelines for acceptance were followed as listed below:

1. If survival is greater in the proposed dredged sediments than in reference site sediment(s) or the reference site sediment database, the proposed dredged sediments are ***not*** acutely toxic to benthic organisms.

2. If a reduction in the survival response between the site sediment and in the reference sediment (or the 'reference site database survival') is ≤20% for amphipods or ≤10% for polychaetes, the test sediments are ***not*** acutely toxic to benthic organisms.
3. If a reduction in the survival response between the site sediment and in the reference sediment (or the 'reference site database survival') is >20% for amphipods or >10% for polychaetes, then the respective survival responses must be statistically compared. If a statistically significant reduction in survival is observed for the site sediment, then the site sediment is considered to be acutely toxic to benthic organisms. Statistical analyses are not performed when reference site database values are used.

5.1.1 Sediment Porewater Characterization

Prior to the initiation of the sediment testing, the composited sediment samples were removed from refrigerated storage and each was re-homogenized in large stainless-steel bowls. An aliquot of each re-homogenized composite sediment was then centrifuged at 2,500 g for 15 minutes; the resulting supernatant porewater was carefully collected and analyzed for ammonia and total sulfides (Table 5-1). A summary of the measured concentrations of total ammonia and total sulfides in the sediment porewaters, and summary tables of the total ammonia concentrations measured in the test overlying waters are presented in Appendix E.

Table 5-1. Sediment Porewater Initial Water Ammonia Levels.

Sample ID	pH	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
SF-10	7.37	6.42	0.206
MOTCO-2019-DU1-Comp	7.84	16.2	0.129
MOTCO-2019-DU2a-Comp	7.75	28.0	0.042
MOTCO-2019-DU2b-Comp	7.95	44.0	0.103
MOTCO-2019-DU3-Comp	7.39	19.7	0.024
MOTCO-2019-DU4-Comp	7.54	25.1	0.015

5.1.2 Purging of Sediment Porewater Ammonia for the Amphipod and Polychaete Tests

The initial MOTCO sediment porewater ammonia concentrations (Table 5-1 above) exceeded the USACE guidelines-recommended threshold of 15 mg/L for the sediment samples; accordingly, these sediments were purged of ammonia prior to test initiation by daily replacement of the overlying water with fresh diluted seawater coupled with aeration until the porewater total ammonia level was below 15 mg/L, after which testing was initiated. The sediment porewater ammonia data are presented in Appendix E.

5.1.3 Effects of the MOTCO Sediments on *Leptocheirus plumulosus*

The results of these tests are summarized in Table 5-2. There was 97% survival in the Lab Control treatment, indicating an acceptable survival response by the test organisms; there was 97% survival in the SF-10 reference sediment. There was ≥85% survival in the MOTCO sediment samples. The differences in survival in the site sediments relative to the SF-10 reference sediment survival response were <20%. It should be noted that there is not a *Leptocheirus plumulosus* SF-DODS reference database value to compare MOTCO sediment results to; however, as there was ≥85% survival in each of the MOTCO sediment samples, test sediments are not considered toxic. The differences in survival in the site sediments relative to the Control treatment were <20%. These test results indicate that the MOTCO sediment samples are ***not*** toxic to amphipods. The test data and summary of statistical analyses for this testing are presented in Appendix F.

Table 5-2. *Leptocheirus plumulosus* survival in the MOTCO sediments.

Test Treatment	% Survival in Test Replicates					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	90	100	100	95	100	97
SF-10	95	95	100	95	100	97
MOTCO-2019-DU1-Comp	75	100	75	90	90	86
MOTCO-2019-DU2a-Comp	100	80	100	95	100	95
MOTCO-2019-DU2b-Comp	80	60	100	95	90	85
MOTCO-2019-DU3-Comp	95	95	95	95	95	95
MOTCO-2019-DU4-Comp	95	90	85	95	100	93

5.1.3.1 Reference Toxicant Toxicity to *Leptocheirus plumulosus*- The results of this test are summarized in Table 5-3. The LC_{50} for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix G.

Table 5-3. Reference Toxicant Testing: Effects of KCl on *Leptocheirus plumulosus.*

KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.25	95
0.5	100
1	90
2	**0***
4	**0***
LC_{50} =	1.3 g/L KCl
Typical Response Range (mean ± 2 SD) =	0.52 – 1.8 g/L KCl

* The survival response at this treatment was significantly less than the Lab Control response at $p < 0.05$.

5.1.3.2 Ammonia Toxicity to *Leptocheirus plumulosus*- The results of this testing are summarized in Table 5-4. There was 95% survival in the Lab Control treatment. The LC_{50} was >120 mg/L NH_3. The test data and summary of statistical analyses for this test are presented in Appendix H.

Table 5-4. Effects of NH_3 on *Leptocheirus plumulosus.*

NH_3-N Treatment (mg/L)	Mean % Survival
Lab Control	95
7.5	100
15	100
30	100
60	100
120	100
LC_{50} =	>120 mg/L NH_3-N

5.1.4 Effects of the MOTCO Sediments on *Neanthes arenaceodentata*

The results of these tests are summarized in Table 5-5. There was 100% survival in the Lab Control treatment, indicating an acceptable survival response by the test organisms; there was also 100% survival in the SF-10 reference sediment. There was 100% survival in each of the MOTCO sediment samples. The differences in survival in the site sediments relative to the SF-10 reference sediment and SF-DODS Reference Site Database survival response were <10%. The differences in survival in the site sediments relative to the control treatment was <10%. These test results indicate that the MOTCO sediments are ***not*** toxic to polychaetes. The test data and summary of statistical analyses for these tests are presented in Appendix I.

Table 5-5. *Neanthes arenaceodentata* survival in the MOTCO sediments.

Test Treatment	% Survival in Test Replicates					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	100	100	100	100	100	100
SF-10	100	100	100	100	100	100
SF-DODS Reference Database	-	-	-	-	-	98
MOTCO-2019-DU1-Comp	100	100	100	100	100	100
MOTCO-2019-DU2a-Comp	100	100	100	100	100	100
MOTCO-2019-DU2b-Comp	100	100	100	100	100	100
MOTCO-2019-DU3-Comp	100	100	100	100	100	100
MOTCO-2019-DU4-Comp	100	100	100	100	100	100

5.1.4.1 Reference Toxicant Toxicity to *Neanthes arenaceodentata* - The results of this test are summarized in Table 5-6. The LC_{50} for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix J.

Table 5-6. Reference Toxicant Testing: Effects of KCl on *Neanthes arenaceodentata.*

KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.5	100
1	100
2	**60***
3	**0***
4	**0***
LC_{50} =	2 g/L KCl
Typical Response Range (mean ± 2 SD) =	0.99 – 2.7 g/L KCl

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

5.1.4.2 Ammonia Toxicity to *Neanthes arenaceodentata* - The results of this test are summarized in Table 5-7. There was 100% survival in the Lab Control treatment. The LC_{50} was >240 mg/L NH_3. The test data and summary of statistical analyses for this test are presented in Appendix K.

Table 5-7. Effects of Ammonia on *Neanthes arenaceodentata.*

NH_3-N Treatment (mg/L)	Mean % Survival
Lab Control	100
15	100
30	100
60	100
120	100
240	80
LC_{50} =	>240 mg/L NH_3-N

5.2 Water Column (Standard Sediment Elutriate) Toxicity Testing

The 48-hr bivalve embryo survival and development toxicity test with *M. galloprovincialis* and 96-hr survival tests with *A. bahia* and *M. beryllina* were performed on standard sediment elutriates to assess the water column effects of dredged material disposal. A summary of these test results is presented in Table 5-8; detailed toxicity test results are presented in Sections 5.2.1-

5.2.4. The test data and summary of statistical analyses for these tests are presented in Appendices L-Q.

Positive and negative Lab Control treatments were tested concurrently with the site sediment elutriates. The positive Lab Controls consisted of 'waterborne' reference toxicant tests; the results of these tests were compared to PER's reference toxicant test response databases to determine whether the test organisms were responding to toxic stress in a typical fashion. The negative Lab Control treatments (and dilution medium) consisted of 0.45 µm-filtered natural seawater (obtained from the UC Davis Granite Canyon Marine Laboratory, Carmel, CA), diluted to the test salinity of 30 ppt via addition of Type 1 lab water (reverse-osmosis de-ionized water). As an additional QA measure, the site water that was used to prepare the 100% elutriates was also tested.

The test results for the sediment composite elutriates were compared with the test organism responses at the negative Lab Control treatment to determine the potential impact of the proposed dredged materials on pelagic organisms at and beyond the boundaries of the disposal site (USEPA/USACE 1991 and 1998). The following criteria were used for suitability determinations:

1. If the survival response and/or normal embryo development response in the 100% sediment elutriate treatment is ≥ the Control (clean seawater) treatment response(s), the dredged material is ***not*** predicted to be acutely toxic to water column organisms.
2. If the reduction in survival response and/or normal embryo development response in the 100% sediment elutriate treatment relative to the Control treatment is ≤10%, there is no need for statistical analyses and no indication of water column toxicity attributable to the test sediments.
3. If the reduction in survival response and/or normal embryo development response in the 100% sediment elutriate treatment relative to the Control treatment is >10%, then the data must be evaluated statistically to determine the magnitude of toxicity. If there is >50% survival or normal embryo development in the 100% elutriate treatment, the LC_{50}/EC_{50} is assumed to be ≥100%. If there is <50% survival or normal embryo development in at least one of the elutriate treatments, then an LC_{50}/EC_{50} should be calculated and compared with existing acceptability standards.

In order for the dredged material to be determined suitable for disposal at in-Bay sites (SF-10, SF-11, etc.) and SF-DODS, compliance with the narrative water quality standard must be met. Compliance with the narrative water quality standard is determined by evaluating whether the dredge material concentration (suspended particulate phase [SPP]), after mixing, would exceed 1% of the LC_{50} or EC_{50} value calculated from the sediment elutriate test (whichever is most conservative), outside of the mixing zone. Disposal site dilution models for both the SF-10 and SF-DODS disposal areas were used to simulate the initial mixing concentration of the suspended

particulate phase (SPP) during disposal. The results of the mixing models are presented in Table 5-8; dilution model calculations are presented in Appendix R.

Table 5-8. Results of the MOTCO Sediment Elutriate Toxicity Tests and Dilution Model Calculations.

Sampling Area	Test Species	Survival LC50	Development EC50	Lowest LC50 or EC50 x 0.01[A]	Predicted Suspended Particulate Phase		Pass?[B]
					SF-10	SF-DODS	
MOTCO-2019-DU1-Comp	*M. galloprovincialis*	>100% elutriate	>100% elutriate	-	-	-	**YES**
	A. bahia	>100% elutriate		-	-	-	
	M. beryllina	>100% elutriate		-	-	-	
MOTCO-2019-DU2a-Comp	*M. galloprovincialis*	>100% elutriate	>100% elutriate	-	-	-	**YES**
	A. bahia	>100% elutriate		-	-	-	
	M. beryllina	>100% elutriate		-	-	-	
MOTCO-2019-DU2b-Comp	*M. galloprovincialis*	76% elutriate	79.1% elutriate	0.76%	0.114%	0.001%	**YES**
	A. bahia	>100% elutriate		-	-	-	
	M. beryllina	>100% elutriate		-	-	-	
MOTCO-2019-DU3-Comp	*M. galloprovincialis*	>100% elutriate	>100% elutriate	-	-	-	**YES**
	A. bahia	>100% elutriate		-	-	-	
	M. beryllina	>100% elutriate		-	-	-	
MOTCO-2019-DU4-Comp	*M. galloprovincialis*	>100% elutriate	>100% elutriate	-	-	-	**YES**
	A. bahia	>100% elutriate		-	-	-	
	M. beryllina	>100% elutriate		-	-	-	

A – Considered the Limiting Permissible Concentration (LPC) for placement at SF-DODS.
B – If the suspended solid concentration is less than 1% of the lowest LC50 or EC50 value calculated from the sediment elutriate test, or if the lowest reported test LC50/EC50 is >100% elutriate, the sediment passes and the narrative water quality standard is met.

5.2.1 Toxicity of the MOTCO Sediment Elutriates to *Mytilus galloprovincialis*

The results of this testing are summarized below in Tables 5-9 through 5-13. There was ≥92.2% survival and normal development in the Lab Control treatments, indicating acceptable responses by the test organisms. The survival LC_{50} and normal development EC_{50} values for the MOTCO sediments were all ≥76% elutriate. The test data and summaries of statistical analyses for these tests are presented in Appendix L.

Table 5-9. Effects of MOTCO-2019-DU1-Comp Sediment Elutriate on *Mytilus galloprovincialis.*

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	95.0	96.4
1%	95.5	96.6
10%	96.6	96.8
50%	94.9	95.8
100%	85.9	94.6
Site Water	87.0	97.2
Salt Control	90.4	96.7
Survival LC_{50} or Development EC_{50} =	>100% elutriate	>100% elutriate

Table 5-10. Effects of MOTCO-2019-DU2a-Comp Sediment Elutriate on *Mytilus galloprovincialis.*

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	96.0	97.3
1%	95.4	96.6
10%	92.8	95.2
50%	98.5	**95.2***
100%	**58.3***	**60.7***
Site Water	87.0	97.2
Salt Control	90.4	96.7
Survival LC_{50} or Development EC_{50} =	>100% elutriate	>100% elutriate

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

Table 5-11. Effects of MOTCO-2019-DU2b-Comp Sediment Elutriate on *Mytilus galloprovincialis.*

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	96.1	96.2
1%	94.5	96.8
10%	88.0[a]	97.2
50%	90.9	94.7
100%	**8.6***	**9.8***
Site Water	87.0	97.2
Salt Control	90.4	96.7
Survival LC_{50} or Development EC_{50} =	76% elutriate	79.1% elutriate

a - There was an interrupted concentration-response with a statistically significant reduction in reproduction at this test treatment. However, as there was no significant reduction in reproduction at the higher 100% treatment, the reduction at this interim treatment is not considered toxicologically significant.

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

Table 5-12. Effects of MOTCO-2019-DU3-Comp Sediment Elutriate on *Mytilus galloprovincialis.*

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	92.2	97.3
1%	94.8	95.3
10%	95.1	98.0
50%	95.7	97.3
100%	**49.9***	**53.4***
Site Water	87.0	97.2
Salt Control	90.4	96.7
Survival LC_{50} or Development EC_{50} =	>100% elutriate	>100% elutriate

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

Table 5-13. Effects of MOTCO-2019-DU4-Comp Sediment Elutriate on *Mytilus galloprovincialis.*

Elutriate Treatment	Mean % Survival	Mean % Normal Development
Lab Control	95.0	95.5
1%	95.8	96.6
10%	94.4	96.2
50%	98.3	96.5
100%	**56.8***	**57.9***
Site Water	87.0	97.2
Salt Control	90.4	96.7
Survival LC_{50} or Development EC_{50} =	>100% elutriate	>100% elutriate

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

5.2.1.1 Reference Toxicant Toxicity to *Mytilus galloprovincialis* Embryos - The results of this test are summarized in Table 5-14. The EC_{50} for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix M.

Table 5-14. Reference Toxicant Testing: Effects of KCl on *Mytilus galloprovincialis.*

KCl Treatment (g/L)	Mean % Normal Embryo Development
Lab Control	96.0
0.5	97.0
1	95.9
2	**25.8***
3	**0.7***
4	**0***
EC_{50} =	1.68 g/L KCl
Typical Response Range (mean ± 2 SD)	1.34 – 3 g/L KCl

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

5.2.2 Toxicity of the MOTCO Sediment Elutriates to *Americamysis bahia*

The results of these tests are summarized below in Tables 5-15 through 5-19. There was ≥96% survival in the Lab Control treatments, indicating acceptable survival responses by the test organisms. The survival LC_{50} values for the MOTCO sediments were all >100% elutriate. The test data and summary of statistical analyses for these tests are presented in Appendix N.

Table 5-15. Effects of MOTCO-2019-DU1-Comp Sediment Elutriate on *Americamysis bahia.*

Elutriate Treatment	Mean % Survival
Lab Control	96
1%	98
10%	100
50%	98
100%	98
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-16. Effects of MOTCO-2019-DU2a-Comp Sediment Elutriate on *Americamysis bahia.*

Elutriate Treatment	Mean % Survival
Lab Control	100
1%	100
10%	100
50%	100
100%	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-17. Effects of MOTCO-2019-DU2b-Comp Sediment Elutriate on *Americamysis bahia.*

Elutriate Treatment	Mean % Survival
Lab Control	98
1%	100
10%	100
50%	100
100%	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-18. Effects of MOTCO-2019-DU3-Comp Sediment Elutriate on *Americamysis bahia.*

Elutriate Treatment	Mean % Survival
Lab Control	98
1%	98
10%	100
50%	100
100%	98
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-19. Effects of MOTCO-2019-DU4-Comp Sediment Elutriate on *Americamysis bahia.*

Elutriate Treatment	Mean % Survival
Lab Control	100
1%	98
10%	100
50%	100
100%	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

5.2.2.1 Reference Toxicant Toxicity to *Americamysis bahia* - The results of these tests are summarized in Table 5-20. The LC_{50} for these tests were consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix O.

Table 5-20. Reference Toxicant Testing: Effects of KCl on *Americamysis bahia*.

KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.125	100
0.25	100
0.5	97.5
1	**0***
2	**0***
LC_{50} =	0.70 g/L KCl
Typical Response Range (mean ± 2 SD) =	0.38 – 0.78 g/L KCl

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

5.2.3 Toxicity of the MOTCO Sediment Elutriates to *Menidia beryllina*

The results of these tests are summarized in Tables 5-21 through 5-25. There was ≥96% survival in the Lab Control treatments, indicating acceptable survival responses by the test organisms. The survival LC_{50} values for the MOTCO sediments were all >100% elutriate. The test data and summary of statistical analyses for these tests are presented in Appendix P.

Table 5-21. Effects of MOTCO-2019-DU1-Comp Sediment Elutriate on *Menidia beryllina.*

Elutriate Treatment	Mean % Survival
Lab Control	100
1%	98
10%	100
50%	100
100%	96
Site Water	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-22. Effects of MOTCO-2019-DU2a-Comp Sediment Elutriate on *Menidia beryllina.*

Elutriate Treatment	Mean % Survival
Lab Control	96
1%	100
10%	98
50%	94
100%	98
Site Water	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-23. Effects of MOTCO-2019-DU2b-Comp Sediment Elutriate on *Menidia beryllina.*

Elutriate Treatment	Mean % Survival
Lab Control	100
1%	100
10%	96
50%	100
100%	100
Site Water	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-24. Effects of MOTCO-2019-DU3-Comp Sediment Elutriate on *Menidia beryllina.*

Elutriate Treatment	Mean % Survival
Lab Control	100
1%	98
10%	98
50%	98
100%	98
Site Water	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

Table 5-25. Effects of MOTCO-2019-DU4-Comp Sediment Elutriate on *Menidia beryllina.*

Elutriate Treatment	Mean % Survival
Lab Control	98
1%	100
10%	96
50%	96
100%	100
Site Water	100
Survival LC_{50} =	>100% Elutriate[a]

a - Due to the absence of significant impairment, the LC50 could not be calculated but can be determined by inspection to be >100% elutriate.

5.2.3.1 Reference Toxicant Toxicity to *Menidia beryllina* - The results of this test are presented in Table 5-26. The LC_{50} for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix Q.

Table 5-26. Reference Toxicant Testing: Effects of KCl on *Menidia beryllina.*

KCl Treatment (g/L)	Mean % Survival
Lab Control	95
0.125	100
0.25	100
0.5	95
1	100
2	**0***
LC_{50} =	1.4 g/L KCl
Typical Response Range (mean ± 2 SD) =	1.1 – 1.5 g/L KCl

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

5.2.4 Toxicity Testing of MOTCO Modified Elutriates (MET) using *Americamysis bahia*

The results of the MET tests are summarized in Table 5-27. There was 98% survival at the Lab Control treatment, indicating an acceptable survival response by the test organisms. There was ≥96% survival in the MOTCO MET samples. The test data and summary of statistical analyses for this testing are presented in Appendix S.

Table 5-27. Effects of MOTCO MET Elutriates on *Americamysis bahia.*

Test Treatments	Mean % Survival
Lab Control	98
Site Water	96
MOTCO-2019-DU1-Comp	100
MOTCO-2019-DU2a-Comp	98
MOTCO-2019-DU2b-Comp	96
MOTCO-2019-DU3-Comp	98
MOTCO-2019-DU4-Comp	100

5.2.4.1 Reference Toxicant Toxicity to *Americamysis bahia* - The results of this test are presented in Table 5-28. The LC_{50} for this test was consistent with PER's reference toxicant test database for this species, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data and summary of statistical analyses for this test are presented in Appendix T.

Table 5-28. Reference Toxicant Testing: Effects of KCl on *Americamysis bahia*.

KCl Treatment (g/L)	Mean % Survival
Lab Control	100
0.125	100
0.25	100
0.5	100
1	**0***
2	**0***
LC_{50} =	0.71 g/L KCl
Typical Response Range (mean ± 2 SD) =	0.37 – 0.77 g/L KCl

* The response at this test treatment was significantly less than the Control treatment response at $p < 0.05$.

5.3 Bioaccumulation Testing of the MOTCO Sediments

Sediment bioaccumulation testing was performed using the bivalve *M. nasuta* and the polychaete *N. virens.* Negative Lab Control treatments consisted of "clean" sediment collected from Paradise Cove in San Francisco Bay. The survival results for the bioaccumulation tests with *M. nasuta* and *N. virens* are presented in Tables 5-18 and 5-19, respectively.

5.3.1 Sediment Bioaccumulation Test Data for *Macoma nasuta*

The percentage of bivalves that survived in each of the test replicates is summarized in Table 5-29. The test data for this testing are presented in Appendix U.

Table 5-29. MOTCO Sediment Bioaccumulation Testing with *Macoma nasuta.*

Test Treatment	Percent of Bivalves that Survived					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	100	95	90	90	100	95
SF-10	95	100	95	100	95	97
MOTCO-2019-DU1-Comp	95	95	85	85	95	91
MOTCO-2019-DU2a-Comp	100	85	60	85	100	86
MOTCO-2019-DU2b-Comp	95	95	90	75	100	91
MOTCO-2019-DU3-Comp	95	90	100	80	95	92
MOTCO-2019-DU4-Comp	95	100	90	95	95	95

Note - All treatments were initiated with 20 clams per replicate.

5.3.2 Sediment Bioaccumulation Test Data for *Nereis virens* - The percentage of polychaetes that survived in each of the test replicates is summarized in Table 5-30. The test data for this testing are presented in Appendix V.

Table 5-30. MOTCO Sediment Bioaccumulation Testing with *Nereis virens.*

Test Treatment	Percent of Polychaetes that Survived					Mean % Survival
	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	100	100	100	100	90	98
SF-10	80	100	100	100	90	94
MOTCO-2019-DU1-Comp	100	90	100	100	100	98
MOTCO-2019-DU2a-Comp	100	100	100	100	100	100
MOTCO-2019-DU2b-Comp	100	100	100	100	100	100
MOTCO-2019-DU3-Comp	100	100	100	100	100	100
MOTCO-2019-DU4-Comp	90	100	100	100	100	98

Note - All treatments were initiated with 10 polychaetes per replicate.

6. CHEMICAL ANALYSES OF BIVALVE AND POLYCHAETE TISSUES

The tissue samples from the MOTCO sediment bioaccumulation tests were analyzed as follows:

Table 6-1. Tissue Analysis Performed to Support Disposal at SF-DODS.

Management Unit	Tissue Analysis to Support Disposal at SF-DODS
MOTCO-2019-DU1-Comp	Arsenic, silver, selenium, and PAHs
MOTCO-2019-DU2a-Comp	Arsenic, silver, selenium, and PAHs
MOTCO-2019-DU2b-Comp	Arsenic, silver, selenium, and PAHs
MOTCO-2019-DU3-Comp	Arsenic, silver, selenium, and PAHs
MOTCO-2019-DU4-Comp	Arsenic, silver, selenium, and PAHs

Evaluation of bioaccumulation test data was consistent with ITM/OTM guidelines and DMMO guidance and was performed as follows:

1. Test organism tissue contaminant concentrations were compared to the SF-DODS reference database; if a tissue concentration was less than or equal to the database range of concentrations, then no further evaluation was performed. If the tissue concentration was greater than the database range of concentrations, then further assessment was performed;
2. Tissue contaminant concentrations were steady-state corrected, as needed, using the best available data and then compared to available U.S. Food & Drug Administration (USFDA) action levels. If the test organism tissue concentrations were greater than USFDA action levels, then the dredged material was predicted to result in benthic bioaccumulation of contaminants;
3. Tissue concentrations greater than the SF-DODS reference database were compared to tissue concentration "effects" data deemed most relevant to the test species obtained from peer-reviewed literature (from the USACE Environmental Residue Effects Database [ERED] http//wes.army.mil/el/ered/index.html; 2020); and
4. If a tissue analyte concentration was less than effects data concentrations, then no further evaluation was performed for that analyte. If the test organism tissue concentration was greater than effects data concentrations, then the magnitude of the exceedance was evaluated along with an assessment of potential food chain effects.

6.1 Bioaccumulation Test Tissue Analytical Chemistry Results

The results of these analyses (performed by Eurofins) are summarized in Tables 6-2 and 6-3 and below in Sections 6.1.1 and 6.1.2.

6.1.1 *Macoma nasuta* Tissue Analytical Chemistry Results

The *Macoma nasuta* test initiation (T_0) total lipids were 0.54%.

The Test initiation (T_0) and Control tissue arsenic concentrations were 2.19 mg/kg and 2.07 mg/kg, respectively. Arsenic concentrations for *M. nasuta* in the MOTCO sediments ranged from 2.05 - 2.30 mg/kg. These concentrations were below the SF-DODS the reference database concentration range of 2.2 - 4.0 mg/kg.

The T_0 and Control tissue silver concentrations were both < MDL. Silver concentrations for *M. nasuta* in the MOTCO sediments were < MDL.

The T_0 and Control tissue selenium concentrations were 0.283 µg/kg and 0.226 µg/kg, respectively. Selenium concentrations for *M. nasuta* in the MOTCO sediments ranged from 0.188 - 0.238 µg/kg. These concentrations were below the SF-DODS the reference database concentration range of 0.2 - 0.4 mg/kg.

The T_0 and Control tissue total PAH concentrations were both < MDL. Total PAH concentrations for *M. nasuta* in the MOTCO sediments ranged from < MDL - 525 µg/kg. The MOTCO DU1, DU3 and DU4 tissues total PAH concentrations were above the SF-DODS reference database concentration range of "not detected" - 33 µg/kg.

The full Data Report for the *M. nasuta* tissue analyses is presented in Appendix X.

6.1.2 *Nereis virens* Tissue Analytical Chemistry Results

The *N. virens* T_0 total lipids were 1.5%.

The Test initiation (T_0) and Control tissue arsenic concentrations were 3.31 mg/kg and 2.15 mg/kg, respectively. Arsenic concentrations for *N. virens* in the MOTCO sediments ranged from 1.36 - 1.97 µg/kg. These concentrations were below the SF-DODS the reference database concentration range of 2.0-2.3 mg/kg.

The T_0 and Control tissue silver concentrations were both < MDL. Silver concentrations for *N. virens* in the MOTCO sediments were < MDL.

The T_0 and Control selenium concentrations were 0.353 mg/kg and 0.261 mg/kg, respectively. Selenium concentrations for *N. virens* in the MOTCO sediments ranged from 0.224 - 0.303 mg/kg. The MOTCO DU2a measured tissue selenium concentration was 0.303 mg/kg, which was slightly above the SF-DODS reference database concentration range of 0.2 - 0.3 mg/kg.

The T_0 and Control tissue total PAH concentrations were both < MDL. Total PAH concentrations for *N. virens* in the MOTCO sediments ranged from < MDL - 109 µg/kg. The MOTCO DU4 measured tissue total PAH concentration of 109 µg/kg was above the SF-DODS the reference database concentration range of >21 - 36 µg/kg. The full Data Report for the *N. virens* tissue analyses is presented in Appendix X.

Table 6-2. Results of the Chemical Analysis of *Macoma nasuta* Tissues for MOTCO Samples.

Analyte	SF-DODs Reference (*Macoma*)[1]	T_0 (Sample collected at time of test initiation)	Control Treatment	SF-10	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp
Total lipids %	-	0.545							
***Metals* (mg/kg, wet wt)**									
Arsenic	**2.2-4.0**	2.19	2.07	2.18	2.30	2.05	2.12	2.15	2.11
Selenium	**0.2-0.4**	0.283	0.226	0.237	0.238	0.188	0.227	0.225	0.204
Silver	**0.02-0.26**	<0.0231	<0.0233	<0.0232	<0.0232	<0.0228	<0.0230	<0.0232	<0.0232
***PAHs* (µg/kg, wet wt)**									
1,6,7-Trimethylnaphthalene	-	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
1-Methylnaphthalene	-	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
1-Methylphenanthrene	-	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4	<2.5	<2.5
2,6-Dimethylnaphthalene	-	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
2-Methylnaphthalene	-	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
Acenaphthene	-	<2.3	<2.3	<2.3	<2.3	<2.4	<2.3	<2.3	<2.3
Acenaphthylene	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Anthracene	-	<3.4	<3.5	<3.4	<3.4	<3.5	<3.4	<3.4	13
Benzo(a)anthracene	-	<2.1	<2.1	<2.1	<2.1	<2.2	<2.1	<2.1	21
Benzo(a)pyrene	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Benzo(b)fluoranthene	-	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
Benzo(e)pyrene	-	<1.9	<2.0	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
Benzo(g,h,i)perylene	-	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Benzo(k)fluoranthene	-	<2.7	<2.8	<2.8	<2.8	<2.8	<2.7	<2.8	<2.8
Chrysene	-	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	18
Dibenz(a,h)anthracene	-	<1.9	<1.9	<1.9	<1.9	<2.0	<1.9	<1.9	<1.9
Dibenzothiophene	-	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Fluoranthene	-	<1.8	<1.8	<1.8	24	<1.8	<1.8	39	230
Fluorene	-	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
Indeno(1,2,3-cd)pyrene	-	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Naphthalene	-	<3.4	<3.5	<3.4	<3.4	<3.5	<3.4	<3.4	<3.4
Perylene	-	<2.3	<2.4	<2.4	<2.4	<2.4	<2.3	<2.4	<2.4
Phenanthrene	-	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	10	83
Pyrene	-	<2.2	<2.2	<2.2	28	<2.3	<2.2	32	160
Biphenyl	-	<1.8	<1.9	<1.8	<1.8	<1.9	<1.8	<1.8	<1.8
∑ detected PAHs	**nd-33**	**0**	**0**	**0**	**52[A]**	**0**	**0**	**81[A]**	**525[A]**
Total molar concentration (mmol/kg) for comparison to CBR narcosis values	-	-	-	-	0.00026	-	-	0.00041	0.00264

Notes:
[1] - San Francisco Deep Ocean Disposal Site (SF-DODS) Reference Database Table 3: http://www.epa.gov/region09/water/dredging/sfdods/refarea-db.html.
nd – not detected.
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
A – Mean tissue concentration exceeds SF-DODS reference site database.

Table 6-3. Results of the Chemical Analysis of *Nereis virens* Tissues for MOTCO Samples.

Analyte	SF-DODs Reference (*Nereis*)[1]	T_0 (Sample collected at time of test initiation)	Control Treatment	SF-10	MOTCO-2019-DU1-Comp	MOTCO-2019-DU2a-Comp	MOTCO-2019-DU2b-Comp	MOTCO-2019-DU3-Comp	MOTCO-2019-DU4-Comp
Total lipids %	-	1.54							
***Metals* (mg/kg, wet wt)**									
Arsenic	**2.0-2.3**	3.31	2.15	1.73	1.97	1.59	1.36	1.59	1.68
Selenium	**0.2-0.3**	0.353	0.261	0.291	0.269	0.303[A]	0.224	0.229	0.256
Silver	**0.03-0.08**	<0.0231	<0.0233	<0.0230	<0.0234	<0.0232	<0.0228	<0.0232	<0.0233
***PAHs* (µg/kg, wet wt)**									
1,6,7-Trimethylnaphthalene	-	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
1-Methylnaphthalene	-	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
1-Methylphenanthrene	-	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.5
2,6-Dimethylnaphthalene	-	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
2-Methylnaphthalene	-	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3	<2.3
Acenaphthene	-	<2.4	<2.4	<2.3	<2.4	<2.3	<2.4	<2.3	31
Acenaphthylene	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Anthracene	-	<3.5	<3.5	<3.4	<3.5	<3.4	<3.5	<3.4	<3.5
Benzo(a)anthracene	-	<2.2	<2.2	<2.1	<2.2	<2.1	<2.2	<2.1	<2.2
Benzo(a)pyrene	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
Benzo(b)fluoranthene	-	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7	<2.7
Benzo(e)pyrene	-	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<2.0
Benzo(g,h,i)perylene	-	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Benzo(k)fluoranthene	-	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8	<2.8
Chrysene	-	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
Dibenz(a,h)anthracene	-	<2.0	<2.0	<1.9	<2.0	<1.9	<2.0	<1.9	<2.0
Dibenzothiophene	-	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Fluoranthene	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	37
Fluorene	-	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
Indeno(1,2,3-cd)pyrene	-	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Naphthalene	-	<3.5	<3.5	<3.4	<3.5	<3.4	<3.5	<3.4	<3.5
Perylene	-	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Phenanthrene	-	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	15
Pyrene	-	<2.3	<2.3	<2.2	<2.3	<2.2	<2.3	<2.2	26
Biphenyl	-	<1.9	<1.9	<1.8	<1.9	<1.8	<1.9	<1.8	<1.9
∑ detected PAHs	**>21-36**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**109[A]**
Total molar concentration (mmol/kg) for comparison to CBR narcosis values	-	-	-	-	-	-	-	-	**0.00061**

Notes:
[1] - San Francisco Deep Ocean Disposal Site (SF-DODS) Reference Database Table 3: http://www.epa.gov/region09/water/dredging/sfdods/refarea-db.html.
nd – not detected.
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate.
All concentrations reported as being below the laboratory MDL are reported above as < the MDL.
CBR – Critical Body Residue
A – Mean tissue concentration exceeds SF-DODS reference site database.

6.2 Comparison of Tissue Concentrations to SF-DODS Reference Site Database

The *M. nasuta* and *N. virens* tissue arsenic, silver, selenium, and total PAH concentrations were compared to the SF-DODS reference database. Exceedances (i.e., tissue concentrations that exceeded the SF-DODS Reference Database concentration) for the MOTCO management units are listed in Table 6-4.

Table 6-4. Tissue Analytes whose Concentrations Exceeded SF-DODS Reference Database Values.

Management Unit	*Macoma nasuta* Tissues	*Nereis virens* Tissues
MOTCO-2019-DU1-Comp	Total PAHs	none
MOTCO-2019-DU2a-Comp	none	Selenium[A]
MOTCO-2019-DU2b-Comp	none	none
MOTCO-2019-DU3-Comp	Total PAHs	none
MOTCO-2019-DU4-Comp	Total PAHs	Total PAHs

A - Although *N. virens* measured selenium tissue concentration was slightly above the SF-DODS database concentration for *N. virens*, further evaluation of selenium tissue concentrations was not performed as there were no available relevant ERED effects data for marine species. It should be noted that the measured selenium concentration was lower than the tissue concentration at test initiation prior to exposure to MOTCO sediments.

6.3 Comparison of Tissue Concentrations to Tissue Residue Effects Data for Invertebrates

The *M. nasuta* and *N. virens* tissue total PAH concentrations that exceeded the SF-DODS Reference Database were compared to USACE ERED effects data to determine the potential for impacts to benthic invertebrates after placement at SF-DODS. The results of this assessment are presented in Sections 6.3.1 and 6.3.2.

6.3.1 Development of Toxicity Reference Values (TRV) Using the USACE ERED

As there are currently no screening levels promulgated for determination of ecological effects at SF-DODS; accordingly, and consistent with ITM/OTM and USACE ERED guidance, toxicity reference values (TRVs) were developed using "effects" data from the USACE ERED database.

Consistent with ITM/OTM and USACE ERED guidance, data used in developing TRVs for use in dredged material disposal assessments were limited to effects data reported in the USACE ERED database that identify measurable biological effects (e.g., reduced survival, growth, or reproduction) for species that were most relevant to *M. nasuta* and *N. virens*.

The most relevant available data for each of the compounds identified in organism tissues as exceeding the SF-DODS reference database are presented in Table 6-5; a summary of the available ERED data is provided in Appendix Y. The TRV was established as equivalent to the lesser of the reported chronic lowest observed-effect concentration (LOEC) or lowest observed-effect dose (LOED) to ensure that a conservative screening was applied. In the absence of a relevant chronic LOEC or LOED value, an estimated LOEC-LOED TRV was calculated by applying an appropriate uncertainty factor the reported acute or chronic LD50/ED50 values (USACHPPM 2000).

Table 6-5 Summary of ERED Tissue 'Effect' Concentrations Used to Determine Potential Benthic Impacts.

Compound	Species	Reported "Effects" Concentration (µg/kg ww)	TRV (µg/kg ww)	Type of Effect	Toxicity Endpoint	Lifestage	Reference from ERED Database
Benzo(a)pyrene	*Psettichthys melanostictus*	2,100	2,100	Embryo development	LOEC	egg	Hose et al. 1982
Fluoranthene	*Streblospio benedictii*	114,000	5,700[A]	survival	LD50	adult	Weinstein and Sanger 2003

* Lowest TRV.
LD = Lethal Dose.
LOEC - Lowest Observed Effect Concentration.
ww – wet weight.
A - Uncertainty factor of 20 applied to obtain an estimated LOEC-based TRV value.

6.3.2 Comparison of Tissue Analyte Concentrations to Toxicity Reference Values

As the bioaccumulation tests were 28-days in duration and may not represent "steady-state" conditions, an estimation of steady-state for each compound was performed, where necessary, using available information (ASTM 2016 and USACE 2010) prior to comparison to TRV values.

The steady-state corrected PAH tissue concentrations were then summed and compared to the most relevant TRV (Table 6-5).

The *M. nasuta* and *N. virens* tissue PAH concentrations were compared to the TRVs; none of the tissue PAH concentrations exceeded the TRV values. The results of this comparison are summarized in Tables 6-6 and 6-7.

Table 6-6. Comparison of *Macoma nasuta* 28-day Tissue Concentrations Exceeding the SF-DODs Reference Database Upper Bound Total PAHs to USACE ERED Database.

Sampling Area	Chemical	Mean 28-day Tissue Concentration (µg/kg, ww)	Steady State Correction Factor	Estimated Steady State Corrected Mean Tissue Concentration (µg/kg, ww)	TRV	Exceedance of TRV?
MOTCO-2019-DU1-Comp	Fluoranthene	24	1.03[B]	24.7	5,700	no
MOTCO-2019-DU3-Comp	Fluoranthene	39	1.03[B]	40.2	5,700	no
MOTCO-2019-DU4-Comp	Benzo(a)pyrene	21	1.02[A]	21.4	2,100	no
	Fluoranthene	230	1.03[B]	236.9	5,700	no

TRV = Toxicity Reference Value.
A - Average for *Macoma nasuta* as reported in USACE 2010.
B - Average for *Macoma nasuta* as reported in ASTM E1688 and USACE 2010.
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate; as a result, J-flagged values are not identified as exceeding screening criteria

Table 6-7. Comparison of *Nereis virens* 28-day Concentrations Exceeding the SF-DODs Reference Database Upper Bound Selenium and Total PAHs to USACE ERED Database.

Management Unit	Chemical	Mean 28-day Tissue Concentration (µg/kg, wet wt)	Steady State Correction Factor	Estimated Steady State Corrected Mean Tissue Concentration (µg/kg, ww)	TRV	Exceedance of TRV?
MOTCO-2019-DU4-Comp	Fluoranthene	37	1.00[A]	37	5,700	no

TRV = Toxicity Reference Value.
A - Average for *Nereis virens* as reported in USACE 2010.
J - Analyte detected below the method reporting limit (MRL) and the reported value is therefore an estimate; as a result, J-flagged values are not identified as exceeding screening criteria.

6.4 Comparison of Tissue Analyte Concentrations to USFDA Action Levels

Tissue concentrations were compared to available USFDA action levels. It should be noted that as there are no USFDA action levels for PAHs, no comparison was performed. However, tissue total PAH concentrations were compared to total PAH concentrations considered by USEPA to present a risk for human consumption of fish and shellfish (6,000 µg/kg wet weight; Oros et al. 2007). The *M. nasuta* and *N. virens* total PAH tissue concentrations were below this screening benchmark.

Table 6-8. Comparison of Tissue Burden Levels to USEPA Screening Benchmark

Compound	PAH Tissue Concentration Range (µg/kg, wet wt.)	USEPA Screening Benchmark (µg/kg, wet wt.)
Total PAHs	10.2-718[A]	6,000

A - Tissue concentration represents the overall range of tissue concentration observed in the study (See Tables 6-1 and 6-2).

6.5 Comparison of Tissue Burdens to Critical Body Residue Narcosis Values

As an additional line of evidence, tissue total PAH concentrations were converted to molar concentrations and then compared to Critical Body Residue (CBR) values associated with acute baseline neutral narcosis in aquatic organisms (McCarty and Mackay 1993). CBR values range from 2 to 8 µg/kg for acute effects and 0.2 to 0.8 µg/kg for chronic effects. As shown in Table 6-9, all tissue total molar PAH concentrations were below both acute and chronic narcosis values.

Table 6-9. Comparison of Tissue Burden Levels to CBR Screening Levels.

Compound	Tissue Concentration Range (mmol/kg, wet wt.)	CBR (mmol/kg, wet wt.)	
		Acute	Chronic
Total PAHs	0.0003-0.003[A]	2-8	0.2-0.8

A - Tissue concentration represents the overall range of tissue concentration observed in the study (See Tables 6-1 and 6-2).

6.6 Potential for Trophic Transfer and Biomagnification

It should be noted that while the *M. nasuta* tissue PAH concentrations were higher than the measured *N. virens* tissue concentrations, none of the sediment PAH compounds evaluated were predicted to bioaccumulate above the "effects" benchmark TRVs for either species. It is recognized that bivalves accumulate PAHs due to their inability to metabolize them (Sirota and Uthe 1981), whereas fish and other invertebrates are capable of metabolizing PAHs, and typically have lower tissue PAH levels (Reichert et al. 1985; Lemaire et al. 1990); this is

supported by the current bioaccumulation test results in which *M. nasuta* tissues exhibited higher PAH concentrations than did *N. virens*.
Due to the ability of most organisms to metabolize PAHs, it is generally agreed that trophic transfer and biomagnification of PAHs is not toxicologically problematic for food webs (Suedel et al 1994); this is supported by studies showing that while primary consumers and detritivores can accumulate PAHs, predators usually contain low levels (Clements et al. 1994; Hellou et al. 1991; Lemaire et al. 1993; Niimi and Dookran 1989). The relevant peer-reviewed literature regarding the bioaccumulation of PAHs in the aquatic environment suggests that the predicted PAH accumulation in benthic organism tissues resulting from exposure to MOTCO's sediments would ***not*** have an adverse effect on upper trophic level consumers.

For sediments placed at SF-DODS, the depth of this site is approximately 3,000 meters. At this depth, there is substantial "dilution" of any dredged materials as they are dispersed through the water column during the settling process and deposit onto the benthic "mudline". Given this dilution and the reduction in any eventual bioaccumulation of the subsequent bedded sediments at SF-DODS that should be expected (relative to the bioaccumulation in *M. nasuta* and *N. virens* in the current "non-diluted" sediments), it seems unlikely that significant uptake of arsenic, selenium, silver, or PAHs by resident benthic organisms at SF-DODS would occur.

7. QUALITY CONTROL REVIEW

7.1 Conventional and Chemical Analytical Quality Control Summary

The QA/QC review entailed reviewing the contract lab Data Reports for sample integrity, correct methodology, and compliance with all appropriate quality Lab Control requirements. The overall data quality assessment found that all data were usable. Appendices B and C contain the sediment conventional and chemical analysis reports. Appendix D contains the MET result report. Appendix X contains tissue analysis reports. Each of these reports includes the contract laboratory QA/QC narrative.

A review summary of the analytical methods, the targeted reporting limits and the achieved method reporting and detection limits are presented in Tables 7-1, 7-2, and 7-3.

7.1.1 Sediment Conventional and Chemical Analytical QA/QC Summary

Eurofins Calscience Report 570-12498-1

TOCs – Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) recovery for several TOCs were outside acceptance limits. MS/MSD RPD for TOCs exceeded control limits. The associated LCS recovery was in control. No further action was taken.

Metals – For arsenic, cadmium, lead, selenium, and silver, recovery of the MS and/or MSD compound was outside acceptance limits. The associated LCS recovery was in control. No further action was taken.

Butyltins – The MS/MSD result for tributyltin exceeded calibration range. The analyte present in the original sample was greater than four times the matrix spike concentration; therefore, control limits were not applicable. The associated LCS recovery was in control. No further action was taken.

PCB Congeners – The PCB surrogate p-Terphenyl-d14 surrogate was outside control limits. MS and/or MSD recovery for PCB 128 and PCB 187 were outside acceptance limits. MS/MSD RPD for PCB 005/008 and PCB 195 exceeded control limits. The associated LCS recovery was in control. No further action was taken.

Organochlorine Pesticides – The percent RPD between the primary and confirmation column/detector was >40% for endrin. The lower value has been reported. MS and/or MSD recovery for several DDTs and endrin aldehyde were outside acceptance limits. MS/MSD RPD for several DDTs and endrin aldehyde exceeded control limits. The associated LCS recovery was in control. No further action was taken.

PAHs – MS and/or MSD recovery for several PAHs were outside acceptance limits. The associated LCS recovery was in control. No further action was taken.

Eurofins Calscience Report 570-12498-2

Metals - The MS/MSD recoveries were outside control limits. Sample matrix interference and/or non-homogeneity were suspected because the associated LCS recovery was within acceptance limits. Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following samples: MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, and MOTCO-2019-DU4-02. The results in this report are reported from the analysis performed before the above-mentioned necessary dilution. The internal standard was out of range in the initial run due to suspected matrix interference and, for that reason, these results are estimates and may not reflect the true value of specific parameters present in the associated samples.

Eurofins Calscience Report 570-15644-1

No anomalies were observed.

Eurofins Calscience Report 570-15054-1

Metals – Due to sample matrix effect on the internal standard (ISTD), a 100x dilution was required on the SF-10 sample, which resulted in elevated MDLs/RLs for arsenic, cadmium, chromium, copper, lead, nickel, selenium, silver, and zinc.

PCB Congeners –MS and/or MSD recovery and MS/MSD RPD for PCB 118 was outside acceptance limits. The associated LCS recovery was in control. No further action was taken.

Organochlorine Pesticides –MS and/or MSD recovery for several DDTs were outside acceptance limits. The result for several DDTs exceeded calibration range. The associated LCS recovery was in control. No further action was taken.

PAHs –MS/MSD RPD for several PAHs were outside acceptance limits. The associated LCS recovery was in control. No further action was taken.

7.1.2 MET Sample Analytical QA/QC Summary

Eurofins Calscience Report 570-13783-1

No anomalies were observed.

7.1.3 Tissue Sample Analytical QA/QC Summary

Eurofins Calscience Report 570-18658-1
The metals MS/MSD recoveries for preparation batch 570-47266, 570-48400, and analytical batch 570-48841 were outside control limits. Sample matrix interference and/or non-homogeneity was suspected because the associated LCS recovery was within acceptance limits. No additional analytical or quality issues were noted.

7.2 Biological Testing Quality Lab Control Summary

The biological testing of the Military Ocean Terminal Concord (MOTCO) sediments incorporated standard QA/QC procedures to ensure that the test results were valid. Standard QA/QC procedures included the use of negative Lab Controls, positive Lab Controls, test replicates, and measurements of water quality during testing.

Quality assurance procedures that were used for sediment testing are consistent with methods described in the U.S.EPA/ACOE (1998). Sediments for the bioassay testing were stored appropriately at ≤4°C and were used within the 8-week holding time period. Sediment interstitial water characteristics were within test acceptability limits at the start of the tests. Sediment elutriates were prepared using site water. The tests were performed using high-quality natural seawater.

All measurements of routine water quality characteristics were performed as described in the PER Lab Standard Operating Procedures (SOPs). All biological testing water quality conditions were within the appropriate limits. Laboratory instruments were calibrated daily according to Lab SOPs, and calibration data were logged and initialed. Standard test conditions are presented in Appendix T.

Negative Lab Control – The biological responses for all the test organisms at the negative Lab Control treatments were within acceptable limits for the sediment and sediment elutriate tests.

Positive Lab Control – The accuracy of the responses of the test organisms to toxic stress was evaluated using positive Lab Controls (reference toxicant testing). The key test concentration-response LC and/or EC point estimates determined for each of the test species were all within the respective typical response ranges for these species, indicating that these test organisms were responding to toxic stress in a typical fashion.

Concentration Response Relationships – The concentration-response relationships for the sediment elutriate tests and reference toxicant tests were evaluated as per EPA guidelines (EPA-DU2b21-B-00-004) and were determined to be acceptable.

Table 7-1. Achieved Detection and Reporting Limits for Composited Sediments.

Analyte	Units	Method Used	Targeted MRL	Achieved MDL	Achieved MRL
Metals					
Arsenic	mg/kg	EPA 6020	2	0.617-3.49	1.59-8.97
Cadmium	mg/kg	EPA 6020	0.3	0.190-1.08 / 0.160-0.241	1.59-8.97 / 1.33-2.01
Chromium	mg/kg	EPA 6020	5	0.186-1.05	3.17-17.9
Copper	mg/kg	EPA 6020	5	0.184-1.04	1.59-8.97
Lead	mg/kg	EPA 6020	5	0.217-1.23	1.59-8.97
Mercury	mg/kg	EPA 7471A	0.02	0.00803-0.0105	0.125-0.149
Nickel	mg/kg	EPA 6020	5	0.203-1.15	1.59-8.97
Selenium	mg/kg	EPA 7742	0.1	0.419-2.37 / 0.352-0.531	1.59-8.97 / 1.33-2.01
Silver	mg/kg	EPA 6020	0.2	0.225-1.27 / 0.189-0.285	1.59-8.97 / 1.33-2.01
Zinc	mg/kg	EPA 6020	1	1.26-7.12	7.93-44.9
Pesticides					
Aldrin	µg/kg	EPA 8081B	2	0.24-0.33	1.4-1.9
a-*BHC*	µg/kg	EPA 8081B	2	1.5-2.0	2.7-3.7
b-BHC	µg/kg	EPA 8081B	2	0.97-1.3	1.4-1.9
g-BHC (Lindane)	µg/kg	EPA 8081B	2	0.26-0.36	1.4-1.9
d-BHC	µg/kg	EPA 8081B	2	1.3-1.8	2.7-3.7
Chlordane	µg/kg	EPA 8081B	20	0.93-1.3	14-19
2,4'-DDD	µg/kg	EPA 8081B	2	0.20-0.27	1.4-1.8
2,4'-DDE	µg/kg	EPA 8081B	2	1.1-1.5	2.7-3.7
2,4'-DDT	µg/kg	EPA 8081B	2	0.19-0.25	1.4-1.8
4,4'-DDD	µg/kg	EPA 8081B	2	0.33-0.44	1.4-1.8
4,4'-DDE	µg/kg	EPA 8081B	2	0.23-0.31	1.4-1.8
4,4'-DDT	µg/kg	EPA 8081B	2	0.41-0.55	1.4-1.8
Dieldrin	µg/kg	EPA 8081B	2	0.14-0.18	1.4-1.8
Endosulfan I	µg/kg	EPA 8081B	2	0.14-0.19	1.4-1.8
Endosulfan II	µg/kg	EPA 8081B	2	0.14-0.36	1.4-1.8
Endosulfan sulfate	µg/kg	EPA 8081B	2	0.14-0.50	1.4-1.8
Endrin	µg/kg	EPA 8081B	2	0.14-0.19	1.4-1.8
Endrin aldehyde	µg/kg	EPA 8081B	2	1.5-2.1	2.7-3.7
Heptachlor	µg/kg	EPA 8081B	2	0.20-0.27	1.4-1.8
Heptachlor epoxide	µg/kg	EPA 8081B	2	0.17-0.23	1.4-1.8
Toxaphene	µg/kg	EPA 8081B	20	4.3-5.7	27-37
Total Butyltins	µg/kg	Krone 1989	10	0.12-2.6	0.5-5.3
Total PAHs (RMP 25)	µg/kg	EPA 8270C	20	0.69-78	14-95
Total PCBs (RMP 40)	µg/kg	EPA 8082	0.5	0.046-0.54	0.27-0.74
Dioxins (TCDD TEQ), total	ng/kg	EPA 8290	1	0.0331-0.116	0.0692-0.295
Grain Size	%	ASTM D4464 (M)	0.1	0.01	0.01
Total Solids	%	EPA 160.3	0.1	0.01	0.01
Total Organic Carbon (TOC)	%	EPA 415.1	0.1	0.0238-0.0321	0.0684-0.0924

a - Results of the reanalysis using 20 X dilution factor (DF). Reported concentrations are estimates due to the internal standard failure observed during the initial run.

Table 7-2. Achieved Detection and Reporting Limits for Modified Elutriate Test Analytes.

Analyte	Units	Method Used	Targeted MRL	Achieved MDL	Achieved MRL
Metals					
Arsenic	µg/L	EPA 6020	0.5	0.03	0.10
Cadmium	µg/L	EPA 6020	0.02	0.018	0.030
Chromium	µg/L	EPA 6020	0.2	0.21	0.50
Copper	µg/L	EPA 6020	0.1	0.40	1.00
Lead	µg/L	EPA 6020	0.02	0.027	0.040
Mercury	µg/L	EPA 1631A	0.005	0.00008-0.00083	0.00050-0.00500
Nickel	µg/L	EPA 6020	0.2	0.23	0.50
Selenium	µg/L	EPA 6020	1	0.05	0.10
Silver	µg/L	EPA 6020	0.02	0.015	0.040
Zinc	µg/L	EPA 6020	0.5	0.82	1.00
Total Suspended Solids (TSS)	mg/L	SM 2540D	5	0.829	1.00

Table 7-3. Achieved Detection and Reporting Limits for Tissue Analysis.

Analyte	Units	Method Used	Targeted MRL	Achieved MDL	Achieved MRL
Lipids	%	NOAA 1993a	0.1	0.1	0.1
Metals					
Arsenic	µg/kg	EPA 6020	2	0.0688-0.0705	0.146-0.150
Selenium	µg/kg	EPA 7742	0.1	0.063-0.099	0.126-0.199
Silver	µg/kg	EPA 6020	0.2	0.0228-0.0234	0.146-0.150
Total PAHs (RMP 25)	µg/kg	EPA 8270C	20	1.3-3.5	9.9-10

8. SUMMARY

The Military Ocean Terminal Concord (MOTCO) Channel sediments were analyzed to evaluate suitability of the material to be dredged for placement in-Bay at SF-10, at SF-DODS, or upland at the CRRP and MWRP beneficial reuse sites.

A summary of the chemical and biological evaluations assessing each of these potential placement/disposal options is provided below in Sections 8.1 through 8.3; an assessment of the Z-layer sediments is provided in Section 8.4.

8.1 Unconfined Aquatic Disposal at SF-10

Selenium analyte concentrations in DU1-Comp, DU2-Comp, and DU3-Comp, were measured above SF Bay ambient concentrations; selenium and endrin analyte concentrations in DU4-Comp were above SF Bay ambient concentrations. However, benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in 10-day sediment tests for all composite samples. All remaining analyte concentrations were below the SF Bay ambient levels in all composite samples. In addition, the narrative WQO was met for the sediment elutriate tests.

It should be noted that total PAHs in the DU3-02 and DU4-03 individual sediment cores were above the SF Bay Bioaccumulation Trigger. However, comparison of the DU3-Comp and DU4-Comp bioaccumulation test tissue PAH concentrations to invertebrate “effects” data obtained from the USACE ERED database (USEPA 2020) indicated that tissue concentrations for these compounds were below effect levels for invertebrates.

Based on these results, the MOTCO sediments would be considered suitable for unconfined aquatic disposal (SUAD) at in-Bay placement sites.

8.2 Unconfined Aquatic Disposal at SF-DODS

One or more analyte concentrations in the MOTCO composite sediment samples were above SF-DODS reference database concentrations; similar results were observed for the individual sediment cores that comprised the each of the composite samples. However, benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests. In addition, the narrative WQO was met for each of the sediment elutriate tests.

Comparison of bioaccumulation test tissue arsenic, selenium, and silver concentrations to the SF-DODS database indicated that tissue levels for these compounds were at or below the SF-DODS reference site tissue screening values. Comparison of bioaccumulation test tissue PAH concentrations to the SF-DODS database indicated that tissue levels for these compounds were above the SF-DODS reference site tissue screening values, but below invertebrate “effects”

concentrations obtained from the USACE ERED database; the results of these analyses also indicated that the tissue concentrations were below USFDA action levels.

Based on these results, the MOTCO sediments would be considered SUAD at SF-DODS.

8.3 Placement at Upland Beneficial Reuse Sites

The selenium concentrations in the DU2b-Comp, DU3-Comp, and DU4-Comp sediment exceeded MWRP and CRRP cover screening criteria, but were below MWRP foundation screening criteria. All remaining sediment analyte concentrations were below the CRRP and MWRP cover screening criteria in all composite samples.

A majority of the individual sediment core samples that comprised the sediment composite samples had arsenic, cadmium, selenium, silver, or zinc concentrations above CRRP and MWRP screening criteria. The DU4-02 and DU4-03 sediment cores had total DDTs concentrations slightly above CRRP and MWRP screening criteria. The DU3-02 and DU4-03 individual sediment core samples total PAH concentrations were measured above CRRP and MWRP screening criteria; however, both the DU3 and DU4 composite samples were well below CRRP and MWRP screening criteria. Measured concentrations of the remaining analytes in the individual sediment cores were below CRRP and MWRP cover screening criteria.

Benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests.

The results of the MET elutriate analyses indicated that none of the compounds evaluated exceeded MWRP screening criteria. The MET toxicity tests met the narrative WQO for toxicity.

Relevant effects effect data for bioaccumulation test tissue arsenic, selenium, and silver concentrations were not available; however, as discussed above, the concentration of these compounds was below the SF-DODS references site database tissues concentrations. Comparison of bioaccumulation test tissue PAH concentrations to the USACE ERED database indicated that tissue levels for these compounds were below invertebrate “effects” concentrations.

Based on these results, the MOTCO sediments would be considered suitable for placement at MWRP. Some or all of the sediments may be considered suitable for placement at CRRP.

8.4 Z-layer Assessment

Due to elevated total PAH concentrations that exceeded the SF Bay Bioaccumulation trigger in the MOTCO-2019-DU3 and MOTCO-2019-DU4-03 individual core samples, total PAH concentrations in the MOTCO-2019-DU3-02-Z-Layer and MOTCO-2019-DU4-03-Z-Layer

cores were evaluated. Although the total PAH concentration in each of the Z-layer samples was above the SF Bay Bioaccumulation Trigger, the total PAH concentration was below the total PAH concentration measured in the overlying sediments proposed for dredging. Furthermore, total PAH concentrations in the MOTCO-2019-DU3 and MOTCO-2019-DU4 composite samples were below both SF Bay ambient concentrations and the SF Bay Bioaccumulation Trigger concentration. As a result, further Z-layer analysis should not be required.

9. REFERENCES

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Appendix A

PER Sediment Core Collection Forms

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-1-01 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05719/ 38.05719 Long/Easting: -122.03863/-122.03867

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -20 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	0947	0957
(A) Measured Water Depth	20.0	→
(B) Tide Height	+1.7	→
(C) Mudline Elevation (A–B=C)	18.7/ 18.3	→8.7/
(D) Calculated Core Length (PD+OD-C=D+Z)	20+2-18.7=3.3+0.5=3.8 4.2 w/ Z-layer	20+2-18.7=3.3+0.5=3.8/ →
Estimated Penetration	5.7	6.1
Description of Core Drive	Smooth (vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	5.7→4.2 w/ Z layer	6.1→3.7 +0.5 Z-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	→ cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	→ gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	→ None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous		

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-1-01/2 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05727/ 38.05727 Long/Easting: -122.03820/ -122.03821

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -20 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	0930	0935
(A) Measured Water Depth	20.8 ~~20.0~~ 20.9	→
(B) Tide Height	+2.9 ~~+2.3~~ +2.0	→
(C) Mudline Elevation (A–B=C)	19.9/ ~~17.9~~ ~~17.7~~ 18.9	19.9/
(D) Calculated Core Length (PD+OD-C=D+Z)	20+2-19.9=2.1+0.5=2.6/ ~~4.6~~ 3.6 w/ 2-layer	20+2-19.9=2.1+0.5=2.6/ →
Estimated Penetration	4.0	7.0
Description of Core Drive	Smooth (vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	3.9 → 3.6 w/ 2 layer	6.9 → 3.1 + 0.5 2-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous		

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-1-03 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05693/ 38.05693 Long/Easting: -122.03851/ ~~-121.03851~~ -122

Vertical Datum: MLLW MLW Other:

Depth Measurement: Sounder Leadline

Project Depth: -20 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	0810	0820
(A) Measured Water Depth	20.8	→
(B) Tide Height	42.9	→
(C) Mudline Elevation (A–B=C)	17.8/ 17.9	17.8/
(D) Calculated Core Length (PD+OD-C=D+Z)	20+2-17.8=4.2+0.5=4.7/ 4.6 w/ Z-layer	20+2-17.8=4.2+0.5=4.7/ 6
Estimated Penetration	4.6	6.2
Description of Core Drive	Smooth (vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	4.1 + 0.5 Z-layer	6 → 4.6 w/ Z-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	→	6" organic matter (woods) at 1" depth, remainder homogenous

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [illegible] (QA)

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Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-1-04 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.05701/ 38.05700 Long/Easting: -122.03808/-122.03808

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: (Sounder) **Leadline**

Project Depth: -20 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	0855	0900
(A) Measured Water Depth	20.0	→
(B) Tide Height	+2.3	→
(C) Mudline Elevation (A–B=C)	16.1/ 17.7	~~18~~.1/
(D) Calculated Core Length (PD+OD-C=D+Z)	20+2-16.1=5.9+0.5=6.4/ 4.8 w/ 2 layer	20+2-16.1=5.9+0.5=6.4/ →
Estimated Penetration	6.5	6.5
Description of Core Drive	Smooth (vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	6.4→4.8 w/ 2-layer	6.2→4.8 w/ 2 layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	top 1" more silt than sand	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [signature] (QA)

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Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2a-01 **Date:** 10/28/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.06231/ 38.06231 Long/Easting: -122.02895/ -122.02895

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1556	
(A) Measured Water Depth	~~32.9~~ 35.5	
(B) Tide Height	+1.3	
(C) Mudline Elevation (A–B=C)	34.8/ 34.2	34.8/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2/34.8=2.2+0.5=2.7/ 2.8 w/ Z layer	35+2/34.8=2.2+0.5=2.7/
Estimated Penetration	4.2	4.1
Description of Core Drive	smooth (vibracore)	
Refusal Encountered?	N	
Total Core Length Recovered	2.8 + 0.5 Z-layer	

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	Homogenous	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. Current too strong for leadline

Recorded by: JL, [illegible] (QA)

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Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2a-02 **Date:** 10/28/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.06216/ 38.06216 Long/Easting: -122.02820/-122.02821

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	~~1415~~ 1514	
(A) Measured Water Depth	39.8	
(B) Tide Height	5.1	
(C) Mudline Elevation (A–B=C)	34.5/34.7	34.5/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.5=2.5+0.5=3.0/ 2.8 w/ Z layer	35+2-34.5=2.5+0.5=3.0/
Estimated Penetration	4.5	4.5
Description of Core Drive	smooth (vibracore)	
Refusal Encountered?	N	
Total Core Length Recovered	28 + 2-layer (includes)	

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	homogenous	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. Current too strong for leadline

Recorded by: JL (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2a-03 **Date:** 10/28/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.06150/ 38.06150 Long/Easting: -122.02812/ -122.02812

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1416	1420
(A) Measured Water Depth	39.0	
(B) Tide Height	5.2	
(C) Mudline Elevation (A–B=C)	34.4/ 33.8	34.4/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.4=2.6+0.5=3.1/ 3.7 w/ 2 layer	35+2-34.4=2.6+0.5=3.1/
Estimated Penetration	4.2	4.0
Description of Core Drive	Smooth (vibracore)	
Refusal Encountered?	N	
Total Core Length Recovered	~~3.7 - 2 layers = 3.2~~	3.2 + 0.5 2-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	homogenous	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. Current too strong for leadline

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2a-04 **Date:** 10/28/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.06152/ 38.06152 Long/Easting: -122.02705/ -122.02705

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: (Sounder) ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	~~1215~~ ~~1327~~ 1315	1327
(A) Measured Water Depth	37.7	
(B) Tide Height	6.3 4.8	
(C) Mudline Elevation (A–B=C)	34.1/ 32.9	34.1/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.1=2.9+0.5=3.4/ 4.6 w/ Z	35+2-34.1=2.9+0.5=3.4/
Estimated Penetration	~~4.1~~ ~~5.5~~ 4.1	~~4.1~~ ~~4.6~~ 5.0 + extra => Z removed to 4.1
Description of Core Drive	Smooth (vibracore)	
Refusal Encountered?	N	N
Total Core Length Recovered	4.1	4.1 + 0.5 ft Z layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	sand on top, silt/clay on bottom	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. current too strong for leadline

Recorded by: [signature] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2b-01 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.06163/ 38.06163 Long/Easting: -122.02587/ ~122.02588

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: (Sounder) **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1043	1048
(A) Measured Water Depth	35.6	→
(B) Tide Height	+1.6	→
(C) Mudline Elevation (A–B=C)	34.5/ 34.0	34.5/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.5=2.5+0.5=3.0/ 3.5 w/ 2 layer	35+2-34.5=2.5+0.5=3.0/ →
Estimated Penetration	5.1	4.9
Description of Core Drive	Smooth (vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	5.0 → 3.5 w/ 2 layer	4.9 → 3.0 +0.5 2-layer

Core Characteristics

Sediment Type	cobble, gravel, (sand) C M F, (silt clay), (organic matter)	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray), black, (brown), brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	(None), slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	greater silt concentration on bottom 1'	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [illegible] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2b-02 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.06126/ 38.06126 Long/Easting: -122.02587/ -122.02586

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1140	1145
(A) Measured Water Depth	35.7	→
(B) Tide Height	1.7	→
(C) Mudline Elevation (A–B=C)	34.0/ 34.0	~~34.0~~/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.0=3.0+0.5=3.5/ 3.5 w/ Z-layer	35+2-34.0=3.0+0.5=3.5/ →
Estimated Penetration	3.5	→
Description of Core Drive	rough (vibracore issue)	smooth
Refusal Encountered?	N	N
Total Core Length Recovered	3.0 +0.5 Z-layer	4.7 → 3.5 w/ Z layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt, clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	top 6" more sand than remainder of core	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [signature] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2b-03 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.06163/ 38.06163 Long/Easting: -122.02503/ -122.02504

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1313	1316
(A) Measured Water Depth	37.4	→
(B) Tide Height	+ 3.0 CD	→
(C) Mudline Elevation (A–B=C)	34.0/ ~~34.6~~ 34.4	→ 34.0/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.0=3.0+0.5=3.5/ ~~2.6~~ ~~2.9~~ 3.1 w/ 2-layer	35+2-34.0=3.0+0.5=3.5/ →
Estimated Penetration	4.5	4.6
Description of Core Drive	Smooth (vibracore)	
Refusal Encountered?	N	N
Total Core Length Recovered	4.3 → 2.9 w/ 2-layer	4.6 → 2.4 + 0.5 Z-layer 4.9

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous		

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-2b-04 **Date:** 10/31/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.06141/ 38.06140 Long/Easting: -122.02515/-122.02514

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1237	1241
(A) Measured Water Depth	37.1	→
(B) Tide Height	+2.4	→
(C) Mudline Elevation (A–B=C)	33.9/ 34.7	33.9/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-33.9=3.1+0.5=3.6/ 2.8 w/ Z-layer	35+2-33.9=3.1+0.5=3.6/ →
Estimated Penetration	5.0	4.4
Description of Core Drive	Smooth (vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	4.7 → 2.8 w/ Z-layer	4.1 → 2.3 +0.5 Z-layer ✓ 3.8 → 2.3

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	bottom 6" (Z-layer) thicker clay than remainder	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-3-01 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.05908/ 38.05908 Long/Easting: -122.01493/ -122.01497

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	0850 0920	0930
(A) Measured Water Depth	37.0	→
(B) Tide Height	+2.1	→
(C) Mudline Elevation (A–B=C)	33.9/ 34.9	33.9/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-33.9=3.1+0.5=3.6/ 3.+2.6 w/ Z layer	35+2-33.9=3.1+0.5=3.6/ →
Estimated Penetration	5'	2.9
Description of Core Drive	smooth (w/ bioturbate)	→
Refusal Encountered?	N	→
Total Core Length Recovered	5' → 2.6 w/ Z layer	2.7 → 2.1 + 0.5 Z layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	homogenous	→

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. Wind swells causing higher water level

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-3-02 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.05898/ 38.05898 Long/Easting: -122.01407/-122.01407

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1004	1014
(A) Measured Water Depth	36.0	→
(B) Tide Height	1.3	→
(C) Mudline Elevation (A–B=C)	34.0/ 34.7	34.0/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.0=3.0+0.5=3.5/ 2.8 w/ 2 layer	35+2-34.0=3.0+0.5=3.5/ →
Estimated Penetration	3.7	2.5
Description of Core Drive	smooth (vibrocore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	3.5 → 2.8 w/2 layer	2.5 → 2.3 +0.5 z-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	striation - lt gray on top → black at bottom	→

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-3-03 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.05885/ 38.05884 Long/Easting: -122.01325/ -122.01325

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: (Sounder) ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1042	1052
(A) Measured Water Depth	35.0	→
(B) Tide Height	1.4	→
(C) Mudline Elevation (A–B=C)	33.2/ 33.6	~~33~~.2/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-33.2=3.8+0.5=4.3/ 3.8 w/ Z layer	35+2-33.2=3.8+0.5=4.3/ →
Estimated Penetration	~~4.2~~ 4.3	3.1
Description of Core Drive	smooth (Vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	4.2 → 3.8 w/ Z layer	3.9 (includes 0.5 Z-layer)

Core Characteristics

Sediment Type	(cobble, gravel, sand C M F, silt clay, organic matter)	→
Sediment Color	(gray, black, brown, brown surface, olivine)	→
Sediment Odor	(None, slight, mod, strong H_2S, petroleum, septic)	→
Any Layering Homogenous	homogenous	→

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [signature] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-3-04 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05874/ 38.05874 Long/Easting: -122.01238/ -122.01240

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1119	1124
(A) Measured Water Depth	34.0	→
(B) Tide Height	41.6	→
(C) Mudline Elevation (A–B=C)	35.0/ 32.4	~~35.0~~/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-35.0=2.0+0.5=2.5/ 5.1 w/ Z layer	35+2-35.0=2.0+0.5=2.5/ →
Estimated Penetration	4.8	~~5.8~~ 5.6
Description of Core Drive	Smooth (Vibracore)	→
Refusal Encountered?	N	→
Total Core Length Recovered	4.6	5.3 → 5.1 w/ Z layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous		

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [signature] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-4-01 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05735/ 38.05735 Long/Easting: -122.00468/ -122.00467

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: (Sounder) **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1700	1706
(A) Measured Water Depth	32.3 →	
(B) Tide Height	+4.9 →	
(C) Mudline Elevation (A–B=C)	32.0/ 32.4	32.0/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-32.0=5.0+0.5=5.5/ ~~5.0~~ 5.6 w/ Z layer →	35+2-32.0=5.0+0.5=5.5/
Estimated Penetration	5.6	0.4
Description of Core Drive	rough, hard clay layer →	
Refusal Encountered?	N →	
Total Core Length Recovered	4.6 ~~+0.5~~ +0.5 z-layer	6.2 → 5.6 w/ Z-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	top ~3.5ft soft, followed by 1ft olivine clay, followed by gravel/sand	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [signature] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-4-02 **Date:** 10/30/09

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05733/ 38.05733 Long/Easting: -122.00431/ -122.00431

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: Sounder **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1615	1625
(A) Measured Water Depth	37.6	→
(B) Tide Height	5.2	→
(C) Mudline Elevation (A–B=C)	30.6/ 32.4	30.6/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-30.6=6.4+0.5=6.9/ 4.6 w/ Z-layer	35+2-30.6=6.4+0.5=6.9/ →
Estimated Penetration	4.8	5.0
Description of Core Drive	rough (hardpan clay Z layer)	→
Refusal Encountered?	Y	→
Total Core Length Recovered	4.2 w/ Z layer	4.6 + 0.3 ft z-layer

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, (silt clay,) organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray,) black, brown, brown surface, (olivine)	gray, black, brown, brown surface, olivine
Sediment Odor	(None,) slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	Bottom 3/4' olivine hard clay, remainder homogenous gray	

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. Hardpan Z-layer encountered, causing a good deal of compaction. Estimated that dredge level was indeed reached but compaction caused a shorter overall core length.

Recorded by: JL, [illegible] (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-4-03 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:
Lat/Northing: 38.05722/ ~~38.05722~~ 38.05719 Long/Easting: -122.00330/ ~~-122.00329~~ -122.00337

Vertical Datum: MLLW MLW Other:

Depth Measurement: Sounder ~~Leadline~~

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1505	1511
(A) Measured Water Depth	37.2	→
(B) Tide Height	~~-5.2~~	→
(C) Mudline Elevation (A–B=C)	34.7/ 32.0	~~34~~.7/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.7=2.3+0.5=2.8/ ~~6.5~~ ~~5.0~~ 5.5 w/ 2 layer	→ 35+2-34.7=2.3+0.5=2.8/
Estimated Penetration	~~4.9~~ 4.9	6.2
Description of Core Drive	smooth (visible core)	→
Refusal Encountered?	N	→
Total Core Length Recovered	~~4.7, taken for volume~~ 4.7	5.9 → 5.5 w/ 2 layers included

Core Characteristics

Sediment Type	cobble, gravel, sand C M F, silt clay, organic matter	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	gray, black, brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	None, slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering Homogenous	bottom 1ft more gravel	→

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container. Moved locations due to inability to collect as area was too steep. some oil sheen.

Recorded by: (QA)

Pacific EcoRisk
Environmental Consulting and Testing

Pacific EcoRisk
2250 Cordelia Road
Fairfield, CA 94534
Phone: (707) 207-7760
Fax: (707) 207-7916

Sediment Core Collection Form

Station ID: DU-4-04 **Date:** 10/30/19

Project Name: USACE MOTCO **Project No.:** 30945

Coordinates:

Lat/Northing: 38.05709/38.05709 Long/Easting: -122.00237/-122.00238

Vertical Datum: **MLLW** MLW Other:

Depth Measurement: (Sounder) **Leadline**

Project Depth: -35 **Overdredge:** +2

	Attempt 1	Attempt 2
Time:	1427	1433
(A) Measured Water Depth	36.4	→
(B) Tide Height	4.3	→
(C) Mudline Elevation (A–B=C)	34.3/ 32.1	→4.3/
(D) Calculated Core Length (PD+OD-C=D+Z)	35+2-34.3=2.7+0.5=3.2/ 5.4 w/ 2-layer	35+2-34.3=2.7+0.5=3.2/ →
Estimated Penetration	5.7	5.1
Description of Core Drive	Smooth (w/ blades core)	→
Refusal Encountered?	N	→
Total Core Length Recovered	5.6→5.4 w/ 2 layers	~~4.6~~ 4.9 +0.5 2-layer

Core Characteristics

Sediment Type	cobble, (gravel), sand C M F, silt clay, (organic matter)	cobble, gravel, sand C M F, silt clay, organic matter
Sediment Color	(gray), (black), brown, brown surface, olivine	gray, black, brown, brown surface, olivine
Sediment Odor	(None), slight, mod, strong H_2S, petroleum, septic	None, slight, mod, strong H_2S, petroleum, septic
Any Layering (Homogenous)		

Comments: Z layer included in core length calculations. Z layer was removed from volume at collection time and separated into its own sample container.

Recorded by: [signature] (QA)

Pacific EcoRisk
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760 FAX (707) 207-7916

CHAIN-OF-CUSTODY RECORD

Results To:		Invoice To:	
Address:		Address:	
Phone:		Phone:	
Attn:		Attn:	
E-mail:		E-mail:	
Project Name:			
P.O.#/Ref:			

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Grab/ Comp	Container Number	Container Type	REQUESTED ANALYSIS
1	SF-9	11/1/19	1100	Sediment		3	large poly bag	
2	SF-10	11/1/19	1230	Sediment		3	1	
3								
4								
5								
6								
7								
8								
9								
10								

Samples Collected By:

Comments/Special Instruction:

RELINQUISHED BY:	RECEIVED BY:
[redacted]	[redacted]
Date: 11/1/19 Time: 1510	Date: 11/1/19 Time: 1510
RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:
Print:	Print:
Organization:	Organization:
Date: Time:	Date: Time:

*Example Matrix Codes: (EFF - Effluent) (FW = Freshwater); (SW = Saltwater); (WW = Wastewater); (STRMW = Stormwater); (SED = Sediment); or other

Appendix B

Eurofins Data Report for the Sediment Analyses

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-12498-1
Client Project/Site: USACE: MOTCO
Revision: 2

For:
Pacific EcoRisk Inc
2250 Cordelia Rd
Fairfield, California 94534

[redacted]

Authorized for release by:
12/6/2019 3:13:56 PM

Carla Hollowell, Project Manager I
(714)895-5494
carlahollowell@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits

GC Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

Geotechnical

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.55	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-18	ND		0.28	0.089	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-28	ND		0.28	0.096	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-31	ND		0.28	0.070	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-33	ND		0.28	0.053	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-44	ND		0.28	0.21	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-49	ND		0.28	0.068	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-52	ND		0.28	0.26	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-56	ND		0.28	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-60	ND		0.28	0.072	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-66	ND		0.28	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-70	ND		0.28	0.098	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-74	ND		0.28	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-87	ND		0.28	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-95	ND		0.28	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-97	ND		0.28	0.064	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-99	ND		0.28	0.065	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-101	ND		0.28	0.061	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-105	ND		0.28	0.074	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-110	ND		0.28	0.047	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-118	ND		0.28	0.048	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-128	ND		0.28	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-132/153	ND		0.55	0.22	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-138/158	ND		0.55	0.48	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-141	ND		0.28	0.067	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-149	ND		0.28	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-151	ND		0.28	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-156	ND		0.28	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-170	ND		0.28	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-174	ND		0.28	0.058	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-177	ND		0.28	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-180	ND		0.28	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-183	ND		0.28	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-187	ND		0.28	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-194	ND		0.28	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-195	ND		0.28	0.083	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-201	ND		0.28	0.047	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1
PCB-203	ND		0.28	0.079	ug/Kg	☼	11/13/19 22:07	11/20/19 20:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*53*		*14 - 146*	*11/13/19 22:07*	*11/20/19 20:40*	*1*
p-Terphenyl-d14	*85*		*34 - 148*	*11/13/19 22:07*	*11/20/19 20:40*	*1*

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.54	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-18	ND		0.27	0.087	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-28	ND		0.27	0.093	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-31	ND		0.27	0.068	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-33	ND		0.27	0.051	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-44	ND		0.27	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-49	ND		0.27	0.067	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-52	ND		0.27	0.26	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-56	ND		0.27	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-60	ND		0.27	0.071	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-66	ND		0.27	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-70	ND		0.27	0.096	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-74	ND		0.27	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-87	ND		0.27	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-95	ND		0.27	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-97	ND		0.27	0.062	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-99	ND		0.27	0.064	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-101	ND		0.27	0.060	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-105	ND		0.27	0.072	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-110	ND		0.27	0.046	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-118	ND		0.27	0.047	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-128	ND		0.27	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-132/153	ND		0.54	0.22	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-138/158	ND		0.54	0.47	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-141	ND		0.27	0.066	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-149	**0.55**		0.27	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-151	ND		0.27	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-156	ND		0.27	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-170	ND		0.27	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-174	ND		0.27	0.056	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-177	ND		0.27	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-180	ND		0.27	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-183	ND		0.27	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-187	ND		0.27	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-194	ND		0.27	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-195	ND		0.27	0.081	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-201	ND		0.27	0.046	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1
PCB-203	ND		0.27	0.078	ug/Kg	☼	11/13/19 22:07	11/20/19 21:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*54*		*14 - 146*	*11/13/19 22:07*	*11/20/19 21:04*	*1*
p-Terphenyl-d14	*86*		*34 - 148*	*11/13/19 22:07*	*11/20/19 21:04*	*1*

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.61	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-18	ND		0.31	0.099	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-28	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-31	ND		0.31	0.078	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-33	ND		0.31	0.058	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-44	ND		0.31	0.23	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-49	**0.36**		0.31	0.076	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-52	**0.51**		0.31	0.29	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-56	ND		0.31	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-60	ND		0.31	0.080	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-66	ND		0.31	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-70	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-74	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-87	ND		0.31	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-95	ND		0.31	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-97	ND		0.31	0.071	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-99	**0.59**		0.31	0.073	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-101	**0.76**		0.31	0.068	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-105	ND		0.31	0.082	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-110	ND		0.31	0.052	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-118	ND		0.31	0.053	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-128	ND		0.31	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-132/153	ND		0.61	0.25	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-138/158	ND		0.61	0.54	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-141	ND		0.31	0.075	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-149	**0.65**		0.31	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-151	ND		0.31	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-156	ND		0.31	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-170	ND		0.31	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-174	ND		0.31	0.064	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-177	ND		0.31	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-180	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-183	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-187	ND		0.31	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-194	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-195	ND		0.31	0.092	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-201	ND		0.31	0.052	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1
PCB-203	ND		0.31	0.088	ug/Kg	☼	11/13/19 22:07	11/20/19 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*53*		*14 - 146*	*11/13/19 22:07*	*11/20/19 21:28*	*1*
p-Terphenyl-d14	*82*		*34 - 148*	*11/13/19 22:07*	*11/20/19 21:28*	*1*

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.66	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-18	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-28	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-31	ND		0.33	0.083	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-33	ND		0.33	0.063	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-44	ND		0.33	0.25	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-49	**1.7**		0.33	0.081	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-52	**2.4**		0.33	0.31	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-56	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-60	ND		0.33	0.086	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-66	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-70	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-74	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-87	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-95	**2.6**		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-97	ND		0.33	0.076	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-99	**2.0**		0.33	0.078	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-101	**2.4**		0.33	0.073	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-105	ND		0.33	0.088	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-110	**0.88**		0.33	0.055	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-118	ND		0.33	0.057	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-128	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-132/153	**2.3**		0.66	0.27	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-138/158	ND		0.66	0.58	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-141	ND		0.33	0.080	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-149	**3.4**		0.33	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-151	ND		0.33	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-156	ND		0.33	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-170	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-174	ND		0.33	0.069	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-177	ND		0.33	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-180	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-183	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-187	ND		0.33	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-194	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-195	ND		0.33	0.098	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-201	ND		0.33	0.056	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1
PCB-203	ND		0.33	0.094	ug/Kg	☼	11/13/19 22:07	11/20/19 21:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*56*		*14 - 146*	*11/13/19 22:07*	*11/20/19 21:53*	*1*
p-Terphenyl-d14	*88*		*34 - 148*	*11/13/19 22:07*	*11/20/19 21:53*	*1*

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.54	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-18	ND		0.27	0.088	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-28	ND		0.27	0.094	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-31	ND		0.27	0.069	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-33	ND		0.27	0.052	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-44	ND		0.27	0.21	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-49	**1.2**		0.27	0.067	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-52	**0.95**		0.27	0.26	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-56	ND		0.27	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-60	ND		0.27	0.071	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-66	ND		0.27	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-70	ND		0.27	0.097	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-74	ND		0.27	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-87	ND		0.27	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-95	**1.5**		0.27	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-97	ND		0.27	0.063	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-99	**0.37**		0.27	0.065	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-101	**0.97**		0.27	0.060	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-105	ND		0.27	0.073	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-110	ND		0.27	0.046	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-118	ND		0.27	0.047	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-128	ND		0.27	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-132/153	ND		0.54	0.22	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-138/158	ND		0.54	0.48	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-141	ND		0.27	0.067	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-149	**0.75**		0.27	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-151	ND		0.27	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-156	ND		0.27	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-170	ND		0.27	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-174	ND		0.27	0.057	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-177	ND		0.27	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-180	ND		0.27	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-183	ND		0.27	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-187	ND		0.27	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-194	ND		0.27	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-195	ND		0.27	0.082	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-201	ND		0.27	0.046	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1
PCB-203	ND		0.27	0.079	ug/Kg	☼	11/13/19 22:07	11/20/19 22:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*62*		*14 - 146*	*11/13/19 22:07*	*11/20/19 22:18*	*1*
p-Terphenyl-d14	*93*		*34 - 148*	*11/13/19 22:07*	*11/20/19 22:18*	*1*

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.60	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-18	ND		0.30	0.097	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-28	ND		0.30	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-31	ND		0.30	0.076	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-33	ND		0.30	0.057	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-44	ND		0.30	0.23	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-49	ND		0.30	0.074	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-52	ND		0.30	0.28	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-56	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-60	ND		0.30	0.078	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-66	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-70	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-74	ND		0.30	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-87	ND		0.30	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-95	ND		0.30	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-97	ND		0.30	0.069	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-99	ND		0.30	0.071	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-101	ND		0.30	0.066	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-105	ND		0.30	0.080	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-110	ND		0.30	0.051	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-118	ND		0.30	0.052	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-128	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-132/153	ND		0.60	0.24	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-138/158	ND		0.60	0.53	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-141	ND		0.30	0.073	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-149	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-151	ND		0.30	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-156	ND		0.30	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-170	ND		0.30	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-174	ND		0.30	0.063	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-177	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-180	ND		0.30	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-183	ND		0.30	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-187	ND		0.30	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-194	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-195	ND		0.30	0.090	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-201	ND		0.30	0.051	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1
PCB-203	ND		0.30	0.086	ug/Kg	☼	11/13/19 22:07	11/20/19 22:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*64*		*14 - 146*	*11/13/19 22:07*	*11/20/19 22:41*	*1*
p-Terphenyl-d14	*89*		*34 - 148*	*11/13/19 22:07*	*11/20/19 22:41*	*1*

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.71	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-18	ND		0.36	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-28	ND		0.36	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-31	ND		0.36	0.090	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-33	ND		0.36	0.068	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-44	ND		0.36	0.27	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-49	ND		0.36	0.088	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-52	ND		0.36	0.34	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-56	ND		0.36	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-60	ND		0.36	0.093	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-66	ND		0.36	0.22	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-70	ND		0.36	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-74	ND		0.36	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-87	ND		0.36	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-95	ND		0.36	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-97	ND		0.36	0.082	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-99	ND		0.36	0.084	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-101	ND		0.36	0.079	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-105	ND		0.36	0.095	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-110	ND		0.36	0.060	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-118	ND		0.36	0.061	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-128	ND		0.36	0.21	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-132/153	ND		0.71	0.29	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-138/158	ND		0.71	0.63	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-141	ND		0.36	0.087	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-149	ND		0.36	0.21	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-151	ND		0.36	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-156	ND		0.36	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-170	ND		0.36	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-174	ND		0.36	0.075	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-177	ND		0.36	0.21	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-180	ND		0.36	0.16	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-183	ND		0.36	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-187	ND		0.36	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-194	ND		0.36	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-195	ND		0.36	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-201	ND		0.36	0.060	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1
PCB-203	ND		0.36	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 23:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*92*		*14 - 146*	*11/13/19 22:07*	*11/20/19 23:06*	*1*
p-Terphenyl-d14	*133*		*34 - 148*	*11/13/19 22:07*	*11/20/19 23:06*	*1*

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.65	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-18	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-28	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-31	ND		0.33	0.083	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-33	ND		0.33	0.062	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-44	ND		0.33	0.25	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-49	ND		0.33	0.081	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-52	ND		0.33	0.31	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-56	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-60	ND		0.33	0.085	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-66	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-70	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-74	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-87	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-95	ND		0.33	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-97	ND		0.33	0.075	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-99	ND		0.33	0.077	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-101	ND		0.33	0.072	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-105	ND		0.33	0.087	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-110	ND		0.33	0.055	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-118	ND		0.33	0.056	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-128	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-132/153	ND		0.65	0.26	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-138/158	ND		0.65	0.57	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-141	ND		0.33	0.080	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-149	ND		0.33	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-151	ND		0.33	0.14	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-156	ND		0.33	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-170	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-174	ND		0.33	0.068	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-177	ND		0.33	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-180	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-183	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-187	ND		0.33	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-194	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-195	ND		0.33	0.098	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-201	ND		0.33	0.055	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1
PCB-203	ND		0.33	0.094	ug/Kg	☼	11/13/19 22:07	11/20/19 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*86*		*14 - 146*	*11/13/19 22:07*	*11/20/19 23:30*	*1*
p-Terphenyl-d14	*141*		*34 - 148*	*11/13/19 22:07*	*11/20/19 23:30*	*1*

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.66	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-18	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-28	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-31	ND		0.33	0.084	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-33	ND		0.33	0.063	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-44	ND		0.33	0.25	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-49	ND		0.33	0.082	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-52	ND		0.33	0.32	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-56	ND		0.33	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-60	ND		0.33	0.087	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-66	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-70	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-74	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-87	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-95	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-97	ND		0.33	0.077	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-99	ND		0.33	0.079	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-101	ND		0.33	0.073	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-105	ND		0.33	0.089	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-110	ND		0.33	0.056	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-118	ND		0.33	0.057	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-128	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-132/153	ND		0.66	0.27	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-138/158	ND		0.66	0.58	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-141	ND		0.33	0.081	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-149	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-151	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-156	ND		0.33	0.13	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-170	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-174	ND		0.33	0.070	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-177	ND		0.33	0.19	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-180	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-183	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-187	ND		0.33	0.17	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-194	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-195	ND		0.33	0.10	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-201	ND		0.33	0.056	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1
PCB-203	ND		0.33	0.096	ug/Kg	☼	11/13/19 22:07	11/20/19 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*89*		*14 - 146*	*11/13/19 22:07*	*11/20/19 23:54*	*1*
p-Terphenyl-d14	*141*		*34 - 148*	*11/13/19 22:07*	*11/20/19 23:54*	*1*

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.63	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-18	ND		0.32	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-28	ND		0.32	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-31	ND		0.32	0.080	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-33	ND		0.32	0.060	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-44	ND		0.32	0.24	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-49	ND		0.32	0.078	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-52	ND		0.32	0.30	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-56	ND		0.32	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-60	ND		0.32	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-66	ND		0.32	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-70	ND		0.32	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-74	ND		0.32	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-87	ND		0.32	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-95	ND		0.32	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-97	ND		0.32	0.073	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-99	ND		0.32	0.075	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-101	ND		0.32	0.070	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-105	ND		0.32	0.084	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-110	ND		0.32	0.053	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-118	ND		0.32	0.055	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-128	ND		0.32	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-132/153	ND		0.63	0.26	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-138/158	ND		0.63	0.56	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-141	ND		0.32	0.077	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-149	ND		0.32	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-151	ND		0.32	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-156	ND		0.32	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-170	ND		0.32	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-174	ND		0.32	0.066	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-177	ND		0.32	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-180	ND		0.32	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-183	ND		0.32	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-187	ND		0.32	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-194	ND		0.32	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-195	ND		0.32	0.095	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-201	ND		0.32	0.054	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1
PCB-203	ND		0.32	0.091	ug/Kg	☼	11/13/19 22:07	11/21/19 00:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*14 - 146*	*11/13/19 22:07*	*11/21/19 00:18*	*1*
p-Terphenyl-d14	*135*		*34 - 148*	*11/13/19 22:07*	*11/21/19 00:18*	*1*

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.68	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-18	ND		0.34	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-28	ND		0.34	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-31	ND		0.34	0.086	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-33	ND		0.34	0.065	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-44	ND		0.34	0.26	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-49	ND		0.34	0.084	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-52	ND		0.34	0.32	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-56	ND		0.34	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-60	ND		0.34	0.089	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-66	ND		0.34	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-70	ND		0.34	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-74	ND		0.34	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-87	ND		0.34	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-95	ND		0.34	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-97	ND		0.34	0.078	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-99	ND		0.34	0.080	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-101	ND		0.34	0.075	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-105	ND		0.34	0.091	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-110	ND		0.34	0.057	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-118	ND		0.34	0.059	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-128	ND		0.34	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-132/153	ND		0.68	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-138/158	ND		0.68	0.60	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-141	ND		0.34	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-149	ND		0.34	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-151	ND		0.34	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-156	ND		0.34	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-170	ND		0.34	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-174	ND		0.34	0.071	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-177	ND		0.34	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-180	ND		0.34	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-183	ND		0.34	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-187	ND		0.34	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-194	ND		0.34	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-195	ND		0.34	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-201	ND		0.34	0.058	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1
PCB-203	ND		0.34	0.098	ug/Kg	☼	11/13/19 22:07	11/21/19 00:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*88*		*14 - 146*	*11/13/19 22:07*	*11/21/19 00:42*	*1*
p-Terphenyl-d14	*140*		*34 - 148*	*11/13/19 22:07*	*11/21/19 00:42*	*1*

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.70	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-18	ND		0.35	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-28	ND		0.35	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-31	ND		0.35	0.089	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-33	ND		0.35	0.067	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-44	ND		0.35	0.27	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-49	ND		0.35	0.087	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-52	ND		0.35	0.33	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-56	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-60	ND		0.35	0.092	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-66	ND		0.35	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-70	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-74	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-87	ND		0.35	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-95	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-97	ND		0.35	0.081	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-99	ND		0.35	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-101	ND		0.35	0.077	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-105	ND		0.35	0.093	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-110	ND		0.35	0.059	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-118	ND		0.35	0.060	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-128	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-132/153	ND		0.70	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-138/158	ND		0.70	0.62	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-141	ND		0.35	0.086	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-149	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-151	ND		0.35	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-156	ND		0.35	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-170	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-174	ND		0.35	0.073	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-177	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-180	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-183	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-187	ND		0.35	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-194	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-195	ND		0.35	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-201	ND		0.35	0.059	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1
PCB-203	ND		0.35	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 01:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*79*		*14 - 146*	*11/13/19 22:07*	*11/21/19 01:06*	*1*
p-Terphenyl-d14	*134*		*34 - 148*	*11/13/19 22:07*	*11/21/19 01:06*	*1*

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.70	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-18	ND		0.35	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-28	ND		0.35	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-31	ND		0.35	0.088	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-33	ND		0.35	0.067	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-44	ND		0.35	0.27	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-49	ND		0.35	0.086	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-52	ND		0.35	0.33	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-56	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-60	ND		0.35	0.091	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-66	ND		0.35	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-70	ND		0.35	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-74	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-87	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-95	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-97	ND		0.35	0.081	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-99	ND		0.35	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-101	ND		0.35	0.077	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-105	ND		0.35	0.093	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-110	ND		0.35	0.059	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-118	ND		0.35	0.060	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-128	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-132/153	ND		0.70	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-138/158	ND		0.70	0.61	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-141	ND		0.35	0.085	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-149	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-151	ND		0.35	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-156	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-170	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-174	ND		0.35	0.073	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-177	ND		0.35	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-180	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-183	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-187	ND		0.35	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-194	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-195	ND		0.35	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-201	ND		0.35	0.059	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1
PCB-203	ND		0.35	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 01:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*14 - 146*	*11/13/19 22:07*	*11/21/19 01:31*	*1*
p-Terphenyl-d14	*136*		*34 - 148*	*11/13/19 22:07*	*11/21/19 01:31*	*1*

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.76	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-18	ND		0.38	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-28	ND		0.38	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-31	ND		0.38	0.096	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-33	ND		0.38	0.072	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-44	ND		0.38	0.29	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-49	ND		0.38	0.094	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-52	ND		0.38	0.36	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-56	ND		0.38	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-60	ND		0.38	0.099	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-66	ND		0.38	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-70	ND		0.38	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-74	ND		0.38	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-87	ND		0.38	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-95	ND		0.38	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-97	ND		0.38	0.087	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-99	ND		0.38	0.090	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-101	ND		0.38	0.084	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-105	ND		0.38	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-110	ND		0.38	0.064	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-118	ND		0.38	0.065	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-128	ND		0.38	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-132/153	ND		0.76	0.31	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-138/158	ND		0.76	0.67	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-141	ND		0.38	0.093	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-149	ND		0.38	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-151	ND		0.38	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-156	ND		0.38	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-170	ND		0.38	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-174	ND		0.38	0.079	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-177	ND		0.38	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-180	ND		0.38	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-183	ND		0.38	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-187	ND		0.38	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-194	ND		0.38	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-195	ND		0.38	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-201	ND		0.38	0.064	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1
PCB-203	ND		0.38	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 01:56	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	86		14 - 146	11/13/19 22:07	11/21/19 01:56	1
p-Terphenyl-d14	135		34 - 148	11/13/19 22:07	11/21/19 01:56	1

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.79	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-18	ND		0.39	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-28	ND		0.39	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-31	ND		0.39	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-33	ND		0.39	0.075	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-44	ND		0.39	0.30	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-49	ND		0.39	0.098	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-52	ND		0.39	0.37	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-56	ND		0.39	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-60	ND		0.39	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-66	ND		0.39	0.24	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-70	ND		0.39	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-74	ND		0.39	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-87	ND		0.39	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-95	ND		0.39	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-97	ND		0.39	0.091	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-99	ND		0.39	0.093	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-101	ND		0.39	0.087	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-105	ND		0.39	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-110	ND		0.39	0.067	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-118	ND		0.39	0.068	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-128	ND		0.39	0.24	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-132/153	ND		0.79	0.32	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-138/158	ND		0.79	0.69	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-141	ND		0.39	0.096	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-149	ND		0.39	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-151	ND		0.39	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-156	ND		0.39	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-170	ND		0.39	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-174	ND		0.39	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-177	ND		0.39	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-180	ND		0.39	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-183	ND		0.39	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-187	ND		0.39	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-194	ND		0.39	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-195	ND		0.39	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-201	ND		0.39	0.067	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1
PCB-203	ND		0.39	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 02:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	99		14 - 146	11/13/19 22:07	11/21/19 02:21	1
p-Terphenyl-d14	150	X	34 - 148	11/13/19 22:07	11/21/19 02:21	1

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.75	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-18	ND		0.37	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-28	ND		0.37	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-31	ND		0.37	0.095	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-33	ND		0.37	0.072	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-44	ND		0.37	0.29	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-49	ND		0.37	0.093	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-52	ND		0.37	0.36	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-56	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-60	ND		0.37	0.098	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-66	ND		0.37	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-70	ND		0.37	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-74	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-87	ND		0.37	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-95	ND		0.37	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-97	ND		0.37	0.087	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-99	ND		0.37	0.089	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-101	ND		0.37	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-105	ND		0.37	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-110	ND		0.37	0.063	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-118	ND		0.37	0.065	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-128	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-132/153	ND		0.75	0.30	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-138/158	ND		0.75	0.66	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-141	ND		0.37	0.092	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-149	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-151	ND		0.37	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-156	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-170	ND		0.37	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-174	ND		0.37	0.079	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-177	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-180	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-183	ND		0.37	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-187	ND		0.37	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-194	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-195	ND		0.37	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-201	ND		0.37	0.064	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1
PCB-203	ND		0.37	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 02:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*14 - 146*	*11/13/19 22:07*	*11/21/19 02:44*	*1*
p-Terphenyl-d14	*138*		*34 - 148*	*11/13/19 22:07*	*11/21/19 02:44*	*1*

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.74	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-18	ND		0.37	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-28	ND		0.37	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-31	ND		0.37	0.094	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-33	ND		0.37	0.071	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-44	ND		0.37	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-49	ND		0.37	0.092	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-52	ND		0.37	0.35	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-56	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-60	ND		0.37	0.097	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-66	ND		0.37	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-70	ND		0.37	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-74	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-87	ND		0.37	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-95	ND		0.37	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-97	ND		0.37	0.085	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-99	ND		0.37	0.088	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-101	ND		0.37	0.082	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-105	ND		0.37	0.099	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-110	ND		0.37	0.063	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-118	ND		0.37	0.064	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-128	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-132/153	ND		0.74	0.30	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-138/158	ND		0.74	0.65	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-141	ND		0.37	0.091	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-149	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-151	ND		0.37	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-156	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-170	ND		0.37	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-174	ND		0.37	0.078	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-177	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-180	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-183	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-187	ND		0.37	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-194	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-195	ND		0.37	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-201	ND		0.37	0.063	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1
PCB-203	ND		0.37	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*85*		*14 - 146*	*11/13/19 22:07*	*11/21/19 03:08*	*1*
p-Terphenyl-d14	*150*	*X*	*34 - 148*	*11/13/19 22:07*	*11/21/19 03:08*	*1*

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.74	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-18	ND		0.37	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-28	ND		0.37	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-31	ND		0.37	0.094	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-33	ND		0.37	0.071	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-44	ND		0.37	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-49	ND		0.37	0.092	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-52	ND		0.37	0.35	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-56	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-60	ND		0.37	0.097	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-66	ND		0.37	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-70	ND		0.37	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-74	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-87	ND		0.37	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-95	ND		0.37	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-97	ND		0.37	0.086	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-99	ND		0.37	0.088	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-101	ND		0.37	0.082	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-105	ND		0.37	0.099	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-110	ND		0.37	0.063	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-118	ND		0.37	0.064	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-128	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-132/153	ND		0.74	0.30	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-138/158	ND		0.74	0.65	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-141	ND		0.37	0.091	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-149	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-151	ND		0.37	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-156	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-170	ND		0.37	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-174	ND		0.37	0.078	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-177	ND		0.37	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-180	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-183	ND		0.37	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-187	ND		0.37	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-194	ND		0.37	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-195	ND		0.37	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-201	ND		0.37	0.063	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1
PCB-203	ND		0.37	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*105*		*14 - 146*	*11/13/19 22:07*	*11/21/19 03:32*	*1*
p-Terphenyl-d14	*145*		*34 - 148*	*11/13/19 22:07*	*11/21/19 03:32*	*1*

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.59	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-18	ND		0.30	0.096	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-28	ND		0.30	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-31	ND		0.30	0.075	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-33	ND		0.30	0.057	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-44	ND		0.30	0.23	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-49	**0.59**		0.30	0.074	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-52	**0.58**		0.30	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-56	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-60	ND		0.30	0.078	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-66	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-70	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-74	ND		0.30	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-87	ND		0.30	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-95	ND		0.30	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-97	ND		0.30	0.069	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-99	ND		0.30	0.070	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-101	ND		0.30	0.066	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-105	ND		0.30	0.079	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-110	ND		0.30	0.050	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-118	ND		0.30	0.051	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-128	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-132/153	ND		0.59	0.24	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-138/158	ND		0.59	0.52	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-141	ND		0.30	0.073	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-149	ND		0.30	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-151	ND		0.30	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-156	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-170	ND		0.30	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-174	ND		0.30	0.062	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-177	ND		0.30	0.17	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-180	ND		0.30	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-183	ND		0.30	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-187	ND		0.30	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-194	ND		0.30	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-195	ND		0.30	0.089	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-201	ND		0.30	0.050	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1
PCB-203	ND		0.30	0.086	ug/Kg	☼	11/13/19 22:07	11/21/19 03:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*14 - 146*	*11/13/19 22:07*	*11/21/19 03:57*	*1*
p-Terphenyl-d14	*130*		*34 - 148*	*11/13/19 22:07*	*11/21/19 03:57*	*1*

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.70	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-18	ND		0.35	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-28	ND		0.35	0.12	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-31	ND		0.35	0.089	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-33	ND		0.35	0.067	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-44	ND		0.35	0.27	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-49	ND		0.35	0.087	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-52	ND		0.35	0.33	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-56	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-60	ND		0.35	0.092	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-66	ND		0.35	0.22	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-70	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-74	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-87	ND		0.35	0.20	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-95	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-97	ND		0.35	0.081	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-99	ND		0.35	0.083	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-101	ND		0.35	0.078	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-105	ND		0.35	0.094	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-110	ND		0.35	0.059	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-118	ND		0.35	0.061	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-128	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-132/153	ND		0.70	0.28	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-138/158	ND		0.70	0.62	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-141	ND		0.35	0.086	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-149	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-151	ND		0.35	0.15	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-156	ND		0.35	0.14	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-170	ND		0.35	0.19	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-174	ND		0.35	0.073	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-177	ND		0.35	0.21	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-180	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-183	ND		0.35	0.16	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-187	ND		0.35	0.18	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-194	ND		0.35	0.13	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-195	ND		0.35	0.11	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-201	ND		0.35	0.060	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1
PCB-203	ND		0.35	0.10	ug/Kg	☼	11/13/19 22:07	11/21/19 04:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*84*		*14 - 146*	*11/13/19 22:07*	*11/21/19 04:22*	*1*
p-Terphenyl-d14	*137*		*34 - 148*	*11/13/19 22:07*	*11/21/19 04:22*	*1*

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.80	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-18	ND		0.40	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-28	ND		0.40	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-31	ND		0.40	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-33	ND		0.40	0.076	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-44	ND		0.40	0.30	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-49	**0.68**		0.40	0.099	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-52	**1.1**		0.40	0.38	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-56	ND		0.40	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-60	ND		0.40	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-66	ND		0.40	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-70	ND		0.40	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-74	ND		0.40	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-87	ND		0.40	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-95	ND		0.40	0.21	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-97	ND		0.40	0.092	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-99	ND		0.40	0.095	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-101	ND		0.40	0.088	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-105	ND		0.40	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-110	ND		0.40	0.068	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-118	ND		0.40	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-128	ND		0.40	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-132/153	ND		0.80	0.32	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-138/158	ND		0.80	0.70	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-141	ND		0.40	0.098	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-149	ND		0.40	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-151	ND		0.40	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-156	ND		0.40	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-170	ND		0.40	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-174	ND		0.40	0.084	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-177	ND		0.40	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-180	ND		0.40	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-183	ND		0.40	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-187	ND		0.40	0.20	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-194	ND		0.40	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-195	ND		0.40	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-201	ND		0.40	0.068	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1
PCB-203	ND		0.40	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*90*		*14 - 146*	*11/13/19 22:08*	*11/21/19 18:00*	*1*
p-Terphenyl-d14	*125*		*34 - 148*	*11/13/19 22:08*	*11/21/19 18:00*	*1*

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.84	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-18	ND		0.42	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-28	ND		0.42	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-31	ND		0.42	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-33	ND		0.42	0.080	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-44	ND		0.42	0.32	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-49	ND		0.42	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-52	ND		0.42	0.40	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-56	ND		0.42	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-60	ND		0.42	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-66	ND		0.42	0.26	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-70	ND		0.42	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-74	ND		0.42	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-87	ND		0.42	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-95	ND		0.42	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-97	ND		0.42	0.097	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-99	ND		0.42	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-101	ND		0.42	0.093	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-105	ND		0.42	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-110	ND		0.42	0.071	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-118	ND		0.42	0.073	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-128	ND		0.42	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-132/153	ND		0.84	0.34	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-138/158	ND		0.84	0.74	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-141	ND		0.42	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-149	ND		0.42	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-151	ND		0.42	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-156	ND		0.42	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-170	ND		0.42	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-174	ND		0.42	0.088	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-177	ND		0.42	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-180	ND		0.42	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-183	ND		0.42	0.20	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-187	ND		0.42	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-194	ND		0.42	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-195	ND		0.42	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-201	ND		0.42	0.071	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1
PCB-203	ND		0.42	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*84*		*14 - 146*	*11/13/19 22:08*	*11/21/19 18:24*	*1*
p-Terphenyl-d14	*112*		*34 - 148*	*11/13/19 22:08*	*11/21/19 18:24*	*1*

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.73	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-18	ND		0.36	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-28	ND		0.36	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-31	ND		0.36	0.092	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-33	ND		0.36	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-44	ND		0.36	0.28	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-49	ND		0.36	0.090	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-52	ND		0.36	0.34	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-56	ND		0.36	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-60	ND		0.36	0.095	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-66	ND		0.36	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-70	ND		0.36	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-74	ND		0.36	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-87	ND		0.36	0.20	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-95	ND		0.36	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-97	ND		0.36	0.084	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-99	ND		0.36	0.086	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-101	ND		0.36	0.080	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-105	ND		0.36	0.097	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-110	ND		0.36	0.061	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-118	ND		0.36	0.063	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-128	ND		0.36	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-132/153	ND		0.73	0.29	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-138/158	ND		0.73	0.64	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-141	ND		0.36	0.089	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-149	ND		0.36	0.21	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-151	ND		0.36	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-156	ND		0.36	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-170	ND		0.36	0.20	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-174	ND		0.36	0.076	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-177	ND		0.36	0.21	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-180	ND		0.36	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-183	ND		0.36	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-187	ND		0.36	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-194	ND		0.36	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-195	ND		0.36	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-201	ND		0.36	0.062	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1
PCB-203	ND		0.36	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*91*		*14 - 146*	*11/13/19 22:08*	*11/21/19 18:48*	*1*
p-Terphenyl-d14	*127*		*34 - 148*	*11/13/19 22:08*	*11/21/19 18:48*	*1*

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.69	0.13	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-18	ND		0.35	0.11	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-28	ND		0.35	0.12	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-31	ND		0.35	0.088	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-33	ND		0.35	0.066	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-44	ND		0.35	0.26	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-49	ND		0.35	0.086	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-52	ND		0.35	0.33	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-56	ND		0.35	0.13	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-60	ND		0.35	0.091	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-66	ND		0.35	0.21	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-70	ND		0.35	0.12	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-74	ND		0.35	0.16	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-87	ND		0.35	0.19	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-95	ND		0.35	0.19	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-97	ND		0.35	0.080	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-99	ND		0.35	0.082	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-101	ND		0.35	0.077	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-105	ND		0.35	0.093	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-110	ND		0.35	0.059	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-118	ND		0.35	0.060	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-128	ND		0.35	0.21	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-132/153	ND		0.69	0.28	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-138/158	ND		0.69	0.61	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-141	ND		0.35	0.085	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-149	ND		0.35	0.20	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-151	ND		0.35	0.15	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-156	ND		0.35	0.13	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-170	ND		0.35	0.19	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-174	ND		0.35	0.073	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-177	ND		0.35	0.20	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-180	ND		0.35	0.16	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-183	ND		0.35	0.16	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-187	ND		0.35	0.18	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-194	ND		0.35	0.13	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-195	ND		0.35	0.10	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-201	ND		0.35	0.059	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1
PCB-203	ND		0.35	0.10	ug/Kg	☼	11/20/19 13:48	11/21/19 15:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*14 - 146*	*11/20/19 13:48*	*11/21/19 15:08*	*1*
p-Terphenyl-d14	*95*		*34 - 148*	*11/20/19 13:48*	*11/21/19 15:08*	*1*

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.56	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-18	ND		0.28	0.090	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-28	ND		0.28	0.097	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-31	ND		0.28	0.071	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-33	ND		0.28	0.053	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-44	ND		0.28	0.21	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-49	ND		0.28	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-52	ND		0.28	0.27	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-56	ND		0.28	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-60	ND		0.28	0.073	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-66	ND		0.28	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-70	ND		0.28	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-74	ND		0.28	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-87	ND		0.28	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-95	ND		0.28	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-97	ND		0.28	0.064	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-99	ND		0.28	0.066	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-101	ND		0.28	0.062	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-105	ND		0.28	0.074	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-110	ND		0.28	0.047	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-118	ND		0.28	0.048	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-128	ND		0.28	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-132/153	ND		0.56	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-138/158	ND		0.56	0.49	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-141	ND		0.28	0.068	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-149	ND		0.28	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-151	ND		0.28	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-156	ND		0.28	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-170	ND		0.28	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-174	ND		0.28	0.058	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-177	ND		0.28	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-180	ND		0.28	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-183	ND		0.28	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-187	ND		0.28	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-194	ND		0.28	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-195	ND		0.28	0.084	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-201	ND		0.28	0.047	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1
PCB-203	ND		0.28	0.080	ug/Kg	☼	11/13/19 22:08	11/21/19 19:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*82*		*14 - 146*	*11/13/19 22:08*	*11/21/19 19:14*	*1*
p-Terphenyl-d14	*127*		*34 - 148*	*11/13/19 22:08*	*11/21/19 19:14*	*1*

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.66	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-18	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-28	ND		0.33	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-31	ND		0.33	0.083	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-33	ND		0.33	0.063	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-44	ND		0.33	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-49	ND		0.33	0.081	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-52	ND		0.33	0.31	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-56	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-60	ND		0.33	0.086	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-66	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-70	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-74	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-87	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-95	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-97	ND		0.33	0.076	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-99	ND		0.33	0.078	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-101	ND		0.33	0.073	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-105	ND		0.33	0.088	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-110	ND		0.33	0.056	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-118	ND		0.33	0.057	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-128	ND		0.33	0.20	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-132/153	ND		0.66	0.27	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-138/158	ND		0.66	0.58	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-141	ND		0.33	0.080	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-149	ND		0.33	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-151	ND		0.33	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-156	ND		0.33	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-170	ND		0.33	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-174	ND		0.33	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-177	ND		0.33	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-180	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-183	ND		0.33	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-187	ND		0.33	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-194	ND		0.33	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-195	ND		0.33	0.099	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-201	ND		0.33	0.056	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1
PCB-203	ND		0.33	0.095	ug/Kg	☼	11/13/19 22:08	11/21/19 19:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*98*		*14 - 146*	*11/13/19 22:08*	*11/21/19 19:39*	*1*
p-Terphenyl-d14	*139*		*34 - 148*	*11/13/19 22:08*	*11/21/19 19:39*	*1*

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.81	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-18	ND		0.41	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-28	ND		0.41	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-31	ND		0.41	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-33	ND		0.41	0.078	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-44	ND		0.41	0.31	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-49	ND		0.41	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-52	ND		0.41	0.39	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-56	ND		0.41	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-60	ND		0.41	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-66	ND		0.41	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-70	ND		0.41	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-74	ND		0.41	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-87	ND		0.41	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-95	ND		0.41	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-97	ND		0.41	0.094	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-99	**0.60**		0.41	0.096	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-101	**0.94**		0.41	0.090	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-105	ND		0.41	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-110	**0.72**		0.41	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-118	ND		0.41	0.070	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-128	ND		0.41	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-132/153	**2.1**		0.81	0.33	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-138/158	ND		0.81	0.71	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-141	ND		0.41	0.099	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-149	**1.9**		0.41	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-151	ND		0.41	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-156	ND		0.41	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-170	ND		0.41	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-174	ND		0.41	0.085	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-177	ND		0.41	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-180	ND		0.41	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-183	ND		0.41	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-187	ND		0.41	0.21	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-194	ND		0.41	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-195	ND		0.41	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-201	ND		0.41	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1
PCB-203	ND		0.41	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*94*		*14 - 146*	*11/13/19 22:08*	*11/21/19 20:03*	*1*
p-Terphenyl-d14	*141*		*34 - 148*	*11/13/19 22:08*	*11/21/19 20:03*	*1*

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.61	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-18	ND		0.31	0.099	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-28	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-31	ND		0.31	0.078	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-33	ND		0.31	0.058	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-44	ND		0.31	0.23	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-49	ND		0.31	0.076	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-52	ND		0.31	0.29	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-56	ND		0.31	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-60	ND		0.31	0.080	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-66	ND		0.31	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-70	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-74	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-87	ND		0.31	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-95	ND		0.31	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-97	ND		0.31	0.071	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-99	ND		0.31	0.073	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-101	ND		0.31	0.068	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-105	ND		0.31	0.082	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-110	ND		0.31	0.052	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-118	ND		0.31	0.053	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-128	ND		0.31	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-132/153	**1.3**		0.61	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-138/158	ND		0.61	0.54	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-141	ND		0.31	0.075	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-149	**0.71**		0.31	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-151	ND		0.31	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-156	ND		0.31	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-170	ND		0.31	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-174	ND		0.31	0.064	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-177	ND		0.31	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-180	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-183	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-187	ND		0.31	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-194	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-195	ND		0.31	0.092	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-201	ND		0.31	0.052	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1
PCB-203	ND		0.31	0.088	ug/Kg	☼	11/13/19 22:08	11/21/19 20:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*92*		*14 - 146*	*11/13/19 22:08*	*11/21/19 20:26*	*1*
p-Terphenyl-d14	*133*		*34 - 148*	*11/13/19 22:08*	*11/21/19 20:26*	*1*

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.62	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-18	ND		0.31	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-28	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-31	ND		0.31	0.078	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-33	ND		0.31	0.059	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-44	ND		0.31	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-49	ND		0.31	0.077	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-52	ND		0.31	0.29	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-56	ND		0.31	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-60	ND		0.31	0.081	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-66	ND		0.31	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-70	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-74	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-87	ND		0.31	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-95	ND		0.31	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-97	ND		0.31	0.071	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-99	ND		0.31	0.073	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-101	ND		0.31	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-105	ND		0.31	0.083	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-110	ND		0.31	0.052	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-118	ND		0.31	0.054	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-128	ND		0.31	0.19	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-132/153	**3.1**		0.62	0.25	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-138/158	**1.9**		0.62	0.54	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-141	ND		0.31	0.076	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-149	**1.5**		0.31	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-151	ND		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-156	ND		0.31	0.12	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-170	**1.6**		0.31	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-174	ND		0.31	0.065	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-177	ND		0.31	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-180	**3.1**		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-183	**0.86**		0.31	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-187	**1.3**		0.31	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-194	ND		0.31	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-195	ND		0.31	0.093	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-201	ND		0.31	0.053	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1
PCB-203	ND		0.31	0.089	ug/Kg	☼	11/13/19 22:08	11/21/19 20:50	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	83		14 - 146	11/13/19 22:08	11/21/19 20:50	1
p-Terphenyl-d14	130		34 - 148	11/13/19 22:08	11/21/19 20:50	1

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.58	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-18	ND		0.29	0.094	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-28	ND		0.29	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-31	ND		0.29	0.074	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-33	ND		0.29	0.056	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-44	ND		0.29	0.22	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-49	ND		0.29	0.072	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-52	ND		0.29	0.28	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-56	ND		0.29	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-60	ND		0.29	0.076	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-66	ND		0.29	0.18	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-70	ND		0.29	0.10	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-74	ND		0.29	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-87	ND		0.29	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-95	ND		0.29	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-97	ND		0.29	0.067	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-99	ND		0.29	0.069	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-101	ND		0.29	0.064	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-105	ND		0.29	0.078	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-110	ND		0.29	0.049	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-118	ND		0.29	0.050	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-128	ND		0.29	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-132/153	ND		0.58	0.24	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-138/158	ND		0.58	0.51	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-141	ND		0.29	0.071	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-149	ND		0.29	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-151	ND		0.29	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-156	ND		0.29	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-170	ND		0.29	0.16	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-174	ND		0.29	0.061	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-177	ND		0.29	0.17	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-180	ND		0.29	0.13	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-183	ND		0.29	0.14	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-187	ND		0.29	0.15	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-194	ND		0.29	0.11	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-195	ND		0.29	0.087	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-201	ND		0.29	0.049	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1
PCB-203	ND		0.29	0.084	ug/Kg	☼	11/13/19 22:08	11/21/19 21:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	85		14 - 146	11/13/19 22:08	11/21/19 21:16	1
p-Terphenyl-d14	148		34 - 148	11/13/19 22:08	11/21/19 21:16	1

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		14	2.7	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
1-Methylnaphthalene	ND		14	0.99	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
1-Methylphenanthrene	ND		14	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
2,6-Dimethylnaphthalene	ND		14	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
2-Methylnaphthalene	ND		14	0.99	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Acenaphthene	**1.1**	**J**	14	0.69	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Acenaphthylene	ND		14	12	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Anthracene	**5.8**	**J**	14	0.92	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Benzo[a]anthracene	**13**	**J**	14	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Benzo[a]pyrene	**6.9**	**J**	14	1.9	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Benzo[b]fluoranthene	**17**		14	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Benzo[e]pyrene	**7.8**	**J**	14	2.7	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Benzo[g,h,i]perylene	ND		14	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Benzo[k]fluoranthene	**9.1**	**J**	14	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Chrysene	**38**		14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Dibenz(a,h)anthracene	ND		14	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Dibenzothiophene	ND		14	1.9	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Fluoranthene	**15**		14	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Fluorene	**2.7**	**J**	14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Indeno[1,2,3-cd]pyrene	ND		14	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Naphthalene	**1.7**	**J**	14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Perylene	ND		14	3.3	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Phenanthrene	**5.9**	**J**	14	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Pyrene	**37**		14	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1
Biphenyl	ND		14	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*46*		*22 - 130*	*11/13/19 22:00*	*11/18/19 18:42*	*1*
Nitrobenzene-d5	*42*		*20 - 145*	*11/13/19 22:00*	*11/18/19 18:42*	*1*
p-Terphenyl-d14	*74*		*33 - 147*	*11/13/19 22:00*	*11/18/19 18:42*	*1*

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		13	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
1-Methylnaphthalene	ND		13	0.97	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
1-Methylphenanthrene	ND		13	2.8	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
2,6-Dimethylnaphthalene	ND		13	2.3	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
2-Methylnaphthalene	ND		13	0.97	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Acenaphthene	ND		13	0.68	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Acenaphthylene	ND		13	11	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Anthracene	ND		13	0.90	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Benzo[a]anthracene	ND		13	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Benzo[a]pyrene	ND		13	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Benzo[b]fluoranthene	**2.0**	**J**	13	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Benzo[e]pyrene	ND		13	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Benzo[g,h,i]perylene	ND		13	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Benzo[k]fluoranthene	ND		13	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Chrysene	**2.7**	**J**	13	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		13	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Dibenzothiophene	ND		13	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Fluoranthene	**6.4**	**J**	13	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Fluorene	ND		13	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Indeno[1,2,3-cd]pyrene	ND		13	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Naphthalene	**1.1**	**J**	13	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Perylene	ND		13	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Phenanthrene	**1.8**	**J**	13	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Pyrene	**12**	**J**	13	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1
Biphenyl	ND		13	2.5	ug/Kg	☼	11/13/19 22:00	11/18/19 19:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*50*		*22 - 130*	*11/13/19 22:00*	*11/18/19 19:01*	*1*
Nitrobenzene-d5	*48*		*20 - 145*	*11/13/19 22:00*	*11/18/19 19:01*	*1*
p-Terphenyl-d14	*72*		*33 - 147*	*11/13/19 22:00*	*11/18/19 19:01*	*1*

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		15	3.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
1-Methylnaphthalene	ND		15	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
1-Methylphenanthrene	ND		15	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
2,6-Dimethylnaphthalene	ND		15	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
2-Methylnaphthalene	**1.8**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Acenaphthene	**4.4**	**J**	15	0.77	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Acenaphthylene	ND		15	13	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Anthracene	**10**	**J**	15	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Benzo[a]anthracene	**29**		15	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Benzo[a]pyrene	**10**	**J**	15	2.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Benzo[b]fluoranthene	**18**		15	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Benzo[e]pyrene	**9.7**	**J**	15	3.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Benzo[g,h,i]perylene	ND		15	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Benzo[k]fluoranthene	**12**	**J**	15	2.5	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Chrysene	**47**		15	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Dibenz(a,h)anthracene	ND		15	1.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Dibenzothiophene	ND		15	2.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Fluoranthene	**100**		15	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Fluorene	**4.7**	**J**	15	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Indeno[1,2,3-cd]pyrene	ND		15	1.9	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Naphthalene	**4.1**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Perylene	**6.0**	**J**	15	3.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Phenanthrene	**18**		15	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Pyrene	**140**		15	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1
Biphenyl	ND		15	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*45*		*22 - 130*	*11/13/19 22:00*	*11/18/19 19:21*	*1*
Nitrobenzene-d5	*44*		*20 - 145*	*11/13/19 22:00*	*11/18/19 19:21*	*1*
p-Terphenyl-d14	*69*		*33 - 147*	*11/13/19 22:00*	*11/18/19 19:21*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	**6.8**	**J**	16	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
1-Methylnaphthalene	ND		16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
1-Methylphenanthrene	**17**		16	3.4	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
2,6-Dimethylnaphthalene	**2.9**	**J**	16	2.8	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
2-Methylnaphthalene	**1.9**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Acenaphthene	**9.6**	**J**	16	0.83	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Acenaphthylene	ND		16	14	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Anthracene	**14**	**J**	16	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Benzo[a]anthracene	**25**		16	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Benzo[a]pyrene	**9.9**	**J**	16	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Benzo[b]fluoranthene	**12**	**J**	16	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Benzo[e]pyrene	**10**	**J**	16	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Benzo[g,h,i]perylene	ND		16	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Benzo[k]fluoranthene	**7.4**	**J**	16	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Chrysene	**32**		16	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Dibenz(a,h)anthracene	ND		16	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Dibenzothiophene	ND		16	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Fluoranthene	**110**		16	1.6	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Fluorene	**4.6**	**J**	16	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Indeno[1,2,3-cd]pyrene	ND		16	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Naphthalene	**4.4**	**J**	16	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Perylene	**17**		16	3.9	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Phenanthrene	**25**		16	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Pyrene	**140**		16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1
Biphenyl	ND		16	3.1	ug/Kg	☼	11/13/19 22:00	11/18/19 19:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*49*		*22 - 130*	*11/13/19 22:00*	*11/18/19 19:41*	*1*
Nitrobenzene-d5	*51*		*20 - 145*	*11/13/19 22:00*	*11/18/19 19:41*	*1*
p-Terphenyl-d14	*70*		*33 - 147*	*11/13/19 22:00*	*11/18/19 19:41*	*1*

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		14	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
1-Methylnaphthalene	ND		14	0.98	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
1-Methylphenanthrene	ND		14	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
2,6-Dimethylnaphthalene	ND		14	2.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
2-Methylnaphthalene	**1.1**	**J**	14	0.98	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Acenaphthene	**4.7**	**J**	14	0.69	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Acenaphthylene	ND		14	12	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Anthracene	**6.5**	**J**	14	0.91	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Benzo[a]anthracene	**14**		14	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Benzo[a]pyrene	**4.5**	**J**	14	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Benzo[b]fluoranthene	**7.3**	**J**	14	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Benzo[e]pyrene	**3.9**	**J**	14	2.7	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Benzo[g,h,i]perylene	ND		14	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Benzo[k]fluoranthene	**3.9**	**J**	14	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Chrysene	**16**		14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		14	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Dibenzothiophene	ND		14	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Fluoranthene	**65**		14	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Fluorene	**3.3**	**J**	14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Indeno[1,2,3-cd]pyrene	ND		14	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Naphthalene	**2.3**	**J**	14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Perylene	**8.7**	**J**	14	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Phenanthrene	**20**		14	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Pyrene	**78**		14	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1
Biphenyl	ND		14	2.5	ug/Kg	☼	11/13/19 22:00	11/18/19 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*53*		*22 - 130*	*11/13/19 22:00*	*11/18/19 20:01*	*1*
Nitrobenzene-d5	*47*		*20 - 145*	*11/13/19 22:00*	*11/18/19 20:01*	*1*
p-Terphenyl-d14	*73*		*33 - 147*	*11/13/19 22:00*	*11/18/19 20:01*	*1*

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		15	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
1-Methylnaphthalene	ND		15	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
1-Methylphenanthrene	ND		15	3.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
2,6-Dimethylnaphthalene	ND		15	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
2-Methylnaphthalene	ND		15	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Acenaphthene	**3.3**	**J**	15	0.75	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Acenaphthylene	ND		15	13	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Anthracene	**7.6**	**J**	15	1.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Benzo[a]anthracene	**9.4**	**J**	15	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Benzo[a]pyrene	**5.7**	**J**	15	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Benzo[b]fluoranthene	**6.1**	**J**	15	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Benzo[e]pyrene	**3.9**	**J**	15	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Benzo[g,h,i]perylene	ND		15	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Benzo[k]fluoranthene	**5.3**	**J**	15	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Chrysene	**12**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Dibenz(a,h)anthracene	ND		15	1.6	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Dibenzothiophene	ND		15	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Fluoranthene	**31**		15	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Fluorene	**4.4**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Indeno[1,2,3-cd]pyrene	ND		15	1.9	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Naphthalene	**4.6**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Perylene	**10**	**J**	15	3.6	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Phenanthrene	**16**		15	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Pyrene	**44**		15	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1
Biphenyl	ND		15	2.8	ug/Kg	☼	11/13/19 22:00	11/18/19 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*59*		*22 - 130*	*11/13/19 22:00*	*11/18/19 20:21*	*1*
Nitrobenzene-d5	*57*		*20 - 145*	*11/13/19 22:00*	*11/18/19 20:21*	*1*
p-Terphenyl-d14	*75*		*33 - 147*	*11/13/19 22:00*	*11/18/19 20:21*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		18	3.5	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
1-Methylnaphthalene	**1.6**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
1-Methylphenanthrene	ND		18	3.7	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
2,6-Dimethylnaphthalene	**5.6**	**J**	18	3.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
2-Methylnaphthalene	**2.2**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Acenaphthene	ND		18	0.90	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Acenaphthylene	ND		18	15	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Anthracene	ND		18	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Benzo[a]anthracene	ND		18	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Benzo[a]pyrene	ND		18	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Benzo[b]fluoranthene	ND		18	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Benzo[e]pyrene	ND		18	3.5	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Benzo[g,h,i]perylene	ND		18	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Benzo[k]fluoranthene	ND		18	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Chrysene	ND		18	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Dibenz(a,h)anthracene	ND		18	1.9	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Dibenzothiophene	ND		18	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Fluoranthene	**6.0**	**J**	18	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Fluorene	**3.8**	**J**	18	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Indeno[1,2,3-cd]pyrene	ND		18	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Naphthalene	**14**	**J**	18	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Perylene	**150**		18	4.2	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Phenanthrene	**7.6**	**J**	18	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Pyrene	**5.9**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1
Biphenyl	ND		18	3.3	ug/Kg	☼	11/13/19 22:00	11/18/19 20:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*87*		*22 - 130*	*11/13/19 22:00*	*11/18/19 20:41*	*1*
Nitrobenzene-d5	*74*		*20 - 145*	*11/13/19 22:00*	*11/18/19 20:41*	*1*
p-Terphenyl-d14	*120*		*33 - 147*	*11/13/19 22:00*	*11/18/19 20:41*	*1*

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		16	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
1-Methylnaphthalene	ND		16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
1-Methylphenanthrene	ND		16	3.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
2,6-Dimethylnaphthalene	**5.8**	**J**	16	2.8	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
2-Methylnaphthalene	**1.6**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Acenaphthene	ND		16	0.82	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Acenaphthylene	ND		16	14	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Anthracene	**1.1**	**J**	16	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Benzo[a]anthracene	ND		16	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Benzo[a]pyrene	ND		16	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Benzo[b]fluoranthene	ND		16	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Benzo[e]pyrene	ND		16	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Benzo[g,h,i]perylene	ND		16	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Benzo[k]fluoranthene	ND		16	2.6	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Chrysene	ND		16	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		16	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Dibenzothiophene	ND		16	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Fluoranthene	**5.1**	**J**	16	1.6	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Fluorene	**3.3**	**J**	16	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Indeno[1,2,3-cd]pyrene	ND		16	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Naphthalene	**7.5**	**J**	16	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Perylene	**160**		16	3.9	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Phenanthrene	**7.8**	**J**	16	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Pyrene	**4.8**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1
Biphenyl	ND		16	3.0	ug/Kg	☼	11/13/19 22:00	11/18/19 21:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*22 - 130*	*11/13/19 22:00*	*11/18/19 21:01*	*1*
Nitrobenzene-d5	*74*		*20 - 145*	*11/13/19 22:00*	*11/18/19 21:01*	*1*
p-Terphenyl-d14	*127*		*33 - 147*	*11/13/19 22:00*	*11/18/19 21:01*	*1*

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		17	3.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
1-Methylnaphthalene	**1.3**	**J**	17	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
1-Methylphenanthrene	ND		17	3.5	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
2,6-Dimethylnaphthalene	**7.7**	**J**	17	2.8	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
2-Methylnaphthalene	**2.0**	**J**	17	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Acenaphthene	ND		17	0.84	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Acenaphthylene	ND		17	14	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Anthracene	ND		17	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Benzo[a]anthracene	ND		17	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Benzo[a]pyrene	ND		17	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Benzo[b]fluoranthene	ND		17	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Benzo[e]pyrene	ND		17	3.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Benzo[g,h,i]perylene	ND		17	2.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Benzo[k]fluoranthene	ND		17	2.7	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Chrysene	ND		17	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Dibenz(a,h)anthracene	ND		17	1.8	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Dibenzothiophene	ND		17	2.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Fluoranthene	**6.1**	**J**	17	1.6	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Fluorene	**4.2**	**J**	17	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Indeno[1,2,3-cd]pyrene	ND		17	2.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Naphthalene	**7.4**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Perylene	**140**		17	3.9	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Phenanthrene	**9.5**	**J**	17	1.4	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Pyrene	**6.1**	**J**	17	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1
Biphenyl	ND		17	3.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*22 - 130*	*11/13/19 22:00*	*11/18/19 21:20*	*1*
Nitrobenzene-d5	*65*		*20 - 145*	*11/13/19 22:00*	*11/18/19 21:20*	*1*
p-Terphenyl-d14	*129*		*33 - 147*	*11/13/19 22:00*	*11/18/19 21:20*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		16	3.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
1-Methylnaphthalene	**1.5**	**J**	16	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
1-Methylphenanthrene	ND		16	3.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
2,6-Dimethylnaphthalene	**7.2**	**J**	16	2.7	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
2-Methylnaphthalene	**1.9**	**J**	16	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Acenaphthene	ND		16	0.80	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Acenaphthylene	ND		16	13	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Anthracene	ND		16	1.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Benzo[a]anthracene	ND		16	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Benzo[a]pyrene	ND		16	2.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Benzo[b]fluoranthene	ND		16	2.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Benzo[e]pyrene	ND		16	3.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Benzo[g,h,i]perylene	ND		16	2.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Benzo[k]fluoranthene	ND		16	2.5	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Chrysene	ND		16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Dibenz(a,h)anthracene	ND		16	1.7	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Dibenzothiophene	ND		16	2.1	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Fluoranthene	**4.8**	**J**	16	1.5	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Fluorene	**3.0**	**J**	16	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Indeno[1,2,3-cd]pyrene	ND		16	2.0	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Naphthalene	**3.6**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Perylene	**140**		16	3.8	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Phenanthrene	**6.5**	**J**	16	1.3	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Pyrene	**4.8**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1
Biphenyl	ND		16	2.9	ug/Kg	☼	11/13/19 22:00	11/18/19 21:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*68*		*22 - 130*	*11/13/19 22:00*	*11/18/19 21:40*	*1*
Nitrobenzene-d5	*59*		*20 - 145*	*11/13/19 22:00*	*11/18/19 21:40*	*1*
p-Terphenyl-d14	*115*		*33 - 147*	*11/13/19 22:00*	*11/18/19 21:40*	*1*

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		17	3.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
1-Methylnaphthalene	ND		17	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
1-Methylphenanthrene	ND		17	3.6	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
2,6-Dimethylnaphthalene	**4.8**	**J**	17	2.9	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
2-Methylnaphthalene	**1.8**	**J**	17	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Acenaphthene	ND		17	0.86	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Acenaphthylene	ND		17	14	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Anthracene	ND		17	1.1	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Benzo[a]anthracene	ND		17	1.9	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Benzo[a]pyrene	ND		17	2.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Benzo[b]fluoranthene	ND		17	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Benzo[e]pyrene	ND		17	3.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Benzo[g,h,i]perylene	ND		17	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Benzo[k]fluoranthene	ND		17	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Chrysene	**3.2**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		17	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Dibenzothiophene	ND		17	2.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Fluoranthene	**5.3**	**J**	17	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Fluorene	**3.5**	**J**	17	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Indeno[1,2,3-cd]pyrene	ND		17	2.1	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Naphthalene	**8.4**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Perylene	**150**		17	4.0	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Phenanthrene	**7.5**	**J**	17	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Pyrene	**5.4**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1
Biphenyl	ND		17	3.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*22 - 130*	*11/13/19 22:00*	*11/19/19 11:06*	*1*
Nitrobenzene-d5	*66*		*20 - 145*	*11/13/19 22:00*	*11/19/19 11:06*	*1*
p-Terphenyl-d14	*116*		*33 - 147*	*11/13/19 22:00*	*11/19/19 11:06*	*1*

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		17	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
1-Methylnaphthalene	**2.1**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
1-Methylphenanthrene	ND		17	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
2,6-Dimethylnaphthalene	**6.3**	**J**	17	3.0	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
2-Methylnaphthalene	**3.1**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Acenaphthene	ND		17	0.88	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Acenaphthylene	ND		17	15	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Anthracene	ND		17	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Benzo[a]anthracene	ND		17	1.9	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Benzo[a]pyrene	ND		17	2.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Benzo[b]fluoranthene	ND		17	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Benzo[e]pyrene	ND		17	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Benzo[g,h,i]perylene	**2.7**	**J**	17	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Benzo[k]fluoranthene	ND		17	2.8	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Chrysene	ND		17	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Dibenz(a,h)anthracene	ND		17	1.9	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Dibenzothiophene	ND		17	2.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Fluoranthene	**6.2**	**J**	17	1.7	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Fluorene	**4.1**	**J**	17	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Indeno[1,2,3-cd]pyrene	ND		17	2.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Naphthalene	**31**		17	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Perylene	**210**		17	4.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Phenanthrene	**8.6**	**J**	17	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Pyrene	**5.9**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1
Biphenyl	ND		17	3.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*72*		*22 - 130*	*11/13/19 22:00*	*11/19/19 11:26*	*1*
Nitrobenzene-d5	*59*		*20 - 145*	*11/13/19 22:00*	*11/19/19 11:26*	*1*
p-Terphenyl-d14	*109*		*33 - 147*	*11/13/19 22:00*	*11/19/19 11:26*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		17	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
1-Methylnaphthalene	ND		17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
1-Methylphenanthrene	ND		17	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
2,6-Dimethylnaphthalene	**4.7**	**J**	17	3.0	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
2-Methylnaphthalene	**1.4**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Acenaphthene	ND		17	0.88	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Acenaphthylene	ND		17	15	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Anthracene	**1.3**	**J**	17	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Benzo[a]anthracene	ND		17	1.9	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Benzo[a]pyrene	ND		17	2.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Benzo[b]fluoranthene	ND		17	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Benzo[e]pyrene	ND		17	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Benzo[g,h,i]perylene	ND		17	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Benzo[k]fluoranthene	ND		17	2.8	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Chrysene	ND		17	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Dibenz(a,h)anthracene	ND		17	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Dibenzothiophene	ND		17	2.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Fluoranthene	**5.5**	**J**	17	1.7	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Fluorene	**3.3**	**J**	17	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Indeno[1,2,3-cd]pyrene	ND		17	2.2	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Naphthalene	**3.8**	**J**	17	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Perylene	**130**		17	4.1	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Phenanthrene	**8.4**	**J**	17	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Pyrene	**5.3**	**J**	17	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1
Biphenyl	ND		17	3.3	ug/Kg	☼	11/13/19 22:00	11/19/19 11:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*67*		*22 - 130*	*11/13/19 22:00*	*11/19/19 11:46*	*1*
Nitrobenzene-d5	*56*		*20 - 145*	*11/13/19 22:00*	*11/19/19 11:46*	*1*
p-Terphenyl-d14	*111*		*33 - 147*	*11/13/19 22:00*	*11/19/19 11:46*	*1*

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		19	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
1-Methylnaphthalene	**2.5**	**J**	19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
1-Methylphenanthrene	ND		19	4.0	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
2,6-Dimethylnaphthalene	**9.1**	**J**	19	3.2	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
2-Methylnaphthalene	**3.0**	**J**	19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Acenaphthene	ND		19	0.95	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Acenaphthylene	ND		19	16	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Anthracene	ND		19	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Benzo[a]anthracene	ND		19	2.1	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Benzo[a]pyrene	ND		19	2.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Benzo[b]fluoranthene	ND		19	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Benzo[e]pyrene	ND		19	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Benzo[g,h,i]perylene	**3.1**	**J**	19	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Benzo[k]fluoranthene	ND		19	3.1	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Chrysene	ND		19	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		19	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Dibenzothiophene	ND		19	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Fluoranthene	**7.1**	**J**	19	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Fluorene	**4.8**	**J**	19	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Indeno[1,2,3-cd]pyrene	ND		19	2.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Naphthalene	**10**	**J**	19	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Perylene	**260**		19	4.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Phenanthrene	**11**	**J**	19	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Pyrene	**6.7**	**J**	19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1
Biphenyl	ND		19	3.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*82*		*22 - 130*	*11/13/19 22:00*	*11/19/19 12:06*	*1*
Nitrobenzene-d5	*72*		*20 - 145*	*11/13/19 22:00*	*11/19/19 12:06*	*1*
p-Terphenyl-d14	*110*		*33 - 147*	*11/13/19 22:00*	*11/19/19 12:06*	*1*

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		20	3.8	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
1-Methylnaphthalene	**2.0**	**J**	20	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
1-Methylphenanthrene	ND		20	4.1	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
2,6-Dimethylnaphthalene	**11**	**J**	20	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
2-Methylnaphthalene	**2.7**	**J**	20	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Acenaphthene	ND		20	0.99	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Acenaphthylene	ND		20	17	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Anthracene	**1.5**	**J**	20	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Benzo[a]anthracene	ND		20	2.2	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Benzo[a]pyrene	ND		20	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Benzo[b]fluoranthene	ND		20	2.9	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Benzo[e]pyrene	**3.9**	**J**	20	3.9	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Benzo[g,h,i]perylene	**3.9**	**J**	20	2.9	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Benzo[k]fluoranthene	ND		20	3.2	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Chrysene	ND		20	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Dibenz(a,h)anthracene	ND		20	2.1	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Dibenzothiophene	ND		20	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Fluoranthene	**9.3**	**J**	20	1.9	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Fluorene	**5.8**	**J**	20	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Indeno[1,2,3-cd]pyrene	ND		20	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Naphthalene	**8.4**	**J**	20	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Perylene	**280**		20	4.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Phenanthrene	**14**	**J**	20	1.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Pyrene	**8.8**	**J**	20	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1
Biphenyl	ND		20	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*84*		*22 - 130*	*11/13/19 22:00*	*11/19/19 12:26*	*1*
Nitrobenzene-d5	*67*		*20 - 145*	*11/13/19 22:00*	*11/19/19 12:26*	*1*
p-Terphenyl-d14	*121*		*33 - 147*	*11/13/19 22:00*	*11/19/19 12:26*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		19	3.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
1-Methylnaphthalene	**1.7**	**J**	19	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
1-Methylphenanthrene	ND		19	3.9	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
2,6-Dimethylnaphthalene	**7.7**	**J**	19	3.2	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
2-Methylnaphthalene	**2.2**	**J**	19	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Acenaphthene	ND		19	0.95	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Acenaphthylene	ND		19	16	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Anthracene	ND		19	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Benzo[a]anthracene	ND		19	2.1	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Benzo[a]pyrene	ND		19	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Benzo[b]fluoranthene	ND		19	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Benzo[e]pyrene	ND		19	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Benzo[g,h,i]perylene	ND		19	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Benzo[k]fluoranthene	ND		19	3.0	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Chrysene	ND		19	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Dibenz(a,h)anthracene	ND		19	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Dibenzothiophene	ND		19	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Fluoranthene	**6.4**	**J**	19	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Fluorene	**5.1**	**J**	19	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Indeno[1,2,3-cd]pyrene	ND		19	2.3	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Naphthalene	**3.8**	**J**	19	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Perylene	**180**		19	4.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Phenanthrene	**10**	**J**	19	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Pyrene	**6.3**	**J**	19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1
Biphenyl	ND		19	3.5	ug/Kg	☼	11/13/19 22:00	11/19/19 12:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*63*		*22 - 130*	*11/13/19 22:00*	*11/19/19 12:46*	*1*
Nitrobenzene-d5	*53*		*20 - 145*	*11/13/19 22:00*	*11/19/19 12:46*	*1*
p-Terphenyl-d14	*108*		*33 - 147*	*11/13/19 22:00*	*11/19/19 12:46*	*1*

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		18	3.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
1-Methylnaphthalene	**1.6**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
1-Methylphenanthrene	ND		18	3.9	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
2,6-Dimethylnaphthalene	**9.2**	**J**	18	3.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
2-Methylnaphthalene	**2.1**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Acenaphthene	ND		18	0.93	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Acenaphthylene	ND		18	16	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Anthracene	**2.0**	**J**	18	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Benzo[a]anthracene	ND		18	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Benzo[a]pyrene	ND		18	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Benzo[b]fluoranthene	ND		18	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Benzo[e]pyrene	ND		18	3.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Benzo[g,h,i]perylene	**3.0**	**J**	18	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Benzo[k]fluoranthene	ND		18	3.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Chrysene	ND		18	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		18	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Dibenzothiophene	ND		18	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Fluoranthene	**8.5**	**J**	18	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Fluorene	**4.8**	**J**	18	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Indeno[1,2,3-cd]pyrene	ND		18	2.3	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Naphthalene	**4.8**	**J**	18	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Perylene	**210**		18	4.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Phenanthrene	**12**	**J**	18	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Pyrene	**8.2**	**J**	18	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1
Biphenyl	ND		18	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*22 - 130*	*11/13/19 22:00*	*11/19/19 13:06*	*1*
Nitrobenzene-d5	*71*		*20 - 145*	*11/13/19 22:00*	*11/19/19 13:06*	*1*
p-Terphenyl-d14	*112*		*33 - 147*	*11/13/19 22:00*	*11/19/19 13:06*	*1*

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		19	3.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
1-Methylnaphthalene	**2.4**	**J**	19	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
1-Methylphenanthrene	ND		19	3.9	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
2,6-Dimethylnaphthalene	**11**	**J**	19	3.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
2-Methylnaphthalene	**3.4**	**J**	19	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Acenaphthene	ND		19	0.94	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Acenaphthylene	ND		19	16	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Anthracene	**3.2**	**J**	19	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Benzo[a]anthracene	ND		19	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Benzo[a]pyrene	ND		19	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Benzo[b]fluoranthene	ND		19	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Benzo[e]pyrene	ND		19	3.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Benzo[g,h,i]perylene	**3.7**	**J**	19	2.7	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Benzo[k]fluoranthene	ND		19	3.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Chrysene	ND		19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Dibenz(a,h)anthracene	ND		19	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Dibenzothiophene	ND		19	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Fluoranthene	**9.7**	**J**	19	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Fluorene	**7.4**	**J**	19	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Indeno[1,2,3-cd]pyrene	ND		19	2.3	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Naphthalene	**15**	**J**	19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Perylene	**260**		19	4.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Phenanthrene	**17**	**J**	19	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Pyrene	**8.9**	**J**	19	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1
Biphenyl	ND		19	3.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*98*		*22 - 130*	*11/13/19 22:00*	*11/19/19 13:26*	*1*
Nitrobenzene-d5	*86*		*20 - 145*	*11/13/19 22:00*	*11/19/19 13:26*	*1*
p-Terphenyl-d14	*119*		*33 - 147*	*11/13/19 22:00*	*11/19/19 13:26*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		15	2.9	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
1-Methylnaphthalene	ND		15	1.1	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
1-Methylphenanthrene	ND		15	3.1	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
2,6-Dimethylnaphthalene	ND		15	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
2-Methylnaphthalene	ND		15	1.1	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Acenaphthene	**25**		15	0.75	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Acenaphthylene	ND		15	13	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Anthracene	ND		15	0.99	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Benzo[a]anthracene	ND		15	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Benzo[a]pyrene	ND		15	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Benzo[b]fluoranthene	ND		15	2.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Benzo[e]pyrene	ND		15	2.9	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Benzo[g,h,i]perylene	ND		15	2.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Benzo[k]fluoranthene	ND		15	2.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Chrysene	**4.0**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Dibenz(a,h)anthracene	ND		15	1.6	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Dibenzothiophene	ND		15	2.0	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Fluoranthene	**21**		15	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Fluorene	**1.2**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Indeno[1,2,3-cd]pyrene	ND		15	1.8	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Naphthalene	ND		15	1.1	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Perylene	**42**		15	3.5	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Phenanthrene	**4.1**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Pyrene	**18**		15	1.1	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1
Biphenyl	ND		15	2.8	ug/Kg	☼	11/13/19 22:00	11/19/19 13:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*22 - 130*	*11/13/19 22:00*	*11/19/19 13:46*	*1*
Nitrobenzene-d5	*65*		*20 - 145*	*11/13/19 22:00*	*11/19/19 13:46*	*1*
p-Terphenyl-d14	*102*		*33 - 147*	*11/13/19 22:00*	*11/19/19 13:46*	*1*

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	**8.9**	**J**	18	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
1-Methylnaphthalene	**6.9**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
1-Methylphenanthrene	**100**		18	3.7	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
2,6-Dimethylnaphthalene	**8.8**	**J**	18	3.0	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
2-Methylnaphthalene	**11**	**J**	18	1.3	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Acenaphthene	**80**		18	0.88	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Acenaphthylene	ND		18	15	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Anthracene	**260**		18	1.2	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Benzo[e]pyrene	**560**		18	3.4	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Benzo[g,h,i]perylene	**200**		18	2.5	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Benzo[k]fluoranthene	**740**		18	2.8	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Dibenz(a,h)anthracene	**150**		18	1.9	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Dibenzothiophene	**27**		18	2.4	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Fluorene	**69**		18	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Indeno[1,2,3-cd]pyrene	**260**		18	2.2	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	16	J	18	1.4	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Perylene	220		18	4.2	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Phenanthrene	500		18	1.5	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1
Biphenyl	6.9	J	18	3.3	ug/Kg	☼	11/13/19 22:00	11/19/19 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*78*		*22 - 130*	*11/13/19 22:00*	*11/19/19 14:05*	*1*
Nitrobenzene-d5	*66*		*20 - 145*	*11/13/19 22:00*	*11/19/19 14:05*	*1*
p-Terphenyl-d14	*117*		*33 - 147*	*11/13/19 22:00*	*11/19/19 14:05*	*1*

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	11	J	20	3.9	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
1-Methylnaphthalene	4.7	J	20	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
1-Methylphenanthrene	41		20	4.2	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
2,6-Dimethylnaphthalene	14	J	20	3.4	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
2-Methylnaphthalene	7.7	J	20	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Acenaphthene	390		20	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Acenaphthylene	ND		20	17	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Anthracene	180		20	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Benzo[a]anthracene	210		20	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Benzo[a]pyrene	110		20	2.7	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Benzo[b]fluoranthene	160		20	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Benzo[e]pyrene	83		20	3.9	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Benzo[g,h,i]perylene	46		20	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Benzo[k]fluoranthene	110		20	3.2	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Chrysene	340		20	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Dibenz(a,h)anthracene	6.3	J	20	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Dibenzothiophene	23		20	2.7	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Fluoranthene	940		20	1.9	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Fluorene	83		20	1.7	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Indeno[1,2,3-cd]pyrene	48		20	2.5	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Naphthalene	16	J	20	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Perylene	140		20	4.8	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Phenanthrene	530		20	1.7	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Pyrene	820		20	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1
Biphenyl	6.4	J	20	3.7	ug/Kg	☼	11/13/19 22:04	11/15/19 21:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*70*		*22 - 130*	*11/13/19 22:04*	*11/15/19 21:33*	*1*
Nitrobenzene-d5	*53*		*20 - 145*	*11/13/19 22:04*	*11/15/19 21:33*	*1*
p-Terphenyl-d14	*85*		*33 - 147*	*11/13/19 22:04*	*11/15/19 21:33*	*1*

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		21	4.1	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	2.5	J	21	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
1-Methylphenanthrene	ND		21	4.4	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
2,6-Dimethylnaphthalene	4.7	J	21	3.6	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
2-Methylnaphthalene	5.2	J	21	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Acenaphthene	39		21	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Acenaphthylene	ND		21	18	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Anthracene	30		21	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Benzo[a]anthracene	97		21	2.3	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Benzo[a]pyrene	18	J	21	2.8	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Benzo[b]fluoranthene	30		21	3.0	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Benzo[e]pyrene	18	J	21	4.1	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Benzo[g,h,i]perylene	3.4	J	21	3.1	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Benzo[k]fluoranthene	23		21	3.4	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Chrysene	85		21	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Dibenz(a,h)anthracene	ND		21	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Dibenzothiophene	7.0	J	21	2.8	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Fluoranthene	410		21	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Fluorene	25		21	1.8	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Indeno[1,2,3-cd]pyrene	3.1	J	21	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Naphthalene	9.9	J	21	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Perylene	26		21	5.0	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Phenanthrene	79		21	1.8	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Pyrene	370		21	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1
Biphenyl	4.3	J	21	3.9	ug/Kg	☼	11/13/19 22:04	11/15/19 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*64*		*22 - 130*	*11/13/19 22:04*	*11/15/19 21:52*	*1*
Nitrobenzene-d5	*49*		*20 - 145*	*11/13/19 22:04*	*11/15/19 21:52*	*1*
p-Terphenyl-d14	*79*		*33 - 147*	*11/13/19 22:04*	*11/15/19 21:52*	*1*

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	5.5	J	18	3.5	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
1-Methylnaphthalene	3.8	J	18	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
1-Methylphenanthrene	20		18	3.8	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
2,6-Dimethylnaphthalene	6.8	J	18	3.1	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
2-Methylnaphthalene	6.3	J	18	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Acenaphthene	110		18	0.92	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Acenaphthylene	ND		18	15	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Anthracene	73		18	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Benzo[a]anthracene	94		18	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Benzo[a]pyrene	27		18	2.5	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Benzo[b]fluoranthene	41		18	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Benzo[e]pyrene	23		18	3.6	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Benzo[g,h,i]perylene	6.1	J	18	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Benzo[k]fluoranthene	31		18	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Chrysene	110		18	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Dibenz(a,h)anthracene	ND		18	1.9	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenzothiophene	10	J	18	2.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Fluoranthene	470		18	1.8	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Fluorene	41		18	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Indeno[1,2,3-cd]pyrene	5.6	J	18	2.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Naphthalene	11	J	18	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Perylene	34		18	4.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Phenanthrene	220		18	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Pyrene	410		18	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1
Biphenyl	4.2	J	18	3.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*22 - 130*	*11/13/19 22:04*	*11/15/19 22:12*	*1*
Nitrobenzene-d5	*66*		*20 - 145*	*11/13/19 22:04*	*11/15/19 22:12*	*1*
p-Terphenyl-d14	*82*		*33 - 147*	*11/13/19 22:04*	*11/15/19 22:12*	*1*

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	13	J	17	3.4	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
1-Methylnaphthalene	4.1	J	17	1.2	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
1-Methylphenanthrene	20		17	3.6	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
2,6-Dimethylnaphthalene	25		17	3.0	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
2-Methylnaphthalene	5.2	J	17	1.2	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Acenaphthylene	ND		17	15	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Anthracene	120		17	1.2	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Benzo[a]anthracene	120		17	1.9	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Benzo[a]pyrene	78		17	2.3	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Benzo[b]fluoranthene	92		17	2.5	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Benzo[e]pyrene	59		17	3.4	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Benzo[g,h,i]perylene	59		17	2.5	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Benzo[k]fluoranthene	64		17	2.8	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Chrysene	130		17	1.3	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Dibenz(a,h)anthracene	15	J	17	1.8	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Dibenzothiophene	20		17	2.3	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Fluoranthene	700		17	1.7	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Fluorene	38		17	1.4	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Indeno[1,2,3-cd]pyrene	45		17	2.2	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Naphthalene	19		17	1.3	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Perylene	160		17	4.1	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Phenanthrene	460		17	1.5	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Pyrene	630		17	1.3	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1
Biphenyl	4.6	J	17	3.2	ug/Kg	☼	11/20/19 14:20	11/21/19 18:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*22 - 130*	*11/20/19 14:20*	*11/21/19 18:49*	*1*
Nitrobenzene-d5	*64*		*20 - 145*	*11/20/19 14:20*	*11/21/19 18:49*	*1*
p-Terphenyl-d14	*104*		*33 - 147*	*11/20/19 14:20*	*11/21/19 18:49*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		14	2.7	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
1-Methylnaphthalene	ND		14	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
1-Methylphenanthrene	ND		14	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
2,6-Dimethylnaphthalene	ND		14	2.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
2-Methylnaphthalene	**1.3**	**J**	14	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Acenaphthene	**15**		14	0.70	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Acenaphthylene	ND		14	12	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Anthracene	**6.7**	**J**	14	0.93	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Benzo[a]anthracene	**6.7**	**J**	14	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Benzo[a]pyrene	**3.1**	**J**	14	1.9	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Benzo[b]fluoranthene	**4.1**	**J**	14	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Benzo[e]pyrene	**2.7**	**J**	14	2.7	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Benzo[g,h,i]perylene	ND		14	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Benzo[k]fluoranthene	ND		14	2.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Chrysene	**6.0**	**J**	14	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Dibenz(a,h)anthracene	ND		14	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Dibenzothiophene	ND		14	1.9	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Fluoranthene	**22**		14	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Fluorene	**2.1**	**J**	14	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Indeno[1,2,3-cd]pyrene	ND		14	1.7	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Naphthalene	**3.8**	**J**	14	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Perylene	**15**		14	3.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Phenanthrene	**16**		14	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Pyrene	**21**		14	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1
Biphenyl	ND		14	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 22:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*70*		*22 - 130*	*11/13/19 22:04*	*11/15/19 22:32*	*1*
Nitrobenzene-d5	*62*		*20 - 145*	*11/13/19 22:04*	*11/15/19 22:32*	*1*
p-Terphenyl-d14	*82*		*33 - 147*	*11/13/19 22:04*	*11/15/19 22:32*	*1*

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		16	3.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
1-Methylnaphthalene	**3.2**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
1-Methylphenanthrene	**8.2**	**J**	16	3.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
2,6-Dimethylnaphthalene	**6.0**	**J**	16	2.8	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
2-Methylnaphthalene	**6.3**	**J**	16	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Acenaphthene	**59**		16	0.83	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Acenaphthylene	ND		16	14	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Anthracene	**21**		16	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Benzo[a]anthracene	**37**		16	1.8	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Benzo[a]pyrene	**32**		16	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Benzo[b]fluoranthene	**32**		16	2.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Benzo[e]pyrene	**21**		16	3.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Benzo[g,h,i]perylene	**26**		16	2.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Benzo[k]fluoranthene	**19**		16	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Chrysene	**43**		16	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		16	1.7	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Dibenzothiophene	**7.1**	**J**	16	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Fluoranthene	**180**		16	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Fluorene	**27**		16	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Indeno[1,2,3-cd]pyrene	**18**		16	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Naphthalene	**12**	**J**	16	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Perylene	**95**		16	3.9	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Phenanthrene	**150**		16	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Pyrene	**180**		16	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1
Biphenyl	**4.7**	**J**	16	3.1	ug/Kg	☼	11/13/19 22:04	11/15/19 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*22 - 130*	*11/13/19 22:04*	*11/15/19 22:52*	*1*
Nitrobenzene-d5	*70*		*20 - 145*	*11/13/19 22:04*	*11/15/19 22:52*	*1*
p-Terphenyl-d14	*89*		*33 - 147*	*11/13/19 22:04*	*11/15/19 22:52*	*1*

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	**4.9**	**J**	15	3.0	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
1-Methylnaphthalene	**1.2**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
1-Methylphenanthrene	ND		15	3.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
2,6-Dimethylnaphthalene	**15**		15	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
2-Methylnaphthalene	**2.5**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Acenaphthene	**320**		15	0.77	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Acenaphthylene	ND		15	13	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Anthracene	**55**		15	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Benzo[a]anthracene	**35**		15	1.7	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Benzo[a]pyrene	**5.2**	**J**	15	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Benzo[b]fluoranthene	**11**	**J**	15	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Benzo[e]pyrene	**6.0**	**J**	15	3.0	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Benzo[g,h,i]perylene	ND		15	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Benzo[k]fluoranthene	**5.1**	**J**	15	2.5	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Chrysene	**42**		15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Dibenz(a,h)anthracene	ND		15	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Dibenzothiophene	**11**	**J**	15	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Fluoranthene	**430**		15	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Fluorene	**15**		15	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Indeno[1,2,3-cd]pyrene	ND		15	1.9	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Naphthalene	**5.3**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Perylene	**4.2**	**J**	15	3.6	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Phenanthrene	**270**		15	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Pyrene	**340**		15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1
Biphenyl	ND		15	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 23:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*65*		*22 - 130*	*11/13/19 22:04*	*11/15/19 23:31*	*1*
Nitrobenzene-d5	*57*		*20 - 145*	*11/13/19 22:04*	*11/15/19 23:31*	*1*
p-Terphenyl-d14	*78*		*33 - 147*	*11/13/19 22:04*	*11/15/19 23:31*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	**7.0**	**J**	15	3.0	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
1-Methylnaphthalene	**3.1**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
1-Methylphenanthrene	**13**	**J**	15	3.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
2,6-Dimethylnaphthalene	**7.2**	**J**	15	2.6	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
2-Methylnaphthalene	**4.8**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Acenaphthene	**230**		15	0.78	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Acenaphthylene	ND		15	13	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Anthracene	**68**		15	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Benzo[a]anthracene	**81**		15	1.7	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Benzo[a]pyrene	**27**		15	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Benzo[b]fluoranthene	**37**		15	2.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Benzo[e]pyrene	**20**		15	3.0	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Benzo[g,h,i]perylene	**4.5**	**J**	15	2.3	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Benzo[k]fluoranthene	**27**		15	2.5	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Chrysene	**74**		15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Dibenz(a,h)anthracene	ND		15	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Dibenzothiophene	**15**		15	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Fluoranthene	**510**		15	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Fluorene	**47**		15	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Indeno[1,2,3-cd]pyrene	**5.2**	**J**	15	1.9	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Naphthalene	**10**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Perylene	**28**		15	3.7	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Phenanthrene	**340**		15	1.3	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Pyrene	**420**		15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1
Biphenyl	ND		15	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 23:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*22 - 130*	*11/13/19 22:04*	*11/15/19 23:51*	*1*
Nitrobenzene-d5	*59*		*20 - 145*	*11/13/19 22:04*	*11/15/19 23:51*	*1*
p-Terphenyl-d14	*72*		*33 - 147*	*11/13/19 22:04*	*11/15/19 23:51*	*1*

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		15	2.8	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
1-Methylnaphthalene	**1.5**	**J**	15	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
1-Methylphenanthrene	ND		15	3.1	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
2,6-Dimethylnaphthalene	**4.5**	**J**	15	2.5	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
2-Methylnaphthalene	**1.4**	**J**	15	1.0	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Acenaphthene	**140**		15	0.73	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Acenaphthylene	ND		15	12	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Anthracene	**11**	**J**	15	0.97	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Benzo[a]anthracene	**9.3**	**J**	15	1.6	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Benzo[a]pyrene	**4.2**	**J**	15	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Benzo[b]fluoranthene	**5.5**	**J**	15	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Benzo[e]pyrene	**3.2**	**J**	15	2.9	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Benzo[g,h,i]perylene	ND		15	2.1	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Benzo[k]fluoranthene	**3.6**	**J**	15	2.3	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Chrysene	**7.3**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		15	1.5	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Dibenzothiophene	**4.1**	**J**	15	2.0	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Fluoranthene	**61**		15	1.4	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Fluorene	**12**	**J**	15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Indeno[1,2,3-cd]pyrene	ND		15	1.8	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Naphthalene	**2.6**	**J**	15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Perylene	**56**		15	3.5	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Phenanthrene	**68**		15	1.2	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Pyrene	**50**		15	1.1	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1
Biphenyl	ND		15	2.7	ug/Kg	☼	11/13/19 22:04	11/15/19 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*57*		*22 - 130*	*11/13/19 22:04*	*11/15/19 17:56*	*1*
Nitrobenzene-d5	*46*		*20 - 145*	*11/13/19 22:04*	*11/15/19 17:56*	*1*
p-Terphenyl-d14	*72*		*33 - 147*	*11/13/19 22:04*	*11/15/19 17:56*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM) - DL

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	**1600**		180	19	ug/Kg	☼	11/13/19 22:00	11/19/19 17:09	10
Benzo[a]pyrene	**920**		180	24	ug/Kg	☼	11/13/19 22:00	11/19/19 17:09	10
Benzo[b]fluoranthene	**970**		180	25	ug/Kg	☼	11/13/19 22:00	11/19/19 17:09	10
Chrysene	**1600**		180	14	ug/Kg	☼	11/13/19 22:00	11/19/19 17:09	10
Fluoranthene	**2900**		180	17	ug/Kg	☼	11/13/19 22:00	11/19/19 17:09	10
Pyrene	**2800**		180	13	ug/Kg	☼	11/13/19 22:00	11/19/19 17:09	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*22 - 130*	*11/13/19 22:00*	*11/19/19 17:09*	*10*
Nitrobenzene-d5	*49*		*20 - 145*	*11/13/19 22:00*	*11/19/19 17:09*	*10*
p-Terphenyl-d14	*101*		*33 - 147*	*11/13/19 22:00*	*11/19/19 17:09*	*10*

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**880**		35	1.8	ug/Kg	☼	11/20/19 14:20	11/22/19 11:48	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*22 - 130*	*11/20/19 14:20*	*11/22/19 11:48*	*2*
Nitrobenzene-d5	*59*		*20 - 145*	*11/20/19 14:20*	*11/22/19 11:48*	*2*
p-Terphenyl-d14	*96*		*33 - 147*	*11/20/19 14:20*	*11/22/19 11:48*	*2*

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		200	39	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
1-Methylnaphthalene	**25**	**J**	200	15	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
1-Methylphenanthrene	**240**		200	43	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
2,6-Dimethylnaphthalene	**48**	**J**	200	35	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
2-Methylnaphthalene	**58**	**J**	200	15	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Acenaphthene	**1600**		200	10	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Acenaphthylene	ND		200	170	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Anthracene	**1000**		200	14	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Benzo[a]anthracene	**1200**		200	22	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Benzo[a]pyrene	**230**		200	27	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Benzo[b]fluoranthene	**340**		200	29	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Benzo[e]pyrene	**170**	**J**	200	40	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Benzo[g,h,i]perylene	ND		200	30	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Benzo[k]fluoranthene	**300**		200	33	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Chrysene	**1300**		200	16	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Dibenz(a,h)anthracene	ND		200	22	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Dibenzothiophene	**210**		200	27	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Fluoranthene	**6200**		200	20	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Fluorene	**830**		200	17	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Indeno[1,2,3-cd]pyrene	**44**	**J**	200	25	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Naphthalene	**100**	**J**	200	16	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Perylene	**73**	**J**	200	48	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Phenanthrene	**6800**		200	17	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10

Method: 8270C SIM - PAHs (GC/MS SIM) - DL (Continued)

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	5400		200	15	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10
Biphenyl	ND		200	38	ug/Kg	☼	11/13/19 22:04	11/18/19 16:43	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*87*		*22 - 130*	*11/13/19 22:04*	*11/18/19 16:43*	*10*
Nitrobenzene-d5	*56*		*20 - 145*	*11/13/19 22:04*	*11/18/19 16:43*	*10*
p-Terphenyl-d14	*129*		*33 - 147*	*11/13/19 22:04*	*11/18/19 16:43*	*10*

Method: Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.0	0.98	ug/Kg	☼	11/13/19 16:02	11/18/19 14:12	1
Tributyltin	ND		4.0	2.0	ug/Kg	☼	11/13/19 16:02	11/18/19 14:12	1
Dibutyltin	ND		4.0	0.97	ug/Kg	☼	11/13/19 16:02	11/18/19 14:12	1
Monobutyltin	ND		4.0	1.8	ug/Kg	☼	11/13/19 16:02	11/18/19 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*53*		*27 - 135*	*11/13/19 16:02*	*11/18/19 14:12*	*1*

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.0	0.98	ug/Kg	☼	11/13/19 16:02	11/18/19 14:48	1
Tributyltin	ND		4.0	2.0	ug/Kg	☼	11/13/19 16:02	11/18/19 14:48	1
Dibutyltin	ND		4.0	0.96	ug/Kg	☼	11/13/19 16:02	11/18/19 14:48	1
Monobutyltin	ND		4.0	1.8	ug/Kg	☼	11/13/19 16:02	11/18/19 14:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*55*		*27 - 135*	*11/13/19 16:02*	*11/18/19 14:48*	*1*

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.6	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 15:05	1
Tributyltin	ND		4.6	2.3	ug/Kg	☼	11/13/19 16:02	11/18/19 15:05	1
Dibutyltin	**1.6**	**J**	4.6	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 15:05	1
Monobutyltin	ND		4.6	2.1	ug/Kg	☼	11/13/19 16:02	11/18/19 15:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*50*		*27 - 135*	*11/13/19 16:02*	*11/18/19 15:05*	*1*

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.7	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 15:23	1
Tributyltin	ND		4.7	2.3	ug/Kg	☼	11/13/19 16:02	11/18/19 15:23	1
Dibutyltin	ND		4.7	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 15:23	1
Monobutyltin	ND		4.7	2.2	ug/Kg	☼	11/13/19 16:02	11/18/19 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*51*		*27 - 135*	*11/13/19 16:02*	*11/18/19 15:23*	*1*

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.1	1.0	ug/Kg	☼	11/13/19 16:02	11/18/19 15:41	1
Tributyltin	ND		4.1	2.0	ug/Kg	☼	11/13/19 16:02	11/18/19 15:41	1
Dibutyltin	ND		4.1	1.0	ug/Kg	☼	11/13/19 16:02	11/18/19 15:41	1

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monobutyltin	ND		4.1	1.9	ug/Kg	☼	11/13/19 16:02	11/18/19 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*56*		*27 - 135*	*11/13/19 16:02*	*11/18/19 15:41*	*1*

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.4	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 15:58	1
Tributyltin	ND		4.4	2.2	ug/Kg	☼	11/13/19 16:02	11/18/19 15:58	1
Dibutyltin	ND		4.4	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 15:58	1
Monobutyltin	ND		4.4	2.0	ug/Kg	☼	11/13/19 16:02	11/18/19 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*49*		*27 - 135*	*11/13/19 16:02*	*11/18/19 15:58*	*1*

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.4	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 16:15	1
Tributyltin	ND		5.4	2.7	ug/Kg	☼	11/13/19 16:02	11/18/19 16:15	1
Dibutyltin	ND		5.4	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 16:15	1
Monobutyltin	ND		5.4	2.5	ug/Kg	☼	11/13/19 16:02	11/18/19 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*47*		*27 - 135*	*11/13/19 16:02*	*11/18/19 16:15*	*1*

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.7	1.2	ug/Kg	☼	11/13/19 16:02	11/19/19 15:59	1
Tributyltin	ND		4.7	2.3	ug/Kg	☼	11/13/19 16:02	11/19/19 15:59	1
Dibutyltin	ND		4.7	1.1	ug/Kg	☼	11/13/19 16:02	11/19/19 15:59	1
Monobutyltin	ND		4.7	2.2	ug/Kg	☼	11/13/19 16:02	11/19/19 15:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*47*		*27 - 135*	*11/13/19 16:02*	*11/19/19 15:59*	*1*

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.9	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 18:38	1
Tributyltin	ND		4.9	2.4	ug/Kg	☼	11/13/19 16:02	11/18/19 18:38	1
Dibutyltin	ND		4.9	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 18:38	1
Monobutyltin	ND		4.9	2.3	ug/Kg	☼	11/13/19 16:02	11/18/19 18:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*56*		*27 - 135*	*11/13/19 16:02*	*11/18/19 18:38*	*1*

Method: Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.8	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 18:55	1
Tributyltin	ND		4.8	2.4	ug/Kg	☼	11/13/19 16:02	11/18/19 18:55	1
Dibutyltin	ND		4.8	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 18:55	1
Monobutyltin	ND		4.8	2.2	ug/Kg	☼	11/13/19 16:02	11/18/19 18:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*50*		*27 - 135*	*11/13/19 16:02*	*11/18/19 18:55*	*1*

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.1	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 19:13	1
Tributyltin	ND		5.1	2.5	ug/Kg	☼	11/13/19 16:02	11/18/19 19:13	1
Dibutyltin	ND		5.1	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 19:13	1
Monobutyltin	ND		5.1	2.3	ug/Kg	☼	11/13/19 16:02	11/18/19 19:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*40*		*27 - 135*	*11/13/19 16:02*	*11/18/19 19:13*	*1*

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.0	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 19:30	1
Tributyltin	ND		5.0	2.5	ug/Kg	☼	11/13/19 16:02	11/18/19 19:30	1
Dibutyltin	ND		5.0	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 19:30	1
Monobutyltin	ND		5.0	2.3	ug/Kg	☼	11/13/19 16:02	11/18/19 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*48*		*27 - 135*	*11/13/19 16:02*	*11/18/19 19:30*	*1*

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.1	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 19:47	1
Tributyltin	ND		5.1	2.5	ug/Kg	☼	11/13/19 16:02	11/18/19 19:47	1
Dibutyltin	ND		5.1	1.2	ug/Kg	☼	11/13/19 16:02	11/18/19 19:47	1
Monobutyltin	ND		5.1	2.3	ug/Kg	☼	11/13/19 16:02	11/18/19 19:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*41*		*27 - 135*	*11/13/19 16:02*	*11/18/19 19:47*	*1*

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.6	1.4	ug/Kg	☼	11/13/19 16:02	11/18/19 20:04	1
Tributyltin	ND		5.6	2.8	ug/Kg	☼	11/13/19 16:02	11/18/19 20:04	1
Dibutyltin	ND		5.6	1.4	ug/Kg	☼	11/13/19 16:02	11/18/19 20:04	1

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monobutyltin	ND		5.6	2.6	ug/Kg	☼	11/13/19 16:02	11/18/19 20:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*42*		*27 - 135*	*11/13/19 16:02*	*11/18/19 20:04*	*1*

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.9	1.5	ug/Kg	☼	11/13/19 16:02	11/18/19 20:22	1
Tributyltin	ND		5.9	2.9	ug/Kg	☼	11/13/19 16:02	11/18/19 20:22	1
Dibutyltin	ND		5.9	1.4	ug/Kg	☼	11/13/19 16:02	11/18/19 20:22	1
Monobutyltin	ND		5.9	2.7	ug/Kg	☼	11/13/19 16:02	11/18/19 20:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*45*		*27 - 135*	*11/13/19 16:02*	*11/18/19 20:22*	*1*

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.7	1.4	ug/Kg	☼	11/13/19 16:12	11/19/19 00:05	1
Tributyltin	ND		5.7	2.8	ug/Kg	☼	11/13/19 16:12	11/19/19 00:05	1
Dibutyltin	ND		5.7	1.4	ug/Kg	☼	11/13/19 16:12	11/19/19 00:05	1
Monobutyltin	ND		5.7	2.6	ug/Kg	☼	11/13/19 16:12	11/19/19 00:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*37*		*27 - 135*	*11/13/19 16:12*	*11/19/19 00:05*	*1*

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		0.50	0.12	ug/Kg	☼	11/13/19 16:02	11/18/19 20:39	1
Tributyltin	ND		0.50	0.25	ug/Kg	☼	11/13/19 16:02	11/18/19 20:39	1
Dibutyltin	ND		0.50	0.12	ug/Kg	☼	11/13/19 16:02	11/18/19 20:39	1
Monobutyltin	ND		0.50	0.23	ug/Kg	☼	11/13/19 16:02	11/18/19 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*52*		*27 - 135*	*11/13/19 16:02*	*11/18/19 20:39*	*1*

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.4	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 20:56	1
Tributyltin	ND		5.4	2.7	ug/Kg	☼	11/13/19 16:02	11/18/19 20:56	1
Dibutyltin	ND		5.4	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 20:56	1
Monobutyltin	ND		5.4	2.5	ug/Kg	☼	11/13/19 16:02	11/18/19 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*52*		*27 - 135*	*11/13/19 16:02*	*11/18/19 20:56*	*1*

Method: Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.4	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 21:13	1
Tributyltin	ND		4.4	2.2	ug/Kg	☼	11/13/19 16:02	11/18/19 21:13	1
Dibutyltin	ND		4.4	1.1	ug/Kg	☼	11/13/19 16:02	11/18/19 21:13	1
Monobutyltin	ND		4.4	2.0	ug/Kg	☼	11/13/19 16:02	11/18/19 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*50*		*27 - 135*	*11/13/19 16:02*	*11/18/19 21:13*	*1*

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.2	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 21:30	1
Tributyltin	ND		5.2	2.6	ug/Kg	☼	11/13/19 16:02	11/18/19 21:30	1
Dibutyltin	**1.7**	**J**	5.2	1.3	ug/Kg	☼	11/13/19 16:02	11/18/19 21:30	1
Monobutyltin	ND		5.2	2.4	ug/Kg	☼	11/13/19 16:02	11/18/19 21:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*45*		*27 - 135*	*11/13/19 16:02*	*11/18/19 21:30*	*1*

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.8	1.4	ug/Kg	☼	11/13/19 16:02	11/18/19 21:47	1
Tributyltin	ND		5.8	2.9	ug/Kg	☼	11/13/19 16:02	11/18/19 21:47	1
Dibutyltin	**2.8**	**J**	5.8	1.4	ug/Kg	☼	11/13/19 16:02	11/18/19 21:47	1
Monobutyltin	ND		5.8	2.7	ug/Kg	☼	11/13/19 16:02	11/18/19 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*51*		*27 - 135*	*11/13/19 16:02*	*11/18/19 21:47*	*1*

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		6.1	1.5	ug/Kg	☼	11/13/19 16:09	11/18/19 22:05	1
Tributyltin	ND		6.1	3.0	ug/Kg	☼	11/13/19 16:09	11/18/19 22:05	1
Dibutyltin	**3.1**	**J**	6.1	1.5	ug/Kg	☼	11/13/19 16:09	11/18/19 22:05	1
Monobutyltin	ND		6.1	2.8	ug/Kg	☼	11/13/19 16:09	11/18/19 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*53*		*27 - 135*	*11/13/19 16:09*	*11/18/19 22:05*	*1*

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.3	1.3	ug/Kg	☼	11/13/19 16:09	11/18/19 22:22	1
Tributyltin	ND		5.3	2.6	ug/Kg	☼	11/13/19 16:09	11/18/19 22:22	1
Dibutyltin	**1.9**	**J**	5.3	1.3	ug/Kg	☼	11/13/19 16:09	11/18/19 22:22	1

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Monobutyltin	ND		5.3	2.4	ug/Kg	☼	11/13/19 16:09	11/18/19 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*52*		*27 - 135*	*11/13/19 16:09*	*11/18/19 22:22*	*1*

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.2	1.3	ug/Kg	☼	11/20/19 10:30	11/20/19 19:10	1
Tributyltin	**9.4**		5.2	2.6	ug/Kg	☼	11/20/19 10:30	11/20/19 19:10	1
Dibutyltin	**15**		5.2	1.3	ug/Kg	☼	11/20/19 10:30	11/20/19 19:10	1
Monobutyltin	ND		5.2	2.4	ug/Kg	☼	11/20/19 10:30	11/20/19 19:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*56*		*27 - 135*	*11/20/19 10:30*	*11/20/19 19:10*	*1*

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.1	1.0	ug/Kg	☼	11/13/19 16:09	11/18/19 22:39	1
Tributyltin	ND		4.1	2.1	ug/Kg	☼	11/13/19 16:09	11/18/19 22:39	1
Dibutyltin	ND		4.1	1.0	ug/Kg	☼	11/13/19 16:09	11/18/19 22:39	1
Monobutyltin	ND		4.1	1.9	ug/Kg	☼	11/13/19 16:09	11/18/19 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*60*		*27 - 135*	*11/13/19 16:09*	*11/18/19 22:39*	*1*

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.9	1.2	ug/Kg	☼	11/13/19 16:09	11/18/19 22:56	1
Tributyltin	ND		4.9	2.4	ug/Kg	☼	11/13/19 16:09	11/18/19 22:56	1
Dibutyltin	**2.1**	**J**	4.9	1.2	ug/Kg	☼	11/13/19 16:09	11/18/19 22:56	1
Monobutyltin	ND		4.9	2.3	ug/Kg	☼	11/13/19 16:09	11/18/19 22:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*51*		*27 - 135*	*11/13/19 16:09*	*11/18/19 22:56*	*1*

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		5.9	1.5	ug/Kg	☼	11/13/19 16:09	11/18/19 23:13	1
Tributyltin	**11**		5.9	2.9	ug/Kg	☼	11/13/19 16:09	11/18/19 23:13	1
Dibutyltin	**4.5**	**J**	5.9	1.4	ug/Kg	☼	11/13/19 16:09	11/18/19 23:13	1
Monobutyltin	ND		5.9	2.7	ug/Kg	☼	11/13/19 16:09	11/18/19 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*48*		*27 - 135*	*11/13/19 16:09*	*11/18/19 23:13*	*1*

Method: Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.6	1.1	ug/Kg	☼	11/13/19 16:12	11/18/19 18:21	1
Tributyltin	ND		4.6	2.3	ug/Kg	☼	11/13/19 16:12	11/18/19 18:21	1
Dibutyltin	**1.1**	**J**	4.6	1.1	ug/Kg	☼	11/13/19 16:12	11/18/19 18:21	1
Monobutyltin	ND		4.6	2.1	ug/Kg	☼	11/13/19 16:12	11/18/19 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*55*		*27 - 135*	*11/13/19 16:12*	*11/18/19 18:21*	*1*

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.6	1.1	ug/Kg	☼	11/13/19 16:12	11/18/19 23:31	1
Tributyltin	ND		4.6	2.3	ug/Kg	☼	11/13/19 16:12	11/18/19 23:31	1
Dibutyltin	ND		4.6	1.1	ug/Kg	☼	11/13/19 16:12	11/18/19 23:31	1
Monobutyltin	ND		4.6	2.1	ug/Kg	☼	11/13/19 16:12	11/18/19 23:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*47*		*27 - 135*	*11/13/19 16:12*	*11/18/19 23:31*	*1*

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.2	1.0	ug/Kg	☼	11/13/19 16:12	11/18/19 23:48	1
Tributyltin	ND		4.2	2.1	ug/Kg	☼	11/13/19 16:12	11/18/19 23:48	1
Dibutyltin	ND		4.2	1.0	ug/Kg	☼	11/13/19 16:12	11/18/19 23:48	1
Monobutyltin	ND		4.2	1.9	ug/Kg	☼	11/13/19 16:12	11/18/19 23:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*48*		*27 - 135*	*11/13/19 16:12*	*11/18/19 23:48*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.4	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
2,4'-DDE	ND		2.7	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
2,4'-DDT	ND		1.4	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
4,4'-DDD	ND		1.4	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
4,4'-DDE	**0.46**	**J**	1.4	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
4,4'-DDT	ND		1.4	0.41	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Aldrin	ND		1.4	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
alpha-BHC	ND		2.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
beta-BHC	ND		1.4	0.96	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Chlordane	ND		14	0.93	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
delta-BHC	ND		2.7	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Dieldrin	ND		1.4	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Endosulfan I	ND		1.4	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Endosulfan II	ND		1.4	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Endosulfan sulfate	ND		1.4	0.37	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Endrin	ND		1.4	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Endrin aldehyde	ND		2.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
gamma-BHC	ND		1.4	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Heptachlor	ND		1.4	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Heptachlor epoxide	ND		1.4	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1
Toxaphene	ND		27	4.3	ug/Kg	☼	11/13/19 17:11	11/19/19 12:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*25 - 145*	*11/13/19 17:11*	*11/19/19 12:04*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*24 - 168*	*11/13/19 17:11*	*11/19/19 12:04*	*1*

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.3	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
2,4'-DDE	ND		2.7	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
2,4'-DDT	ND		1.3	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
4,4'-DDD	ND		1.3	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
4,4'-DDE	ND		1.3	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
4,4'-DDT	ND		1.3	0.40	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Aldrin	ND		1.3	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
alpha-BHC	ND		2.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
beta-BHC	ND		1.3	0.95	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Chlordane	ND		13	0.91	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
delta-BHC	ND		2.7	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Dieldrin	ND		1.3	0.13	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Endosulfan I	ND		1.3	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Endosulfan II	ND		1.3	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Endosulfan sulfate	ND		1.3	0.37	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Endrin	ND		1.3	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Endrin aldehyde	ND		2.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
gamma-BHC	ND		1.3	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Heptachlor	ND		1.3	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1
Heptachlor epoxide	ND		1.3	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		27	4.2	ug/Kg	☼	11/13/19 17:11	11/19/19 12:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*84*		*25 - 145*	*11/13/19 17:11*	*11/19/19 12:18*	*1*
DCB Decachlorobiphenyl (Surr)	*103*		*24 - 168*	*11/13/19 17:11*	*11/19/19 12:18*	*1*

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.5	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
2,4'-DDE	ND		3.1	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
2,4'-DDT	ND		1.5	0.21	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
4,4'-DDD	**2.5**		1.5	0.37	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
4,4'-DDE	**0.94**	**J**	1.5	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
4,4'-DDT	ND		1.5	0.46	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Aldrin	ND		1.5	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
alpha-BHC	ND		3.1	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
beta-BHC	ND		1.5	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Chlordane	ND		15	1.0	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
delta-BHC	ND		3.1	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Dieldrin	ND		1.5	0.15	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Endosulfan I	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Endosulfan II	ND		1.5	0.30	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Endosulfan sulfate	ND		1.5	0.42	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Endrin	**0.26**	**J p**	1.5	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Endrin aldehyde	ND		3.1	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
gamma-BHC	ND		1.5	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Heptachlor	ND		1.5	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Heptachlor epoxide	ND		1.5	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1
Toxaphene	ND		31	4.8	ug/Kg	☼	11/13/19 17:11	11/19/19 12:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*25 - 145*	*11/13/19 17:11*	*11/19/19 12:32*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*24 - 168*	*11/13/19 17:11*	*11/19/19 12:32*	*1*

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
2,4'-DDE	ND		3.2	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
2,4'-DDT	ND		1.6	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
4,4'-DDD	**5.1**		1.6	0.39	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
4,4'-DDE	**1.3**	**J**	1.6	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
4,4'-DDT	ND		1.6	0.49	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Aldrin	ND		1.6	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
alpha-BHC	ND		3.2	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
beta-BHC	ND		1.6	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Chlordane	ND		16	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		3.2	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Dieldrin	ND		1.6	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Endosulfan I	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Endosulfan II	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Endosulfan sulfate	ND		1.6	0.44	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Endrin	**0.49**	**J**	1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Endrin aldehyde	ND		3.2	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
gamma-BHC	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Heptachlor	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Heptachlor epoxide	ND		1.6	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1
Toxaphene	ND		32	5.1	ug/Kg	☼	11/13/19 17:11	11/19/19 12:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*77*		*25 - 145*	*11/13/19 17:11*	*11/19/19 12:46*	*1*
DCB Decachlorobiphenyl (Surr)	*92*		*24 - 168*	*11/13/19 17:11*	*11/19/19 12:46*	*1*

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.4	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
2,4'-DDE	ND		2.7	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
2,4'-DDT	ND		1.4	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
4,4'-DDD	**1.7**		1.4	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
4,4'-DDE	**0.71**	**J**	1.4	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
4,4'-DDT	ND	F2 F1	1.4	0.41	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Aldrin	ND		1.4	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
alpha-BHC	ND		2.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
beta-BHC	ND		1.4	0.97	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Chlordane	ND		14	0.93	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
delta-BHC	ND		2.7	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Dieldrin	ND		1.4	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Endosulfan I	ND		1.4	0.15	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Endosulfan II	ND		1.4	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Endosulfan sulfate	ND		1.4	0.37	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Endrin	**0.18**	**J p**	1.4	0.14	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Endrin aldehyde	ND		2.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
gamma-BHC	ND		1.4	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Heptachlor	ND		1.4	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Heptachlor epoxide	ND		1.4	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1
Toxaphene	ND		27	4.3	ug/Kg	☼	11/13/19 17:11	11/19/19 09:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*79*		*25 - 145*	*11/13/19 17:11*	*11/19/19 09:59*	*1*
DCB Decachlorobiphenyl (Surr)	*94*		*24 - 168*	*11/13/19 17:11*	*11/19/19 09:59*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.5	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
2,4'-DDE	ND		3.0	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
2,4'-DDT	ND		1.5	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
4,4'-DDD	**0.62**	**J p**	1.5	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
4,4'-DDE	ND		1.5	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
4,4'-DDT	ND		1.5	0.45	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Aldrin	ND		1.5	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
alpha-BHC	ND		3.0	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
beta-BHC	ND		1.5	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Chlordane	ND		15	1.0	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
delta-BHC	ND		3.0	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Dieldrin	ND		1.5	0.15	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Endosulfan I	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Endosulfan II	ND		1.5	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Endosulfan sulfate	ND		1.5	0.41	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Endrin	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Endrin aldehyde	ND		3.0	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
gamma-BHC	ND		1.5	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Heptachlor	ND		1.5	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Heptachlor epoxide	ND		1.5	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1
Toxaphene	ND		30	4.7	ug/Kg	☼	11/13/19 17:11	11/19/19 13:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*86*		*25 - 145*	*11/13/19 17:11*	*11/19/19 13:01*	*1*
DCB Decachlorobiphenyl (Surr)	*99*		*24 - 168*	*11/13/19 17:11*	*11/19/19 13:01*	*1*

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.8	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
2,4'-DDE	ND		3.5	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
2,4'-DDT	ND		1.8	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
4,4'-DDD	ND		1.8	0.43	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
4,4'-DDE	ND		1.8	0.30	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
4,4'-DDT	ND		1.8	0.53	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Aldrin	ND		1.8	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
alpha-BHC	ND		3.5	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
beta-BHC	ND		1.8	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Chlordane	ND		18	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
delta-BHC	ND		3.5	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Dieldrin	ND		1.8	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Endosulfan I	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Endosulfan II	ND		1.8	0.34	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Endosulfan sulfate	ND		1.8	0.48	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Endrin	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Endrin aldehyde	ND		3.5	2.0	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
gamma-BHC	ND		1.8	0.34	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Heptachlor	ND		1.8	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1
Heptachlor epoxide	ND		1.8	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		35	5.5	ug/Kg	☼	11/13/19 17:11	11/19/19 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*25 - 145*	*11/13/19 17:11*	*11/19/19 13:15*	*1*
DCB Decachlorobiphenyl (Surr)	*98*		*24 - 168*	*11/13/19 17:11*	*11/19/19 13:15*	*1*

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
2,4'-DDE	ND		3.2	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
2,4'-DDT	ND		1.6	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
4,4'-DDD	ND		1.6	0.39	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
4,4'-DDE	ND		1.6	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
4,4'-DDT	ND		1.6	0.48	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Aldrin	ND		1.6	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
alpha-BHC	ND		3.2	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
beta-BHC	ND		1.6	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Chlordane	ND		16	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
delta-BHC	ND		3.2	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Dieldrin	ND		1.6	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Endosulfan I	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Endosulfan II	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Endosulfan sulfate	ND		1.6	0.44	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Endrin	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Endrin aldehyde	ND		3.2	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
gamma-BHC	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Heptachlor	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Heptachlor epoxide	ND		1.6	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1
Toxaphene	ND		32	5.0	ug/Kg	☼	11/13/19 17:11	11/19/19 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*79*		*25 - 145*	*11/13/19 17:11*	*11/19/19 13:29*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*24 - 168*	*11/13/19 17:11*	*11/19/19 13:29*	*1*

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
2,4'-DDE	ND		3.3	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
2,4'-DDT	ND		1.6	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
4,4'-DDD	ND		1.6	0.40	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
4,4'-DDE	ND		1.6	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
4,4'-DDT	ND		1.6	0.49	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Aldrin	ND		1.6	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
alpha-BHC	ND		3.3	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
beta-BHC	ND		1.6	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Chlordane	ND		16	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		3.3	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Dieldrin	ND		1.6	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Endosulfan I	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Endosulfan II	ND		1.6	0.32	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Endosulfan sulfate	ND		1.6	0.45	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Endrin	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Endrin aldehyde	ND		3.3	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
gamma-BHC	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Heptachlor	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Heptachlor epoxide	ND		1.6	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1
Toxaphene	ND		33	5.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*73*		*25 - 145*	*11/13/19 17:11*	*11/19/19 13:43*	*1*
DCB Decachlorobiphenyl (Surr)	*97*		*24 - 168*	*11/13/19 17:11*	*11/19/19 13:43*	*1*

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.6	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
2,4'-DDE	ND		3.2	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
2,4'-DDT	ND		1.6	0.21	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
4,4'-DDD	ND		1.6	0.38	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
4,4'-DDE	ND		1.6	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
4,4'-DDT	ND		1.6	0.48	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Aldrin	ND		1.6	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
alpha-BHC	ND		3.2	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
beta-BHC	ND		1.6	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Chlordane	ND		16	1.1	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
delta-BHC	ND		3.2	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Dieldrin	ND		1.6	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Endosulfan I	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Endosulfan II	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Endosulfan sulfate	ND		1.6	0.43	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Endrin	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Endrin aldehyde	ND		3.2	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
gamma-BHC	ND		1.6	0.30	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Heptachlor	ND		1.6	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Heptachlor epoxide	ND		1.6	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1
Toxaphene	ND		32	4.9	ug/Kg	☼	11/13/19 17:11	11/19/19 13:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*85*		*25 - 145*	*11/13/19 17:11*	*11/19/19 13:57*	*1*
DCB Decachlorobiphenyl (Surr)	*118*		*24 - 168*	*11/13/19 17:11*	*11/19/19 13:57*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.7	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
2,4'-DDE	ND		3.4	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
2,4'-DDT	ND		1.7	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
4,4'-DDD	ND		1.7	0.41	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
4,4'-DDE	ND		1.7	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
4,4'-DDT	ND		1.7	0.51	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Aldrin	ND		1.7	0.30	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
alpha-BHC	ND		3.4	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
beta-BHC	ND		1.7	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Chlordane	ND		17	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
delta-BHC	ND		3.4	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Dieldrin	ND		1.7	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Endosulfan I	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Endosulfan II	ND		1.7	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Endosulfan sulfate	ND		1.7	0.46	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Endrin	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Endrin aldehyde	ND		3.4	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
gamma-BHC	ND		1.7	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Heptachlor	ND		1.7	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Heptachlor epoxide	ND		1.7	0.21	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1
Toxaphene	ND		34	5.3	ug/Kg	☼	11/13/19 17:11	11/19/19 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*77*		*25 - 145*	*11/13/19 17:11*	*11/19/19 14:12*	*1*
DCB Decachlorobiphenyl (Surr)	*107*		*24 - 168*	*11/13/19 17:11*	*11/19/19 14:12*	*1*

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.7	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
2,4'-DDE	ND		3.5	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
2,4'-DDT	ND		1.7	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
4,4'-DDD	ND		1.7	0.42	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
4,4'-DDE	ND		1.7	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
4,4'-DDT	ND		1.7	0.53	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Aldrin	ND		1.7	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
alpha-BHC	ND		3.5	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
beta-BHC	ND		1.7	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Chlordane	ND		17	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
delta-BHC	ND		3.5	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Dieldrin	ND		1.7	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Endosulfan I	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Endosulfan II	ND		1.7	0.34	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Endosulfan sulfate	ND		1.7	0.48	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Endrin	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Endrin aldehyde	ND		3.5	2.0	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
gamma-BHC	ND		1.7	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Heptachlor	ND		1.7	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1
Heptachlor epoxide	ND		1.7	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		35	5.4	ug/Kg	☼	11/13/19 17:11	11/19/19 14:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*76*		*25 - 145*	*11/13/19 17:11*	*11/19/19 14:26*	*1*
DCB Decachlorobiphenyl (Surr)	*114*		*24 - 168*	*11/13/19 17:11*	*11/19/19 14:26*	*1*

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.7	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
2,4'-DDE	ND		3.5	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
2,4'-DDT	ND		1.7	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
4,4'-DDD	ND		1.7	0.42	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
4,4'-DDE	ND		1.7	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
4,4'-DDT	ND		1.7	0.52	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Aldrin	ND		1.7	0.30	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
alpha-BHC	ND		3.5	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
beta-BHC	ND		1.7	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Chlordane	ND		17	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
delta-BHC	ND		3.5	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Dieldrin	ND		1.7	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Endosulfan I	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Endosulfan II	ND		1.7	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Endosulfan sulfate	ND		1.7	0.47	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Endrin	**0.59**	**J**	1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Endrin aldehyde	ND		3.5	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
gamma-BHC	ND		1.7	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Heptachlor	ND		1.7	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Heptachlor epoxide	ND		1.7	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1
Toxaphene	ND		35	5.4	ug/Kg	☼	11/13/19 17:11	11/19/19 14:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*25 - 145*	*11/13/19 17:11*	*11/19/19 14:40*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*24 - 168*	*11/13/19 17:11*	*11/19/19 14:40*	*1*

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.9	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
2,4'-DDE	ND		3.8	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
2,4'-DDT	ND		1.9	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
4,4'-DDD	ND		1.9	0.46	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
4,4'-DDE	ND		1.9	0.32	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
4,4'-DDT	ND		1.9	0.57	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Aldrin	ND		1.9	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
alpha-BHC	ND		3.8	2.0	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
beta-BHC	ND		1.9	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Chlordane	ND		19	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		3.8	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Dieldrin	ND		1.9	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Endosulfan I	ND		1.9	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Endosulfan II	ND		1.9	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Endosulfan sulfate	ND		1.9	0.51	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Endrin	ND		1.9	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Endrin aldehyde	ND		3.8	2.1	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
gamma-BHC	ND		1.9	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Heptachlor	ND		1.9	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Heptachlor epoxide	ND		1.9	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1
Toxaphene	ND		38	5.9	ug/Kg	☼	11/13/19 17:11	11/19/19 14:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*79*		*25 - 145*	*11/13/19 17:11*	*11/19/19 14:54*	*1*
DCB Decachlorobiphenyl (Surr)	*101*		*24 - 168*	*11/13/19 17:11*	*11/19/19 14:54*	*1*

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		2.0	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
2,4'-DDE	ND		3.9	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
2,4'-DDT	ND		2.0	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
4,4'-DDD	ND		2.0	0.48	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
4,4'-DDE	ND		2.0	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
4,4'-DDT	ND		2.0	0.59	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Aldrin	ND		2.0	0.34	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
alpha-BHC	ND		3.9	2.1	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
beta-BHC	ND		2.0	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Chlordane	ND		20	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
delta-BHC	ND		3.9	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Dieldrin	ND		2.0	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Endosulfan I	ND		2.0	0.21	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Endosulfan II	ND		2.0	0.38	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Endosulfan sulfate	ND		2.0	0.54	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Endrin	ND		2.0	0.21	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Endrin aldehyde	ND		3.9	2.2	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
gamma-BHC	ND		2.0	0.38	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Heptachlor	ND		2.0	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Heptachlor epoxide	ND		2.0	0.24	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1
Toxaphene	ND		39	6.1	ug/Kg	☼	11/13/19 17:11	11/19/19 15:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*79*		*25 - 145*	*11/13/19 17:11*	*11/19/19 15:09*	*1*
DCB Decachlorobiphenyl (Surr)	*107*		*24 - 168*	*11/13/19 17:11*	*11/19/19 15:09*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.9	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
2,4'-DDE	ND		3.7	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
2,4'-DDT	ND		1.9	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
4,4'-DDD	ND		1.9	0.45	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
4,4'-DDE	ND		1.9	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
4,4'-DDT	ND		1.9	0.57	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Aldrin	ND		1.9	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
alpha-BHC	ND		3.7	2.0	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
beta-BHC	ND		1.9	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Chlordane	ND		19	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
delta-BHC	ND		3.7	1.8	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Dieldrin	ND		1.9	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Endosulfan I	ND		1.9	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Endosulfan II	ND		1.9	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Endosulfan sulfate	ND		1.9	0.51	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Endrin	ND		1.9	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Endrin aldehyde	ND		3.7	2.1	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
gamma-BHC	ND		1.9	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Heptachlor	ND		1.9	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Heptachlor epoxide	ND		1.9	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1
Toxaphene	ND		37	5.9	ug/Kg	☼	11/13/19 17:11	11/19/19 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*70*		*25 - 145*	*11/13/19 17:11*	*11/19/19 15:23*	*1*
DCB Decachlorobiphenyl (Surr)	*90*		*24 - 168*	*11/13/19 17:11*	*11/19/19 15:23*	*1*

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.8	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
2,4'-DDE	ND		3.7	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
2,4'-DDT	ND		1.8	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
4,4'-DDD	ND		1.8	0.44	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
4,4'-DDE	ND		1.8	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
4,4'-DDT	ND		1.8	0.55	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Aldrin	ND		1.8	0.32	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
alpha-BHC	ND		3.7	2.0	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
beta-BHC	ND		1.8	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Chlordane	ND		18	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
delta-BHC	ND		3.7	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Dieldrin	ND		1.8	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Endosulfan I	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Endosulfan II	ND		1.8	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Endosulfan sulfate	ND		1.8	0.50	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Endrin	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Endrin aldehyde	ND		3.7	2.1	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
gamma-BHC	ND		1.8	0.35	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Heptachlor	ND		1.8	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1
Heptachlor epoxide	ND		1.8	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		37	5.7	ug/Kg	☼	11/13/19 17:11	11/19/19 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*66*		*25 - 145*	*11/13/19 17:11*	*11/19/19 15:37*	*1*
DCB Decachlorobiphenyl (Surr)	*93*		*24 - 168*	*11/13/19 17:11*	*11/19/19 15:37*	*1*

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.8	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
2,4'-DDE	ND		3.6	1.5	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
2,4'-DDT	ND		1.8	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
4,4'-DDD	ND		1.8	0.44	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
4,4'-DDE	ND		1.8	0.31	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
4,4'-DDT	ND		1.8	0.55	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Aldrin	ND		1.8	0.32	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
alpha-BHC	ND		3.6	2.0	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
beta-BHC	ND		1.8	1.3	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Chlordane	ND		18	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
delta-BHC	ND		3.6	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Dieldrin	ND		1.8	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Endosulfan I	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Endosulfan II	ND		1.8	0.35	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Endosulfan sulfate	ND		1.8	0.50	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Endrin	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Endrin aldehyde	ND		3.6	2.1	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
gamma-BHC	ND		1.8	0.35	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Heptachlor	ND		1.8	0.27	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Heptachlor epoxide	ND		1.8	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1
Toxaphene	ND		36	5.7	ug/Kg	☼	11/13/19 17:11	11/19/19 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*67*		*25 - 145*	*11/13/19 17:11*	*11/19/19 15:51*	*1*
DCB Decachlorobiphenyl (Surr)	*98*		*24 - 168*	*11/13/19 17:11*	*11/19/19 15:51*	*1*

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.5	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
2,4'-DDE	ND		3.0	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
2,4'-DDT	ND		1.5	0.20	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
4,4'-DDD	ND		1.5	0.36	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
4,4'-DDE	ND		1.5	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
4,4'-DDT	ND		1.5	0.45	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Aldrin	ND		1.5	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
alpha-BHC	ND		3.0	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
beta-BHC	ND		1.5	1.0	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Chlordane	ND		15	1.0	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		3.0	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Dieldrin	ND		1.5	0.15	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Endosulfan I	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Endosulfan II	ND		1.5	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Endosulfan sulfate	ND		1.5	0.40	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Endrin	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Endrin aldehyde	ND		3.0	1.7	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
gamma-BHC	ND		1.5	0.28	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Heptachlor	ND		1.5	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Heptachlor epoxide	ND		1.5	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1
Toxaphene	ND		30	4.6	ug/Kg	☼	11/13/19 17:11	11/19/19 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*71*		*25 - 145*	*11/13/19 17:11*	*11/19/19 16:06*	*1*
DCB Decachlorobiphenyl (Surr)	*93*		*24 - 168*	*11/13/19 17:11*	*11/19/19 16:06*	*1*

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.7	0.26	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
2,4'-DDE	ND		3.5	1.4	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
2,4'-DDT	ND		1.7	0.23	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
4,4'-DDD	**1.1**	**J p**	1.7	0.42	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
4,4'-DDE	**2.7**		1.7	0.29	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
4,4'-DDT	ND		1.7	0.52	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Aldrin	ND		1.7	0.30	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
alpha-BHC	ND		3.5	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
beta-BHC	ND		1.7	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Chlordane	ND		17	1.2	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
delta-BHC	ND		3.5	1.6	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Dieldrin	ND		1.7	0.17	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Endosulfan I	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Endosulfan II	ND		1.7	0.34	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Endosulfan sulfate	ND		1.7	0.47	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Endrin	ND		1.7	0.18	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Endrin aldehyde	ND		3.5	1.9	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
gamma-BHC	ND		1.7	0.33	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Heptachlor	ND		1.7	0.25	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Heptachlor epoxide	ND		1.7	0.22	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1
Toxaphene	ND		35	5.4	ug/Kg	☼	11/13/19 17:11	11/19/19 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*77*		*25 - 145*	*11/13/19 17:11*	*11/19/19 16:20*	*1*
DCB Decachlorobiphenyl (Surr)	*117*		*24 - 168*	*11/13/19 17:11*	*11/19/19 16:20*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		2.0	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
2,4'-DDE	ND		4.0	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
2,4'-DDT	ND		2.0	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
4,4'-DDD	**1.3**	**J p**	2.0	0.49	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
4,4'-DDE	**2.7**	**p**	2.0	0.34	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
4,4'-DDT	ND		2.0	0.61	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Aldrin	ND		2.0	0.35	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
alpha-BHC	ND		4.0	2.2	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
beta-BHC	ND		2.0	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Chlordane	ND		20	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
delta-BHC	ND		4.0	1.9	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Dieldrin	ND		2.0	0.20	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Endosulfan I	ND		2.0	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Endosulfan II	ND		2.0	0.39	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Endosulfan sulfate	ND		2.0	0.55	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Endrin	ND		2.0	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Endrin aldehyde	ND		4.0	2.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
gamma-BHC	ND		2.0	0.39	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Heptachlor	ND		2.0	0.29	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Heptachlor epoxide	ND		2.0	0.25	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1
Toxaphene	ND		40	6.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*76*		*25 - 145*	*11/13/19 17:27*	*11/19/19 07:08*	*1*
DCB Decachlorobiphenyl (Surr)	*124*		*24 - 168*	*11/13/19 17:27*	*11/19/19 07:08*	*1*

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		2.1	0.31	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
2,4'-DDE	ND		4.1	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
2,4'-DDT	ND		2.1	0.28	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
4,4'-DDD	**1.0**	**J p**	2.1	0.50	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
4,4'-DDE	**2.6**		2.1	0.35	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
4,4'-DDT	ND		2.1	0.62	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Aldrin	ND		2.1	0.36	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
alpha-BHC	ND		4.1	2.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
beta-BHC	ND		2.1	1.5	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Chlordane	ND		21	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
delta-BHC	ND		4.1	1.9	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Dieldrin	ND		2.1	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Endosulfan I	**0.23**	**J p**	2.1	0.22	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Endosulfan II	ND		2.1	0.40	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Endosulfan sulfate	ND		2.1	0.57	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Endrin	ND		2.1	0.22	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Endrin aldehyde	ND		4.1	2.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
gamma-BHC	ND		2.1	0.40	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Heptachlor	ND		2.1	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1
Heptachlor epoxide	ND		2.1	0.26	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		41	6.5	ug/Kg	☼	11/13/19 17:27	11/19/19 07:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*74*		*25 - 145*	*11/13/19 17:27*	*11/19/19 07:23*	*1*
DCB Decachlorobiphenyl (Surr)	*138*		*24 - 168*	*11/13/19 17:27*	*11/19/19 07:23*	*1*

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.8	0.26	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
2,4'-DDE	ND		3.6	1.5	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
2,4'-DDT	ND		1.8	0.24	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
4,4'-DDD	**1.4**	**J p**	1.8	0.43	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
4,4'-DDE	**1.5**	**J p**	1.8	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
4,4'-DDT	ND		1.8	0.54	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Aldrin	ND		1.8	0.31	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
alpha-BHC	ND		3.6	1.9	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
beta-BHC	ND		1.8	1.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Chlordane	ND		18	1.2	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
delta-BHC	ND		3.6	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Dieldrin	ND		1.8	0.18	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Endosulfan I	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Endosulfan II	ND		1.8	0.35	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Endosulfan sulfate	ND		1.8	0.49	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Endrin	ND		1.8	0.19	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Endrin aldehyde	ND		3.6	2.0	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
gamma-BHC	ND		1.8	0.34	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Heptachlor	ND		1.8	0.26	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Heptachlor epoxide	ND		1.8	0.22	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1
Toxaphene	ND		36	5.6	ug/Kg	☼	11/13/19 17:27	11/19/19 07:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*74*		*25 - 145*	*11/13/19 17:27*	*11/19/19 07:37*	*1*
DCB Decachlorobiphenyl (Surr)	*167*		*24 - 168*	*11/13/19 17:27*	*11/19/19 07:37*	*1*

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	**0.39**	**J p F1**	1.7	0.26	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
2,4'-DDE	ND	F1	3.5	1.4	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
2,4'-DDT	ND	F1 F2	1.7	0.23	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
4,4'-DDD	**1.7**		1.7	0.42	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
4,4'-DDE	**2.6**		1.7	0.29	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
4,4'-DDT	ND		1.7	0.52	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Aldrin	ND		1.7	0.30	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
alpha-BHC	ND		3.5	1.9	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
beta-BHC	ND		1.7	1.2	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Chlordane	ND		17	1.2	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		3.5	1.6	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Dieldrin	ND		1.7	0.17	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Endosulfan I	ND		1.7	0.18	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Endosulfan II	ND		1.7	0.34	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Endosulfan sulfate	ND		1.7	0.47	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Endrin	ND		1.7	0.18	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Endrin aldehyde	ND		3.5	2.0	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
gamma-BHC	ND		1.7	0.33	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Heptachlor	ND		1.7	0.25	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Heptachlor epoxide	ND		1.7	0.22	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1
Toxaphene	ND		35	5.4	ug/Kg	☼	11/20/19 14:02	11/22/19 11:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*66*		*25 - 145*	*11/20/19 14:02*	*11/22/19 11:32*	*1*
DCB Decachlorobiphenyl (Surr)	*98*		*24 - 168*	*11/20/19 14:02*	*11/22/19 11:32*	*1*

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.4	0.20	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
2,4'-DDE	ND		2.8	1.2	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
2,4'-DDT	ND		1.4	0.19	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
4,4'-DDD	**0.77**	**J**	1.4	0.34	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
4,4'-DDE	ND		1.4	0.23	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
4,4'-DDT	ND		1.4	0.42	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Aldrin	ND		1.4	0.24	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
alpha-BHC	ND		2.8	1.5	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
beta-BHC	ND		1.4	0.97	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Chlordane	ND		14	0.94	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
delta-BHC	ND		2.8	1.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Dieldrin	ND		1.4	0.14	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Endosulfan I	ND		1.4	0.15	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Endosulfan II	ND		1.4	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Endosulfan sulfate	ND		1.4	0.38	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Endrin	ND		1.4	0.15	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Endrin aldehyde	ND		2.8	1.6	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
gamma-BHC	ND		1.4	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Heptachlor	ND		1.4	0.20	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Heptachlor epoxide	ND		1.4	0.17	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1
Toxaphene	ND		28	4.3	ug/Kg	☼	11/13/19 17:27	11/19/19 07:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*61*		*25 - 145*	*11/13/19 17:27*	*11/19/19 07:51*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*24 - 168*	*11/13/19 17:27*	*11/19/19 07:51*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	**0.46**	**J p**	1.6	0.24	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
2,4'-DDE	ND		3.3	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
2,4'-DDT	ND		1.6	0.22	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
4,4'-DDD	**3.4**		1.6	0.40	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
4,4'-DDE	**3.3**		1.6	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
4,4'-DDT	**1.8**		1.6	0.49	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Aldrin	ND		1.6	0.29	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
alpha-BHC	ND		3.3	1.8	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
beta-BHC	ND		1.6	1.2	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Chlordane	ND		16	1.1	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
delta-BHC	ND		3.3	1.5	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Dieldrin	ND		1.6	0.16	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Endosulfan I	**0.20**	**J p**	1.6	0.17	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Endosulfan II	ND		1.6	0.32	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Endosulfan sulfate	ND		1.6	0.45	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Endrin	ND		1.6	0.17	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Endrin aldehyde	ND		3.3	1.8	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
gamma-BHC	ND		1.6	0.31	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Heptachlor	ND		1.6	0.24	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Heptachlor epoxide	ND		1.6	0.20	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1
Toxaphene	ND		33	5.1	ug/Kg	☼	11/13/19 17:27	11/19/19 08:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*69*		*25 - 145*	*11/13/19 17:27*	*11/19/19 08:05*	*1*
DCB Decachlorobiphenyl (Surr)	*123*		*24 - 168*	*11/13/19 17:27*	*11/19/19 08:05*	*1*

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	**2.6**		2.0	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
2,4'-DDE	ND		4.0	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
2,4'-DDT	ND		2.0	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
4,4'-DDD	**2.2**		2.0	0.49	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
4,4'-DDE	**3.1**		2.0	0.34	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
4,4'-DDT	ND		2.0	0.61	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Aldrin	ND		2.0	0.35	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
alpha-BHC	ND		4.0	2.2	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
beta-BHC	ND		2.0	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Chlordane	ND		20	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
delta-BHC	ND		4.0	1.9	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Dieldrin	ND		2.0	0.20	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Endosulfan I	ND		2.0	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Endosulfan II	ND		2.0	0.39	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Endosulfan sulfate	ND		2.0	0.55	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Endrin	ND		2.0	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Endrin aldehyde	ND		4.0	2.3	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
gamma-BHC	ND		2.0	0.39	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Heptachlor	ND		2.0	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1
Heptachlor epoxide	ND		2.0	0.25	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toxaphene	ND		40	6.3	ug/Kg	☼	11/13/19 17:27	11/19/19 08:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*56*		*25 - 145*	*11/13/19 17:27*	*11/19/19 08:20*	*1*
DCB Decachlorobiphenyl (Surr)	*98*		*24 - 168*	*11/13/19 17:27*	*11/19/19 08:20*	*1*

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.5	0.23	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
2,4'-DDE	ND		3.1	1.3	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
2,4'-DDT	ND		1.5	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
4,4'-DDD	**1.7**		1.5	0.37	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
4,4'-DDE	**1.1**	**J**	1.5	0.26	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
4,4'-DDT	ND		1.5	0.46	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Aldrin	ND		1.5	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
alpha-BHC	ND		3.1	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
beta-BHC	ND		1.5	1.1	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Chlordane	ND		15	1.0	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
delta-BHC	ND		3.1	1.4	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Dieldrin	ND		1.5	0.15	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Endosulfan I	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Endosulfan II	ND		1.5	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Endosulfan sulfate	ND		1.5	0.42	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Endrin	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Endrin aldehyde	ND		3.1	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
gamma-BHC	ND		1.5	0.29	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Heptachlor	ND		1.5	0.22	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Heptachlor epoxide	ND		1.5	0.19	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1
Toxaphene	ND		31	4.8	ug/Kg	☼	11/13/19 17:27	11/19/19 08:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*65*		*25 - 145*	*11/13/19 17:27*	*11/19/19 08:34*	*1*
DCB Decachlorobiphenyl (Surr)	*89*		*24 - 168*	*11/13/19 17:27*	*11/19/19 08:34*	*1*

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.5	0.23	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
2,4'-DDE	ND		3.1	1.3	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
2,4'-DDT	ND		1.5	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
4,4'-DDD	**1.6**		1.5	0.38	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
4,4'-DDE	**1.3**	**J**	1.5	0.26	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
4,4'-DDT	ND		1.5	0.47	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Aldrin	ND		1.5	0.27	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
alpha-BHC	ND		3.1	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
beta-BHC	ND		1.5	1.1	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Chlordane	ND		15	1.1	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		3.1	1.5	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Dieldrin	ND		1.5	0.15	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Endosulfan I	ND		1.5	0.16	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Endosulfan II	ND		1.5	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Endosulfan sulfate	ND		1.5	0.42	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Endrin	**1.5**		1.5	0.16	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Endrin aldehyde	ND		3.1	1.7	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
gamma-BHC	ND		1.5	0.30	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Heptachlor	ND		1.5	0.23	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Heptachlor epoxide	ND		1.5	0.19	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1
Toxaphene	ND		31	4.8	ug/Kg	☼	11/13/19 17:27	11/19/19 08:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*67*		*25 - 145*	*11/13/19 17:27*	*11/19/19 08:48*	*1*
DCB Decachlorobiphenyl (Surr)	*99*		*24 - 168*	*11/13/19 17:27*	*11/19/19 08:48*	*1*

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.4	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
2,4'-DDE	ND		2.9	1.2	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
2,4'-DDT	ND		1.4	0.19	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
4,4'-DDD	ND		1.4	0.35	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
4,4'-DDE	ND		1.4	0.24	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
4,4'-DDT	ND		1.4	0.43	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Aldrin	ND		1.4	0.25	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
alpha-BHC	ND		2.9	1.6	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
beta-BHC	ND		1.4	1.0	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Chlordane	ND		14	0.97	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
delta-BHC	ND		2.9	1.3	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Dieldrin	ND		1.4	0.14	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Endosulfan I	ND		1.4	0.15	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Endosulfan II	ND		1.4	0.28	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Endosulfan sulfate	ND		1.4	0.39	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Endrin	ND		1.4	0.15	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Endrin aldehyde	ND		2.9	1.6	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
gamma-BHC	ND		1.4	0.28	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Heptachlor	ND		1.4	0.21	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Heptachlor epoxide	ND		1.4	0.18	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1
Toxaphene	ND		29	4.5	ug/Kg	☼	11/13/19 17:27	11/19/19 09:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*68*		*25 - 145*	*11/13/19 17:27*	*11/19/19 09:02*	*1*
DCB Decachlorobiphenyl (Surr)	*96*		*24 - 168*	*11/13/19 17:27*	*11/19/19 09:02*	*1*

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.85**		6.65	2.59	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Cadmium	ND		6.65	0.798	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Chromium	**32.2**		13.3	0.778	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Copper	**10.2**		6.65	0.771	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Lead	**6.40**	**J**	6.65	0.911	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Nickel	**51.3**		6.65	0.851	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Selenium	ND		6.65	1.75	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Silver	ND		6.65	0.944	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100
Zinc	**47.9**		33.2	5.27	mg/Kg	☼	11/12/19 19:33	11/18/19 20:32	100

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**5.53**	**J**	6.63	2.58	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Cadmium	ND		6.63	0.796	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Chromium	**26.7**		13.3	0.776	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Copper	**10.1**		6.63	0.770	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Lead	**6.70**		6.63	0.909	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Nickel	**52.5**		6.63	0.849	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Selenium	ND		6.63	1.75	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Silver	ND		6.63	0.942	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100
Zinc	**50.6**		33.2	5.26	mg/Kg	☼	11/12/19 19:33	11/18/19 20:35	100

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**9.01**		7.97	3.10	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Cadmium	ND		7.97	0.957	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Chromium	**32.9**		15.9	0.933	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Copper	**20.0**		7.97	0.925	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Lead	**9.66**		7.97	1.09	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Nickel	**54.3**		7.97	1.02	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Selenium	ND		7.97	2.10	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Silver	ND		7.97	1.13	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100
Zinc	**66.1**		39.9	6.32	mg/Kg	☼	11/12/19 19:33	11/18/19 20:46	100

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**22.4**		8.23	3.20	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Cadmium	ND		8.23	0.987	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Chromium	**49.7**		16.5	0.963	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Copper	**37.2**		8.23	0.955	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Lead	**23.2**		8.23	1.13	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Nickel	**62.3**		8.23	1.05	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Selenium	ND		8.23	2.17	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100
Silver	ND		8.23	1.17	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	**96.2**		41.1	6.53	mg/Kg	☼	11/12/19 19:33	11/18/19 20:49	100

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**9.40**		6.58	2.56	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Cadmium	ND		6.58	0.789	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Chromium	**38.9**		13.2	0.770	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Copper	**16.7**		6.58	0.763	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Lead	**9.44**		6.58	0.901	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Nickel	**56.5**		6.58	0.842	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Selenium	**2.19**	**J**	6.58	1.74	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Silver	ND		6.58	0.934	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100
Zinc	**60.3**		32.9	5.22	mg/Kg	☼	11/12/19 19:33	11/19/19 11:35	100

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**12.8**		7.29	2.84	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Cadmium	ND		7.29	0.875	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Chromium	**25.6**		14.6	0.853	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Copper	**7.82**		7.29	0.846	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Lead	**4.33**	**J**	7.29	0.999	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Nickel	**45.3**		7.29	0.934	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Selenium	ND		7.29	1.93	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Silver	ND		7.29	1.04	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100
Zinc	**42.0**		36.5	5.78	mg/Kg	☼	11/12/19 19:33	11/18/19 20:52	100

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.03**	**J**	8.58	3.34	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Cadmium	ND		8.58	1.03	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Chromium	**47.1**		17.2	1.00	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Copper	**22.2**		8.58	0.996	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Lead	**5.59**	**J**	8.58	1.18	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Nickel	**59.6**		8.58	1.10	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Selenium	**2.36**	**J**	8.58	2.27	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Silver	ND		8.58	1.22	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100
Zinc	**57.2**		42.9	6.81	mg/Kg	☼	11/12/19 19:33	11/18/19 20:55	100

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.49**	**J**	8.49	3.30	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Cadmium	ND		8.49	1.02	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**64.3**		17.0	0.993	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Copper	**25.6**		8.49	0.985	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Lead	**6.60**	**J**	8.49	1.16	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Nickel	**77.8**		8.49	1.09	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Selenium	ND		8.49	2.24	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Silver	ND		8.49	1.21	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100
Zinc	**68.8**		42.4	6.73	mg/Kg	☼	11/12/19 19:33	11/19/19 11:46	100

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		8.29	3.22	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Cadmium	ND		8.29	0.994	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Chromium	**1.17**	**J**	16.6	0.970	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Copper	ND		8.29	0.961	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Lead	ND		8.29	1.14	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Nickel	ND		8.29	1.06	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Selenium	ND		8.29	2.19	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Silver	ND		8.29	1.18	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100
Zinc	ND		41.4	6.57	mg/Kg	☼	11/12/19 19:33	11/18/19 21:00	100

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.01**	**J**	7.74	3.01	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Cadmium	ND		7.74	0.929	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Chromium	**47.2**		15.5	0.906	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Copper	**20.7**		7.74	0.898	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Lead	**5.71**	**J**	7.74	1.06	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Nickel	**58.2**		7.74	0.991	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Selenium	ND		7.74	2.04	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Silver	ND		7.74	1.10	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100
Zinc	**55.2**		38.7	6.14	mg/Kg	☼	11/12/19 19:33	11/18/19 21:03	100

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.93**	**J**	8.48	3.30	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Cadmium	ND		8.48	1.02	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Chromium	**50.1**		17.0	0.993	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Copper	**21.0**		8.48	0.984	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Lead	**6.10**	**J**	8.48	1.16	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Nickel	**62.3**		8.48	1.09	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Selenium	ND		8.48	2.24	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Silver	ND		8.48	1.20	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100
Zinc	**64.1**		42.4	6.73	mg/Kg	☼	11/12/19 19:33	11/18/19 21:06	100

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**5.88**	**J**	8.74	3.40	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Cadmium	ND		8.74	1.05	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Chromium	**54.6**		17.5	1.02	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Copper	**23.4**		8.74	1.01	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Lead	**6.28**	**J**	8.74	1.20	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Nickel	**68.1**		8.74	1.12	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Selenium	ND		8.74	2.31	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Silver	ND		8.74	1.24	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100
Zinc	**62.6**		43.7	6.93	mg/Kg	☼	11/12/19 19:33	11/18/19 21:09	100

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**5.48**	**J**	8.55	3.32	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Cadmium	ND		8.55	1.03	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Chromium	**56.3**		17.1	1.00	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Copper	**27.2**		8.55	0.991	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Lead	**6.61**	**J**	8.55	1.17	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Nickel	**68.3**		8.55	1.09	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Selenium	ND		8.55	2.26	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Silver	ND		8.55	1.21	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100
Zinc	**66.0**		42.7	6.78	mg/Kg	☼	11/12/19 19:33	11/18/19 21:12	100

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.66**	**J**	9.45	3.67	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Cadmium	ND		9.45	1.13	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Chromium	**60.9**		18.9	1.11	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Copper	**29.3**		9.45	1.10	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Lead	**7.65**	**J**	9.45	1.29	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Nickel	**71.8**		9.45	1.21	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Selenium	ND		9.45	2.49	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Silver	ND		9.45	1.34	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100
Zinc	**69.2**		47.2	7.49	mg/Kg	☼	11/12/19 19:33	11/18/19 21:23	100

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**5.09**	**J**	9.75	3.79	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Cadmium	ND		9.75	1.17	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Chromium	**51.6**		19.5	1.14	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Copper	**23.8**		9.75	1.13	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Lead	**6.99**	**J**	9.75	1.34	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Nickel	**61.2**		9.75	1.25	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Selenium	ND		9.75	2.57	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100
Silver	ND		9.75	1.38	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	**61.0**		48.7	7.73	mg/Kg	☼	11/12/19 19:33	11/18/19 21:26	100

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**5.98**	**J**	9.23	3.59	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Cadmium	ND		9.23	1.11	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Chromium	**62.4**		18.5	1.08	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Copper	**30.9**		9.23	1.07	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Lead	**7.57**	**J**	9.23	1.26	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Nickel	**81.1**		9.23	1.18	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Selenium	ND		9.23	2.44	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Silver	ND		9.23	1.31	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100
Zinc	**70.6**		46.1	7.32	mg/Kg	☼	11/12/19 19:33	11/18/19 21:28	100

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.02**	**J**	8.97	3.49	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Cadmium	ND		8.97	1.08	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Chromium	**54.9**		17.9	1.05	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Copper	**28.3**		8.97	1.04	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Lead	**7.41**	**J**	8.97	1.23	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Nickel	**67.7**		8.97	1.15	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Selenium	ND		8.97	2.37	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Silver	ND		8.97	1.27	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100
Zinc	**65.6**		44.9	7.12	mg/Kg	☼	11/12/19 19:33	11/18/19 21:31	100

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.59**	**J**	9.26	3.60	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Cadmium	ND		9.26	1.11	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Chromium	**59.9**		18.5	1.08	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Copper	**26.6**		9.26	1.07	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Lead	**7.42**	**J**	9.26	1.27	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Nickel	**72.6**		9.26	1.19	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Selenium	ND		9.26	2.44	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Silver	ND		9.26	1.31	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100
Zinc	**69.1**		46.3	7.34	mg/Kg	☼	11/12/19 19:33	11/18/19 21:34	100

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.37**	**J**	7.38	2.87	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Cadmium	ND		7.38	0.886	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**40.1**		14.8	0.863	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Copper	**15.2**		7.38	0.856	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Lead	**3.98**	**J**	7.38	1.01	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Nickel	**56.7**		7.38	0.945	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Selenium	ND		7.38	1.95	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Silver	ND		7.38	1.05	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100
Zinc	**53.4**		36.9	5.85	mg/Kg	☼	11/12/19 19:33	11/18/19 21:37	100

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**8.78**	**J**	8.89	3.46	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Cadmium	ND		8.89	1.07	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Chromium	**48.3**		17.8	1.04	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Copper	**38.4**		8.89	1.03	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Lead	**11.1**		8.89	1.22	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Nickel	**64.4**		8.89	1.14	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Selenium	**2.52**	**J**	8.89	2.35	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Silver	ND		8.89	1.26	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100
Zinc	**82.7**		44.4	7.05	mg/Kg	☼	11/12/19 19:33	11/18/19 21:40	100

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**14.1**	**F1**	10.3	4.03	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Cadmium	ND	F1	10.3	1.24	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Chromium	**63.3**		20.7	1.21	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Copper	**56.2**		10.3	1.20	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Lead	**17.9**	**F1**	10.3	1.42	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Nickel	**81.2**		10.3	1.32	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Selenium	ND	F1	10.3	2.73	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Silver	ND	F1	10.3	1.47	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100
Zinc	**115**		51.7	8.21	mg/Kg	☼	11/12/19 19:40	11/19/19 10:53	100

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**11.2**		10.0	3.91	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Cadmium	ND		10.0	1.21	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Chromium	**65.9**		20.1	1.18	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Copper	**54.6**		10.0	1.17	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Lead	**16.3**		10.0	1.38	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Nickel	**85.3**		10.0	1.29	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Selenium	**3.53**	**J**	10.0	2.65	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Silver	ND		10.0	1.43	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100
Zinc	**110**		50.2	7.97	mg/Kg	☼	11/12/19 19:40	11/19/19 11:12	100

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.84		1.88	0.731	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Cadmium	0.291	J	1.88	0.225	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Chromium	52.6		3.76	0.220	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Copper	46.1		1.88	0.218	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Lead	23.0		1.88	0.257	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Nickel	76.4		1.88	0.241	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Selenium	1.03	J	1.88	0.496	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Silver	ND		1.88	0.267	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20
Zinc	97.6		9.39	1.49	mg/Kg	☼	11/12/19 19:40	11/19/19 02:18	20

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	14.9		1.71	0.665	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Cadmium	0.451	J	1.71	0.205	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Chromium	43.6		3.42	0.200	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Copper	36.7		1.71	0.198	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Lead	10.0		1.71	0.234	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Nickel	66.9		1.71	0.219	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Selenium	ND		1.71	0.451	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Silver	0.946	J	1.71	0.243	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20
Zinc	89.3		8.54	1.36	mg/Kg	☼	11/12/19 19:40	11/19/19 18:44	20

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.78		1.46	0.568	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Cadmium	0.204	J	1.46	0.175	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Chromium	48.2		2.92	0.171	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Copper	32.1		1.46	0.169	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Lead	7.56		1.46	0.200	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Nickel	85.8		1.46	0.187	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Selenium	ND		1.46	0.385	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Silver	ND		1.46	0.207	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20
Zinc	67.9		7.30	1.16	mg/Kg	☼	11/12/19 19:40	11/19/19 02:29	20

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.52	J	8.28	3.22	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Cadmium	ND		8.28	0.994	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Chromium	63.2		16.6	0.969	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Copper	54.6		8.28	0.961	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Lead	14.0		8.28	1.13	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Nickel	85.2		8.28	1.06	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Selenium	ND		8.28	2.19	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100
Silver	ND		8.28	1.18	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	**111**		41.4	6.57	mg/Kg	☼	11/12/19 19:40	11/19/19 11:18	100

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**9.47**		2.03	0.789	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Cadmium	**0.442**	**J**	2.03	0.243	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Chromium	**55.3**		4.06	0.237	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Copper	**57.4**		2.03	0.235	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Lead	**24.1**		2.03	0.278	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Nickel	**72.5**		2.03	0.260	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Selenium	**0.662**	**J**	2.03	0.536	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Silver	ND		2.03	0.288	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20
Zinc	**229**		10.1	1.61	mg/Kg	☼	11/12/19 19:40	11/19/19 02:35	20

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.44**		1.59	0.617	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Cadmium	**0.229**	**J**	1.59	0.190	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Chromium	**56.1**		3.17	0.186	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Copper	**44.2**		1.59	0.184	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Lead	**14.9**		1.59	0.217	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Nickel	**91.8**		1.59	0.203	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Selenium	ND		1.59	0.419	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Silver	ND		1.59	0.225	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20
Zinc	**102**		7.93	1.26	mg/Kg	☼	11/12/19 19:40	11/19/19 02:38	20

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**6.40**		1.59	0.617	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Cadmium	**0.286**	**J**	1.59	0.190	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Chromium	**54.4**		3.17	0.186	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Copper	**45.5**		1.59	0.184	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Lead	**11.2**		1.59	0.217	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Nickel	**79.4**		1.59	0.203	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Selenium	**0.805**	**J**	1.59	0.419	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Silver	ND		1.59	0.225	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20
Zinc	**96.8**		7.93	1.26	mg/Kg	☼	11/12/19 19:40	11/19/19 02:41	20

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.23**		1.38	0.539	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Cadmium	ND		1.38	0.166	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20

Method: 6020 - Metals (ICP/MS) (Continued)

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**56.4**		2.77	0.162	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Copper	**37.5**		1.38	0.161	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Lead	**7.34**		1.38	0.190	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Nickel	**91.3**		1.38	0.177	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Selenium	ND		1.38	0.366	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Silver	ND		1.38	0.197	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20
Zinc	**77.1**		6.92	1.10	mg/Kg	☼	11/12/19 19:40	11/19/19 02:43	20

Method: 7471A - Mercury (CVAA)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0387	J	0.115	0.00808	mg/Kg	☼	11/13/19 15:00	11/13/19 18:47	1

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0245	J	0.107	0.00753	mg/Kg	☼	11/13/19 15:00	11/13/19 18:49	1

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0952	J	0.126	0.00888	mg/Kg	☼	11/13/19 15:00	11/13/19 18:52	1

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.295		0.136	0.00961	mg/Kg	☼	11/13/19 15:00	11/13/19 18:54	1

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0797	J	0.114	0.00803	mg/Kg	☼	11/13/19 15:00	11/13/19 18:40	1

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0174	J	0.123	0.00868	mg/Kg	☼	11/13/19 15:00	11/13/19 19:01	1

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0363	J	0.151	0.0107	mg/Kg	☼	11/13/19 15:00	11/13/19 19:03	1

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0334	J	0.138	0.00973	mg/Kg	☼	11/13/19 15:00	11/13/19 19:05	1

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.137	0.00962	mg/Kg	☼	11/13/19 15:00	11/13/19 19:08	1

Method: 7471A - Mercury (CVAA)

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0352	J	0.131	0.00921	mg/Kg	☼	11/13/19 15:00	11/13/19 19:10	1

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0367	J	0.145	0.0102	mg/Kg	☼	11/13/19 15:00	11/13/19 19:12	1

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0318	J	0.148	0.0104	mg/Kg	☼	11/13/19 15:00	11/13/19 19:14	1

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0347	J	0.145	0.0102	mg/Kg	☼	11/13/19 15:00	11/13/19 19:17	1

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0431	J	0.153	0.0108	mg/Kg	☼	11/13/19 15:00	11/13/19 19:19	1

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.146	J	0.165	0.0116	mg/Kg	☼	11/13/19 15:00	11/13/19 19:21	1

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0418	J	0.150	0.0106	mg/Kg	☼	11/13/19 15:00	11/13/19 19:28	1

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0449	J	0.149	0.0105	mg/Kg	☼	11/13/19 15:00	11/13/19 19:31	1

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0388	J	0.150	0.0106	mg/Kg	☼	11/13/19 15:00	11/13/19 19:33	1

Method: 7471A - Mercury (CVAA)

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0217	J	0.124	0.00875	mg/Kg	☼	11/13/19 15:00	11/13/19 19:35	1

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.145		0.144	0.0102	mg/Kg	☼	11/13/19 15:00	11/13/19 19:37	1

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.114	J	0.170	0.0120	mg/Kg	☼	11/13/19 11:00	11/13/19 17:38	1

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.162	J	0.175	0.0123	mg/Kg	☼	11/13/19 11:00	11/13/19 17:41	1

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.132	J	0.145	0.0102	mg/Kg	☼	11/13/19 11:00	11/13/19 17:43	1

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.124	J	0.145	0.0102	mg/Kg	☼	11/19/19 11:00	11/19/19 23:25	1

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0857	J	0.111	0.00779	mg/Kg	☼	11/13/19 11:00	11/13/19 17:45	1

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.128	J	0.131	0.00922	mg/Kg	☼	11/13/19 11:00	11/13/19 17:48	1

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.199		0.167	0.0118	mg/Kg	☼	11/13/19 11:00	11/13/19 17:50	1

Method: 7471A - Mercury (CVAA)

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.153		0.122	0.00860	mg/Kg	☼	11/13/19 11:00	11/13/19 17:52	1

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.119	J	0.125	0.00883	mg/Kg	☼	11/13/19 11:00	11/13/19 17:55	1

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.0660	J	0.128	0.00899	mg/Kg	☼	11/13/19 11:00	11/13/19 17:57	1

General Chemistry

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.223		0.0688	0.0239	%	☼		11/13/19 14:15	1
Percent Moisture	27.3		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.307		0.0673	0.0234	%	☼		11/13/19 14:15	1
Percent Moisture	25.7		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.631		0.0769	0.0267	%	☼		11/13/19 14:15	1
Percent Moisture	35.0		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.778		0.0819	0.0284	%	☼		11/13/19 14:15	1
Percent Moisture	38.9		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.628		0.0684	0.0238	%	☼		11/13/19 14:15	1
Percent Moisture	26.9		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.359		0.0751	0.0261	%	☼		11/13/19 14:15	1
Percent Moisture	33.4		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2.27		0.0893	0.0310	%	☼		11/13/19 14:15	1
Percent Moisture	44.0		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.01		0.0815	0.0283	%	☼		11/13/19 14:15	1
Percent Moisture	38.6		0.1	0.1	%			11/13/19 09:00	1

General Chemistry

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.33		0.0833	0.0289	%	☼		11/13/19 14:15	1
Percent Moisture	40.0		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.52		0.0797	0.0277	%	☼		11/13/19 14:15	1
Percent Moisture	37.3		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.50		0.0853	0.0296	%	☼		11/13/19 14:15	1
Percent Moisture	41.4		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.98		0.0874	0.0304	%	☼		11/13/19 14:15	1
Percent Moisture	42.8		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.45		0.0872	0.0303	%	☼		11/13/19 14:15	1
Percent Moisture	42.6		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.82		0.0949	0.0330	%	☼		11/13/19 14:15	1
Percent Moisture	47.3		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2.00		0.0990	0.0344	%	☼		11/13/19 14:15	1
Percent Moisture	49.5		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.79		0.0946	0.0329	%	☼		11/13/19 14:15	1
Percent Moisture	47.1		0.1	0.1	%			11/13/19 09:00	1

General Chemistry

Client Sample ID: MOTCO-2019-DU2b-Comp — **Lab Sample ID: 570-12498-19**
Date Collected: 10/31/19 10:43 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.84		0.0924	0.0321	%	☼		11/13/19 14:15	1
Percent Moisture	45.9		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp — **Lab Sample ID: 570-12498-21**
Date Collected: 10/31/19 10:43 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.75		0.0931	0.0323	%	☼		11/13/19 14:15	1
Percent Moisture	46.3		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU3-01 — **Lab Sample ID: 570-12498-22**
Date Collected: 10/30/19 09:20 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.476		0.0745	0.0259	%	☼		11/15/19 11:34	1
Percent Moisture	32.9		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU3-02 — **Lab Sample ID: 570-12498-23**
Date Collected: 10/30/19 10:04 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.92		0.0880	0.0306	%	☼		11/15/19 11:34	1
Percent Moisture	43.2		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU3-03 — **Lab Sample ID: 570-12498-24**
Date Collected: 10/30/19 10:42 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2.28		0.100	0.0349	%	☼		11/15/19 11:34	1
Percent Moisture	50.2		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU3-04 — **Lab Sample ID: 570-12498-25**
Date Collected: 10/30/19 11:19 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2.62		0.105	0.0365	%	☼		11/15/19 11:34	1
Percent Moisture	52.4		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU3-Comp — **Lab Sample ID: 570-12498-26**
Date Collected: 10/30/19 09:20 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.90		0.0911	0.0317	%	☼		11/15/19 11:34	1
Percent Moisture	45.1		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp — **Lab Sample ID: 570-12498-28**
Date Collected: 10/30/19 09:20 — **Matrix: Sediment**
Date Received: 11/09/19 08:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2.12	^	0.0871	0.0303	%	☼		11/19/19 13:46	1
Percent Moisture	42.6		0.1	0.1	%			11/19/19 09:00	1

General Chemistry

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.275		0.0697	0.0242	%	☼		11/15/19 11:34	1
Percent Moisture	28.2		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1.16		0.0824	0.0286	%	☼		11/15/19 11:34	1
Percent Moisture	39.3		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2.48		0.102	0.0354	%	☼		11/15/19 11:34	1
Percent Moisture	50.9		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.664		0.0769	0.0267	%	☼		11/15/19 11:34	1
Percent Moisture	35.0		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.774		0.0777	0.0270	%	☼		11/15/19 11:34	1
Percent Moisture	35.7		0.1	0.1	%			11/13/19 09:00	1

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.362		0.0727	0.0253	%	☼		11/15/19 11:34	1
Percent Moisture	31.2		0.1	0.1	%			11/13/19 09:00	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	7.64		0.01	0.01	%			11/21/19 18:11	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 18:11	1
Fine Sand (0.125 to 0.25mm)	10.08		0.01	0.01	%			11/21/19 18:11	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:11	1
Medium Sand (0.25 to 0.5 mm)	55.54		0.01	0.01	%			11/21/19 18:11	1
Silt (0.00391 to 0.0625mm)	23.26		0.01	0.01	%			11/21/19 18:11	1
Total Silt and Clay (0 to 0.0626mm)	30.91		0.01	0.01	%			11/21/19 18:11	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 18:11	1
Very Fine Sand (0.0625 to 0.125 mm)	3.48		0.01	0.01	%			11/21/19 18:11	1

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	1.35		0.01	0.01	%			11/21/19 18:19	1
Coarse Sand (0.5mm to 1mm)	15.88		0.01	0.01	%			11/21/19 18:19	1
Fine Sand (0.125 to 0.25mm)	11.12		0.01	0.01	%			11/21/19 18:19	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:19	1
Medium Sand (0.25 to 0.5 mm)	66.24		0.01	0.01	%			11/21/19 18:19	1
Silt (0.00391 to 0.0625mm)	4.43		0.01	0.01	%			11/21/19 18:19	1
Total Silt and Clay (0 to 0.0626mm)	5.78		0.01	0.01	%			11/21/19 18:19	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 18:19	1
Very Fine Sand (0.0625 to 0.125 mm)	0.99		0.01	0.01	%			11/21/19 18:19	1

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	6.95		0.01	0.01	%			11/21/19 18:25	1
Coarse Sand (0.5mm to 1mm)	0.01		0.01	0.01	%			11/21/19 18:25	1
Fine Sand (0.125 to 0.25mm)	21.49		0.01	0.01	%			11/21/19 18:25	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:25	1
Medium Sand (0.25 to 0.5 mm)	41.19		0.01	0.01	%			11/21/19 18:25	1
Silt (0.00391 to 0.0625mm)	22.89		0.01	0.01	%			11/21/19 18:25	1
Total Silt and Clay (0 to 0.0626mm)	29.84		0.01	0.01	%			11/21/19 18:25	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 18:25	1
Very Fine Sand (0.0625 to 0.125 mm)	7.47		0.01	0.01	%			11/21/19 18:25	1

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	19.06		0.01	0.01	%			11/21/19 18:33	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 18:33	1
Fine Sand (0.125 to 0.25mm)	2.20		0.01	0.01	%			11/21/19 18:33	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:33	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 18:33	1
Silt (0.00391 to 0.0625mm)	**60.81**		0.01	0.01	%			11/21/19 18:33	1
Total Silt and Clay (0 to 0.0626mm)	**79.87**		0.01	0.01	%			11/21/19 18:33	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 18:33	1
Very Fine Sand (0.0625 to 0.125 mm)	**17.93**		0.01	0.01	%			11/21/19 18:33	1

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-6
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**9.19**		0.01	0.01	%			11/21/19 18:40	1
Coarse Sand (0.5mm to 1mm)	**0.02**		0.01	0.01	%			11/21/19 18:40	1
Fine Sand (0.125 to 0.25mm)	**14.31**		0.01	0.01	%			11/21/19 18:40	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:40	1
Medium Sand (0.25 to 0.5 mm)	**47.62**		0.01	0.01	%			11/21/19 18:40	1
Silt (0.00391 to 0.0625mm)	**23.30**		0.01	0.01	%			11/21/19 18:40	1
Total Silt and Clay (0 to 0.0626mm)	**32.49**		0.01	0.01	%			11/21/19 18:40	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 18:40	1
Very Fine Sand (0.0625 to 0.125 mm)	**5.56**		0.01	0.01	%			11/21/19 18:40	1

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**0.55**		0.01	0.01	%			11/21/19 18:58	1
Coarse Sand (0.5mm to 1mm)	**23.04**		0.01	0.01	%			11/21/19 18:58	1
Fine Sand (0.125 to 0.25mm)	**9.44**		0.01	0.01	%			11/21/19 18:58	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:58	1
Medium Sand (0.25 to 0.5 mm)	**62.36**		0.01	0.01	%			11/21/19 18:58	1
Silt (0.00391 to 0.0625mm)	**2.99**		0.01	0.01	%			11/21/19 18:58	1
Total Silt and Clay (0 to 0.0626mm)	**3.54**		0.01	0.01	%			11/21/19 18:58	1
Very Coarse Sand (1 to 2mm)	**0.01**		0.01	0.01	%			11/21/19 18:58	1
Very Fine Sand (0.0625 to 0.125 mm)	**1.61**		0.01	0.01	%			11/21/19 18:58	1

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**18.23**		0.01	0.01	%			11/21/19 19:06	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:06	1
Fine Sand (0.125 to 0.25mm)	**0.01**		0.01	0.01	%			11/21/19 19:06	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:06	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:06	1
Silt (0.00391 to 0.0625mm)	**72.66**		0.01	0.01	%			11/21/19 19:06	1
Total Silt and Clay (0 to 0.0626mm)	**90.89**		0.01	0.01	%			11/21/19 19:06	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:06	1
Very Fine Sand (0.0625 to 0.125 mm)	**9.10**		0.01	0.01	%			11/21/19 19:06	1

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**20.42**		0.01	0.01	%			11/21/19 19:13	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Fine Sand (0.125 to 0.25mm)	**0.01**		0.01	0.01	%			11/21/19 19:13	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Silt (0.00391 to 0.0625mm)	**67.42**		0.01	0.01	%			11/21/19 19:13	1
Total Silt and Clay (0 to 0.0626mm)	**87.84**		0.01	0.01	%			11/21/19 19:13	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Very Fine Sand (0.0625 to 0.125 mm)	**12.15**		0.01	0.01	%			11/21/19 19:13	1

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**23.80**		0.01	0.01	%			11/21/19 19:20	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:20	1
Fine Sand (0.125 to 0.25mm)	ND		0.01	0.01	%			11/21/19 19:20	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:20	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:20	1
Silt (0.00391 to 0.0625mm)	**75.25**		0.01	0.01	%			11/21/19 19:20	1
Total Silt and Clay (0 to 0.0626mm)	**99.05**		0.01	0.01	%			11/21/19 19:20	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:20	1
Very Fine Sand (0.0625 to 0.125 mm)	**0.95**		0.01	0.01	%			11/21/19 19:20	1

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**21.46**		0.01	0.01	%			11/21/19 19:29	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:29	1
Fine Sand (0.125 to 0.25mm)	ND		0.01	0.01	%			11/21/19 19:29	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:29	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:29	1
Silt (0.00391 to 0.0625mm)	**70.76**		0.01	0.01	%			11/21/19 19:29	1
Total Silt and Clay (0 to 0.0626mm)	**92.22**		0.01	0.01	%			11/21/19 19:29	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:29	1
Very Fine Sand (0.0625 to 0.125 mm)	**7.78**		0.01	0.01	%			11/21/19 19:29	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-13
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**24.27**		0.01	0.01	%			11/21/19 21:04	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 21:04	1
Fine Sand (0.125 to 0.25mm)	**0.56**		0.01	0.01	%			11/21/19 21:04	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 21:04	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 21:04	1
Silt (0.00391 to 0.0625mm)	**63.44**		0.01	0.01	%			11/21/19 21:04	1
Total Silt and Clay (0 to 0.0626mm)	**87.71**		0.01	0.01	%			11/21/19 21:04	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 21:04	1
Very Fine Sand (0.0625 to 0.125 mm)	**11.73**		0.01	0.01	%			11/21/19 21:04	1

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**21.89**		0.01	0.01	%			11/21/19 21:11	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 21:11	1
Fine Sand (0.125 to 0.25mm)	**1.75**		0.01	0.01	%			11/21/19 21:11	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 21:11	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 21:11	1
Silt (0.00391 to 0.0625mm)	**62.82**		0.01	0.01	%			11/21/19 21:11	1
Total Silt and Clay (0 to 0.0626mm)	**84.71**		0.01	0.01	%			11/21/19 21:11	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 21:11	1
Very Fine Sand (0.0625 to 0.125 mm)	**13.55**		0.01	0.01	%			11/21/19 21:11	1

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**22.56**		0.01	0.01	%			11/21/19 19:41	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:41	1
Fine Sand (0.125 to 0.25mm)	**0.05**		0.01	0.01	%			11/21/19 19:41	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:41	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:41	1
Silt (0.00391 to 0.0625mm)	**69.53**		0.01	0.01	%			11/21/19 19:41	1
Total Silt and Clay (0 to 0.0626mm)	**92.09**		0.01	0.01	%			11/21/19 19:41	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:41	1
Very Fine Sand (0.0625 to 0.125 mm)	**7.86**		0.01	0.01	%			11/21/19 19:41	1

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**18.95**		0.01	0.01	%			11/21/19 19:49	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:49	1
Fine Sand (0.125 to 0.25mm)	**0.04**		0.01	0.01	%			11/21/19 19:49	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:49	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:49	1
Silt (0.00391 to 0.0625mm)	**72.70**		0.01	0.01	%			11/21/19 19:49	1
Total Silt and Clay (0 to 0.0626mm)	**91.65**		0.01	0.01	%			11/21/19 19:49	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:49	1
Very Fine Sand (0.0625 to 0.125 mm)	**8.31**		0.01	0.01	%			11/21/19 19:49	1

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**20.63**		0.01	0.01	%			11/21/19 20:15	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 20:15	1
Fine Sand (0.125 to 0.25mm)	**0.06**		0.01	0.01	%			11/21/19 20:15	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 20:15	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 20:15	1
Silt (0.00391 to 0.0625mm)	**72.43**		0.01	0.01	%			11/21/19 20:15	1
Total Silt and Clay (0 to 0.0626mm)	**93.06**		0.01	0.01	%			11/21/19 20:15	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 20:15	1
Very Fine Sand (0.0625 to 0.125 mm)	**6.88**		0.01	0.01	%			11/21/19 20:15	1

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**20.57**		0.01	0.01	%			11/21/19 20:22	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 20:22	1
Fine Sand (0.125 to 0.25mm)	**0.05**		0.01	0.01	%			11/21/19 20:22	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 20:22	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 20:22	1
Silt (0.00391 to 0.0625mm)	**72.15**		0.01	0.01	%			11/21/19 20:22	1
Total Silt and Clay (0 to 0.0626mm)	**92.72**		0.01	0.01	%			11/21/19 20:22	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 20:22	1
Very Fine Sand (0.0625 to 0.125 mm)	**7.23**		0.01	0.01	%			11/21/19 20:22	1

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-20
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**27.20**		0.01	0.01	%			11/21/19 20:29	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 20:29	1
Fine Sand (0.125 to 0.25mm)	**0.01**		0.01	0.01	%			11/21/19 20:29	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 20:29	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 20:29	1
Silt (0.00391 to 0.0625mm)	**66.28**		0.01	0.01	%			11/21/19 20:29	1
Total Silt and Clay (0 to 0.0626mm)	**93.48**		0.01	0.01	%			11/21/19 20:29	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-20
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 20:29	1
Very Fine Sand (0.0625 to 0.125 mm)	**6.51**		0.01	0.01	%			11/21/19 20:29	1

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**23.39**		0.01	0.01	%			11/21/19 20:37	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 20:37	1
Fine Sand (0.125 to 0.25mm)	**0.01**		0.01	0.01	%			11/21/19 20:37	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 20:37	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 20:37	1
Silt (0.00391 to 0.0625mm)	**70.73**		0.01	0.01	%			11/21/19 20:37	1
Total Silt and Clay (0 to 0.0626mm)	**94.11**		0.01	0.01	%			11/21/19 20:37	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 20:37	1
Very Fine Sand (0.0625 to 0.125 mm)	**5.88**		0.01	0.01	%			11/21/19 20:37	1

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**2.55**		0.01	0.01	%			11/21/19 21:09	1
Coarse Sand (0.5mm to 1mm)	**0.03**		0.01	0.01	%			11/21/19 21:09	1
Fine Sand (0.125 to 0.25mm)	**63.32**		0.01	0.01	%			11/21/19 21:09	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 21:09	1
Medium Sand (0.25 to 0.5 mm)	**18.22**		0.01	0.01	%			11/21/19 21:09	1
Silt (0.00391 to 0.0625mm)	**8.25**		0.01	0.01	%			11/21/19 21:09	1
Total Silt and Clay (0 to 0.0626mm)	**10.80**		0.01	0.01	%			11/21/19 21:09	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 21:09	1
Very Fine Sand (0.0625 to 0.125 mm)	**7.64**		0.01	0.01	%			11/21/19 21:09	1

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**14.76**		0.01	0.01	%			11/21/19 21:16	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 21:16	1
Fine Sand (0.125 to 0.25mm)	**22.06**		0.01	0.01	%			11/21/19 21:16	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 21:16	1
Medium Sand (0.25 to 0.5 mm)	**0.53**		0.01	0.01	%			11/21/19 21:16	1
Silt (0.00391 to 0.0625mm)	**46.44**		0.01	0.01	%			11/21/19 21:16	1
Total Silt and Clay (0 to 0.0626mm)	**61.19**		0.01	0.01	%			11/21/19 21:16	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 21:16	1
Very Fine Sand (0.0625 to 0.125 mm)	**16.22**		0.01	0.01	%			11/21/19 21:16	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**22.06**		0.01	0.01	%			11/21/19 21:23	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 21:23	1
Fine Sand (0.125 to 0.25mm)	**2.25**		0.01	0.01	%			11/21/19 21:23	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 21:23	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 21:23	1
Silt (0.00391 to 0.0625mm)	**58.71**		0.01	0.01	%			11/21/19 21:23	1
Total Silt and Clay (0 to 0.0626mm)	**80.77**		0.01	0.01	%			11/21/19 21:23	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 21:23	1
Very Fine Sand (0.0625 to 0.125 mm)	**16.98**		0.01	0.01	%			11/21/19 21:23	1

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**23.53**		0.01	0.01	%			11/21/19 21:32	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 21:32	1
Fine Sand (0.125 to 0.25mm)	**0.12**		0.01	0.01	%			11/21/19 21:32	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 21:32	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 21:32	1
Silt (0.00391 to 0.0625mm)	**64.10**		0.01	0.01	%			11/21/19 21:32	1
Total Silt and Clay (0 to 0.0626mm)	**87.62**		0.01	0.01	%			11/21/19 21:32	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 21:32	1
Very Fine Sand (0.0625 to 0.125 mm)	**12.26**		0.01	0.01	%			11/21/19 21:32	1

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-27
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**22.02**		0.01	0.01	%			11/21/19 15:52	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 15:52	1
Fine Sand (0.125 to 0.25mm)	**3.55**		0.01	0.01	%			11/21/19 15:52	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 15:52	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 15:52	1
Silt (0.00391 to 0.0625mm)	**53.50**		0.01	0.01	%			11/21/19 15:52	1
Total Silt and Clay (0 to 0.0626mm)	**75.52**		0.01	0.01	%			11/21/19 15:52	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 15:52	1
Very Fine Sand (0.0625 to 0.125 mm)	**20.93**		0.01	0.01	%			11/21/19 15:52	1

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**17.67**		0.01	0.01	%			11/22/19 19:04	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/22/19 19:04	1
Fine Sand (0.125 to 0.25mm)	**20.20**		0.01	0.01	%			11/22/19 19:04	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/22/19 19:04	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-28
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/22/19 19:04	1
Silt (0.00391 to 0.0625mm)	**46.97**		0.01	0.01	%			11/22/19 19:04	1
Total Silt and Clay (0 to 0.0626mm)	**64.64**		0.01	0.01	%			11/22/19 19:04	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/22/19 19:04	1
Very Fine Sand (0.0625 to 0.125 mm)	**15.15**		0.01	0.01	%			11/22/19 19:04	1

Client Sample ID: MOTCO-2019-DU4-01
Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**14.59**		0.01	0.01	%			11/21/19 15:59	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 15:59	1
Fine Sand (0.125 to 0.25mm)	**25.17**		0.01	0.01	%			11/21/19 15:59	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 15:59	1
Medium Sand (0.25 to 0.5 mm)	**0.47**		0.01	0.01	%			11/21/19 15:59	1
Silt (0.00391 to 0.0625mm)	**43.13**		0.01	0.01	%			11/21/19 15:59	1
Total Silt and Clay (0 to 0.0626mm)	**57.72**		0.01	0.01	%			11/21/19 15:59	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 15:59	1
Very Fine Sand (0.0625 to 0.125 mm)	**16.64**		0.01	0.01	%			11/21/19 15:59	1

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**18.02**		0.01	0.01	%			11/21/19 16:06	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 16:06	1
Fine Sand (0.125 to 0.25mm)	**9.82**		0.01	0.01	%			11/21/19 16:06	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 16:06	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 16:06	1
Silt (0.00391 to 0.0625mm)	**50.15**		0.01	0.01	%			11/21/19 16:06	1
Total Silt and Clay (0 to 0.0626mm)	**68.17**		0.01	0.01	%			11/21/19 16:06	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 16:06	1
Very Fine Sand (0.0625 to 0.125 mm)	**22.01**		0.01	0.01	%			11/21/19 16:06	1

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**21.01**		0.01	0.01	%			11/21/19 18:55	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 18:55	1
Fine Sand (0.125 to 0.25mm)	**8.46**		0.01	0.01	%			11/21/19 18:55	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 18:55	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 18:55	1
Silt (0.00391 to 0.0625mm)	**58.95**		0.01	0.01	%			11/21/19 18:55	1
Total Silt and Clay (0 to 0.0626mm)	**79.97**		0.01	0.01	%			11/21/19 18:55	1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering) (Continued)

Client Sample ID: MOTCO-2019-DU4-03
Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 18:55	1
Very Fine Sand (0.0625 to 0.125 mm)	**11.57**		0.01	0.01	%			11/21/19 18:55	1

Client Sample ID: MOTCO-2019-DU4-04
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**9.08**		0.01	0.01	%			11/21/19 19:05	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:05	1
Fine Sand (0.125 to 0.25mm)	**22.03**		0.01	0.01	%			11/21/19 19:05	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:05	1
Medium Sand (0.25 to 0.5 mm)	**6.87**		0.01	0.01	%			11/21/19 19:05	1
Silt (0.00391 to 0.0625mm)	**34.98**		0.01	0.01	%			11/21/19 19:05	1
Total Silt and Clay (0 to 0.0626mm)	**44.06**		0.01	0.01	%			11/21/19 19:05	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:05	1
Very Fine Sand (0.0625 to 0.125 mm)	**27.05**		0.01	0.01	%			11/21/19 19:05	1

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-34
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**23.60**		0.01	0.01	%			11/21/19 19:13	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Fine Sand (0.125 to 0.25mm)	**10.96**		0.01	0.01	%			11/21/19 19:13	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Silt (0.00391 to 0.0625mm)	**52.09**		0.01	0.01	%			11/21/19 19:13	1
Total Silt and Clay (0 to 0.0626mm)	**75.69**		0.01	0.01	%			11/21/19 19:13	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:13	1
Very Fine Sand (0.0625 to 0.125 mm)	**13.35**		0.01	0.01	%			11/21/19 19:13	1

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-35
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**15.79**		0.01	0.01	%			11/21/19 19:21	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			11/21/19 19:21	1
Fine Sand (0.125 to 0.25mm)	**19.61**		0.01	0.01	%			11/21/19 19:21	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			11/21/19 19:21	1
Medium Sand (0.25 to 0.5 mm)	**0.25**		0.01	0.01	%			11/21/19 19:21	1
Silt (0.00391 to 0.0625mm)	**45.01**		0.01	0.01	%			11/21/19 19:21	1
Total Silt and Clay (0 to 0.0626mm)	**60.80**		0.01	0.01	%			11/21/19 19:21	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			11/21/19 19:21	1
Very Fine Sand (0.0625 to 0.125 mm)	**19.34**		0.01	0.01	%			11/21/19 19:21	1

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

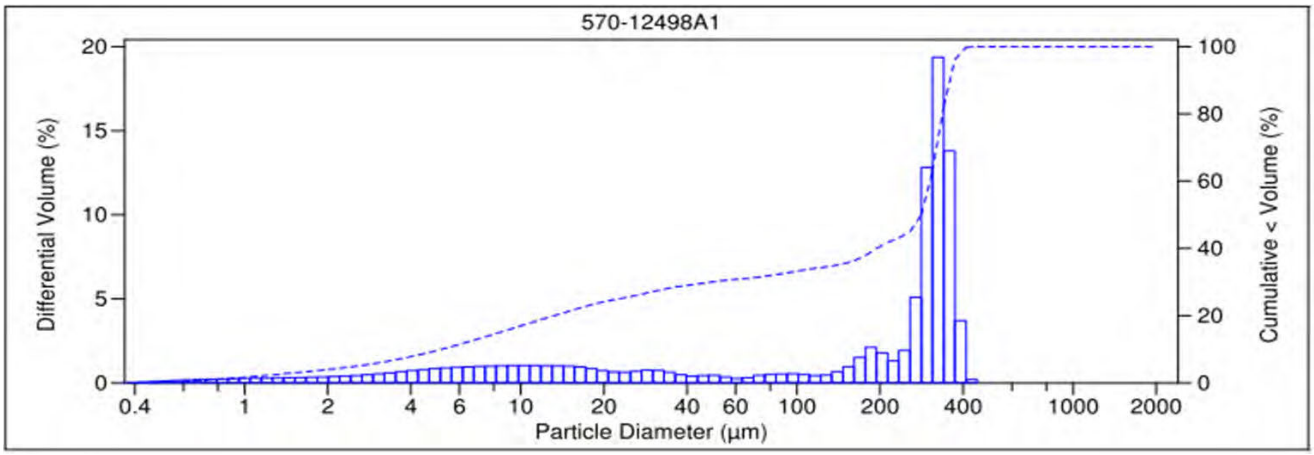
Pacific EcoRisk

Date Sampled:	10/31/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/15/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU1-01		Fine Sand	0.207

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	55.54	10.08	3.48	23.26	7.64	30.91



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

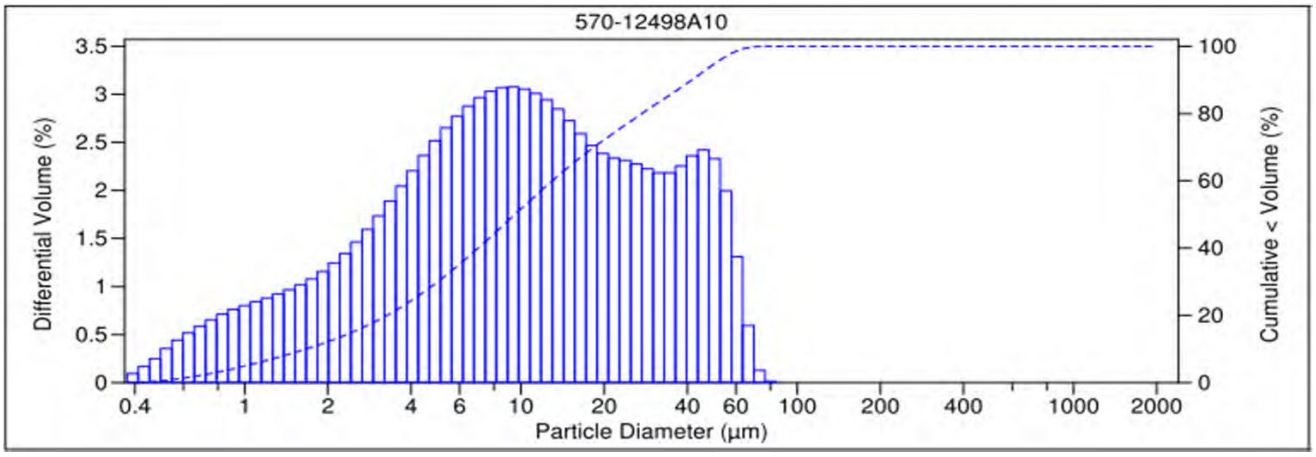
Pacific EcoRisk

Date Sampled:	10/28/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/15/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2a-03		Silt	0.016

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	0.00	0.00	0.95	75.25	23.80	99.05



V 3.0

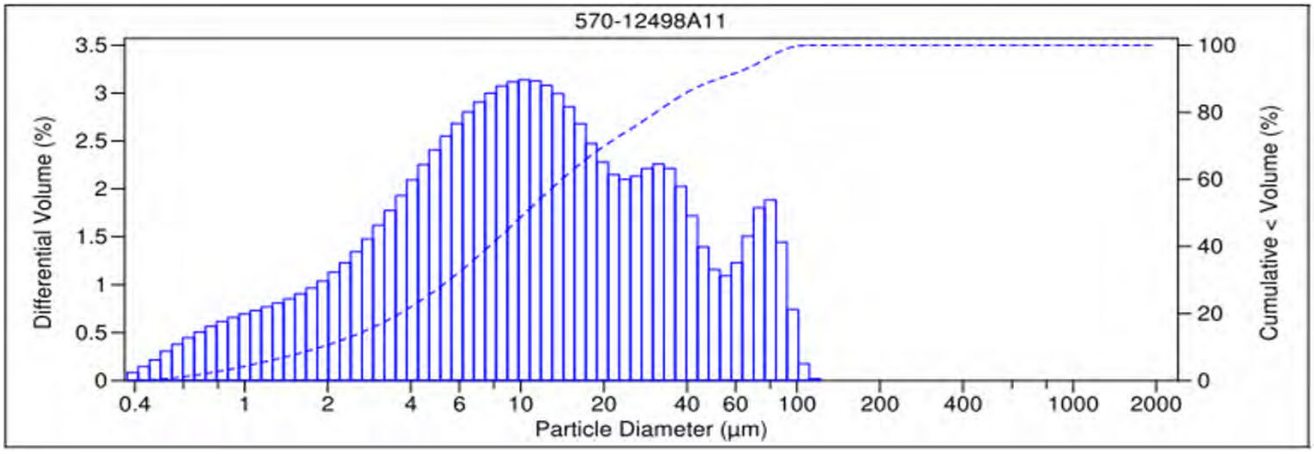
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/28/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/15/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 11 of 13

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2a-04		Silt	0.019

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	0.00	0.00	7.78	70.76	21.46	92.22



V 3.0

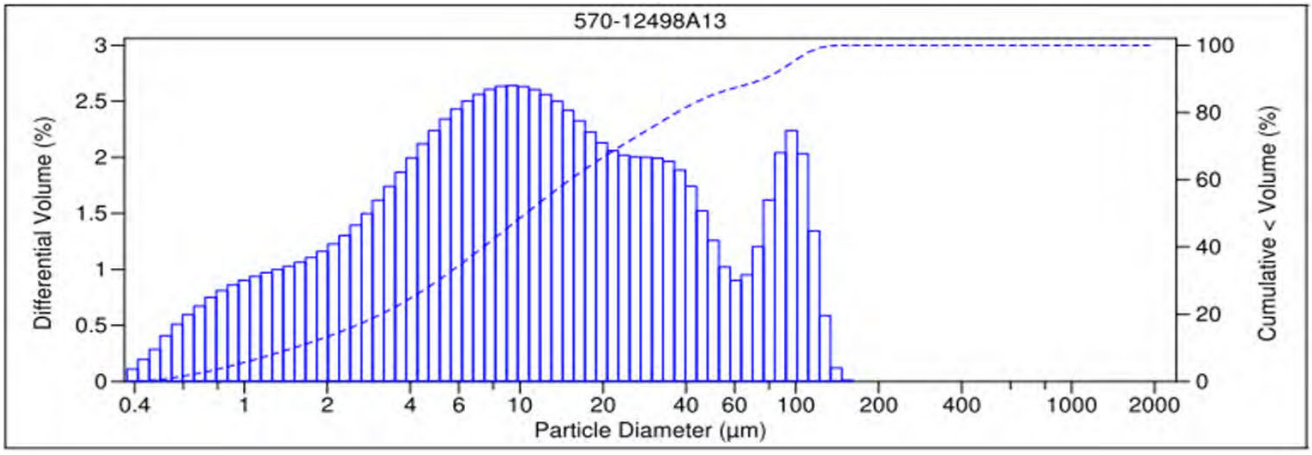
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/28/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/15/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 12 of 13

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2a-Comp		Silt	0.023

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	0.00	0.56	11.73	63.44	24.27	87.71



V 3.0

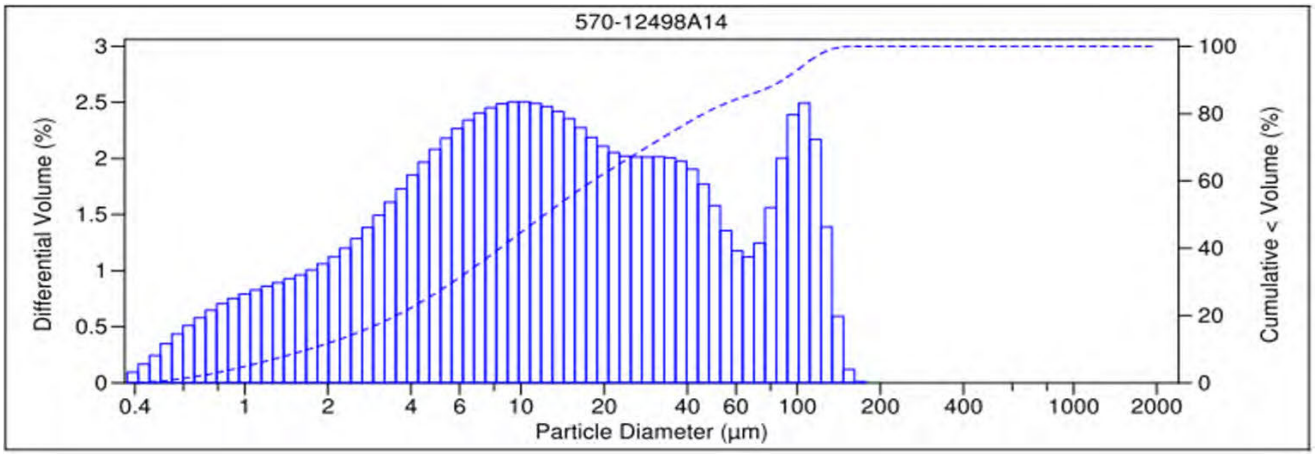
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/28/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/15/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 13 of 13

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2a-Z-Layer-Comp		Silt	0.028

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	0.00	1.75	13.55	62.82	21.89	84.71



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

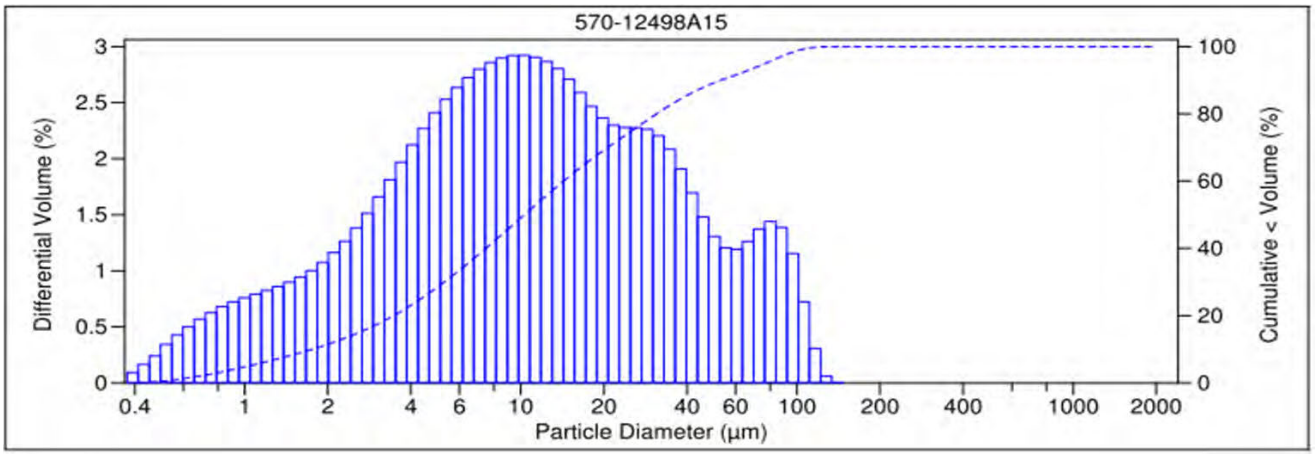
Pacific EcoRisk

Date Sampled:	10/31/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/18/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2b-01		Silt	0.020

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	0.00	0.05	7.86	69.53	22.56	92.09



V 3.0

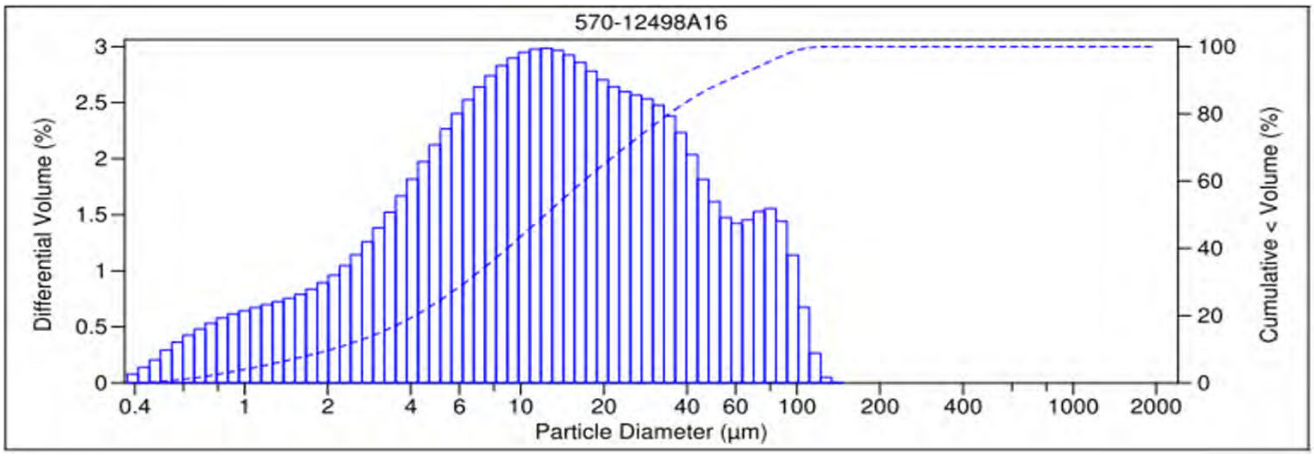
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/31/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/18/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 2 of 11

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2b-02		Silt	0.021

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	0.00	0.04	8.31	72.70	18.95	91.65



V 3.0

PARTICLE SIZE SUMMARY

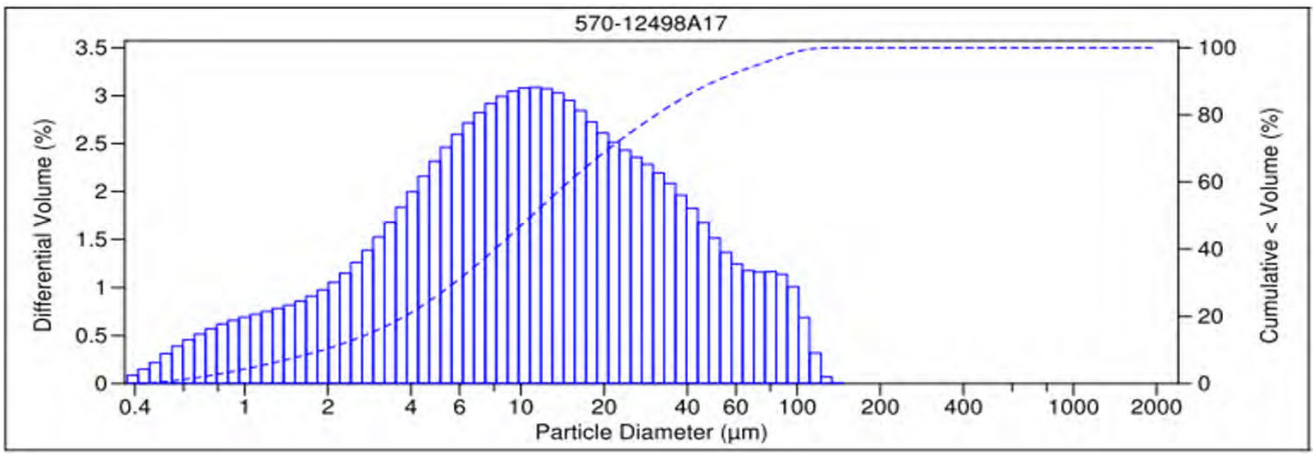
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/31/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/18/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2b-03		Silt	0.020

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	0.00	0.06	6.88	72.43	20.63	93.06



V 3.0

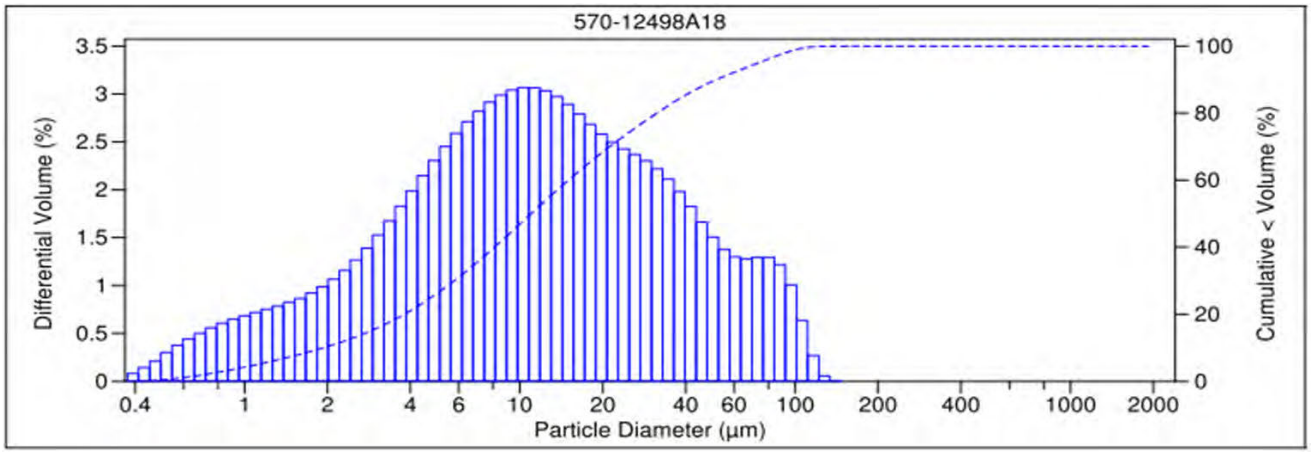
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/31/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/18/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 4 of 11

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2b-04		Silt	0.020

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	0.00	0.05	7.23	72.15	20.57	92.72



V 3.0

PARTICLE SIZE SUMMARY

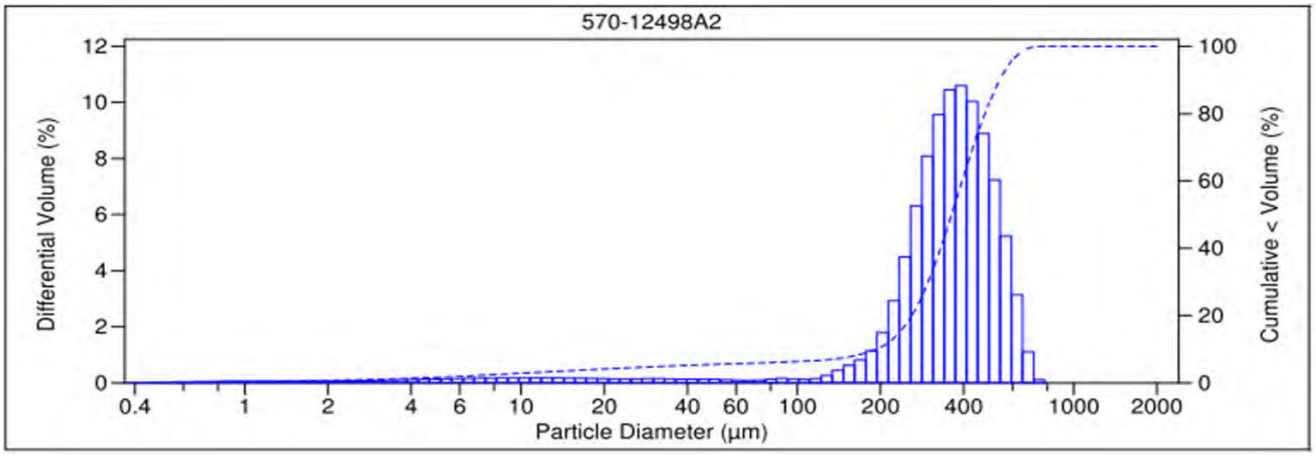
(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/31/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/15/19
		Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU1-02		Medium Sand	0.359

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	15.88	66.24	11.12	0.99	4.43	1.35	5.78



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

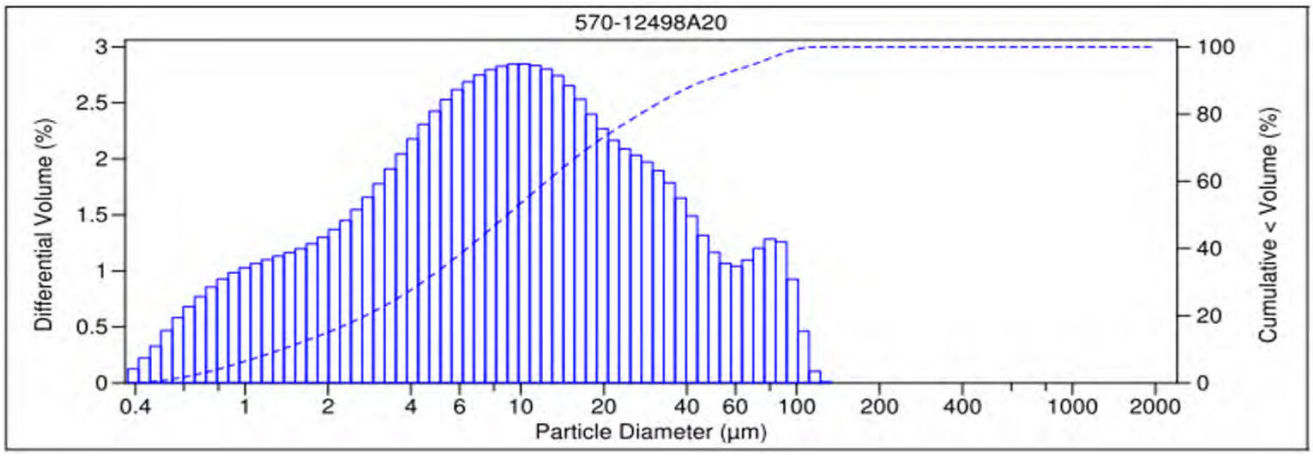
Pacific EcoRisk

Date Sampled:	10/31/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/18/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2b-Comp		Silt	0.017

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	0.00	0.01	6.51	66.28	27.20	93.48



V 3.0

PARTICLE SIZE SUMMARY

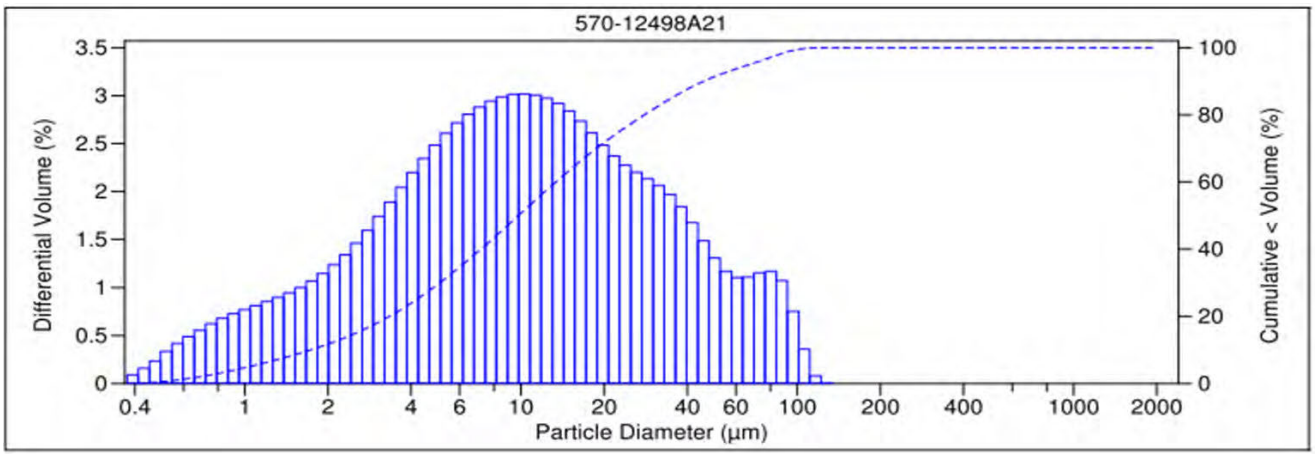
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/31/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/18/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2b-Z-Layer-Comp		Silt	0.018

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	0.00	0.01	5.88	70.73	23.39	94.11



V 3.0

PARTICLE SIZE SUMMARY

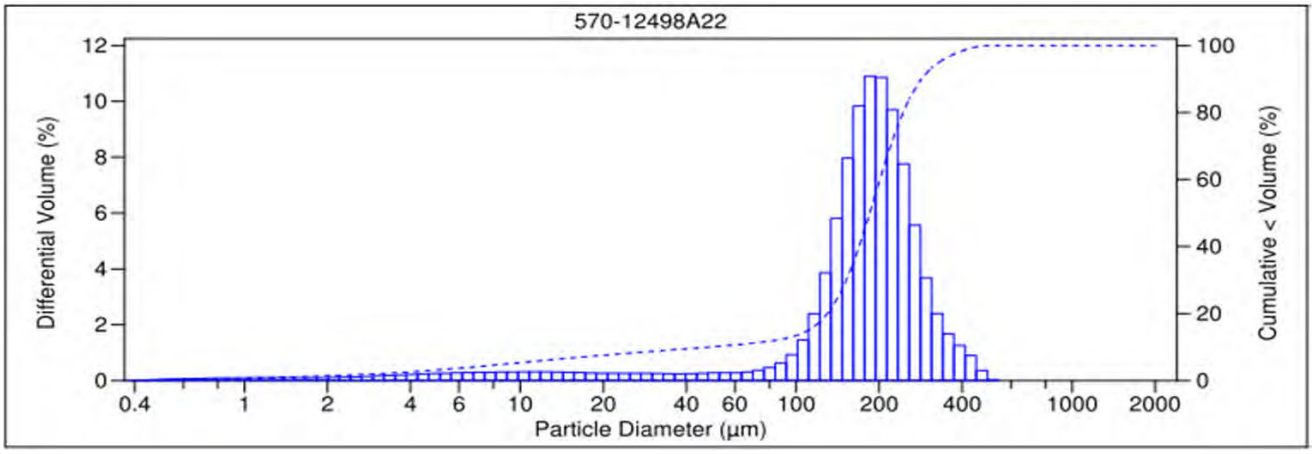
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/30/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/18/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU3-01		Fine Sand	0.184

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	0.03	18.22	63.32	7.64	8.25	2.55	10.80



V 3.0

PARTICLE SIZE SUMMARY

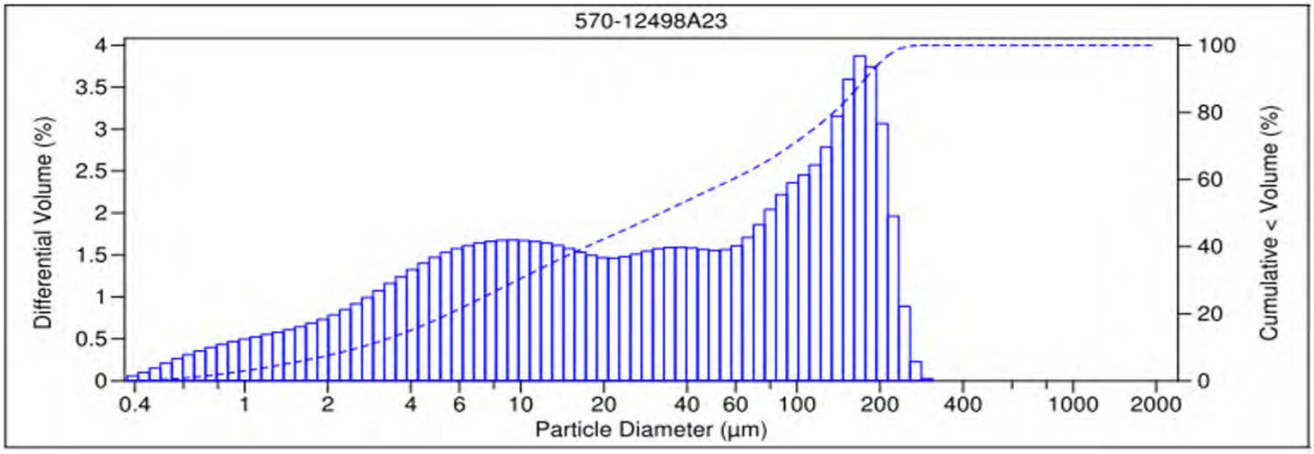
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/30/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/18/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU3-02		Very Fine Sand	0.065

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	0.53	22.06	16.22	46.44	14.76	61.19



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

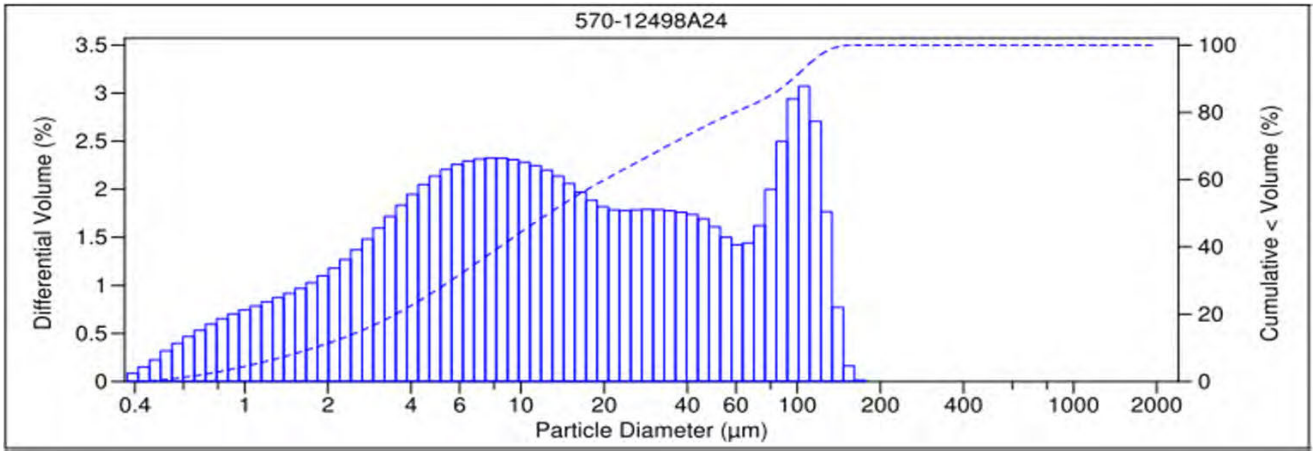
Pacific EcoRisk

Date Sampled:	10/30/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/18/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU3-03		Silt	0.031

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	0.00	2.25	16.98	58.71	22.06	80.77



V 3.0

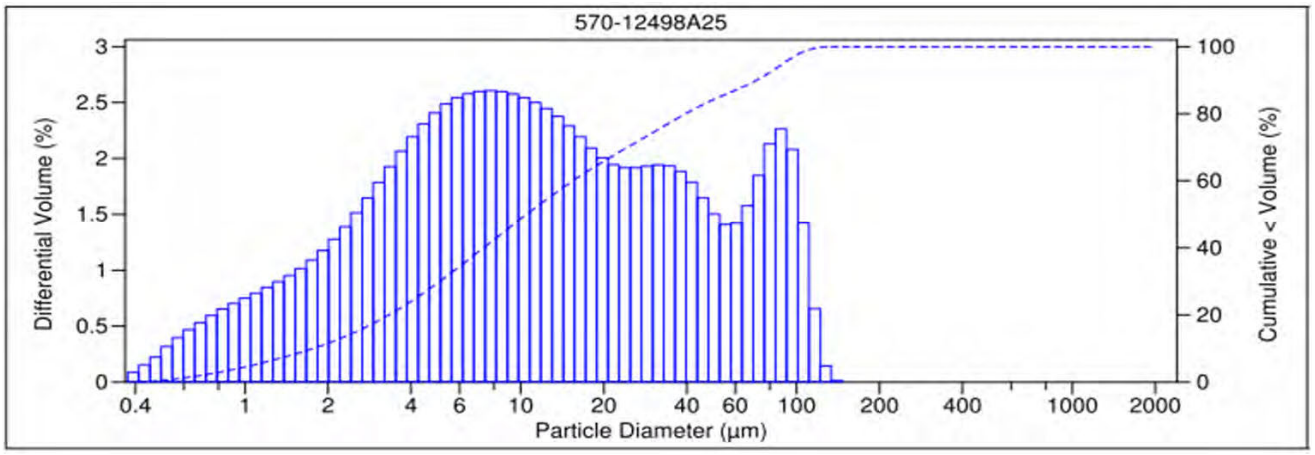
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/30/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/18/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 11 of 11

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU3-04		Silt	0.023

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	0.00	0.12	12.26	64.10	23.53	87.62



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

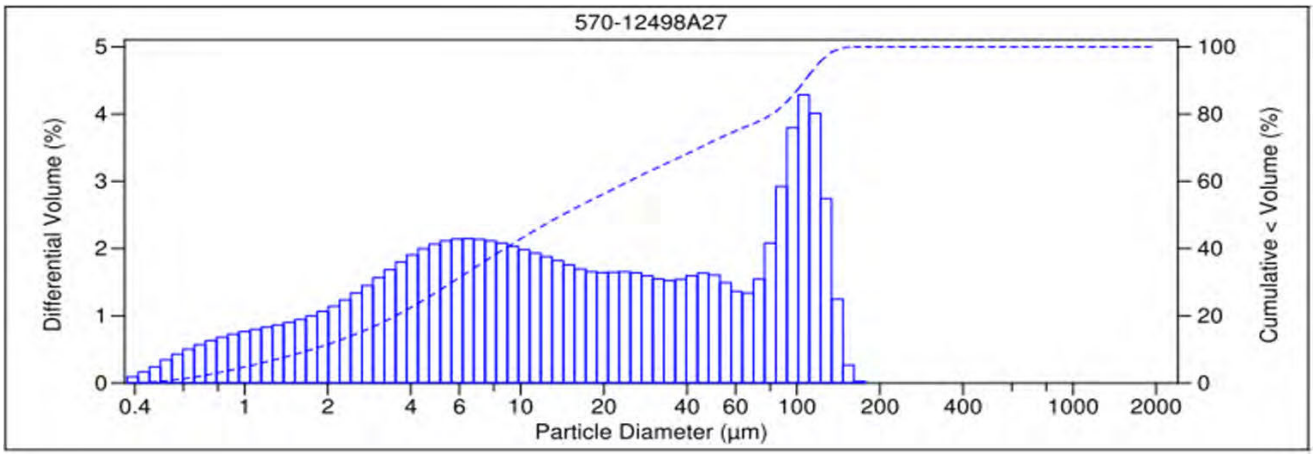
Pacific EcoRisk

Date Sampled:	10/30/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/20/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU3-Comp		Silt	0.036

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	0.00	3.55	20.93	53.50	22.02	75.52



V 3.0

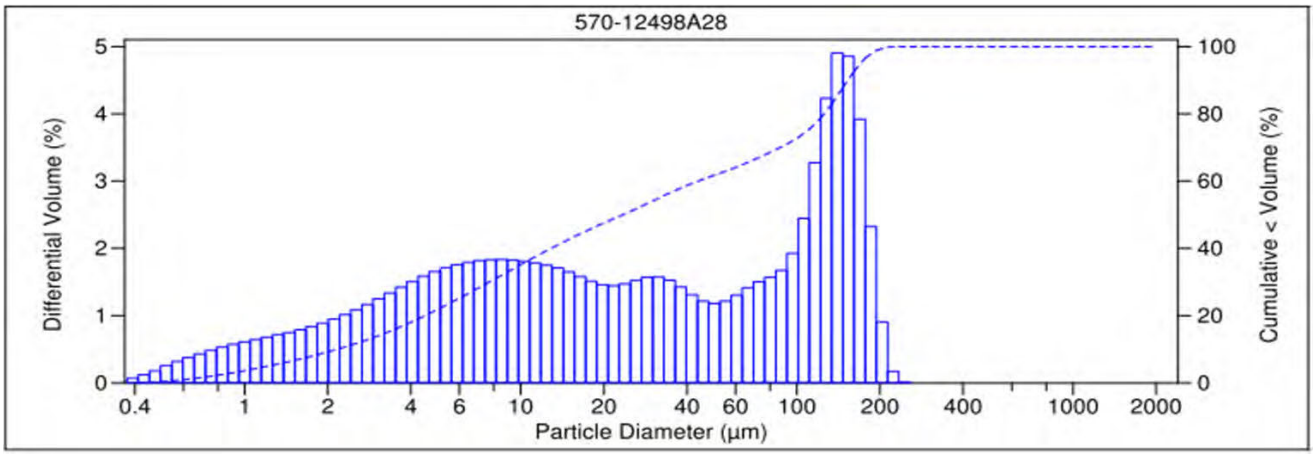
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/30/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/22/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 1 of 1

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU3-Z-Layer-Comp		Silt	0.056

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	0.00	20.20	15.15	46.97	17.67	64.64



V 3.0

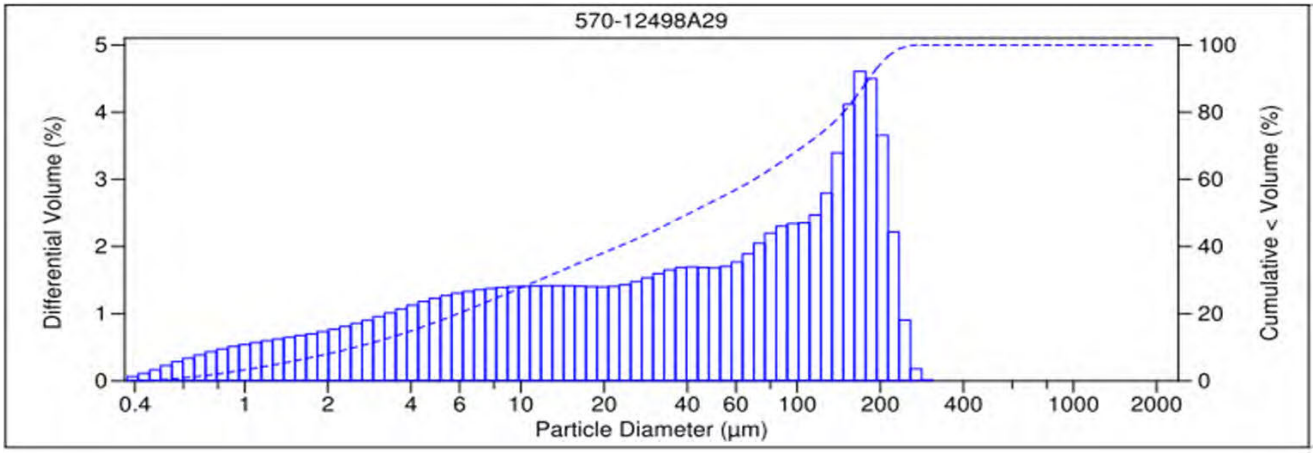
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/30/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/20/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 2 of 8

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU4-01		Very Fine Sand	0.070

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	0.47	25.17	16.64	43.13	14.59	57.72



V 3.0

PARTICLE SIZE SUMMARY

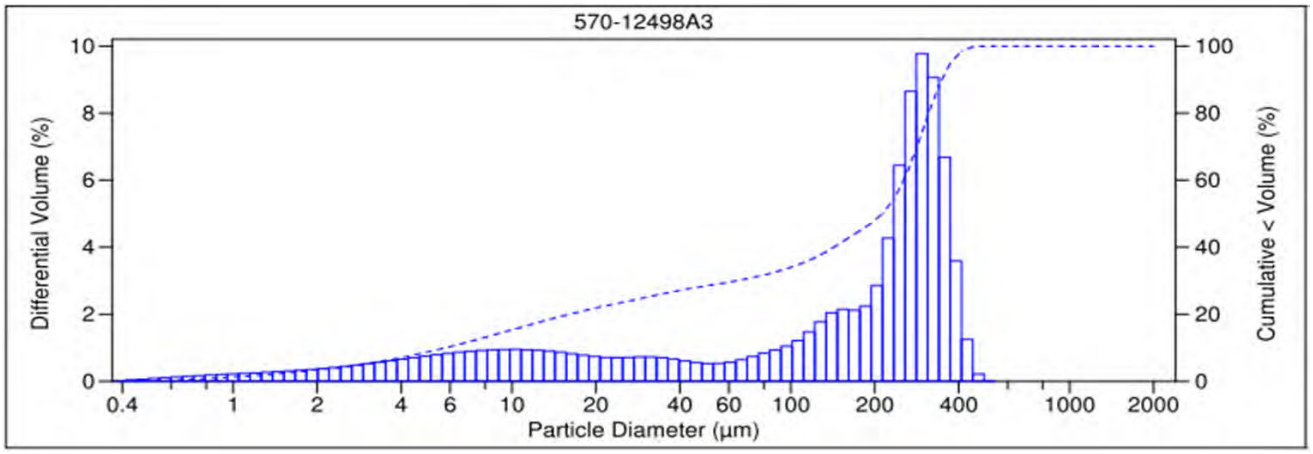
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/31/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/15/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU1-03		Fine Sand	0.184

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	0.01	41.19	21.49	7.47	22.89	6.95	29.84



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

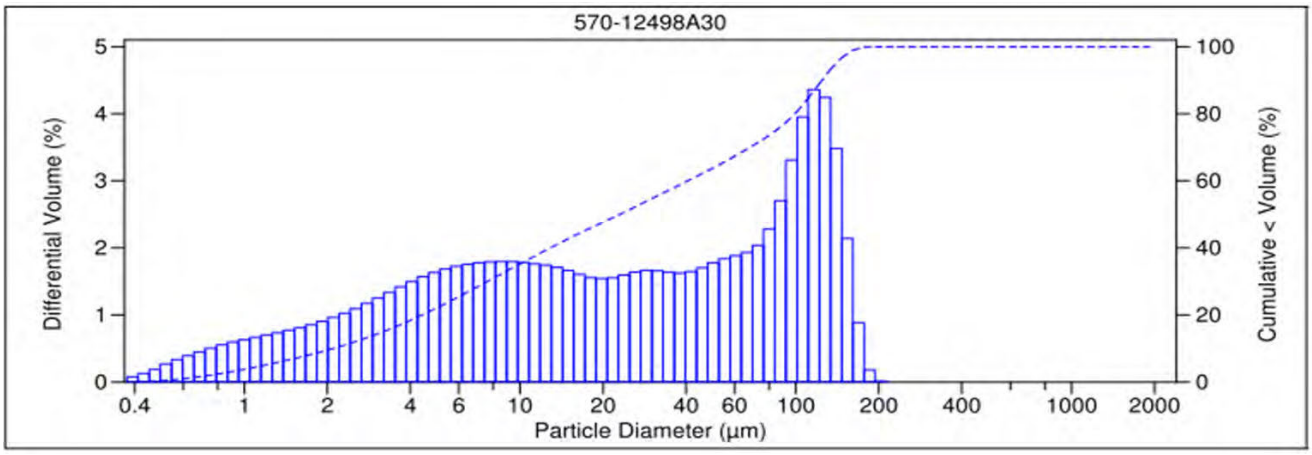
Pacific EcoRisk

Date Sampled:	10/30/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/20/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU4-02		Silt	0.046

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	0.00	9.82	22.01	50.15	18.02	68.17



V 3.0

PARTICLE SIZE SUMMARY

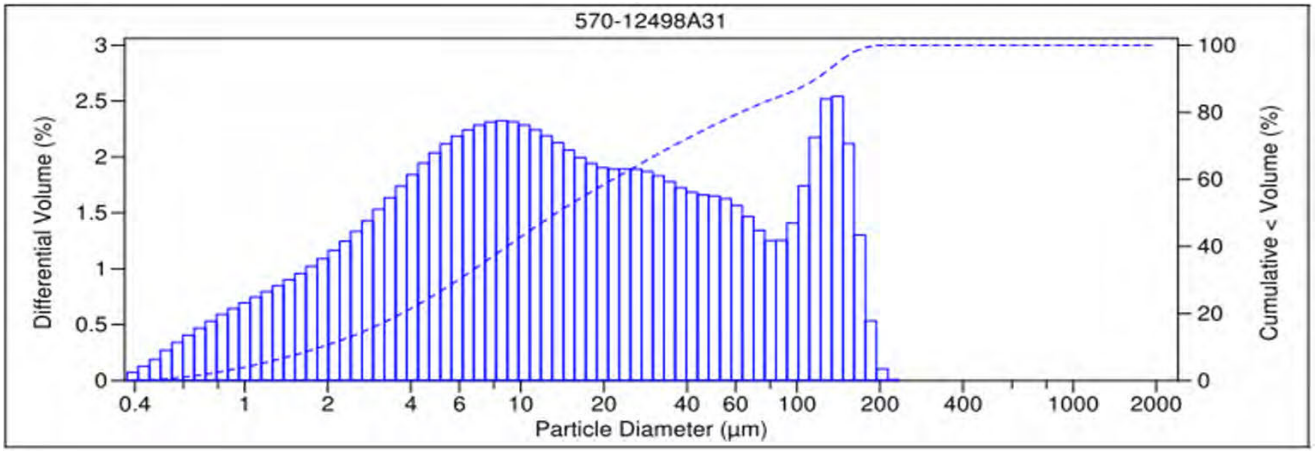
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/30/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/20/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU4-03		Silt	0.035

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	0.00	8.46	11.57	58.95	21.01	79.97



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

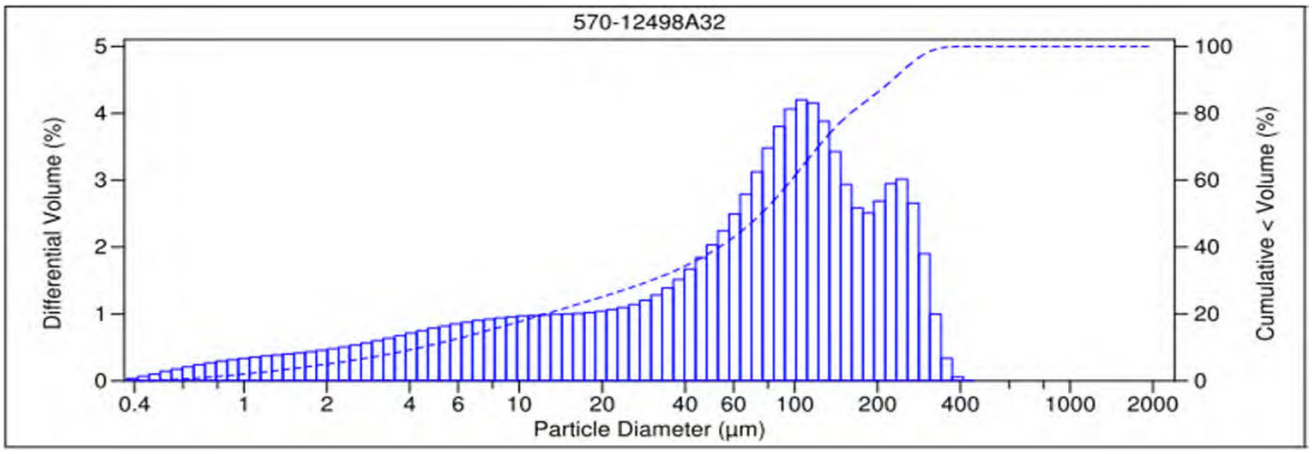
Pacific EcoRisk

Date Sampled:	10/30/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/20/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU4-04		Very Fine Sand	0.093

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	6.87	22.03	27.05	34.98	9.08	44.06



V 3.0

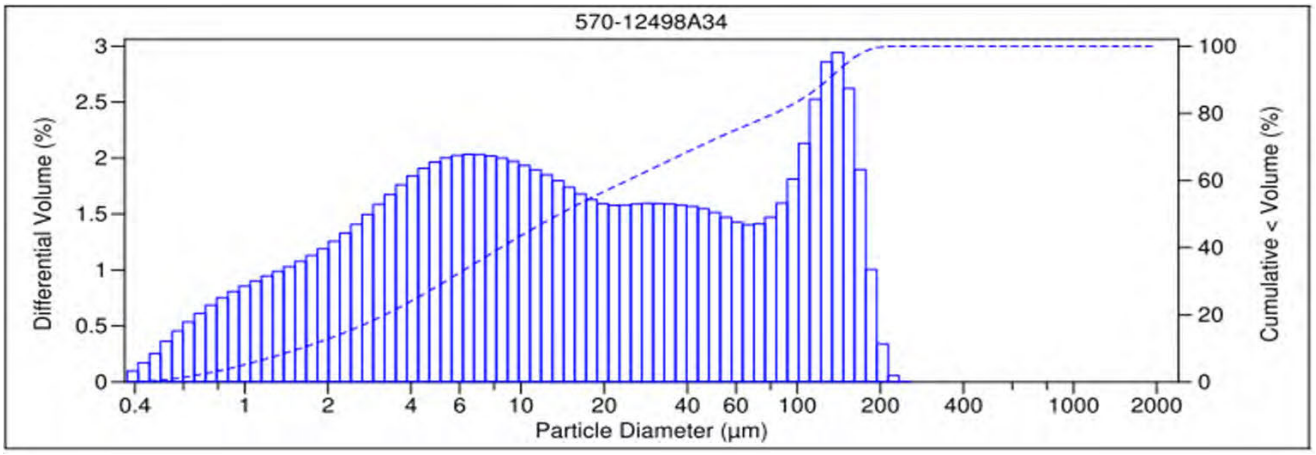
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/30/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/20/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 7 of 8

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU4-Comp		Silt	0.040

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	0.00	10.96	13.35	52.09	23.60	75.69



V 3.0

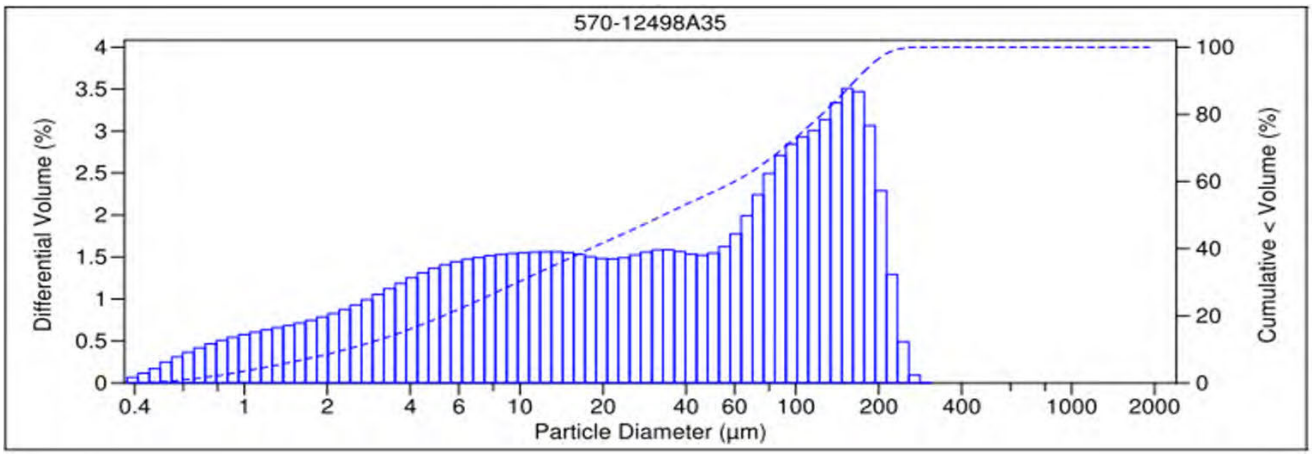
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/30/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/20/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 8 of 8

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU4-Z-Layer-Comp		Silt	0.062

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	0.25	19.61	19.34	45.01	15.79	60.80



V 3.0

PARTICLE SIZE SUMMARY

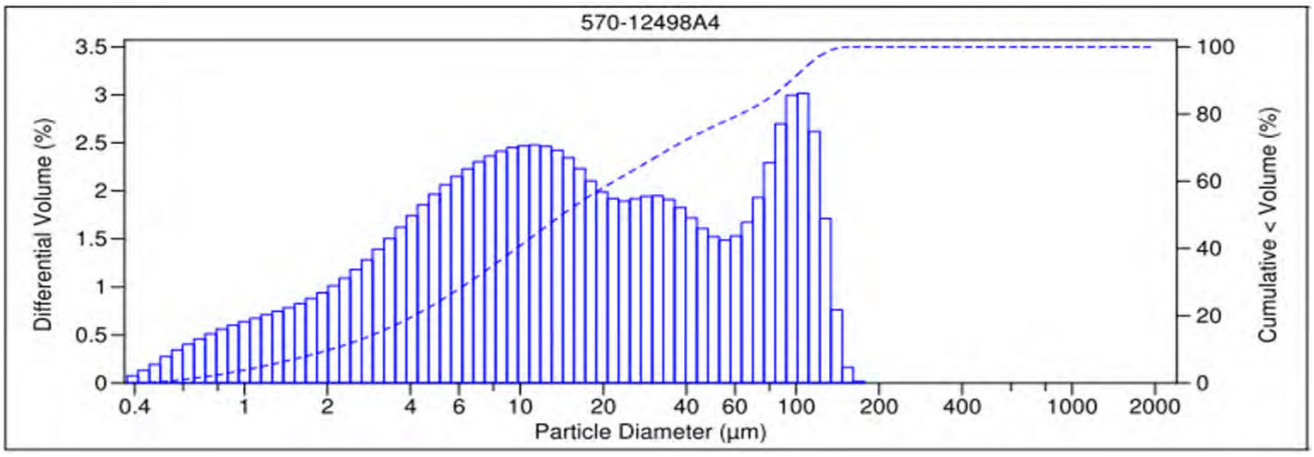
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/31/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/15/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU1-04		Silt	0.032

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	0.00	2.20	17.93	60.81	19.06	79.87



V 3.0

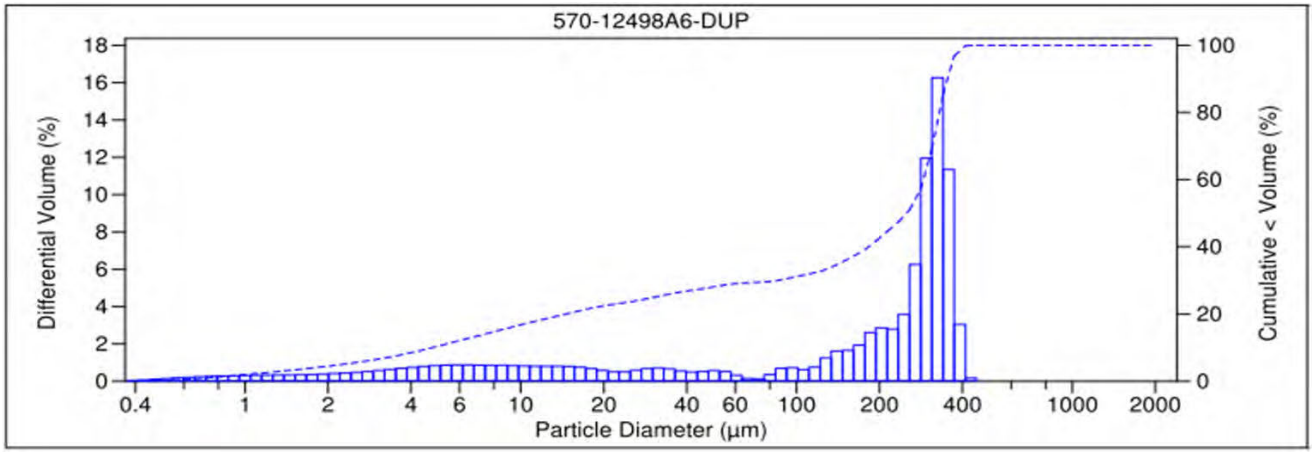
PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

Pacific EcoRisk		Date Sampled:	10/31/19
		Date Received:	11/09/19
		Work Order No:	570-12498
		Date Analyzed:	11/15/19
		Method:	ASTM D4464M
Project:	USACE: MOTCO		Page 6 of 13

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU1-Comp		Fine Sand	0.201

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	50.13	16.87	3.82	20.86	8.32	29.18



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

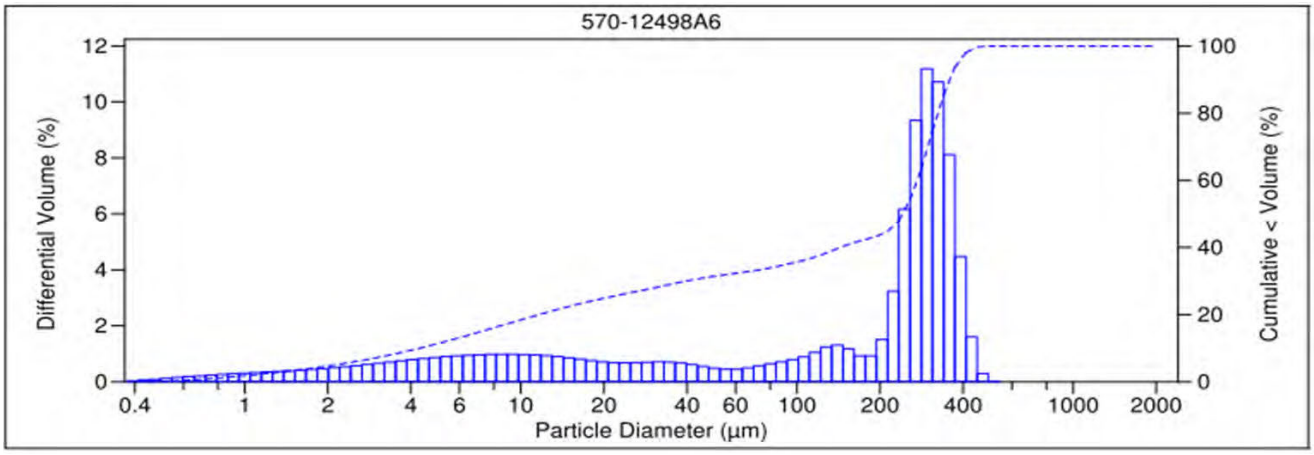
Pacific EcoRisk

Date Sampled:	10/31/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/15/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU1-Comp		Fine Sand	0.191

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	0.02	47.62	14.31	5.56	23.30	9.19	32.49



V 3.0

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

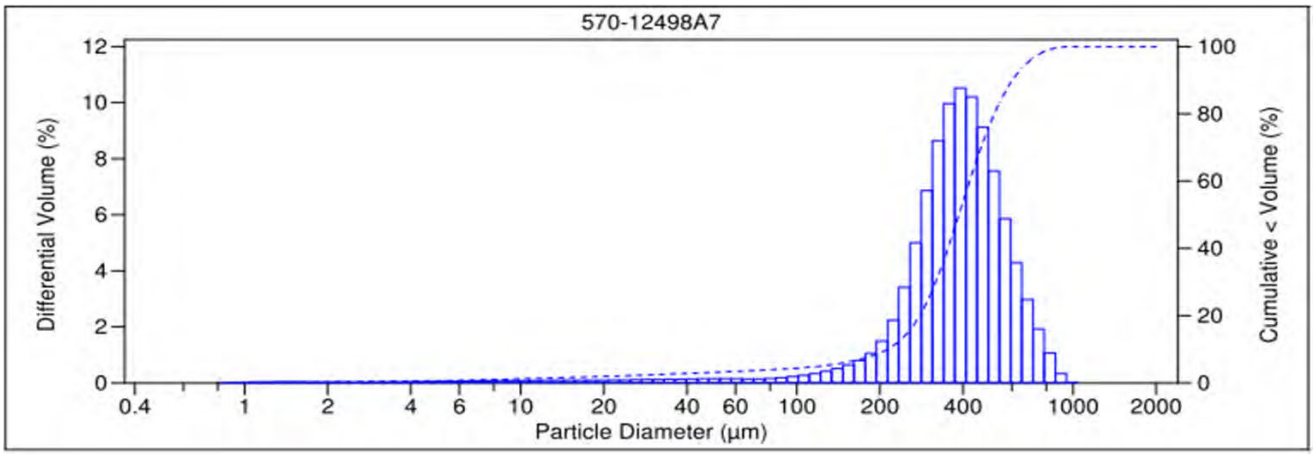
Pacific EcoRisk

Date Sampled:	10/31/19
Date Received:	11/09/19
Work Order No:	570-12498
Date Analyzed:	11/15/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DUI-Z-Layer-Comp		Medium Sand	0.395

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	0.01	23.04	62.36	9.44	1.61	2.99	0.55	3.54



V 3.0

PARTICLE SIZE SUMMARY

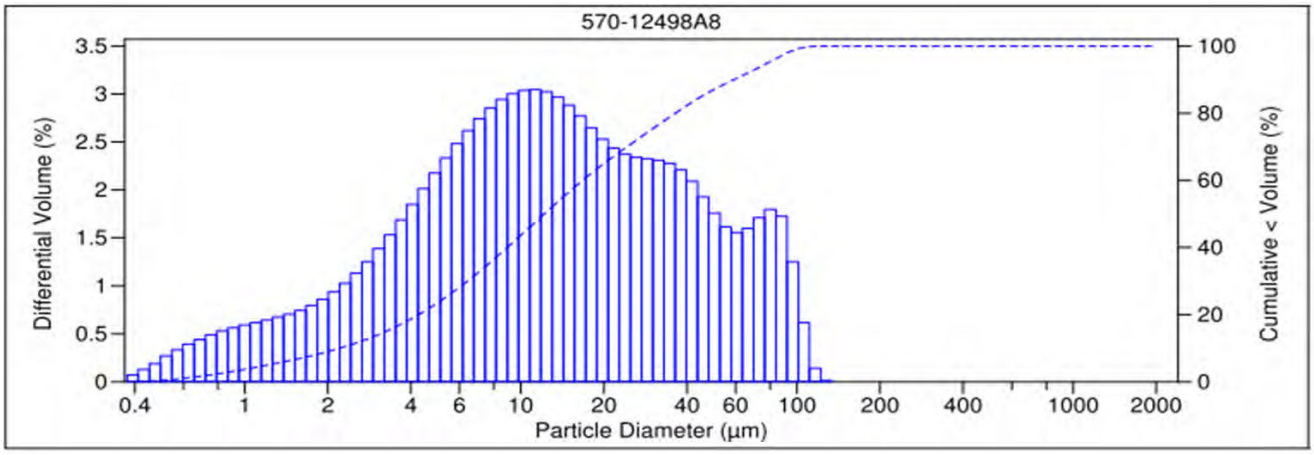
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/28/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/15/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2a-01		Silt	0.022

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	0.00	0.01	9.10	72.66	18.23	90.89



V 3.0

PARTICLE SIZE SUMMARY

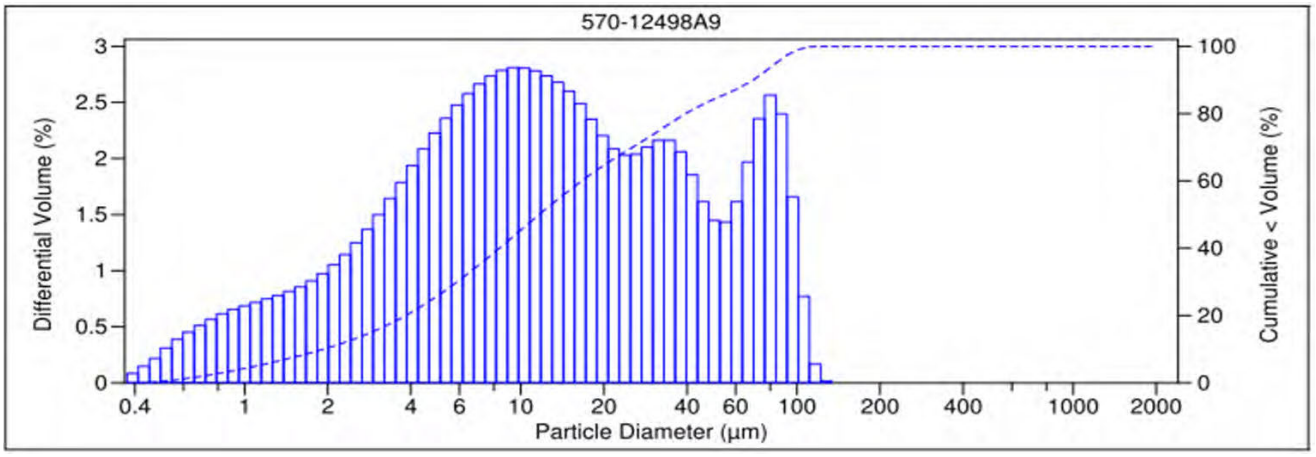
(ASTM D422 / D4464M)

Pacific EcoRisk	Date Sampled:	10/28/19
	Date Received:	11/09/19
	Work Order No:	570-12498
	Date Analyzed:	11/15/19
	Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
MOTCO-2019-DU2a-02		Silt	0.023

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	0.00	0.01	12.15	67.42	20.42	87.84



V 3.0

Surrogate Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Sediment

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	FBP (22-130)	NBZ (20-145)	TPHd14 (33-147)
570-12498-1	MOTCO-2019-DU1-01	46	42	74
570-12498-2	MOTCO-2019-DU1-02	50	48	72
570-12498-3	MOTCO-2019-DU1-03	45	44	69
570-12498-4	MOTCO-2019-DU1-04	49	51	70
570-12498-5	MOTCO-2019-DU1-Comp	53	47	73
570-12498-5 MS	MOTCO-2019-DU1-Comp	85	79	107
570-12498-5 MSD	MOTCO-2019-DU1-Comp	89	83	110
570-12498-7	MOTCO-2019-DU1-Z-Layer-Comp	59	57	75
570-12498-8	MOTCO-2019-DU2a-01	87	74	120
570-12498-9	MOTCO-2019-DU2a-02	77	74	127
570-12498-10	MOTCO-2019-DU2a-03	80	65	129
570-12498-11	MOTCO-2019-DU2a-04	68	59	115
570-12498-12	MOTCO-2019-DU2a-Comp	78	66	116
570-12498-14	MOTCO-2019-DU2a-Z-Layer-Comp	72	59	109
570-12498-15	MOTCO-2019-DU2b-01	67	56	111
570-12498-16	MOTCO-2019-DU2b-02	82	72	110
570-12498-17	MOTCO-2019-DU2b-03	84	67	121
570-12498-18	MOTCO-2019-DU2b-04	63	53	108
570-12498-19	MOTCO-2019-DU2b-Comp	83	71	112
570-12498-21	MOTCO-2019-DU2b-Z-Layer-Comp	98	86	119
570-12498-22	MOTCO-2019-DU3-01	73	65	102
570-12498-23	MOTCO-2019-DU3-02	78	66	117
570-12498-23 - DL	MOTCO-2019-DU3-02	75	49	101
570-12498-24	MOTCO-2019-DU3-03	70	53	85
570-12498-25	MOTCO-2019-DU3-04	64	49	79
570-12498-26	MOTCO-2019-DU3-Comp	71	66	82
570-12498-28	MOTCO-2019-DU3-Z-Layer-Comp	75	64	104
570-12498-28 - DL	MOTCO-2019-DU3-Z-Layer-Comp	73	59	96
570-12498-29	MOTCO-2019-DU4-01	70	62	82
570-12498-30	MOTCO-2019-DU4-02	75	70	89
570-12498-31 - DL	MOTCO-2019-DU4-03	87	56	129
570-12498-32	MOTCO-2019-DU4-04	65	57	78
570-12498-33	MOTCO-2019-DU4-Comp	58	59	72
570-12498-35	MOTCO-2019-DU4-Z-Layer-Comp	57	46	72
570-12498-35 MS	MOTCO-2019-DU4-Z-Layer-Comp	68	64	82
570-12498-35 MSD	MOTCO-2019-DU4-Z-Layer-Comp	68	64	84

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Surrogate Summary

Client: Pacific EcoRisk Inc
Job ID: 570-12498-1
Project/Site: USACE: MOTCO

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Solid
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-12907-A-2-E MS	Matrix Spike	77	66	103
570-12907-A-2-F MSD	Matrix Spike Duplicate	81	70	98
LCS 570-32709/2-A	Lab Control Sample	81	74	101
LCS 570-32711/2-A	Lab Control Sample	68	67	71
LCS 570-33985/2-A	Lab Control Sample	82	66	96
LCSD 570-32709/3-A	Lab Control Sample Dup	85	80	100
LCSD 570-32711/3-A	Lab Control Sample Dup	70	69	74
LCSD 570-33985/3-A	Lab Control Sample Dup	81	67	95
MB 570-32709/1-A	Method Blank	71	50	107
MB 570-32711/1-A	Method Blank	75	70	80
MB 570-33985/1-A	Method Blank	77	46	109

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Sediment
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		FBP	TPHd14
Lab Sample ID	Client Sample ID	(14-146)	(34-148)
570-12498-1	MOTCO-2019-DU1-01	53	85
570-12498-2	MOTCO-2019-DU1-02	54	86
570-12498-3	MOTCO-2019-DU1-03	53	82
570-12498-4	MOTCO-2019-DU1-04	56	88
570-12498-5	MOTCO-2019-DU1-Comp	62	93
570-12498-5 MS	MOTCO-2019-DU1-Comp	72	94
570-12498-5 MSD	MOTCO-2019-DU1-Comp	74	89
570-12498-7	MOTCO-2019-DU1-Z-Layer-Comp	64	89
570-12498-8	MOTCO-2019-DU2a-01	92	133
570-12498-9	MOTCO-2019-DU2a-02	86	141
570-12498-10	MOTCO-2019-DU2a-03	89	141
570-12498-11	MOTCO-2019-DU2a-04	78	135
570-12498-12	MOTCO-2019-DU2a-Comp	88	140
570-12498-14	MOTCO-2019-DU2a-Z-Layer-Comp	79	134
570-12498-15	MOTCO-2019-DU2b-01	73	136
570-12498-16	MOTCO-2019-DU2b-02	86	135
570-12498-17	MOTCO-2019-DU2b-03	99	150 X
570-12498-18	MOTCO-2019-DU2b-04	69	138
570-12498-19	MOTCO-2019-DU2b-Comp	85	150 X
570-12498-21	MOTCO-2019-DU2b-Z-Layer-Comp	105	145
570-12498-22	MOTCO-2019-DU3-01	77	130
570-12498-23	MOTCO-2019-DU3-02	84	137
570-12498-24	MOTCO-2019-DU3-03	90	125
570-12498-25	MOTCO-2019-DU3-04	84	112
570-12498-26	MOTCO-2019-DU3-Comp	91	127

Surrogate Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	FBP (14-146)	TPHd14 (34-148)
570-12498-28	MOTCO-2019-DU3-Z-Layer-Cor	72	95
570-12498-29	MOTCO-2019-DU4-01	82	127
570-12498-30	MOTCO-2019-DU4-02	98	139
570-12498-31	MOTCO-2019-DU4-03	94	141
570-12498-32	MOTCO-2019-DU4-04	92	133
570-12498-33	MOTCO-2019-DU4-Comp	83	130
570-12498-35	MOTCO-2019-DU4-Z-Layer-Comp	85	148
570-12498-35 MS	MOTCO-2019-DU4-Z-Layer-Comp	87	111
570-12498-35 MSD	MOTCO-2019-DU4-Z-Layer-Comp	83	115

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

TPHd14 = p-Terphenyl-d14

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	FBP (14-146)	TPHd14 (34-148)
570-1204-A-1-G MS	Matrix Spike	62	108
570-1204-A-1-H MSD	Matrix Spike Duplicate	90	131
LCS 570-32712/2-A	Lab Control Sample	68	90
LCS 570-32713/2-A	Lab Control Sample	81	109
LCS 570-33981/2-A	Lab Control Sample	75	90
LCSD 570-32712/3-A	Lab Control Sample Dup	70	92
LCSD 570-32713/3-A	Lab Control Sample Dup	77	97
LCSD 570-33981/3-A	Lab Control Sample Dup	72	101
MB 570-32712/1-A	Method Blank	66	100
MB 570-32713/1-A	Method Blank	81	93
MB 570-33981/1-A	Method Blank	83	110

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

TPHd14 = p-Terphenyl-d14

Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TPTT (27-135)
570-12498-1	MOTCO-2019-DU1-01	53
570-12498-2	MOTCO-2019-DU1-02	55
570-12498-3	MOTCO-2019-DU1-03	50
570-12498-4	MOTCO-2019-DU1-04	51
570-12498-5	MOTCO-2019-DU1-Comp	56
570-12498-5 MS	MOTCO-2019-DU1-Comp	71
570-12498-5 MSD	MOTCO-2019-DU1-Comp	55

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Matrix: Sediment **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits) TPTT (27-135)
570-12498-7	MOTCO-2019-DU1-Z-Layer-Cor	49
570-12498-8	MOTCO-2019-DU2a-01	47
570-12498-9	MOTCO-2019-DU2a-02	47
570-12498-10	MOTCO-2019-DU2a-03	56
570-12498-11	MOTCO-2019-DU2a-04	50
570-12498-12	MOTCO-2019-DU2a-Comp	40
570-12498-14	MOTCO-2019-DU2a-Z-Layer-Comp	48
570-12498-15	MOTCO-2019-DU2b-01	41
570-12498-16	MOTCO-2019-DU2b-02	42
570-12498-17	MOTCO-2019-DU2b-03	45
570-12498-18	MOTCO-2019-DU2b-04	37
570-12498-19	MOTCO-2019-DU2b-Comp	52
570-12498-21	MOTCO-2019-DU2b-Z-Layer-Comp	52
570-12498-22	MOTCO-2019-DU3-01	50
570-12498-23	MOTCO-2019-DU3-02	45
570-12498-24	MOTCO-2019-DU3-03	51
570-12498-25	MOTCO-2019-DU3-04	53
570-12498-26	MOTCO-2019-DU3-Comp	52
570-12498-28	MOTCO-2019-DU3-Z-Layer-Comp	56
570-12498-29	MOTCO-2019-DU4-01	60
570-12498-30	MOTCO-2019-DU4-02	51
570-12498-31	MOTCO-2019-DU4-03	48
570-12498-32	MOTCO-2019-DU4-04	55
570-12498-32 MS	MOTCO-2019-DU4-04	52
570-12498-32 MSD	MOTCO-2019-DU4-04	61
570-12498-33	MOTCO-2019-DU4-Comp	47
570-12498-35	MOTCO-2019-DU4-Z-Layer-Comp	48

Surrogate Legend

TPTT = Tripentyltin

Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Solid **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits) TPTT (27-135)
570-12850-A-3-A MS	Matrix Spike	52
570-12850-A-3-B MSD	Matrix Spike Duplicate	69
LCS 570-32611/2-A	Lab Control Sample	72
LCS 570-32616/2-A	Lab Control Sample	51
LCS 570-34074/2-A	Lab Control Sample	56
LCSD 570-32611/3-A	Lab Control Sample Dup	73
LCSD 570-32616/3-A	Lab Control Sample Dup	51
LCSD 570-34074/3-A	Lab Control Sample Dup	54
MB 570-32611/1-A	Method Blank	68
MB 570-32616/1-A	Method Blank	52
MB 570-34074/1-A	Method Blank	44

Surrogate Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Surrogate Legend

TPTT = Tripentyltin

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Sediment

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCB1
Lab Sample ID	Client Sample ID	(25-145)	(24-168)
570-12498-1	MOTCO-2019-DU1-01	78	96
570-12498-2	MOTCO-2019-DU1-02	84	103
570-12498-3	MOTCO-2019-DU1-03	78	96
570-12498-4	MOTCO-2019-DU1-04	77	92
570-12498-5	MOTCO-2019-DU1-Comp	79	94
570-12498-5 MS	MOTCO-2019-DU1-Comp	92	100
570-12498-5 MSD	MOTCO-2019-DU1-Comp	79	94
570-12498-7	MOTCO-2019-DU1-Z-Layer-Comp	86	99
570-12498-8	MOTCO-2019-DU2a-01	78	98
570-12498-9	MOTCO-2019-DU2a-02	79	96
570-12498-10	MOTCO-2019-DU2a-03	73	97
570-12498-11	MOTCO-2019-DU2a-04	85	118
570-12498-12	MOTCO-2019-DU2a-Comp	77	107
570-12498-14	MOTCO-2019-DU2a-Z-Layer-Comp	76	114
570-12498-15	MOTCO-2019-DU2b-01	78	96
570-12498-16	MOTCO-2019-DU2b-02	79	101
570-12498-17	MOTCO-2019-DU2b-03	79	107
570-12498-18	MOTCO-2019-DU2b-04	70	90
570-12498-19	MOTCO-2019-DU2b-Comp	66	93
570-12498-21	MOTCO-2019-DU2b-Z-Layer-Comp	67	98
570-12498-22	MOTCO-2019-DU3-01	71	93
570-12498-23	MOTCO-2019-DU3-02	77	117
570-12498-24	MOTCO-2019-DU3-03	76	124
570-12498-25	MOTCO-2019-DU3-04	74	138
570-12498-26	MOTCO-2019-DU3-Comp	74	167
570-12498-28	MOTCO-2019-DU3-Z-Layer-Comp	66	98
570-12498-28 MS	MOTCO-2019-DU3-Z-Layer-Comp	81	118
570-12498-28 MSD	MOTCO-2019-DU3-Z-Layer-Comp	76	87
570-12498-29	MOTCO-2019-DU4-01	61	96
570-12498-30	MOTCO-2019-DU4-02	69	123
570-12498-31	MOTCO-2019-DU4-03	56	98
570-12498-32	MOTCO-2019-DU4-04	65	89
570-12498-32 MS	MOTCO-2019-DU4-04	74	86
570-12498-32 MSD	MOTCO-2019-DU4-04	70	82
570-12498-33	MOTCO-2019-DU4-Comp	67	99
570-12498-35	MOTCO-2019-DU4-Z-Layer-Comp	68	96

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl (Surr)

Surrogate Summary

Client: Pacific EcoRisk Inc
Job ID: 570-12498-1
Project/Site: USACE: MOTCO

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid
Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)									
		TCX1	DCB1								
Lab Sample ID	Client Sample ID	(25-145)	(24-168)								
570-12907-A-2-B MS	Matrix Spike	87	91								
570-12907-A-2-C MSD	Matrix Spike Duplicate	73	89								
LCS 570-32642/2-A	Lab Control Sample	77	87								
LCS 570-32645/2-A	Lab Control Sample	75	89								
LCS 570-33984/16-A	Lab Control Sample	74	81								
LCS 570-33984/2-A	Lab Control Sample	84	94								
LCSD 570-32642/3-A	Lab Control Sample Dup	81	87								
LCSD 570-32645/3-A	Lab Control Sample Dup	76	90								
LCSD 570-33984/17-A	Lab Control Sample Dup	75	81								
LCSD 570-33984/3-A	Lab Control Sample Dup	79	85								
MB 570-32642/1-A	Method Blank	68	103								
MB 570-32645/1-A	Method Blank	73	89								
MB 570-33984/1-A	Method Blank	78	94								

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-32709/1-A
Matrix: Solid
Analysis Batch: 33511

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32709

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
1-Methylnaphthalene	ND		10	0.72	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
1-Methylphenanthrene	ND		10	2.1	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
2-Methylnaphthalene	ND		10	0.72	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Acenaphthene	ND		10	0.51	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Acenaphthylene	ND		10	8.5	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Anthracene	ND		10	0.67	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Benzo[a]anthracene	ND		10	1.1	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Benzo[a]pyrene	ND		10	1.4	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Benzo[b]fluoranthene	ND		10	1.5	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Benzo[k]fluoranthene	ND		10	1.6	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Chrysene	ND		10	0.78	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Dibenz(a,h)anthracene	ND		10	1.1	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Dibenzothiophene	ND		10	1.3	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Fluoranthene	ND		10	0.97	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Fluorene	ND		10	0.84	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Indeno[1,2,3-cd]pyrene	ND		10	1.2	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Naphthalene	ND		10	0.78	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Perylene	ND		10	2.4	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Phenanthrene	ND		10	0.84	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Pyrene	ND		10	0.75	ug/Kg		11/13/19 22:00	11/18/19 17:02	1
Biphenyl	ND		10	1.9	ug/Kg		11/13/19 22:00	11/18/19 17:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*22 - 130*	*11/13/19 22:00*	*11/18/19 17:02*	*1*
Nitrobenzene-d5	*50*		*20 - 145*	*11/13/19 22:00*	*11/18/19 17:02*	*1*
p-Terphenyl-d14	*107*		*33 - 147*	*11/13/19 22:00*	*11/18/19 17:02*	*1*

Lab Sample ID: LCS 570-32709/2-A
Matrix: Solid
Analysis Batch: 33511

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32709

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	100	82.40		ug/Kg		82	54 - 132
2-Methylnaphthalene	100	83.77		ug/Kg		84	50 - 127
Acenaphthene	100	86.21		ug/Kg		86	53 - 125
Acenaphthylene	100	97.63		ug/Kg		98	50 - 123
Anthracene	100	94.88		ug/Kg		95	50 - 132
Benzo[a]anthracene	100	100.9		ug/Kg		101	50 - 133
Benzo[a]pyrene	100	89.60		ug/Kg		90	50 - 134
Benzo[b]fluoranthene	100	92.74		ug/Kg		93	50 - 142
Benzo[g,h,i]perylene	100	73.00		ug/Kg		73	50 - 130
Benzo[k]fluoranthene	100	98.94		ug/Kg		99	49 - 150
Chrysene	100	91.54		ug/Kg		92	51 - 129
Dibenz(a,h)anthracene	100	78.98		ug/Kg		79	50 - 133

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-32709/2-A
Matrix: Solid
Analysis Batch: 33511

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32709

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoranthene			100	97.10		ug/Kg		97	55 - 127		
Fluorene			100	89.96		ug/Kg		90	55 - 127		
Indeno[1,2,3-cd]pyrene			100	75.82		ug/Kg		76	50 - 148		
Naphthalene			100	84.38		ug/Kg		84	51 - 129		
Phenanthrene			100	92.25		ug/Kg		92	50 - 122		
Pyrene			100	109.7		ug/Kg		110	50 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*81*		*22 - 130*
Nitrobenzene-d5	*74*		*20 - 145*
p-Terphenyl-d14	*101*		*33 - 147*

Lab Sample ID: LCSD 570-32709/3-A
Matrix: Solid
Analysis Batch: 33511

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32709

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene			100	87.77		ug/Kg		88	54 - 132	6	20
2-Methylnaphthalene			100	89.27		ug/Kg		89	50 - 127	6	20
Acenaphthene			100	90.51		ug/Kg		91	53 - 125	5	20
Acenaphthylene			100	102.5		ug/Kg		102	50 - 123	5	20
Anthracene			100	95.38		ug/Kg		95	50 - 132	1	20
Benzo[a]anthracene			100	100.9		ug/Kg		101	50 - 133	0	20
Benzo[a]pyrene			100	89.62		ug/Kg		90	50 - 134	0	20
Benzo[b]fluoranthene			100	94.77		ug/Kg		95	50 - 142	2	20
Benzo[g,h,i]perylene			100	74.87		ug/Kg		75	50 - 130	3	20
Benzo[k]fluoranthene			100	95.33		ug/Kg		95	49 - 150	4	20
Chrysene			100	91.89		ug/Kg		92	51 - 129	0	20
Dibenz(a,h)anthracene			100	81.06		ug/Kg		81	50 - 133	3	20
Fluoranthene			100	97.03		ug/Kg		97	55 - 127	0	20
Fluorene			100	94.00		ug/Kg		94	55 - 127	4	20
Indeno[1,2,3-cd]pyrene			100	77.42		ug/Kg		77	50 - 148	2	20
Naphthalene			100	89.55		ug/Kg		90	51 - 129	6	20
Phenanthrene			100	93.99		ug/Kg		94	50 - 122	2	20
Pyrene			100	111.6		ug/Kg		112	50 - 134	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*85*		*22 - 130*
Nitrobenzene-d5	*80*		*20 - 145*
p-Terphenyl-d14	*100*		*33 - 147*

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33511

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32709

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1-Methylnaphthalene	ND		137	110.2		ug/Kg	☼	81	34 - 136		
2-Methylnaphthalene	1.1	J	137	114.5		ug/Kg	☼	84	29 - 137		

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33511

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32709

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	4.7	J	137	133.2		ug/Kg	☼	94	29 - 137
Acenaphthylene	ND		137	140.1		ug/Kg	☼	102	29 - 131
Anthracene	6.5	J	137	143.6		ug/Kg	☼	100	26 - 134
Benzo[a]anthracene	14		137	126.0		ug/Kg	☼	82	24 - 150
Benzo[a]pyrene	4.5	J	137	51.14		ug/Kg	☼	34	29 - 149
Benzo[b]fluoranthene	7.3	J	137	74.03		ug/Kg	☼	49	21 - 153
Benzo[g,h,i]perylene	ND	F1	137	13.13	J F1	ug/Kg	☼	10	20 - 148
Benzo[k]fluoranthene	3.9	J	137	56.05		ug/Kg	☼	38	28 - 148
Chrysene	16		137	133.6		ug/Kg	☼	86	25 - 145
Dibenz(a,h)anthracene	ND	F1	137	17.61	F1	ug/Kg	☼	13	20 - 132
Fluoranthene	65		137	201.4		ug/Kg	☼	100	20 - 151
Fluorene	3.3	J	137	133.5		ug/Kg	☼	95	36 - 132
Indeno[1,2,3-cd]pyrene	ND	F1	137	17.03	F1	ug/Kg	☼	12	20 - 154
Naphthalene	2.3	J	137	116.8		ug/Kg	☼	84	20 - 150
Phenanthrene	20		137	157.3		ug/Kg	☼	100	20 - 144
Pyrene	78		137	263.2		ug/Kg	☼	136	20 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*85*		*22 - 130*
Nitrobenzene-d5	*79*		*20 - 145*
p-Terphenyl-d14	*107*		*33 - 147*

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 33511

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32709

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		136	109.8		ug/Kg	☼	81	34 - 136	0	29
2-Methylnaphthalene	1.1	J	136	114.1		ug/Kg	☼	84	29 - 137	0	31
Acenaphthene	4.7	J	136	128.0		ug/Kg	☼	91	29 - 137	4	28
Acenaphthylene	ND		136	140.4		ug/Kg	☼	103	29 - 131	0	32
Anthracene	6.5	J	136	141.6		ug/Kg	☼	99	26 - 134	1	27
Benzo[a]anthracene	14		136	122.9		ug/Kg	☼	80	24 - 150	3	24
Benzo[a]pyrene	4.5	J	136	49.83		ug/Kg	☼	33	29 - 149	3	22
Benzo[b]fluoranthene	7.3	J	136	71.32		ug/Kg	☼	47	21 - 153	4	26
Benzo[g,h,i]perylene	ND	F1	136	11.58	J F1	ug/Kg	☼	9	20 - 148	13	27
Benzo[k]fluoranthene	3.9	J	136	62.12		ug/Kg	☼	43	28 - 148	10	26
Chrysene	16		136	116.0		ug/Kg	☼	73	25 - 145	14	28
Dibenz(a,h)anthracene	ND	F1	136	16.17	F1	ug/Kg	☼	12	20 - 132	9	26
Fluoranthene	65		136	203.5		ug/Kg	☼	102	20 - 151	1	26
Fluorene	3.3	J	136	133.5		ug/Kg	☼	96	36 - 132	0	27
Indeno[1,2,3-cd]pyrene	ND	F1	136	14.83	F1	ug/Kg	☼	11	20 - 154	14	25
Naphthalene	2.3	J	136	116.2		ug/Kg	☼	84	20 - 150	1	33
Phenanthrene	20		136	160.0		ug/Kg	☼	103	20 - 144	2	27
Pyrene	78		136	238.8		ug/Kg	☼	118	20 - 150	10	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*89*		*22 - 130*

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 33511

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32709

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Nitrobenzene-d5	*83*		*20 - 145*
p-Terphenyl-d14	*110*		*33 - 147*

Lab Sample ID: MB 570-32711/1-A
Matrix: Solid
Analysis Batch: 33092

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32711

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
1-Methylnaphthalene	ND		10	0.72	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
1-Methylphenanthrene	ND		10	2.1	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
2-Methylnaphthalene	ND		10	0.72	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Acenaphthene	ND		10	0.51	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Acenaphthylene	ND		10	8.5	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Anthracene	ND		10	0.67	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Benzo[a]anthracene	ND		10	1.1	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Benzo[a]pyrene	ND		10	1.4	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Benzo[b]fluoranthene	ND		10	1.5	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Benzo[k]fluoranthene	ND		10	1.6	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Chrysene	ND		10	0.78	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Dibenz(a,h)anthracene	ND		10	1.1	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Dibenzothiophene	ND		10	1.3	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Fluoranthene	ND		10	0.97	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Fluorene	ND		10	0.84	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Indeno[1,2,3-cd]pyrene	ND		10	1.2	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Naphthalene	ND		10	0.78	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Perylene	ND		10	2.4	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Phenanthrene	ND		10	0.84	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Pyrene	ND		10	0.75	ug/Kg		11/13/19 22:04	11/15/19 16:56	1
Biphenyl	ND		10	1.9	ug/Kg		11/13/19 22:04	11/15/19 16:56	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	*75*		*22 - 130*	*11/13/19 22:04*	*11/15/19 16:56*	*1*
Nitrobenzene-d5	*70*		*20 - 145*	*11/13/19 22:04*	*11/15/19 16:56*	*1*
p-Terphenyl-d14	*80*		*33 - 147*	*11/13/19 22:04*	*11/15/19 16:56*	*1*

Lab Sample ID: LCS 570-32711/2-A
Matrix: Solid
Analysis Batch: 33092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32711

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	100	67.95		ug/Kg		68	54 - 132
2-Methylnaphthalene	100	70.66		ug/Kg		71	50 - 127
Acenaphthene	100	69.72		ug/Kg		70	53 - 125
Acenaphthylene	100	79.76		ug/Kg		80	50 - 123

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-32711/2-A
Matrix: Solid
Analysis Batch: 33092

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32711

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Anthracene	100	70.83		ug/Kg		71	50 - 132
Benzo[a]anthracene	100	75.46		ug/Kg		75	50 - 133
Benzo[a]pyrene	100	66.57		ug/Kg		67	50 - 134
Benzo[b]fluoranthene	100	65.12		ug/Kg		65	50 - 142
Benzo[g,h,i]perylene	100	72.44		ug/Kg		72	50 - 130
Benzo[k]fluoranthene	100	73.65		ug/Kg		74	49 - 150
Chrysene	100	71.27		ug/Kg		71	51 - 129
Dibenz(a,h)anthracene	100	69.94		ug/Kg		70	50 - 133
Fluoranthene	100	72.66		ug/Kg		73	55 - 127
Fluorene	100	70.76		ug/Kg		71	55 - 127
Indeno[1,2,3-cd]pyrene	100	69.62		ug/Kg		70	50 - 148
Naphthalene	100	71.55		ug/Kg		72	51 - 129
Phenanthrene	100	69.62		ug/Kg		70	50 - 122
Pyrene	100	76.96		ug/Kg		77	50 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*68*		*22 - 130*
Nitrobenzene-d5	*67*		*20 - 145*
p-Terphenyl-d14	*71*		*33 - 147*

Lab Sample ID: LCSD 570-32711/3-A
Matrix: Solid
Analysis Batch: 33092

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32711

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	100	69.33		ug/Kg		69	54 - 132	2	20
2-Methylnaphthalene	100	73.87		ug/Kg		74	50 - 127	4	20
Acenaphthene	100	70.10		ug/Kg		70	53 - 125	1	20
Acenaphthylene	100	80.53		ug/Kg		81	50 - 123	1	20
Anthracene	100	69.07		ug/Kg		69	50 - 132	3	20
Benzo[a]anthracene	100	75.08		ug/Kg		75	50 - 133	0	20
Benzo[a]pyrene	100	67.02		ug/Kg		67	50 - 134	1	20
Benzo[b]fluoranthene	100	65.96		ug/Kg		66	50 - 142	1	20
Benzo[g,h,i]perylene	100	73.43		ug/Kg		73	50 - 130	1	20
Benzo[k]fluoranthene	100	71.83		ug/Kg		72	49 - 150	2	20
Chrysene	100	70.32		ug/Kg		70	51 - 129	1	20
Dibenz(a,h)anthracene	100	68.25		ug/Kg		68	50 - 133	2	20
Fluoranthene	100	72.36		ug/Kg		72	55 - 127	0	20
Fluorene	100	71.56		ug/Kg		72	55 - 127	1	20
Indeno[1,2,3-cd]pyrene	100	68.89		ug/Kg		69	50 - 148	1	20
Naphthalene	100	73.67		ug/Kg		74	51 - 129	3	20
Phenanthrene	100	69.06		ug/Kg		69	50 - 122	1	20
Pyrene	100	77.19		ug/Kg		77	50 - 134	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*70*		*22 - 130*
Nitrobenzene-d5	*69*		*20 - 145*
p-Terphenyl-d14	*74*		*33 - 147*

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: 570-12498-35 MS
Matrix: Sediment
Analysis Batch: 33092

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 32711

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	1.5	J	145	102.4		ug/Kg	☼	69	34 - 136
2-Methylnaphthalene	1.4	J	145	104.9		ug/Kg	☼	71	29 - 137
Acenaphthene	140		145	294.2		ug/Kg	☼	107	29 - 137
Acenaphthylene	ND		145	124.5		ug/Kg	☼	86	29 - 131
Anthracene	11	J	145	130.8		ug/Kg	☼	82	26 - 134
Benzo[a]anthracene	9.3	J	145	131.2		ug/Kg	☼	84	24 - 150
Benzo[a]pyrene	4.2	J	145	107.8		ug/Kg	☼	71	29 - 149
Benzo[b]fluoranthene	5.5	J	145	111.0		ug/Kg	☼	73	21 - 153
Benzo[g,h,i]perylene	ND		145	102.1		ug/Kg	☼	70	20 - 148
Benzo[k]fluoranthene	3.6	J	145	117.1		ug/Kg	☼	78	28 - 148
Chrysene	7.3	J	145	121.2		ug/Kg	☼	78	25 - 145
Dibenz(a,h)anthracene	ND		145	104.2		ug/Kg	☼	72	20 - 132
Fluoranthene	61		145	220.8		ug/Kg	☼	110	20 - 151
Fluorene	12	J	145	132.9		ug/Kg	☼	83	36 - 132
Indeno[1,2,3-cd]pyrene	ND		145	102.6		ug/Kg	☼	71	20 - 154
Naphthalene	2.6	J	145	100.5		ug/Kg	☼	67	20 - 150
Phenanthrene	68		145	190.4		ug/Kg	☼	84	20 - 144
Pyrene	50		145	212.2		ug/Kg	☼	111	20 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*68*		*22 - 130*
Nitrobenzene-d5	*64*		*20 - 145*
p-Terphenyl-d14	*82*		*33 - 147*

Lab Sample ID: 570-12498-35 MSD
Matrix: Sediment
Analysis Batch: 33092

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 32711

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	1.5	J	145	99.57		ug/Kg	☼	68	34 - 136	3	29
2-Methylnaphthalene	1.4	J	145	103.6		ug/Kg	☼	71	29 - 137	1	31
Acenaphthene	140		145	289.8		ug/Kg	☼	105	29 - 137	2	28
Acenaphthylene	ND		145	124.0		ug/Kg	☼	86	29 - 131	0	32
Anthracene	11	J	145	129.1		ug/Kg	☼	82	26 - 134	1	27
Benzo[a]anthracene	9.3	J	145	130.3		ug/Kg	☼	84	24 - 150	1	24
Benzo[a]pyrene	4.2	J	145	107.0		ug/Kg	☼	71	29 - 149	1	22
Benzo[b]fluoranthene	5.5	J	145	108.7		ug/Kg	☼	71	21 - 153	2	26
Benzo[g,h,i]perylene	ND		145	99.41		ug/Kg	☼	69	20 - 148	3	27
Benzo[k]fluoranthene	3.6	J	145	99.86		ug/Kg	☼	67	28 - 148	16	26
Chrysene	7.3	J	145	121.4		ug/Kg	☼	79	25 - 145	0	28
Dibenz(a,h)anthracene	ND		145	103.2		ug/Kg	☼	71	20 - 132	1	26
Fluoranthene	61		145	218.7		ug/Kg	☼	109	20 - 151	1	26
Fluorene	12	J	145	131.2		ug/Kg	☼	82	36 - 132	1	27
Indeno[1,2,3-cd]pyrene	ND		145	101.1		ug/Kg	☼	70	20 - 154	2	25
Naphthalene	2.6	J	145	99.63		ug/Kg	☼	67	20 - 150	1	33
Phenanthrene	68		145	189.9		ug/Kg	☼	84	20 - 144	0	27
Pyrene	50		145	212.2		ug/Kg	☼	112	20 - 150	0	32

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-12498-35 MSD
Matrix: Sediment
Analysis Batch: 33092

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 32711

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	68		22 - 130
Nitrobenzene-d5	64		20 - 145
p-Terphenyl-d14	84		33 - 147

Lab Sample ID: MB 570-33985/1-A
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33985

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
1-Methylnaphthalene	ND		10	0.72	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
1-Methylphenanthrene	ND		10	2.1	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
2-Methylnaphthalene	ND		10	0.72	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Acenaphthene	ND		10	0.51	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Acenaphthylene	ND		10	8.5	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Anthracene	ND		10	0.67	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Benzo[a]anthracene	ND		10	1.1	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Benzo[a]pyrene	ND		10	1.4	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Benzo[b]fluoranthene	ND		10	1.5	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Benzo[k]fluoranthene	ND		10	1.6	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Chrysene	ND		10	0.78	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Dibenz(a,h)anthracene	ND		10	1.1	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Dibenzothiophene	ND		10	1.3	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Fluoranthene	ND		10	0.97	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Fluorene	ND		10	0.84	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Indeno[1,2,3-cd]pyrene	ND		10	1.2	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Naphthalene	ND		10	0.78	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Perylene	ND		10	2.4	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Phenanthrene	ND		10	0.84	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Pyrene	ND		10	0.75	ug/Kg		11/19/19 22:10	11/21/19 12:27	1
Biphenyl	ND		10	1.9	ug/Kg		11/19/19 22:10	11/21/19 12:27	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	77		22 - 130	11/19/19 22:10	11/21/19 12:27	1
Nitrobenzene-d5	46		20 - 145	11/19/19 22:10	11/21/19 12:27	1
p-Terphenyl-d14	109		33 - 147	11/19/19 22:10	11/21/19 12:27	1

Lab Sample ID: LCS 570-33985/2-A
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33985

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	100	65.94		ug/Kg		66	54 - 132
2-Methylnaphthalene	100	68.24		ug/Kg		68	50 - 127
Acenaphthene	100	75.43		ug/Kg		75	53 - 125

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-33985/2-A
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33985

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthylene	100	85.51		ug/Kg		86	50 - 123
Anthracene	100	86.93		ug/Kg		87	50 - 132
Benzo[a]anthracene	100	89.82		ug/Kg		90	50 - 133
Benzo[a]pyrene	100	79.28		ug/Kg		79	50 - 134
Benzo[b]fluoranthene	100	78.51		ug/Kg		79	50 - 142
Benzo[g,h,i]perylene	100	84.87		ug/Kg		85	50 - 130
Benzo[k]fluoranthene	100	79.68		ug/Kg		80	49 - 150
Chrysene	100	83.86		ug/Kg		84	51 - 129
Dibenz(a,h)anthracene	100	84.33		ug/Kg		84	50 - 133
Fluoranthene	100	90.07		ug/Kg		90	55 - 127
Fluorene	100	82.45		ug/Kg		82	55 - 127
Indeno[1,2,3-cd]pyrene	100	82.89		ug/Kg		83	50 - 148
Naphthalene	100	59.56		ug/Kg		60	51 - 129
Phenanthrene	100	84.79		ug/Kg		85	50 - 122
Pyrene	100	93.47		ug/Kg		93	50 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*82*		*22 - 130*
Nitrobenzene-d5	*66*		*20 - 145*
p-Terphenyl-d14	*96*		*33 - 147*

Lab Sample ID: LCSD 570-33985/3-A
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33985

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	100	68.58		ug/Kg		69	54 - 132	4	20
2-Methylnaphthalene	100	70.43		ug/Kg		70	50 - 127	3	20
Acenaphthene	100	78.48		ug/Kg		78	53 - 125	4	20
Acenaphthylene	100	88.50		ug/Kg		88	50 - 123	3	20
Anthracene	100	87.45		ug/Kg		87	50 - 132	1	20
Benzo[a]anthracene	100	92.82		ug/Kg		93	50 - 133	3	20
Benzo[a]pyrene	100	81.71		ug/Kg		82	50 - 134	3	20
Benzo[b]fluoranthene	100	84.51		ug/Kg		85	50 - 142	7	20
Benzo[g,h,i]perylene	100	89.98		ug/Kg		90	50 - 130	6	20
Benzo[k]fluoranthene	100	82.77		ug/Kg		83	49 - 150	4	20
Chrysene	100	85.18		ug/Kg		85	51 - 129	2	20
Dibenz(a,h)anthracene	100	89.07		ug/Kg		89	50 - 133	5	20
Fluoranthene	100	90.50		ug/Kg		91	55 - 127	0	20
Fluorene	100	84.74		ug/Kg		85	55 - 127	3	20
Indeno[1,2,3-cd]pyrene	100	87.17		ug/Kg		87	50 - 148	5	20
Naphthalene	100	63.47		ug/Kg		63	51 - 129	6	20
Phenanthrene	100	86.35		ug/Kg		86	50 - 122	2	20
Pyrene	100	96.45		ug/Kg		96	50 - 134	3	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*81*		*22 - 130*
Nitrobenzene-d5	*67*		*20 - 145*

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 570-33985/3-A
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33985

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
p-Terphenyl-d14	*95*		*33 - 147*

Lab Sample ID: 570-12907-A-2-E MS
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 33985

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	ND		116	73.02		ug/Kg	☼	63	34 - 136
2-Methylnaphthalene	ND		116	76.05		ug/Kg	☼	65	29 - 137
Acenaphthene	ND		116	89.37		ug/Kg	☼	77	29 - 137
Acenaphthylene	ND		116	100.4		ug/Kg	☼	86	29 - 131
Anthracene	ND		116	109.9		ug/Kg	☼	95	26 - 134
Benzo[a]anthracene	ND		116	115.0		ug/Kg	☼	99	24 - 150
Benzo[a]pyrene	ND		116	103.2		ug/Kg	☼	89	29 - 149
Benzo[b]fluoranthene	ND		116	99.14		ug/Kg	☼	85	21 - 153
Benzo[g,h,i]perylene	ND		116	108.5		ug/Kg	☼	93	20 - 148
Benzo[k]fluoranthene	ND		116	101.0		ug/Kg	☼	87	28 - 148
Chrysene	ND		116	105.8		ug/Kg	☼	91	25 - 145
Dibenz(a,h)anthracene	ND		116	107.8		ug/Kg	☼	93	20 - 132
Fluoranthene	1.1	J	116	109.2		ug/Kg	☼	94	20 - 151
Fluorene	ND		116	100.9		ug/Kg	☼	87	36 - 132
Indeno[1,2,3-cd]pyrene	ND		116	105.2		ug/Kg	☼	91	20 - 154
Naphthalene	ND		116	69.79		ug/Kg	☼	60	20 - 150
Phenanthrene	1.1	J	116	107.2		ug/Kg	☼	91	20 - 144
Pyrene	1.3	J	116	116.2		ug/Kg	☼	99	20 - 150

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl (Surr)	*77*		*22 - 130*
Nitrobenzene-d5	*66*		*20 - 145*
p-Terphenyl-d14	*103*		*33 - 147*

Lab Sample ID: 570-12907-A-2-F MSD
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 33985

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		116	66.97		ug/Kg	☼	58	34 - 136	9	29
2-Methylnaphthalene	ND		116	70.33		ug/Kg	☼	61	29 - 137	8	31
Acenaphthene	ND		116	83.45		ug/Kg	☼	72	29 - 137	7	28
Acenaphthylene	ND		116	93.19		ug/Kg	☼	81	29 - 131	7	32
Anthracene	ND		116	105.6		ug/Kg	☼	91	26 - 134	4	27
Benzo[a]anthracene	ND		116	109.5		ug/Kg	☼	95	24 - 150	5	24
Benzo[a]pyrene	ND		116	98.60		ug/Kg	☼	85	29 - 149	5	22
Benzo[b]fluoranthene	ND		116	101.7		ug/Kg	☼	88	21 - 153	3	26
Benzo[g,h,i]perylene	ND		116	103.0		ug/Kg	☼	89	20 - 148	5	27
Benzo[k]fluoranthene	ND		116	95.84		ug/Kg	☼	83	28 - 148	5	26
Chrysene	ND		116	100.7		ug/Kg	☼	87	25 - 145	5	28
Dibenz(a,h)anthracene	ND		116	103.1		ug/Kg	☼	89	20 - 132	4	26

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-12907-A-2-F MSD
Matrix: Solid
Analysis Batch: 34347

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 33985

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoranthene	1.1	J	116	103.8		ug/Kg	☼	90	20 - 151	5	26
Fluorene	ND		116	96.13		ug/Kg	☼	83	36 - 132	5	27
Indeno[1,2,3-cd]pyrene	ND		116	100.5		ug/Kg	☼	87	20 - 154	5	25
Naphthalene	ND		116	62.52		ug/Kg	☼	54	20 - 150	11	33
Phenanthrene	1.1	J	116	101.7		ug/Kg	☼	87	20 - 144	5	27
Pyrene	1.3	J	116	110.2		ug/Kg	☼	94	20 - 150	5	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*81*		*22 - 130*
Nitrobenzene-d5	*70*		*20 - 145*
p-Terphenyl-d14	*98*		*33 - 147*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: MB 570-32712/1-A
Matrix: Solid
Analysis Batch: 34194

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32712

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.077	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-18	ND		0.20	0.065	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-28	ND		0.20	0.069	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-31	ND		0.20	0.051	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-33	ND		0.20	0.038	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-44	ND		0.20	0.15	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-49	ND		0.20	0.050	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-52	ND		0.20	0.19	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-56	ND		0.20	0.076	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-60	ND		0.20	0.052	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-66	ND		0.20	0.12	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-70	ND		0.20	0.072	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-74	ND		0.20	0.090	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-87	ND		0.20	0.11	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-95	ND		0.20	0.11	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-97	ND		0.20	0.046	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-99	ND		0.20	0.047	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-101	ND		0.20	0.044	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-105	ND		0.20	0.053	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-110	ND		0.20	0.034	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-118	ND		0.20	0.035	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-128	ND		0.20	0.12	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-132/153	ND		0.40	0.16	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-138/158	ND		0.40	0.35	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-141	ND		0.20	0.049	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-149	ND		0.20	0.12	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-151	ND		0.20	0.088	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-156	ND		0.20	0.077	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-170	ND		0.20	0.11	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-174	ND		0.20	0.042	ug/Kg		11/13/19 22:07	11/20/19 18:39	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: MB 570-32712/1-A
Matrix: Solid
Analysis Batch: 34194

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32712

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-177	ND		0.20	0.12	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-180	ND		0.20	0.092	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-183	ND		0.20	0.093	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-187	ND		0.20	0.10	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-194	ND		0.20	0.074	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-195	ND		0.20	0.060	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-201	ND		0.20	0.034	ug/Kg		11/13/19 22:07	11/20/19 18:39	1
PCB-203	ND		0.20	0.058	ug/Kg		11/13/19 22:07	11/20/19 18:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*66*		*14 - 146*	*11/13/19 22:07*	*11/20/19 18:39*	*1*
p-Terphenyl-d14	*100*		*34 - 148*	*11/13/19 22:07*	*11/20/19 18:39*	*1*

Lab Sample ID: LCS 570-32712/2-A
Matrix: Solid
Analysis Batch: 34194

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32712

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-5/8	50.0	37.98		ug/Kg		76	50 - 150
PCB-18	50.0	32.12		ug/Kg		64	24 - 132
PCB-28	50.0	39.23		ug/Kg		78	31 - 133
PCB-44	50.0	36.91		ug/Kg		74	36 - 120
PCB-52	50.0	35.45		ug/Kg		71	31 - 121
PCB-66	50.0	40.34		ug/Kg		81	43 - 139
PCB-101	50.0	37.82		ug/Kg		76	37 - 121
PCB-105	50.0	39.14		ug/Kg		78	48 - 132
PCB-118	50.0	40.38		ug/Kg		81	46 - 136
PCB-128	50.0	47.70		ug/Kg		95	40 - 130
PCB-132/153	50.0	43.92		ug/Kg		88	50 - 150
PCB-138/158	50.0	39.03		ug/Kg		78	50 - 150
PCB-170	50.0	37.77		ug/Kg		76	40 - 124
PCB-180	50.0	45.03		ug/Kg		90	41 - 143
PCB-187	50.0	43.50		ug/Kg		87	39 - 129
PCB-195	50.0	37.05		ug/Kg		74	44 - 128
PCB-201	50.0	44.76		ug/Kg		90	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*68*		*14 - 146*
p-Terphenyl-d14	*90*		*34 - 148*

Lab Sample ID: LCSD 570-32712/3-A
Matrix: Solid
Analysis Batch: 34194

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32712

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8	50.0	37.77		ug/Kg		76	50 - 150	1	25
PCB-18	50.0	30.98		ug/Kg		62	24 - 132	4	28
PCB-28	50.0	38.63		ug/Kg		77	31 - 133	2	26

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: LCSD 570-32712/3-A
Matrix: Solid
Analysis Batch: 34194

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32712

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-44			50.0	35.27		ug/Kg		71	36 - 120	5	28
PCB-52			50.0	34.67		ug/Kg		69	31 - 121	2	27
PCB-66			50.0	38.78		ug/Kg		78	43 - 139	4	25
PCB-101			50.0	36.04		ug/Kg		72	37 - 121	5	27
PCB-105			50.0	38.02		ug/Kg		76	48 - 132	3	26
PCB-118			50.0	38.27		ug/Kg		77	46 - 136	5	25
PCB-128			50.0	45.96		ug/Kg		92	40 - 130	4	26
PCB-132/153			50.0	44.32		ug/Kg		89	50 - 150	1	25
PCB-138/158			50.0	38.33		ug/Kg		77	50 - 150	2	25
PCB-170			50.0	37.10		ug/Kg		74	40 - 124	2	29
PCB-180			50.0	44.00		ug/Kg		88	41 - 143	2	26
PCB-187			50.0	42.10		ug/Kg		84	39 - 129	3	26
PCB-195			50.0	38.66		ug/Kg		77	44 - 128	4	28
PCB-201			50.0	43.56		ug/Kg		87	50 - 150	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*70*		*14 - 146*
p-Terphenyl-d14	*92*		*34 - 148*

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 34194

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32712

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-5/8	ND		68.1	53.49		ug/Kg	☼	79	50 - 150
PCB-18	ND		68.1	45.72		ug/Kg	☼	67	24 - 132
PCB-28	ND		68.1	60.26		ug/Kg	☼	89	31 - 133
PCB-44	ND		68.1	53.34		ug/Kg	☼	78	36 - 120
PCB-52	0.95		68.1	54.26		ug/Kg	☼	78	31 - 121
PCB-66	ND		68.1	56.48		ug/Kg	☼	83	43 - 139
PCB-101	0.97		68.1	53.88		ug/Kg	☼	78	37 - 121
PCB-105	ND		68.1	57.57		ug/Kg	☼	85	48 - 132
PCB-118	ND		68.1	58.76		ug/Kg	☼	86	46 - 136
PCB-128	ND		68.1	66.43		ug/Kg	☼	98	40 - 130
PCB-132/153	ND		68.1	63.94		ug/Kg	☼	94	50 - 150
PCB-138/158	ND		68.1	56.49		ug/Kg	☼	83	50 - 150
PCB-170	ND		68.1	56.64		ug/Kg	☼	83	40 - 124
PCB-180	ND		68.1	62.98		ug/Kg	☼	93	41 - 143
PCB-187	ND		68.1	61.16		ug/Kg	☼	90	39 - 129
PCB-195	ND		68.1	57.01		ug/Kg	☼	84	44 - 128
PCB-201	ND		68.1	62.92		ug/Kg	☼	92	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*72*		*14 - 146*
p-Terphenyl-d14	*94*		*34 - 148*

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 34194

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32712

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8	ND		68.1	50.68		ug/Kg	☼	74	50 - 150	5	25
PCB-18	ND		68.1	41.72		ug/Kg	☼	61	24 - 132	9	28
PCB-28	ND		68.1	56.15		ug/Kg	☼	82	31 - 133	7	26
PCB-44	ND		68.1	49.94		ug/Kg	☼	73	36 - 120	7	28
PCB-52	0.95		68.1	51.15		ug/Kg	☼	74	31 - 121	6	27
PCB-66	ND		68.1	52.34		ug/Kg	☼	77	43 - 139	8	25
PCB-101	0.97		68.1	50.10		ug/Kg	☼	72	37 - 121	7	27
PCB-105	ND		68.1	53.26		ug/Kg	☼	78	48 - 132	8	26
PCB-118	ND		68.1	54.31		ug/Kg	☼	80	46 - 136	8	25
PCB-128	ND		68.1	62.28		ug/Kg	☼	92	40 - 130	6	26
PCB-132/153	ND		68.1	60.67		ug/Kg	☼	89	50 - 150	5	25
PCB-138/158	ND		68.1	52.05		ug/Kg	☼	76	50 - 150	8	25
PCB-170	ND		68.1	52.71		ug/Kg	☼	77	40 - 124	7	29
PCB-180	ND		68.1	61.60		ug/Kg	☼	90	41 - 143	2	26
PCB-187	ND		68.1	57.98		ug/Kg	☼	85	39 - 129	5	26
PCB-195	ND		68.1	52.84		ug/Kg	☼	78	44 - 128	8	28
PCB-201	ND		68.1	59.65		ug/Kg	☼	88	50 - 150	5	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*74*		*14 - 146*
p-Terphenyl-d14	*89*		*34 - 148*

Lab Sample ID: MB 570-32713/1-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32713

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.077	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-18	ND		0.20	0.065	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-28	ND		0.20	0.069	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-31	ND		0.20	0.051	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-33	ND		0.20	0.038	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-44	ND		0.20	0.15	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-49	ND		0.20	0.050	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-52	ND		0.20	0.19	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-56	ND		0.20	0.076	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-60	ND		0.20	0.052	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-66	ND		0.20	0.12	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-70	ND		0.20	0.072	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-74	ND		0.20	0.090	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-87	ND		0.20	0.11	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-95	ND		0.20	0.11	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-97	ND		0.20	0.046	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-99	ND		0.20	0.047	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-101	ND		0.20	0.044	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-105	ND		0.20	0.053	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-110	ND		0.20	0.034	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-118	ND		0.20	0.035	ug/Kg		11/13/19 22:08	11/21/19 15:32	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: MB 570-32713/1-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32713

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-128	ND		0.20	0.12	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-132/153	ND		0.40	0.16	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-138/158	ND		0.40	0.35	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-141	ND		0.20	0.049	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-149	ND		0.20	0.12	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-151	ND		0.20	0.088	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-156	ND		0.20	0.077	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-170	ND		0.20	0.11	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-174	ND		0.20	0.042	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-177	ND		0.20	0.12	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-180	ND		0.20	0.092	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-183	ND		0.20	0.093	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-187	ND		0.20	0.10	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-194	ND		0.20	0.074	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-195	ND		0.20	0.060	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-201	ND		0.20	0.034	ug/Kg		11/13/19 22:08	11/21/19 15:32	1
PCB-203	ND		0.20	0.058	ug/Kg		11/13/19 22:08	11/21/19 15:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*81*		*14 - 146*	*11/13/19 22:08*	*11/21/19 15:32*	*1*
p-Terphenyl-d14	*93*		*34 - 148*	*11/13/19 22:08*	*11/21/19 15:32*	*1*

Lab Sample ID: LCS 570-32713/2-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32713

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-5/8	50.0	39.26		ug/Kg		79	50 - 150
PCB-18	50.0	32.63		ug/Kg		65	24 - 132
PCB-28	50.0	40.91		ug/Kg		82	31 - 133
PCB-44	50.0	37.70		ug/Kg		75	36 - 120
PCB-52	50.0	37.07		ug/Kg		74	31 - 121
PCB-66	50.0	41.08		ug/Kg		82	43 - 139
PCB-101	50.0	39.23		ug/Kg		78	37 - 121
PCB-105	50.0	41.40		ug/Kg		83	48 - 132
PCB-118	50.0	43.64		ug/Kg		87	46 - 136
PCB-128	50.0	51.64		ug/Kg		103	40 - 130
PCB-132/153	50.0	48.82		ug/Kg		98	50 - 150
PCB-138/158	50.0	43.07		ug/Kg		86	50 - 150
PCB-170	50.0	40.00		ug/Kg		80	40 - 124
PCB-180	50.0	48.40		ug/Kg		97	41 - 143
PCB-187	50.0	46.51		ug/Kg		93	39 - 129
PCB-195	50.0	41.04		ug/Kg		82	44 - 128
PCB-201	50.0	48.90		ug/Kg		98	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*81*		*14 - 146*
p-Terphenyl-d14	*109*		*34 - 148*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: LCSD 570-32713/3-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32713

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8			50.0	36.16		ug/Kg		72	50 - 150	8	25
PCB-18			50.0	30.89		ug/Kg		62	24 - 132	5	28
PCB-28			50.0	36.49		ug/Kg		73	31 - 133	11	26
PCB-44			50.0	35.65		ug/Kg		71	36 - 120	6	28
PCB-52			50.0	33.73		ug/Kg		67	31 - 121	9	27
PCB-66			50.0	38.35		ug/Kg		77	43 - 139	7	25
PCB-101			50.0	35.75		ug/Kg		71	37 - 121	9	27
PCB-105			50.0	39.95		ug/Kg		80	48 - 132	4	26
PCB-118			50.0	40.42		ug/Kg		81	46 - 136	8	25
PCB-128			50.0	49.58		ug/Kg		99	40 - 130	4	26
PCB-132/153			50.0	45.52		ug/Kg		91	50 - 150	7	25
PCB-138/158			50.0	40.40		ug/Kg		81	50 - 150	6	25
PCB-170			50.0	37.18		ug/Kg		74	40 - 124	7	29
PCB-180			50.0	46.20		ug/Kg		92	41 - 143	5	26
PCB-187			50.0	44.29		ug/Kg		89	39 - 129	5	26
PCB-195			50.0	37.91		ug/Kg		76	44 - 128	8	28
PCB-201			50.0	46.31		ug/Kg		93	50 - 150	5	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*77*		*14 - 146*
p-Terphenyl-d14	*97*		*34 - 148*

Lab Sample ID: 570-12498-35 MS
Matrix: Sediment
Analysis Batch: 34349

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 32713

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-5/8	ND		72.3	65.80		ug/Kg	☼	91	50 - 150		
PCB-18	ND		72.3	54.60		ug/Kg	☼	75	24 - 132		
PCB-28	ND		72.3	70.35		ug/Kg	☼	97	31 - 133		
PCB-44	ND		72.3	61.41		ug/Kg	☼	85	36 - 120		
PCB-52	ND		72.3	61.18		ug/Kg	☼	85	31 - 121		
PCB-66	ND		72.3	61.89		ug/Kg	☼	86	43 - 139		
PCB-101	ND		72.3	59.13		ug/Kg	☼	82	37 - 121		
PCB-105	ND		72.3	64.10		ug/Kg	☼	89	48 - 132		
PCB-118	ND		72.3	63.67		ug/Kg	☼	88	46 - 136		
PCB-128	ND		72.3	78.06		ug/Kg	☼	108	40 - 130		
PCB-132/153	ND		72.3	71.83		ug/Kg	☼	99	50 - 150		
PCB-138/158	ND		72.3	64.19		ug/Kg	☼	89	50 - 150		
PCB-170	ND		72.3	65.72		ug/Kg	☼	91	40 - 124		
PCB-180	ND		72.3	77.24		ug/Kg	☼	107	41 - 143		
PCB-187	ND		72.3	72.88		ug/Kg	☼	101	39 - 129		
PCB-195	ND		72.3	64.04		ug/Kg	☼	89	44 - 128		
PCB-201	ND		72.3	76.77		ug/Kg	☼	106	50 - 150		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*87*		*14 - 146*
p-Terphenyl-d14	*111*		*34 - 148*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: 570-12498-35 MSD
Matrix: Sediment
Analysis Batch: 34349

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 32713

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8	ND		72.3	64.75		ug/Kg	☼	90	50 - 150	2	25
PCB-18	ND		72.3	52.24		ug/Kg	☼	72	24 - 132	4	28
PCB-28	ND		72.3	69.27		ug/Kg	☼	96	31 - 133	2	26
PCB-44	ND		72.3	61.84		ug/Kg	☼	86	36 - 120	1	28
PCB-52	ND		72.3	63.18		ug/Kg	☼	87	31 - 121	3	27
PCB-66	ND		72.3	66.97		ug/Kg	☼	93	43 - 139	8	25
PCB-101	ND		72.3	64.32		ug/Kg	☼	89	37 - 121	8	27
PCB-105	ND		72.3	68.37		ug/Kg	☼	95	48 - 132	6	26
PCB-118	ND		72.3	71.18		ug/Kg	☼	98	46 - 136	11	25
PCB-128	ND		72.3	84.73		ug/Kg	☼	117	40 - 130	8	26
PCB-132/153	ND		72.3	79.72		ug/Kg	☼	110	50 - 150	10	25
PCB-138/158	ND		72.3	69.37		ug/Kg	☼	96	50 - 150	8	25
PCB-170	ND		72.3	65.10		ug/Kg	☼	90	40 - 124	1	29
PCB-180	ND		72.3	80.99		ug/Kg	☼	112	41 - 143	5	26
PCB-187	ND		72.3	76.81		ug/Kg	☼	106	39 - 129	5	26
PCB-195	ND		72.3	64.94		ug/Kg	☼	90	44 - 128	1	28
PCB-201	ND		72.3	79.73		ug/Kg	☼	110	50 - 150	4	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*83*		*14 - 146*
p-Terphenyl-d14	*115*		*34 - 148*

Lab Sample ID: MB 570-33981/1-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33981

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.077	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-18	ND		0.20	0.065	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-28	ND		0.20	0.069	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-31	ND		0.20	0.051	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-33	ND		0.20	0.038	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-44	ND		0.20	0.15	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-49	ND		0.20	0.050	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-52	ND		0.20	0.19	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-56	ND		0.20	0.076	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-60	ND		0.20	0.052	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-66	ND		0.20	0.12	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-70	ND		0.20	0.072	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-74	ND		0.20	0.090	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-87	ND		0.20	0.11	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-95	ND		0.20	0.11	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-97	ND		0.20	0.046	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-99	ND		0.20	0.047	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-101	ND		0.20	0.044	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-105	ND		0.20	0.053	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-110	ND		0.20	0.034	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-118	ND		0.20	0.035	ug/Kg		11/19/19 22:01	11/21/19 11:50	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: MB 570-33981/1-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33981

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-128	ND		0.20	0.12	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-132/153	ND		0.40	0.16	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-138/158	ND		0.40	0.35	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-141	ND		0.20	0.049	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-149	ND		0.20	0.12	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-151	ND		0.20	0.088	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-156	ND		0.20	0.077	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-170	ND		0.20	0.11	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-174	ND		0.20	0.042	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-177	ND		0.20	0.12	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-180	ND		0.20	0.092	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-183	ND		0.20	0.093	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-187	ND		0.20	0.10	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-194	ND		0.20	0.074	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-195	ND		0.20	0.060	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-201	ND		0.20	0.034	ug/Kg		11/19/19 22:01	11/21/19 11:50	1
PCB-203	ND		0.20	0.058	ug/Kg		11/19/19 22:01	11/21/19 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*14 - 146*	*11/19/19 22:01*	*11/21/19 11:50*	*1*
p-Terphenyl-d14	*110*		*34 - 148*	*11/19/19 22:01*	*11/21/19 11:50*	*1*

Lab Sample ID: LCS 570-33981/2-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33981

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-5/8	50.0	46.18		ug/Kg		92	50 - 150
PCB-18	50.0	37.87		ug/Kg		76	24 - 132
PCB-28	50.0	46.44		ug/Kg		93	31 - 133
PCB-44	50.0	41.93		ug/Kg		84	36 - 120
PCB-52	50.0	40.81		ug/Kg		82	31 - 121
PCB-66	50.0	43.50		ug/Kg		87	43 - 139
PCB-101	50.0	41.57		ug/Kg		83	37 - 121
PCB-105	50.0	40.35		ug/Kg		81	48 - 132
PCB-118	50.0	43.08		ug/Kg		86	46 - 136
PCB-128	50.0	48.60		ug/Kg		97	40 - 130
PCB-132/153	50.0	47.00		ug/Kg		94	50 - 150
PCB-138/158	50.0	39.88		ug/Kg		80	50 - 150
PCB-170	50.0	46.47		ug/Kg		93	40 - 124
PCB-180	50.0	45.40		ug/Kg		91	41 - 143
PCB-187	50.0	44.43		ug/Kg		89	39 - 129
PCB-195	50.0	48.93		ug/Kg		98	44 - 128
PCB-201	50.0	45.04		ug/Kg		90	50 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*75*		*14 - 146*
p-Terphenyl-d14	*90*		*34 - 148*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: LCSD 570-33981/3-A
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33981

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8			50.0	48.75		ug/Kg		98	50 - 150	5	25
PCB-18			50.0	40.39		ug/Kg		81	24 - 132	6	28
PCB-28			50.0	49.02		ug/Kg		98	31 - 133	5	26
PCB-44			50.0	45.86		ug/Kg		92	36 - 120	9	28
PCB-52			50.0	45.90		ug/Kg		92	31 - 121	12	27
PCB-66			50.0	48.28		ug/Kg		97	43 - 139	10	25
PCB-101			50.0	45.74		ug/Kg		91	37 - 121	10	27
PCB-105			50.0	43.92		ug/Kg		88	48 - 132	8	26
PCB-118			50.0	46.05		ug/Kg		92	46 - 136	7	25
PCB-128			50.0	51.95		ug/Kg		104	40 - 130	7	26
PCB-132/153			50.0	51.09		ug/Kg		102	50 - 150	8	25
PCB-138/158			50.0	43.70		ug/Kg		87	50 - 150	9	25
PCB-170			50.0	50.21		ug/Kg		100	40 - 124	8	29
PCB-180			50.0	48.06		ug/Kg		96	41 - 143	6	26
PCB-187			50.0	49.20		ug/Kg		98	39 - 129	10	26
PCB-195			50.0	49.66		ug/Kg		99	44 - 128	1	28
PCB-201			50.0	49.68		ug/Kg		99	50 - 150	10	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*72*		*14 - 146*
p-Terphenyl-d14	*101*		*34 - 148*

Lab Sample ID: 570-1204-A-1-G MS
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 33981

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-5/8	ND	F2	90.2	65.29		ug/Kg	☼	72	50 - 150		
PCB-18	ND		90.2	62.17		ug/Kg	☼	69	24 - 132		
PCB-28	ND		90.2	95.98		ug/Kg	☼	106	31 - 133		
PCB-44	7.4		90.2	77.27		ug/Kg	☼	77	36 - 120		
PCB-52	9.1		90.2	72.46		ug/Kg	☼	70	31 - 121		
PCB-66	7.8		90.2	84.54		ug/Kg	☼	85	43 - 139		
PCB-101	14		90.2	91.80		ug/Kg	☼	86	37 - 121		
PCB-105	5.5		90.2	94.99		ug/Kg	☼	99	48 - 132		
PCB-118	15		90.2	104.1		ug/Kg	☼	99	46 - 136		
PCB-128	ND	F1	90.2	108.2		ug/Kg	☼	120	40 - 130		
PCB-132/153	27		90.2	123.2		ug/Kg	☼	106	50 - 150		
PCB-138/158	26		90.2	111.5		ug/Kg	☼	95	50 - 150		
PCB-170	6.0		90.2	78.06		ug/Kg	☼	80	40 - 124		
PCB-180	17		90.2	114.4		ug/Kg	☼	108	41 - 143		
PCB-187	11	F1	90.2	106.1		ug/Kg	☼	106	39 - 129		
PCB-195	ND	F2	90.2	72.17		ug/Kg	☼	80	44 - 128		
PCB-201	ND		90.2	104.3		ug/Kg	☼	116	50 - 150		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*62*		*14 - 146*
p-Terphenyl-d14	*108*		*34 - 148*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: 570-1204-A-1-H MSD
Matrix: Solid
Analysis Batch: 34349

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 33981

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8	ND	F2	89.8	85.90	F2	ug/Kg	☼	96	50 - 150	27	25
PCB-18	ND		89.8	73.42		ug/Kg	☼	82	24 - 132	17	28
PCB-28	ND		89.8	98.94		ug/Kg	☼	110	31 - 133	3	26
PCB-44	7.4		89.8	93.81		ug/Kg	☼	96	36 - 120	19	28
PCB-52	9.1		89.8	93.68		ug/Kg	☼	94	31 - 121	26	27
PCB-66	7.8		89.8	97.40		ug/Kg	☼	100	43 - 139	14	25
PCB-101	14		89.8	105.7		ug/Kg	☼	102	37 - 121	14	27
PCB-105	5.5		89.8	104.1		ug/Kg	☼	110	48 - 132	9	26
PCB-118	15		89.8	121.5		ug/Kg	☼	119	46 - 136	15	25
PCB-128	ND	F1	89.8	131.0	F1	ug/Kg	☼	146	40 - 130	19	26
PCB-132/153	27		89.8	141.4		ug/Kg	☼	127	50 - 150	14	25
PCB-138/158	26		89.8	127.2		ug/Kg	☼	113	50 - 150	13	25
PCB-170	6.0		89.8	102.9		ug/Kg	☼	108	40 - 124	27	29
PCB-180	17		89.8	138.8		ug/Kg	☼	136	41 - 143	19	26
PCB-187	11	F1	89.8	127.8	F1	ug/Kg	☼	130	39 - 129	19	26
PCB-195	ND	F2	89.8	97.75	F2	ug/Kg	☼	109	44 - 128	30	28
PCB-201	ND		89.8	127.2		ug/Kg	☼	142	50 - 150	20	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*90*		*14 - 146*
p-Terphenyl-d14	*131*		*34 - 148*

Method: Organotins SIM - Organotins (GC/MS SIM)

Lab Sample ID: MB 570-32611/1-A
Matrix: Solid
Analysis Batch: 33084

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32611

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		3.0	0.74	ug/Kg		11/13/19 16:02	11/15/19 18:58	1
Tributyltin	ND		3.0	1.5	ug/Kg		11/13/19 16:02	11/15/19 18:58	1
Dibutyltin	ND		3.0	0.73	ug/Kg		11/13/19 16:02	11/15/19 18:58	1
Monobutyltin	ND		3.0	1.4	ug/Kg		11/13/19 16:02	11/15/19 18:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*68*		*27 - 135*	*11/13/19 16:02*	*11/15/19 18:58*	*1*

Lab Sample ID: LCS 570-32611/2-A
Matrix: Solid
Analysis Batch: 33084

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32611

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tetrabutyltin			100	74.54		ug/Kg		75	40 - 142		
Tributyltin			100	60.91		ug/Kg		61	33 - 147		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*72*		*27 - 135*

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 570-32611/3-A
Matrix: Solid
Analysis Batch: 33084

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32611

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin			100	83.00		ug/Kg		83	40 - 142	11	20
Tributyltin			100	68.06		ug/Kg		68	33 - 147	11	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*73*		*27 - 135*

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33084

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32611

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tetrabutyltin	ND		135	109.4		ug/Kg	☼	81	33 - 129		
Tributyltin	ND		135	86.08		ug/Kg	☼	64	34 - 142		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tripentyltin	*71*		*27 - 135*

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 33535

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32611

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin	ND		137	87.87		ug/Kg	☼	64	33 - 129	22	36
Tributyltin	ND		137	62.08		ug/Kg	☼	45	34 - 142	32	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tripentyltin	*55*		*27 - 135*

Lab Sample ID: MB 570-32616/1-A
Matrix: Solid
Analysis Batch: 33535

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32616

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		3.0	0.74	ug/Kg		11/13/19 16:09	11/18/19 16:55	1
Tributyltin	ND		3.0	1.5	ug/Kg		11/13/19 16:09	11/18/19 16:55	1
Dibutyltin	ND		3.0	0.73	ug/Kg		11/13/19 16:09	11/18/19 16:55	1
Monobutyltin	ND		3.0	1.4	ug/Kg		11/13/19 16:09	11/18/19 16:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*52*		*27 - 135*	*11/13/19 16:09*	*11/18/19 16:55*	*1*

Lab Sample ID: LCS 570-32616/2-A
Matrix: Solid
Analysis Batch: 33535

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32616

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tetrabutyltin			100	58.06		ug/Kg		58	40 - 142		

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-32616/2-A
Matrix: Solid
Analysis Batch: 33535

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32616

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tributyltin			100	44.57		ug/Kg		45	33 - 147		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*51*		*27 - 135*

Lab Sample ID: LCSD 570-32616/3-A
Matrix: Solid
Analysis Batch: 33535

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32616

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin			100	58.67		ug/Kg		59	40 - 142	1	20
Tributyltin			100	46.81		ug/Kg		47	33 - 147	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*51*		*27 - 135*

Lab Sample ID: 570-12498-32 MS
Matrix: Sediment
Analysis Batch: 33535

Client Sample ID: MOTCO-2019-DU4-04
Prep Type: Total/NA
Prep Batch: 32616

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tetrabutyltin	ND		154	92.11		ug/Kg	☼	60	33 - 129		
Tributyltin	ND		154	69.93		ug/Kg	☼	45	34 - 142		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tripentyltin	*52*		*27 - 135*

Lab Sample ID: 570-12498-32 MSD
Matrix: Sediment
Analysis Batch: 33535

Client Sample ID: MOTCO-2019-DU4-04
Prep Type: Total/NA
Prep Batch: 32616

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin	ND		154	113.5		ug/Kg	☼	74	33 - 129	21	36
Tributyltin	ND		154	86.85		ug/Kg	☼	56	34 - 142	22	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tripentyltin	*61*		*27 - 135*

Lab Sample ID: MB 570-34074/1-A
Matrix: Solid
Analysis Batch: 34119

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34074

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		3.0	0.74	ug/Kg		11/20/19 10:30	11/20/19 17:22	1
Tributyltin	ND		3.0	1.5	ug/Kg		11/20/19 10:30	11/20/19 17:22	1
Dibutyltin	ND		3.0	0.73	ug/Kg		11/20/19 10:30	11/20/19 17:22	1
Monobutyltin	ND		3.0	1.4	ug/Kg		11/20/19 10:30	11/20/19 17:22	1

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: MB 570-34074/1-A
Matrix: Solid
Analysis Batch: 34119

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 34074

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tripentyltin	44		27 - 135	11/20/19 10:30	11/20/19 17:22	1

Lab Sample ID: LCS 570-34074/2-A
Matrix: Solid
Analysis Batch: 34119

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 34074

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tetrabutyltin			100	67.87		ug/Kg		68	40 - 142		
Tributyltin			100	49.75		ug/Kg		50	33 - 147		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tripentyltin	56		27 - 135

Lab Sample ID: LCSD 570-34074/3-A
Matrix: Solid
Analysis Batch: 34119

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 34074

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin			100	65.97		ug/Kg		66	40 - 142	3	20
Tributyltin			100	50.35		ug/Kg		50	33 - 147	1	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tripentyltin	54		27 - 135

Lab Sample ID: 570-12850-A-3-A MS
Matrix: Solid
Analysis Batch: 34119

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 34074

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tetrabutyltin	ND		100	63.85		ug/Kg		64	33 - 129		
Tributyltin	860		100	1277	E 4	ug/Kg		414	34 - 142		

Surrogate	MS %Recovery	MS Qualifier	Limits
Tripentyltin	52		27 - 135

Lab Sample ID: 570-12850-A-3-B MSD
Matrix: Solid
Analysis Batch: 34119

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 34074

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin	ND		100	66.46		ug/Kg		66	33 - 129	4	36
Tributyltin	860		100	1133	E 4	ug/Kg		270	34 - 142	12	50

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Tripentyltin	69		27 - 135

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 570-32642/1-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32642

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.0	0.15	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
2,4'-DDE	ND		2.0	0.83	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
2,4'-DDT	ND		1.0	0.14	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
4,4'-DDD	ND		1.0	0.24	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
4,4'-DDE	ND		1.0	0.17	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
4,4'-DDT	ND		1.0	0.30	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Aldrin	ND		1.0	0.18	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
alpha-BHC	ND		2.0	1.1	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
beta-BHC	ND		1.0	0.71	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Chlordane	ND		10	0.68	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
delta-BHC	ND		2.0	0.94	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Dieldrin	ND		1.0	0.10	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Endosulfan I	ND		1.0	0.11	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Endosulfan II	ND		1.0	0.19	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Endosulfan sulfate	ND		1.0	0.27	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Endrin	ND		1.0	0.11	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Endrin aldehyde	ND		2.0	1.1	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
gamma-BHC	ND		1.0	0.19	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Heptachlor	ND		1.0	0.15	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Heptachlor epoxide	ND		1.0	0.13	ug/Kg		11/13/19 17:11	11/19/19 09:16	1
Toxaphene	ND		20	3.1	ug/Kg		11/13/19 17:11	11/19/19 09:16	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*68*		*25 - 145*	*11/13/19 17:11*	*11/19/19 09:16*	*1*
DCB Decachlorobiphenyl (Surr)	*103*		*24 - 168*	*11/13/19 17:11*	*11/19/19 09:16*	*1*

Lab Sample ID: LCS 570-32642/2-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32642

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	5.00	5.078		ug/Kg		102	50 - 135
4,4'-DDE	5.00	4.901		ug/Kg		98	50 - 135
4,4'-DDT	5.00	5.159		ug/Kg		103	50 - 135
Aldrin	5.00	4.251		ug/Kg		85	50 - 135
alpha-BHC	5.00	4.450		ug/Kg		89	50 - 135
beta-BHC	5.00	4.823		ug/Kg		96	50 - 135
delta-BHC	5.00	6.278		ug/Kg		126	50 - 135
Dieldrin	5.00	4.857		ug/Kg		97	50 - 135
Endosulfan I	5.00	4.371		ug/Kg		87	50 - 135
Endosulfan II	5.00	5.251		ug/Kg		105	50 - 135
Endosulfan sulfate	5.00	4.678		ug/Kg		94	50 - 135
Endrin	5.00	4.718		ug/Kg		94	50 - 135
Endrin aldehyde	5.00	4.868		ug/Kg		97	50 - 135
gamma-BHC	5.00	4.472		ug/Kg		89	50 - 135
Heptachlor	5.00	4.353		ug/Kg		87	50 - 135
Heptachlor epoxide	5.00	4.559		ug/Kg		91	50 - 135

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 570-32642/2-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32642

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	*77*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*87*		*24 - 168*

Lab Sample ID: LCSD 570-32642/3-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32642

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD			5.00	4.979		ug/Kg		100	50 - 135	2	25
4,4'-DDE			5.00	4.916		ug/Kg		98	50 - 135	0	25
4,4'-DDT			5.00	4.939		ug/Kg		99	50 - 135	4	25
Aldrin			5.00	4.231		ug/Kg		85	50 - 135	0	25
alpha-BHC			5.00	4.508		ug/Kg		90	50 - 135	1	25
beta-BHC			5.00	4.874		ug/Kg		97	50 - 135	1	25
delta-BHC			5.00	6.165		ug/Kg		123	50 - 135	2	25
Dieldrin			5.00	4.684		ug/Kg		94	50 - 135	4	25
Endosulfan I			5.00	4.312		ug/Kg		86	50 - 135	1	25
Endosulfan II			5.00	4.737		ug/Kg		95	50 - 135	10	25
Endosulfan sulfate			5.00	4.602		ug/Kg		92	50 - 135	2	25
Endrin			5.00	4.676		ug/Kg		94	50 - 135	1	25
Endrin aldehyde			5.00	4.395		ug/Kg		88	50 - 135	10	25
gamma-BHC			5.00	4.498		ug/Kg		90	50 - 135	1	25
Heptachlor			5.00	4.444		ug/Kg		89	50 - 135	2	25
Heptachlor epoxide			5.00	4.517		ug/Kg		90	50 - 135	1	25

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	*81*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*87*		*24 - 168*

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33632

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32642

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	1.7		6.74	8.629		ug/Kg	☼	102	50 - 135
4,4'-DDE	0.71	J	6.74	7.086		ug/Kg	☼	95	50 - 135
4,4'-DDT	ND	F2 F1	6.74	7.182		ug/Kg	☼	107	50 - 135
Aldrin	ND		6.74	5.793		ug/Kg	☼	86	50 - 135
alpha-BHC	ND		6.74	5.872		ug/Kg	☼	87	50 - 135
beta-BHC	ND		6.74	7.256		ug/Kg	☼	108	50 - 135
delta-BHC	ND		6.74	6.328		ug/Kg	☼	94	50 - 135
Dieldrin	ND		6.74	6.457		ug/Kg	☼	96	50 - 135
Endosulfan I	ND		6.74	5.900		ug/Kg	☼	88	50 - 135
Endosulfan II	ND		6.74	6.341		ug/Kg	☼	94	50 - 135
Endosulfan sulfate	ND		6.74	6.581		ug/Kg	☼	98	50 - 135
Endrin	0.18	J p	6.74	6.582		ug/Kg	☼	95	50 - 135
Endrin aldehyde	ND		6.74	5.377		ug/Kg	☼	80	50 - 135
gamma-BHC	ND		6.74	6.047		ug/Kg	☼	90	50 - 135

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33632

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32642

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptachlor	ND		6.74	5.890		ug/Kg	☼	87	50 - 135
Heptachlor epoxide	ND		6.74	7.251		ug/Kg	☼	108	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*92*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*100*		*24 - 168*

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 33632

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32642

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	1.7		6.84	9.155		ug/Kg	☼	108	50 - 135	6	25
4,4'-DDE	0.71	J	6.84	7.328		ug/Kg	☼	97	50 - 135	3	25
4,4'-DDT	ND	F2 F1	6.84	9.701	F1 F2	ug/Kg	☼	142	50 - 135	30	25
Aldrin	ND		6.84	5.586		ug/Kg	☼	82	50 - 135	4	25
alpha-BHC	ND		6.84	6.011		ug/Kg	☼	88	50 - 135	2	25
beta-BHC	ND		6.84	6.005		ug/Kg	☼	88	50 - 135	19	25
delta-BHC	ND		6.84	6.240		ug/Kg	☼	91	50 - 135	1	25
Dieldrin	ND		6.84	6.845		ug/Kg	☼	100	50 - 135	6	25
Endosulfan I	ND		6.84	6.149		ug/Kg	☼	90	50 - 135	4	25
Endosulfan II	ND		6.84	6.530		ug/Kg	☼	95	50 - 135	3	25
Endosulfan sulfate	ND		6.84	6.813		ug/Kg	☼	100	50 - 135	3	25
Endrin	0.18	J p	6.84	6.611		ug/Kg	☼	94	50 - 135	0	25
Endrin aldehyde	ND		6.84	5.931		ug/Kg	☼	87	50 - 135	10	25
gamma-BHC	ND		6.84	6.191		ug/Kg	☼	91	50 - 135	2	25
Heptachlor	ND		6.84	5.738		ug/Kg	☼	84	50 - 135	3	25
Heptachlor epoxide	ND		6.84	6.381		ug/Kg	☼	93	50 - 135	13	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*79*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*94*		*24 - 168*

Lab Sample ID: MB 570-32645/1-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32645

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.0	0.15	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
2,4'-DDE	ND		2.0	0.83	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
2,4'-DDT	ND		1.0	0.14	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
4,4'-DDD	ND		1.0	0.24	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
4,4'-DDE	ND		1.0	0.17	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
4,4'-DDT	ND		1.0	0.30	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Aldrin	ND		1.0	0.18	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
alpha-BHC	ND		2.0	1.1	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
beta-BHC	ND		1.0	0.71	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Chlordane	ND		10	0.68	ug/Kg		11/13/19 17:27	11/19/19 05:57	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 570-32645/1-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32645

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		2.0	0.94	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Dieldrin	ND		1.0	0.10	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Endosulfan I	ND		1.0	0.11	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Endosulfan II	ND		1.0	0.19	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Endosulfan sulfate	ND		1.0	0.27	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Endrin	ND		1.0	0.11	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Endrin aldehyde	ND		2.0	1.1	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
gamma-BHC	ND		1.0	0.19	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Heptachlor	ND		1.0	0.15	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Heptachlor epoxide	ND		1.0	0.13	ug/Kg		11/13/19 17:27	11/19/19 05:57	1
Toxaphene	ND		20	3.1	ug/Kg		11/13/19 17:27	11/19/19 05:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*73*		*25 - 145*	*11/13/19 17:27*	*11/19/19 05:57*	*1*
DCB Decachlorobiphenyl (Surr)	*89*		*24 - 168*	*11/13/19 17:27*	*11/19/19 05:57*	*1*

Lab Sample ID: LCS 570-32645/2-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32645

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	5.00	4.983		ug/Kg		100	50 - 135
4,4'-DDE	5.00	4.851		ug/Kg		97	50 - 135
4,4'-DDT	5.00	4.900		ug/Kg		98	50 - 135
Aldrin	5.00	4.085		ug/Kg		82	50 - 135
alpha-BHC	5.00	4.401		ug/Kg		88	50 - 135
beta-BHC	5.00	4.700		ug/Kg		94	50 - 135
delta-BHC	5.00	5.861		ug/Kg		117	50 - 135
Dieldrin	5.00	4.645		ug/Kg		93	50 - 135
Endosulfan I	5.00	4.289		ug/Kg		86	50 - 135
Endosulfan II	5.00	4.710		ug/Kg		94	50 - 135
Endosulfan sulfate	5.00	4.633		ug/Kg		93	50 - 135
Endrin	5.00	4.684		ug/Kg		94	50 - 135
Endrin aldehyde	5.00	4.774		ug/Kg		95	50 - 135
gamma-BHC	5.00	4.376		ug/Kg		88	50 - 135
Heptachlor	5.00	4.309		ug/Kg		86	50 - 135
Heptachlor epoxide	5.00	4.462		ug/Kg		89	50 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*75*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*89*		*24 - 168*

Lab Sample ID: LCSD 570-32645/3-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32645

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	5.00	4.936		ug/Kg		99	50 - 135	1	25

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-32645/3-A
Matrix: Solid
Analysis Batch: 33632

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32645

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDE			5.00	4.806		ug/Kg		96	50 - 135	1	25
4,4'-DDT			5.00	4.884		ug/Kg		98	50 - 135	0	25
Aldrin			5.00	4.084		ug/Kg		82	50 - 135	0	25
alpha-BHC			5.00	4.408		ug/Kg		88	50 - 135	0	25
beta-BHC			5.00	4.680		ug/Kg		94	50 - 135	0	25
delta-BHC			5.00	6.047		ug/Kg		121	50 - 135	3	25
Dieldrin			5.00	4.605		ug/Kg		92	50 - 135	1	25
Endosulfan I			5.00	4.222		ug/Kg		84	50 - 135	2	25
Endosulfan II			5.00	4.660		ug/Kg		93	50 - 135	1	25
Endosulfan sulfate			5.00	4.590		ug/Kg		92	50 - 135	1	25
Endrin			5.00	4.644		ug/Kg		93	50 - 135	1	25
Endrin aldehyde			5.00	4.699		ug/Kg		94	50 - 135	2	25
gamma-BHC			5.00	4.373		ug/Kg		87	50 - 135	0	25
Heptachlor			5.00	4.320		ug/Kg		86	50 - 135	0	25
Heptachlor epoxide			5.00	4.462		ug/Kg		89	50 - 135	0	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*76*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*90*		*24 - 168*

Lab Sample ID: 570-12498-32 MS
Matrix: Sediment
Analysis Batch: 33632

Client Sample ID: MOTCO-2019-DU4-04
Prep Type: Total/NA
Prep Batch: 32645

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	1.7		7.65	7.975		ug/Kg	☼	82	50 - 135
4,4'-DDE	1.1	J	7.65	7.610		ug/Kg	☼	85	50 - 135
4,4'-DDT	ND		7.65	6.790		ug/Kg	☼	89	50 - 135
Aldrin	ND		7.65	5.675		ug/Kg	☼	74	50 - 135
alpha-BHC	ND		7.65	6.520		ug/Kg	☼	85	50 - 135
beta-BHC	ND		7.65	7.817		ug/Kg	☼	102	50 - 135
delta-BHC	ND		7.65	5.335		ug/Kg	☼	70	50 - 135
Dieldrin	ND		7.65	6.272		ug/Kg	☼	82	50 - 135
Endosulfan I	ND		7.65	5.701		ug/Kg	☼	75	50 - 135
Endosulfan II	ND		7.65	5.878		ug/Kg	☼	77	50 - 135
Endosulfan sulfate	ND		7.65	6.322		ug/Kg	☼	83	50 - 135
Endrin	ND		7.65	6.259		ug/Kg	☼	82	50 - 135
Endrin aldehyde	ND		7.65	5.812		ug/Kg	☼	76	50 - 135
gamma-BHC	ND		7.65	6.077		ug/Kg	☼	79	50 - 135
Heptachlor	ND		7.65	6.525		ug/Kg	☼	85	50 - 135
Heptachlor epoxide	ND		7.65	5.970		ug/Kg	☼	78	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*74*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*86*		*24 - 168*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-12498-32 MSD
Matrix: Sediment
Analysis Batch: 33632

Client Sample ID: MOTCO-2019-DU4-04
Prep Type: Total/NA
Prep Batch: 32645

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	1.7		7.69	8.415		ug/Kg	☼	87	50 - 135	5	25
4,4'-DDE	1.1	J	7.69	7.179		ug/Kg	☼	79	50 - 135	6	25
4,4'-DDT	ND		7.69	5.957		ug/Kg	☼	77	50 - 135	13	25
Aldrin	ND		7.69	5.249		ug/Kg	☼	68	50 - 135	8	25
alpha-BHC	ND		7.69	5.731		ug/Kg	☼	75	50 - 135	13	25
beta-BHC	ND		7.69	5.620	F2	ug/Kg	☼	73	50 - 135	33	25
delta-BHC	ND		7.69	4.992		ug/Kg	☼	65	50 - 135	7	25
Dieldrin	ND		7.69	5.878		ug/Kg	☼	76	50 - 135	6	25
Endosulfan I	ND		7.69	5.394		ug/Kg	☼	70	50 - 135	6	25
Endosulfan II	ND		7.69	5.365		ug/Kg	☼	70	50 - 135	9	25
Endosulfan sulfate	ND		7.69	5.351		ug/Kg	☼	70	50 - 135	17	25
Endrin	ND		7.69	5.684		ug/Kg	☼	74	50 - 135	10	25
Endrin aldehyde	ND		7.69	4.149	F2	ug/Kg	☼	54	50 - 135	33	25
gamma-BHC	ND		7.69	5.614		ug/Kg	☼	73	50 - 135	8	25
Heptachlor	ND		7.69	4.713	F2	ug/Kg	☼	61	50 - 135	32	25
Heptachlor epoxide	ND		7.69	5.441		ug/Kg	☼	71	50 - 135	9	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*70*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*82*		*24 - 168*

Lab Sample ID: MB 570-33984/1-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33984

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.0	0.15	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
2,4'-DDE	ND		2.0	0.83	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
2,4'-DDT	ND		1.0	0.14	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
4,4'-DDD	ND		1.0	0.24	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
4,4'-DDE	ND		1.0	0.17	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
4,4'-DDT	ND		1.0	0.30	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Aldrin	ND		1.0	0.18	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
alpha-BHC	ND		2.0	1.1	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
beta-BHC	ND		1.0	0.71	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Chlordane	ND		10	0.68	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
delta-BHC	ND		2.0	0.94	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Dieldrin	ND		1.0	0.10	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Endosulfan I	ND		1.0	0.11	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Endosulfan II	ND		1.0	0.19	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Endosulfan sulfate	ND		1.0	0.27	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Endrin	ND		1.0	0.11	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Endrin aldehyde	ND		2.0	1.1	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
gamma-BHC	ND		1.0	0.19	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Heptachlor	ND		1.0	0.15	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Heptachlor epoxide	ND		1.0	0.13	ug/Kg		11/19/19 22:08	11/22/19 08:27	1
Toxaphene	ND		20	3.1	ug/Kg		11/19/19 22:08	11/22/19 08:27	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 570-33984/1-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33984

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	78		25 - 145	11/19/19 22:08	11/22/19 08:27	1
DCB Decachlorobiphenyl (Surr)	94		24 - 168	11/19/19 22:08	11/22/19 08:27	1

Lab Sample ID: LCS 570-33984/16-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4'-DDD	5.00	6.220		ug/Kg		124	50 - 135
2,4'-DDE	5.00	5.940		ug/Kg		119	50 - 135
2,4'-DDT	5.00	6.601		ug/Kg		132	50 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	74		25 - 145
DCB Decachlorobiphenyl (Surr)	81		24 - 168

Lab Sample ID: LCS 570-33984/2-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	5.00	5.764		ug/Kg		115	50 - 135
4,4'-DDE	5.00	5.162		ug/Kg		103	50 - 135
4,4'-DDT	5.00	5.239		ug/Kg		105	50 - 135
Aldrin	5.00	3.839		ug/Kg		77	50 - 135
alpha-BHC	5.00	4.878		ug/Kg		98	50 - 135
beta-BHC	5.00	5.148		ug/Kg		103	50 - 135
delta-BHC	5.00	5.640		ug/Kg		113	50 - 135
Dieldrin	5.00	4.932		ug/Kg		99	50 - 135
Endosulfan I	5.00	4.619		ug/Kg		92	50 - 135
Endosulfan II	5.00	5.037		ug/Kg		101	50 - 135
Endosulfan sulfate	5.00	5.010		ug/Kg		100	50 - 135
Endrin	5.00	4.931		ug/Kg		99	50 - 135
Endrin aldehyde	5.00	5.115		ug/Kg		102	50 - 135
gamma-BHC	5.00	4.872		ug/Kg		97	50 - 135
Heptachlor	5.00	4.753		ug/Kg		95	50 - 135
Heptachlor epoxide	5.00	4.784		ug/Kg		96	50 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	84		25 - 145
DCB Decachlorobiphenyl (Surr)	94		24 - 168

Lab Sample ID: LCSD 570-33984/17-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4'-DDD	5.00	6.270		ug/Kg		125	50 - 135	1	25

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-33984/17-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33984

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4'-DDE			5.00	6.140		ug/Kg		123	50 - 135	3	25
2,4'-DDT			5.00	6.691		ug/Kg		134	50 - 135	1	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*75*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*81*		*24 - 168*

Lab Sample ID: LCSD 570-33984/3-A
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33984

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD			5.00	5.305		ug/Kg		106	50 - 135	8	25
4,4'-DDE			5.00	4.722		ug/Kg		94	50 - 135	NaN	25
4,4'-DDT			5.00	4.772		ug/Kg		95	50 - 135	NaN	25
Aldrin			5.00	3.569		ug/Kg		71	50 - 135	NaN	25
alpha-BHC			5.00	4.546		ug/Kg		91	50 - 135	7	25
beta-BHC			5.00	4.748		ug/Kg		95	50 - 135	NaN	25
delta-BHC			5.00	5.245		ug/Kg		105	50 - 135	NaN	25
Dieldrin			5.00	4.553		ug/Kg		91	50 - 135	8	25
Endosulfan I			5.00	4.257		ug/Kg		85	50 - 135	NaN	25
Endosulfan II			5.00	4.613		ug/Kg		92	50 - 135	9	25
Endosulfan sulfate			5.00	4.601		ug/Kg		92	50 - 135	NaN	25
Endrin			5.00	4.539		ug/Kg		91	50 - 135	8	25
Endrin aldehyde			5.00	4.725		ug/Kg		94	50 - 135	8	25
gamma-BHC			5.00	4.511		ug/Kg		90	50 - 135	NaN	25
Heptachlor			5.00	4.340		ug/Kg		87	50 - 135	NaN	25
Heptachlor epoxide			5.00	4.427		ug/Kg		89	50 - 135	NaN	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*79*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*85*		*24 - 168*

Lab Sample ID: 570-12498-28 MS
Matrix: Sediment
Analysis Batch: 34516

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4'-DDD	0.39	J p F1	8.71	14.10	E F1	ug/Kg	☼	157	50 - 135
2,4'-DDE	ND	F1	8.71	13.94	F1	ug/Kg	☼	160	50 - 135
2,4'-DDT	ND	F1 F2	8.71	14.36	E F1	ug/Kg	☼	165	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*81*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*118*		*24 - 168*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-12498-28 MSD
Matrix: Sediment
Analysis Batch: 34516

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4'-DDD	0.39	J p F1	8.67	15.05	E F1	ug/Kg	☼	169	50 - 135	7	25
2,4'-DDE	ND	F1	8.67	14.15	E F1	ug/Kg	☼	163	50 - 135	1	25
2,4'-DDT	ND	F1 F2	8.67	10.33	F2	ug/Kg	☼	119	50 - 135	33	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*76*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*87*		*24 - 168*

Lab Sample ID: 570-12907-A-2-B MS
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	ND		5.81	6.090		ug/Kg	☼	105	50 - 135
4,4'-DDE	ND		5.81	5.660		ug/Kg	☼	97	50 - 135
4,4'-DDT	ND		5.81	6.299		ug/Kg	☼	108	50 - 135
Aldrin	ND		5.81	4.361		ug/Kg	☼	75	50 - 135
alpha-BHC	ND		5.81	4.855		ug/Kg	☼	84	50 - 135
beta-BHC	ND		5.81	4.831		ug/Kg	☼	83	50 - 135
delta-BHC	ND		5.81	6.056		ug/Kg	☼	104	50 - 135
Dieldrin	ND		5.81	5.251		ug/Kg	☼	90	50 - 135
Endosulfan I	ND		5.81	4.961		ug/Kg	☼	85	50 - 135
Endosulfan II	ND		5.81	5.643		ug/Kg	☼	97	50 - 135
Endosulfan sulfate	ND		5.81	5.959		ug/Kg	☼	103	50 - 135
Endrin	ND		5.81	4.748		ug/Kg	☼	82	50 - 135
Endrin aldehyde	ND		5.81	8.872	F1	ug/Kg	☼	153	50 - 135
gamma-BHC	ND		5.81	4.894		ug/Kg	☼	84	50 - 135
Heptachlor	ND		5.81	4.788		ug/Kg	☼	82	50 - 135
Heptachlor epoxide	ND		5.81	5.426		ug/Kg	☼	93	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*87*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*91*		*24 - 168*

Lab Sample ID: 570-12907-A-2-C MSD
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	ND		5.75	6.216		ug/Kg	☼	108	50 - 135	2	25
4,4'-DDE	ND		5.75	5.583		ug/Kg	☼	97	50 - 135	1	25
4,4'-DDT	ND		5.75	5.842		ug/Kg	☼	102	50 - 135	8	25
Aldrin	ND		5.75	3.904		ug/Kg	☼	68	50 - 135	11	25
alpha-BHC	ND		5.75	4.855		ug/Kg	☼	84	50 - 135	0	25
beta-BHC	ND		5.75	4.986		ug/Kg	☼	87	50 - 135	3	25
delta-BHC	ND		5.75	6.021		ug/Kg	☼	105	50 - 135	1	25
Dieldrin	ND		5.75	5.287		ug/Kg	☼	92	50 - 135	1	25
Endosulfan I	ND		5.75	5.054		ug/Kg	☼	88	50 - 135	2	25

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-12907-A-2-C MSD
Matrix: Solid
Analysis Batch: 34516

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 33984

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Endosulfan II	ND		5.75	5.432		ug/Kg	☼	94	50 - 135	4	25
Endosulfan sulfate	ND		5.75	5.717		ug/Kg	☼	99	50 - 135	4	25
Endrin	ND		5.75	4.676		ug/Kg	☼	81	50 - 135	2	25
Endrin aldehyde	ND		5.75	5.606	F2	ug/Kg	☼	97	50 - 135	45	25
gamma-BHC	ND		5.75	4.995		ug/Kg	☼	87	50 - 135	2	25
Heptachlor	ND		5.75	4.862		ug/Kg	☼	85	50 - 135	2	25
Heptachlor epoxide	ND		5.75	5.114		ug/Kg	☼	89	50 - 135	6	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*73*		*25 - 145*
DCB Decachlorobiphenyl (Surr)	*89*		*24 - 168*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-32417/1-A ^20
Matrix: Solid
Analysis Batch: 33769

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32417

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.03	0.399	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Cadmium	ND		1.03	0.123	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Chromium	ND		2.05	0.120	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Copper	ND		1.03	0.119	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Lead	ND		1.03	0.141	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Nickel	ND		1.03	0.131	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Selenium	ND		1.03	0.271	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Silver	ND		1.03	0.146	mg/Kg		11/12/19 19:33	11/18/19 20:10	20
Zinc	ND		5.13	0.813	mg/Kg		11/12/19 19:33	11/18/19 20:10	20

Lab Sample ID: LCS 570-32417/2-A ^20
Matrix: Solid
Analysis Batch: 33769

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32417

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	25.3	24.91		mg/Kg		99	80 - 120
Cadmium	25.3	26.42		mg/Kg		105	80 - 120
Chromium	25.3	25.05		mg/Kg		99	80 - 120
Copper	25.3	26.32		mg/Kg		104	80 - 120
Lead	25.3	25.29		mg/Kg		100	80 - 120
Nickel	25.3	25.63		mg/Kg		102	80 - 120
Selenium	25.3	25.69		mg/Kg		102	80 - 120
Silver	12.6	12.62		mg/Kg		100	80 - 120
Zinc	25.3	26.83		mg/Kg		106	80 - 120

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 570-32417/3-A ^20
Matrix: Solid
Analysis Batch: 33769

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32417

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic			24.6	24.68		mg/Kg		100	80 - 120	1	20
Cadmium			24.6	25.33		mg/Kg		103	80 - 120	4	20
Chromium			24.6	24.10		mg/Kg		98	80 - 120	4	20
Copper			24.6	25.85		mg/Kg		105	80 - 120	2	20
Lead			24.6	24.65		mg/Kg		100	80 - 120	3	20
Nickel			24.6	25.10		mg/Kg		102	80 - 120	2	20
Selenium			24.6	24.98		mg/Kg		101	80 - 120	3	20
Silver			12.3	12.60		mg/Kg		102	80 - 120	0	20
Zinc			24.6	26.20		mg/Kg		106	80 - 120	2	20

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33839

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32417

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	9.40		34.4	42.22		mg/Kg	☼	95	72 - 132
Cadmium	ND		34.4	34.95		mg/Kg	☼	102	85 - 121
Chromium	38.9		34.4	74.94		mg/Kg	☼	105	20 - 182
Copper	16.7		34.4	51.09		mg/Kg	☼	100	25 - 157
Lead	9.44		34.4	42.80		mg/Kg	☼	97	62 - 134
Nickel	56.5		34.4	92.48		mg/Kg	☼	105	46 - 154
Selenium	2.19	J	34.4	34.85		mg/Kg	☼	95	54 - 132
Silver	ND		17.2	16.54		mg/Kg	☼	96	78 - 126
Zinc	60.3		34.4	98.32		mg/Kg	☼	110	23 - 173

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 33839

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32417

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	9.40		34.0	40.79		mg/Kg	☼	92	72 - 132	3	13
Cadmium	ND		34.0	34.25		mg/Kg	☼	101	85 - 121	2	12
Chromium	38.9		34.0	74.61		mg/Kg	☼	105	20 - 182	0	15
Copper	16.7		34.0	51.46		mg/Kg	☼	102	25 - 157	1	22
Lead	9.44		34.0	41.70		mg/Kg	☼	95	62 - 134	3	23
Nickel	56.5		34.0	91.63		mg/Kg	☼	103	46 - 154	1	15
Selenium	2.19	J	34.0	33.92		mg/Kg	☼	93	54 - 132	3	14
Silver	ND		17.0	16.80		mg/Kg	☼	99	78 - 126	2	15
Zinc	60.3		34.0	97.18		mg/Kg	☼	108	23 - 173	1	18

Lab Sample ID: MB 570-32423/1-A ^20
Matrix: Solid
Analysis Batch: 33779

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32423

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.03	0.399	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Cadmium	ND		1.03	0.123	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Chromium	ND		2.05	0.120	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Copper	ND		1.03	0.119	mg/Kg		11/12/19 19:40	11/19/19 01:53	20

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 570-32423/1-A ^20
Matrix: Solid
Analysis Batch: 33779

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32423

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.03	0.141	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Nickel	ND		1.03	0.131	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Selenium	ND		1.03	0.271	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Silver	ND		1.03	0.146	mg/Kg		11/12/19 19:40	11/19/19 01:53	20
Zinc	ND		5.13	0.813	mg/Kg		11/12/19 19:40	11/19/19 01:53	20

Lab Sample ID: LCS 570-32423/2-A ^20
Matrix: Solid
Analysis Batch: 33779

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32423

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	25.3	24.99		mg/Kg		99	80 - 120
Cadmium	25.3	26.09		mg/Kg		103	80 - 120
Chromium	25.3	24.41		mg/Kg		97	80 - 120
Copper	25.3	25.92		mg/Kg		103	80 - 120
Lead	25.3	24.60		mg/Kg		97	80 - 120
Nickel	25.3	25.85		mg/Kg		102	80 - 120
Selenium	25.3	24.82		mg/Kg		98	80 - 120
Silver	12.6	12.32		mg/Kg		98	80 - 120
Zinc	25.3	26.59		mg/Kg		105	80 - 120

Lab Sample ID: LCSD 570-32423/3-A ^20
Matrix: Solid
Analysis Batch: 33779

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32423

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	24.6	24.99		mg/Kg		101	80 - 120	0	20
Cadmium	24.6	25.62		mg/Kg		104	80 - 120	2	20
Chromium	24.6	24.06		mg/Kg		98	80 - 120	1	20
Copper	24.6	25.78		mg/Kg		105	80 - 120	1	20
Lead	24.6	23.68		mg/Kg		96	80 - 120	4	20
Nickel	24.6	25.50		mg/Kg		104	80 - 120	1	20
Selenium	24.6	23.68		mg/Kg		96	80 - 120	5	20
Silver	12.3	12.48		mg/Kg		101	80 - 120	1	20
Zinc	24.6	25.41		mg/Kg		103	80 - 120	5	20

Lab Sample ID: 570-12498-24 MS
Matrix: Sediment
Analysis Batch: 33839

Client Sample ID: MOTCO-2019-DU3-03
Prep Type: Total/NA
Prep Batch: 32423

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	14.1	F1	51.5	62.78		mg/Kg	☼	95	72 - 132
Cadmium	ND	F1	51.5	56.17		mg/Kg	☼	109	85 - 121
Chromium	63.3		51.5	118.1		mg/Kg	☼	106	20 - 182
Copper	56.2		51.5	107.2		mg/Kg	☼	99	25 - 157
Lead	17.9	F1	51.5	68.15		mg/Kg	☼	98	62 - 134
Nickel	81.2		51.5	131.3		mg/Kg	☼	97	46 - 154
Selenium	ND	F1	51.5	51.85		mg/Kg	☼	101	54 - 132
Silver	ND	F1	25.7	23.97		mg/Kg	☼	93	78 - 126

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 570-12498-24 MS
Matrix: Sediment
Analysis Batch: 33839

Client Sample ID: MOTCO-2019-DU3-03
Prep Type: Total/NA
Prep Batch: 32423

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	115		51.5	162.2		mg/Kg	☼	92	23 - 173

Lab Sample ID: 570-12498-24 MSD
Matrix: Sediment
Analysis Batch: 33839

Client Sample ID: MOTCO-2019-DU3-03
Prep Type: Total/NA
Prep Batch: 32423

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	14.1	F1	47.8	60.66		mg/Kg	☼	97	72 - 132	3	13
Cadmium	ND	F1	47.8	51.91		mg/Kg	☼	109	85 - 121	8	12
Chromium	63.3		47.8	110.6		mg/Kg	☼	99	20 - 182	7	15
Copper	56.2		47.8	100.6		mg/Kg	☼	93	25 - 157	6	22
Lead	17.9	F1	47.8	61.81		mg/Kg	☼	92	62 - 134	10	23
Nickel	81.2		47.8	127.0		mg/Kg	☼	96	46 - 154	3	15
Selenium	ND	F1	47.8	50.37		mg/Kg	☼	105	54 - 132	3	14
Silver	ND	F1	23.9	24.12		mg/Kg	☼	101	78 - 126	1	15
Zinc	115		47.8	149.7		mg/Kg	☼	73	23 - 173	8	18

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-32368/1-A
Matrix: Solid
Analysis Batch: 32608

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32368

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0833	0.00587	mg/Kg		11/13/19 11:00	11/13/19 17:01	1

Lab Sample ID: LCS 570-32368/2-A
Matrix: Solid
Analysis Batch: 32608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32368

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.833	0.8408		mg/Kg		101	85 - 121

Lab Sample ID: LCSD 570-32368/3-A
Matrix: Solid
Analysis Batch: 32608

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32368

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.820	0.8265		mg/Kg		101	85 - 121	2	10

Lab Sample ID: MB 570-32418/1-A
Matrix: Solid
Analysis Batch: 32608

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32418

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0833	0.00587	mg/Kg		11/13/19 15:00	11/13/19 18:33	1

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 570-32418/2-A
Matrix: Solid
Analysis Batch: 32608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32418

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.833	0.8276		mg/Kg		99	85 - 121		

Lab Sample ID: LCSD 570-32418/3-A
Matrix: Solid
Analysis Batch: 32608

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32418

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.820	0.8132		mg/Kg		99	85 - 121	2	10

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 32608

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32418

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	0.0797	J	1.18	1.022		mg/Kg	☼	80	71 - 137		

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 32608

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA
Prep Batch: 32418

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.0797	J	1.18	1.048		mg/Kg	☼	82	71 - 137	3	14

Lab Sample ID: MB 570-33648/1-A
Matrix: Solid
Analysis Batch: 33879

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 33648

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0877	0.00618	mg/Kg		11/19/19 11:00	11/19/19 23:18	1

Lab Sample ID: LCS 570-33648/2-A
Matrix: Solid
Analysis Batch: 33879

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 33648

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.862	0.8544		mg/Kg		99	85 - 121		

Lab Sample ID: LCSD 570-33648/3-A
Matrix: Solid
Analysis Batch: 33879

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 33648

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.833	0.8127		mg/Kg		98	85 - 121	5	10

Lab Sample ID: 570-12498-28 MS
Matrix: Sediment
Analysis Batch: 33879

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 33648

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	0.124	J	1.41	1.531		mg/Kg	☼	100	71 - 137		

Method: 7471A - Mercury (CVAA)

Lab Sample ID: 570-12498-28 MSD
Matrix: Sediment
Analysis Batch: 33879

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Prep Type: Total/NA
Prep Batch: 33648

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.117	J	1.53	1.660		mg/Kg	☼	101	71 - 137	8	14

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 570-33087/4
Matrix: Solid
Analysis Batch: 33087

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		0.0500	0.0174	%			11/13/19 14:15	1

Lab Sample ID: LCS 570-33087/5
Matrix: Solid
Analysis Batch: 33087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	3.00	2.863		%		95	80 - 120

Lab Sample ID: LCSD 570-33087/6
Matrix: Solid
Analysis Batch: 33087

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	3.00	2.758		%		92	80 - 120	4	20

Lab Sample ID: 570-12498-5 MS
Matrix: Sediment
Analysis Batch: 33087

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	0.628		3.91	3.697		%	☼	79	75 - 125

Lab Sample ID: 570-12498-5 MSD
Matrix: Sediment
Analysis Batch: 33087

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	0.628		4.00	4.353		%	☼	93	75 - 125	16	25

Lab Sample ID: MB 570-33684/4
Matrix: Solid
Analysis Batch: 33684

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		0.0500	0.0174	%			11/15/19 11:34	1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 570-33684/5
Matrix: Solid
Analysis Batch: 33684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	3.00	2.568		%		86	80 - 120

Lab Sample ID: LCSD 570-33684/6
Matrix: Solid
Analysis Batch: 33684

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	3.00	2.427		%		81	80 - 120	6	20

Lab Sample ID: 570-12498-22 MS
Matrix: Sediment
Analysis Batch: 33684

Client Sample ID: MOTCO-2019-DU3-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	0.476		4.26	4.093		%	☼	85	75 - 125

Lab Sample ID: 570-12498-22 MSD
Matrix: Sediment
Analysis Batch: 33684

Client Sample ID: MOTCO-2019-DU3-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	0.476		4.43	3.976		%	☼	79	75 - 125	3	25

Lab Sample ID: MB 570-34412/4
Matrix: Solid
Analysis Batch: 34412

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		0.0500	0.0174	%			11/19/19 13:46	1

Lab Sample ID: LCS 570-34412/7
Matrix: Solid
Analysis Batch: 34412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	3.00	2.639	^	%		88	80 - 120

Lab Sample ID: LCSD 570-34412/9
Matrix: Solid
Analysis Batch: 34412

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	3.00	2.613	^	%		87	80 - 120	1	20

Lab Sample ID: 570-12628-A-1 MS
Matrix: Solid
Analysis Batch: 34412

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	0.0562	J F1 F2	3.54	3.541		%	☼	98	75 - 125

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: 570-12628-A-1 MSD
Matrix: Solid
Analysis Batch: 34412

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	0.0562	J F1 F2	3.54	2.649	F1 F2	%	☼	73	75 - 125	29	25

Method: Moisture - Percent Moisture

Lab Sample ID: 570-12498-5 DU
Matrix: Sediment
Analysis Batch: 32503

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	26.9			29.8		%				10	10

Lab Sample ID: 570-12498-12 DU
Matrix: Sediment
Analysis Batch: 32503

Client Sample ID: MOTCO-2019-DU2a-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	41.4			39.8		%				4	10

Lab Sample ID: 570-12498-24 DU
Matrix: Sediment
Analysis Batch: 32537

Client Sample ID: MOTCO-2019-DU3-03
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	50.2			51.0		%				2	10

Lab Sample ID: 570-12498-28 DU
Matrix: Sediment
Analysis Batch: 33789

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	42.6			42.0		%				1	10

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Lab Sample ID: 570-12498-6 DU
Matrix: Sediment
Analysis Batch: 34543

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Clay(less than 0.00391 mm)	9.19			8.32		%				10	20
Coarse Sand (0.5mm to 1mm)	0.02			ND		%				NC	20
Fine Sand (0.125 to 0.25mm)	14.31			16.87		%				16	20
Gravel (greater than 2 mm)	ND			ND		%				NC	20
Medium Sand (0.25 to 0.5 mm)	47.62			50.13		%				5	20
Silt (0.00391 to 0.0625mm)	23.30			20.86		%				11	20
Total Silt and Clay (0 to 0.0626mm)	32.49			29.18		%				11	20
Very Coarse Sand (1 to 2mm)	ND			ND		%				NC	20
Very Fine Sand (0.0625 to 0.125 mm)	5.56			3.82	F3	%				37	20

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU1-01

Lab Sample ID: 570-12498-1

Date Collected: 10/31/19 09:47

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 18:42	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 20:40	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.4 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 14:12	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 12:04	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.07 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 20:32	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.60 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 18:47	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	208.4 mg	208.4 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 18:11	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-02

Lab Sample ID: 570-12498-2

Date Collected: 10/31/19 09:30

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 19:01	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 21:04	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU1-02

Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.2 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 14:48	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 12:18	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.03 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 20:35	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.63 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 18:49	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	200.0 mg	200.0 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 18:19	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-03

Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 19:21	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 21:28	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 15:05	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 12:32	UHHN	ECL 1
	Instrument ID: GC44									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU1-03

Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.93 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 20:46	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.61 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 18:52	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	210.0 mg	210.0 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 18:25	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-04

Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 19:41	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 21:53	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.4 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 15:23	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 12:46	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.99 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 20:49	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.60 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 18:54	I3IN	ECL 1
	Instrument ID: HG8									

Client Sample ID: MOTCO-2019-DU1-04

Lab Sample ID: 570-12498-4

Date Collected: 10/31/19 08:55

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	209.0 mg	209.0 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 18:33	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp

Lab Sample ID: 570-12498-5

Date Collected: 10/31/19 08:10

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 20:01	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 22:18	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 15:41	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 09:59	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.08 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33839	11/19/19 11:35	ZHW5	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.60 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 18:40	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	201.9 mg	201.9 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU1-Comp

Lab Sample ID: 570-12498-6

Date Collected: 10/31/19 08:10

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4464		1			34543	11/21/19 18:40	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp

Lab Sample ID: 570-12498-7

Date Collected: 10/31/19 08:10

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 20:21	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 22:41	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.2 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 15:58	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 13:01	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.06 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 20:52	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.61 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:01	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	202.8 mg	202.8 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 18:58	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2a-01

Lab Sample ID: 570-12498-8

Date Collected: 10/28/19 15:56

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 20:41	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 23:06	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 16:15	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.3 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 13:15	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.08 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 20:55	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.59 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:03	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.7 mg	204.7 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 19:06	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-02

Lab Sample ID: 570-12498-9

Date Collected: 10/28/19 15:14

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 21:01	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 23:30	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2a-02

Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.4 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33857	11/19/19 15:59	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.3 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 13:29	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.92 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33839	11/19/19 11:46	ZHW5	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.59 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:05	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	207.9 mg	207.9 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 19:13	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-03

Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 21:20	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/20/19 23:54	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.2 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 18:38	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.4 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 13:43	UHHN	ECL 1
	Instrument ID: GC44									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2a-03

Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.01 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:00	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.61 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:08	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	208.3 mg	208.3 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 19:20	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-04

Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33511	11/18/19 21:40	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 00:18	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 18:55	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 13:57	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.06 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:03	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.61 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:10	I3IN	ECL 1
	Instrument ID: HG8									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2a-04

Lab Sample ID: 570-12498-11

Date Collected: 10/28/19 13:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.0 mg	204.0 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 19:29	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp

Lab Sample ID: 570-12498-12

Date Collected: 10/28/19 13:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 11:06	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 00:42	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.1 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 19:13	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 14:12	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.01 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:06	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.59 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:12	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	210.0 mg	210.0 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2a-Comp

Lab Sample ID: 570-12498-13

Date Collected: 10/28/19 13:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4464		1			34543	11/21/19 21:04	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp

Lab Sample ID: 570-12498-14

Date Collected: 10/28/19 13:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 11:26	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 01:06	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.5 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 19:30	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 14:26	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.00 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:09	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.59 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:14	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.1 mg	204.1 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34543	11/21/19 21:11	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2b-01

Lab Sample ID: 570-12498-15

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 11:46	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 01:31	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.3 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 19:47	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 14:40	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.04 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:12	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.60 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:17	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	200.1 mg	200.1 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 19:41	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-02

Lab Sample ID: 570-12498-16

Date Collected: 10/31/19 11:40

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 12:06	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 01:56	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2b-02

Lab Sample ID: 570-12498-16

Date Collected: 10/31/19 11:40

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.1 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 20:04	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 14:54	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.01 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:23	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.62 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:19	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.3 mg	204.3 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 19:49	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-03

Lab Sample ID: 570-12498-17

Date Collected: 10/31/19 13:13

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 12:26	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 02:21	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.1 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 20:22	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 15:09	UHHN	ECL 1
	Instrument ID: GC44									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2b-03

Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.03 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:26	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.60 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:21	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	203.2 mg	203.2 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 20:15	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-04

Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 12:46	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 02:44	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	32616	11/13/19 16:12	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/19/19 00:05	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 15:23	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.05 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:28	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.63 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:28	I3IN	ECL 1
	Instrument ID: HG8									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2b-04

Lab Sample ID: 570-12498-18

Date Collected: 10/31/19 12:37

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	208.7 mg	208.7 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 20:22	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp

Lab Sample ID: 570-12498-19

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 13:06	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 03:08	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			110.4 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 20:39	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 15:37	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.06 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:31	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.62 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:31	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	209.7 mg	209.7 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU2b-Comp

Lab Sample ID: 570-12498-20

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4464		1			34546	11/21/19 20:29	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp

Lab Sample ID: 570-12498-21

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 13:26	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 03:32	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.3 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 20:56	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.4 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 15:51	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.01 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:34	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.62 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:33	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	207.8 mg	207.8 mg	33087	11/13/19 14:15	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 20:37	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU3-01

Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 13:46	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 03:57	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.1 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 21:13	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 16:06	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.02 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:37	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.60 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:35	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	201.2 mg	201.2 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 21:09	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-02

Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33774	11/19/19 14:05	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep	DL				32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541	DL		20.1 g	2 mL	32709	11/13/19 22:00	UM1W	ECL 1
Total/NA	Analysis	8270C SIM	DL	10			33774	11/19/19 17:09	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU3-02

Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32712	11/13/19 22:07	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34194	11/21/19 04:22	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.2 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 21:30	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.3 g	2 mL	32642	11/13/19 17:11	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 16:20	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.98 g	100 mL	32417	11/12/19 19:33	MD3A	ECL 1
Total/NA	Analysis	6020		100			33769	11/18/19 21:40	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			0.61 g	100 mL	32418	11/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 19:37	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.3 mg	204.3 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32503	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 21:16	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-03

Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 21:33	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 18:00	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.4 g	5 mL	32611	11/13/19 16:02	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 21:47	AJ2Q	ECL 1
	Instrument ID: GCMSY									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU3-03

Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 07:08	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.94 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		100			33839	11/19/19 10:53	ZHW5	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.59 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:38	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	205.3 mg	205.3 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 21:23	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-04

Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 21:52	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 18:24	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.4 g	5 mL	32616	11/13/19 16:09	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 22:05	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.3 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 07:23	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.09 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		100			33839	11/19/19 11:12	ZHW5	ECL 1
	Instrument ID: ICPMS05									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU3-04

Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.60 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:41	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	208.5 mg	208.5 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34546	11/21/19 21:32	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp

Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-26

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 22:12	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 18:48	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.3 g	5 mL	32616	11/13/19 16:09	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 22:22	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.4 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 07:37	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.94 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		20			33779	11/19/19 02:18	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.63 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:43	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	210.0 mg	210.0 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU3-Comp

Lab Sample ID: 570-12498-27

Date Collected: 10/30/19 09:20

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4464		1			34548	11/21/19 15:52	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Z-Layer-Comp

Lab Sample ID: 570-12498-28

Date Collected: 10/30/19 09:20

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	33985	11/20/19 14:20	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			34347	11/21/19 18:49	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep	DL				33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Prep	3541	DL		20.1 g	2 mL	33985	11/20/19 14:20	UM1W	ECL 1
Total/NA	Analysis	8270C SIM	DL	2			34659	11/22/19 11:48	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	33981	11/20/19 13:48	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 15:08	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	34074	11/20/19 10:30	UWEZ	ECL 1
Total/NA	Analysis	Organotins SIM		1			34119	11/20/19 19:10	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	33984	11/20/19 14:02	UM1W	ECL 1
Total/NA	Analysis	8081A		1			34516	11/22/19 11:32	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Prep	3050B			2.04 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Analysis	6020		20			34089	11/19/19 18:44	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Prep	7471A			.60 g	100 mL	33648	11/19/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			33879	11/19/19 23:25	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					33583	11/18/19 14:04	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.5 mg	204.5 mg	34412	11/19/19 13:46	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			33789	11/19/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34876	11/22/19 19:04	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU4-01

Date Collected: 10/30/19 17:00
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-29

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 22:32	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 19:14	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.1 g	5 mL	32616	11/13/19 16:09	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 22:39	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 07:51	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.91 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		20			33779	11/19/19 02:29	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.63 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:45	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	200.0 mg	200.0 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34548	11/21/19 15:59	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-02

Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 22:52	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 19:39	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU4-02

Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.1 g	5 mL	32616	11/13/19 16:09	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 22:56	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.2 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 08:05	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.99 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		100			33839	11/19/19 11:18	ZHW5	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.63 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:48	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	210.0 mg	210.0 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34548	11/21/19 16:06	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-03

Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep	DL				32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541	DL		20.1 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM	DL	10			33511	11/18/19 16:43	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 20:03	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.4 g	5 mL	32616	11/13/19 16:09	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 23:13	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.3 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 08:20	UHHN	ECL 1
	Instrument ID: GC44									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU4-03

Date Collected: 10/30/19 15:05
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-31

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.01 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		20			33779	11/19/19 02:35	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.61 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:50	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	206.9 mg	206.9 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34548	11/21/19 18:55	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-04

Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 23:31	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 20:26	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.0 g	5 mL	32616	11/13/19 16:12	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 18:21	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 08:34	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.94 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		20			33779	11/19/19 02:38	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.63 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:52	I3IN	ECL 1
	Instrument ID: HG8									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU4-04

Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-32

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	210.0 mg	210.0 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34548	11/21/19 19:05	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp

Date Collected: 10/30/19 14:27
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-33

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 23:51	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 20:50	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.2 g	5 mL	32616	11/13/19 16:12	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 23:31	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 08:48	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			1.96 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		20			33779	11/19/19 02:41	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.62 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:55	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	204.1 mg	204.1 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Client Sample ID: MOTCO-2019-DU4-Comp

Lab Sample ID: 570-12498-34

Date Collected: 10/30/19 14:27

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4464		1			34548	11/21/19 19:13	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Z-Layer-Comp

Lab Sample ID: 570-12498-35

Date Collected: 10/30/19 14:27

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32711	11/13/19 22:04	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			33092	11/15/19 17:56	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	32713	11/13/19 22:08	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			34349	11/21/19 21:16	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.5 g	5 mL	32616	11/13/19 16:12	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			33535	11/18/19 23:48	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3541			20.3 g	2 mL	32645	11/13/19 17:27	UM1W	ECL 1
Total/NA	Analysis	8081A		1			33632	11/19/19 09:02	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	3050B			2.10 g	100 mL	32423	11/12/19 19:40	X7RL	ECL 1
Total/NA	Analysis	6020		20			33779	11/19/19 02:43	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Prep	7471A			.57 g	100 mL	32368	11/13/19 11:00	X7RL	ECL 1
Total/NA	Analysis	7471A		1			32608	11/13/19 17:57	I3IN	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					32392	11/12/19 18:56	C4LT	ECL 1
Total/NA	Analysis	9060A		1	203.1 mg	203.1 mg	33684	11/15/19 11:34	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			32537	11/13/19 09:00	KAP4	ECL 2
	Instrument ID: NOEQUIP									
Total/NA	Analysis	D4464		1			34548	11/21/19 19:21	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Frontier = Frontier Analytical Laboratory, 5172 Hillsdale Circle, El Dorado Hills, CA 95762

Accreditation/Certification Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	SCAQMD LAP	17LA0919	11-30-19
California	State	2944	09-29-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-20

Method Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Method	Method Description	Protocol	Laboratory
8270C SIM	PAHs (GC/MS SIM)	SW846	ECL 1
8270C SIM CON	PCB Congeners (GC/MS)	SW846	ECL 1
Organotins SIM	Organotins (GC/MS SIM)	Lab SOP	ECL 1
8081A	Organochlorine Pesticides (GC)	SW846	ECL 1
6020	Metals (ICP/MS)	SW846	ECL 1
7471A	Mercury (CVAA)	SW846	ECL 1
9060A	Organic Carbon, Total (TOC)	SW846	ECL 1
Moisture	Percent Moisture	EPA	ECL 2
D4464	Particle Size Distribution of Catalytic Material (Laser light scattering)	ASTM	ECL 1
8290	SW846 8290 Dioxins	SW846	Frontier
3050B	Preparation, Metals	SW846	ECL 1
3541	Automated Soxhlet Extraction	SW846	ECL 1
7471A	Preparation, Mercury	SW846	ECL 1
Homogenize Prep	Preparation, Homogenization	None	ECL 1
Organotin Prep	Extraction (Organotins)	None	ECL 1

Protocol References:

ASTM = ASTM International
EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494
ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494
Frontier = Frontier Analytical Laboratory, 5172 Hillsdale Circle, El Dorado Hills, CA 95762

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-12498-1	MOTCO-2019-DU1-01	Sediment	10/31/19 09:47	11/09/19 08:30	
570-12498-2	MOTCO-2019-DU1-02	Sediment	10/31/19 09:30	11/09/19 08:30	
570-12498-3	MOTCO-2019-DU1-03	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-4	MOTCO-2019-DU1-04	Sediment	10/31/19 08:55	11/09/19 08:30	
570-12498-5	MOTCO-2019-DU1-Comp	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-6	MOTCO-2019-DU1-Comp	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-7	MOTCO-2019-DU1-Z-Layer-Comp	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-8	MOTCO-2019-DU2a-01	Sediment	10/28/19 15:56	11/09/19 08:30	
570-12498-9	MOTCO-2019-DU2a-02	Sediment	10/28/19 15:14	11/09/19 08:30	
570-12498-10	MOTCO-2019-DU2a-03	Sediment	10/28/19 14:16	11/09/19 08:30	
570-12498-11	MOTCO-2019-DU2a-04	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-12	MOTCO-2019-DU2a-Comp	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-13	MOTCO-2019-DU2a-Comp	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-14	MOTCO-2019-DU2a-Z-Layer-Comp	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-15	MOTCO-2019-DU2b-01	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-16	MOTCO-2019-DU2b-02	Sediment	10/31/19 11:40	11/09/19 08:30	
570-12498-17	MOTCO-2019-DU2b-03	Sediment	10/31/19 13:13	11/09/19 08:30	
570-12498-18	MOTCO-2019-DU2b-04	Sediment	10/31/19 12:37	11/09/19 08:30	
570-12498-19	MOTCO-2019-DU2b-Comp	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-20	MOTCO-2019-DU2b-Comp	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-21	MOTCO-2019-DU2b-Z-Layer-Comp	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-22	MOTCO-2019-DU3-01	Sediment	10/30/19 09:20	11/09/19 08:30	
570-12498-23	MOTCO-2019-DU3-02	Sediment	10/30/19 10:04	11/09/19 08:30	
570-12498-24	MOTCO-2019-DU3-03	Sediment	10/30/19 10:42	11/09/19 08:30	
570-12498-25	MOTCO-2019-DU3-04	Sediment	10/30/19 11:19	11/09/19 08:30	
570-12498-26	MOTCO-2019-DU3-Comp	Sediment	10/30/19 09:20	11/09/19 08:30	
570-12498-27	MOTCO-2019-DU3-Comp	Sediment	10/30/19 09:20	11/09/19 08:30	
570-12498-28	MOTCO-2019-DU3-Z-Layer-Comp	Sediment	10/30/19 09:20	11/09/19 08:30	
570-12498-29	MOTCO-2019-DU4-01	Sediment	10/30/19 17:00	11/09/19 08:30	
570-12498-30	MOTCO-2019-DU4-02	Sediment	10/30/19 16:15	11/09/19 08:30	
570-12498-31	MOTCO-2019-DU4-03	Sediment	10/30/19 15:05	11/09/19 08:30	
570-12498-32	MOTCO-2019-DU4-04	Sediment	10/30/19 14:27	11/09/19 08:30	
570-12498-33	MOTCO-2019-DU4-Comp	Sediment	10/30/19 14:27	11/09/19 08:30	
570-12498-34	MOTCO-2019-DU4-Comp	Sediment	10/30/19 14:27	11/09/19 08:30	
570-12498-35	MOTCO-2019-DU4-Z-Layer-Comp	Sediment	10/30/19 14:27	11/09/19 08:30	

December 2, 2019

FAL Project ID: 12774

[redacted]
Eurofins Calscience, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427

[redacted]

The following results are associated with Frontier Analytical Laboratory project **12774**. This corresponds to your project number **570-12498**. Fifteen solid samples were received on 11/14/2019. These samples were extracted and analyzed by EPA Method 8290 for tetra through octa chlorinated dibenzo dioxins and furans. Per your chain of custody request, a matrix spike and a matrix spike duplicate (MS/MSD) were performed on sample 12774-005-SA (Eurofins Calscience ID: MOTCO-2019-DU1-Comp (570-12498-5). The Toxic Equivalency (TEQ) for these samples has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). A ten business day turnaround time was requested for this project.

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custodies, our sample login form and a sample photo. The attached results and electronic data deliverable (EDD) are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of California ELAP certificate number is **2934**. This report and the EDD have been emailed to you. A hardcopy of this report will not be sent to you unless specifically requested.

If you have any questions regarding project **12774**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

[redacted]

[redacted]
Director

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **12774**

Received on: **11/14/2019** Project Due: **12/03/2019** Storage: **R-3**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
12774-001-SA	0	570-12498	MOTCO-2019-DU1-01 (570-12498-1)	EPA 8290 D/F	Solid	10/31/2019	09:47 am	11/30/2019
12774-002-SA	0	570-12498	MOTCO-2019-DU1-02 (570-12498-2)	EPA 8290 D/F	Solid	10/31/2019	09:30 am	11/30/2019
12774-003-SA	0	570-12498	MOTCO-2019-DU1-03 (570-12498-3)	EPA 8290 D/F	Solid	10/31/2019	08:10 am	11/30/2019
12774-004-SA	0	570-12498	MOTCO-2019-DU1-04 (570-12498-4)	EPA 8290 D/F	Solid	10/31/2019	08:55 am	11/30/2019
12774-005-SA	0	570-12498	MOTCO-2019-DU1-Comp (570-12498-5)	EPA 8290 D/F	Solid	10/31/2019	08:10 am	11/30/2019
12774-005-MS	0	570-12498	MOTCO-2019-DU1-Comp (570-12498-5MS)	EPA 8290 D/F	Solid	10/31/2019	08:10 am	11/30/2019
12774-005-MSD	0	570-12498	MOTCO-2019-DU1-Comp (570-12498-5MSD)	EPA 8290 D/F	Solid	10/31/2019	08:10 am	11/30/2019
12774-006-SA	0	570-12498	MOTCO-2019-DU1-Z-Layer-Comp (570-12498-7)	EPA 8290 D/F	Solid	10/31/2019	08:10 am	11/30/2019
12774-007-SA	0	570-12498	MOTCO-2019-DU2a-01 (570-12498-8)	EPA 8290 D/F	Solid	10/28/2019	03:56 pm	11/27/2019
12774-008-SA	0	570-12498	MOTCO-2019-DU2a-02 (570-12498-9)	EPA 8290 D/F	Solid	10/28/2019	03:14 pm	11/27/2019
12774-009-SA	0	570-12498	MOTCO-2019-DU2a-03 (570-12498-10)	EPA 8290 D/F	Solid	10/28/2019	02:16 pm	11/27/2019
12774-010-SA	0	570-12498	MOTCO-2019-DU2a-04 (570-12498-11)	EPA 8290 D/F	Solid	10/28/2019	01:15 pm	11/27/2019
12774-011-SA	0	570-12498	MOTCO-2019-DU2a-Comp (570-12498-12)	EPA 8290 D/F	Solid	10/28/2019	01:15 pm	11/27/2019
12774-012-SA	0	570-12498	MOTCO-2019-DU2a-Z-Layer-Comp (570-12498-14)	EPA 8290 D/F	Solid	10/28/2019	01:15 pm	11/27/2019
12774-013-SA	0	570-12498	MOTCO-2019-DU2b-01 (570-12498-15)	EPA 8290 D/F	Solid	10/31/2019	10:43 am	11/30/2019
12774-014-SA	0	570-12498	MOTCO-2019-DU2b-02 (570-12498-16)	EPA 8290 D/F	Solid	10/31/2019	11:40 am	11/30/2019
12774-015-SA	0	570-12498	MOTCO-2019-DU2b-03 (570-12498-17)	EPA 8290 D/F	Solid	10/31/2019	01:13 pm	11/30/2019

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EPA Method 8290
PCDD/F

FAL ID: 12774-001-MB
Client ID: Method Blank
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.0
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0578		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.108		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.185		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.184		-	0.0538	Total TCDD	ND	0.0578	
1,2,3,7,8,9-HxCDD	ND	0.173		-	0.0518	Total PeCDD	ND	0.108	
1,2,3,4,6,7,8-HpCDD	ND	0.130		-	0.0695	Total HxCDD	ND	0.185	
OCDD	ND	0.452		-	0.116	Total HpCDD	ND	0.130	
2,3,7,8-TCDF	ND	0.0672		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.0940		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.0961		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.101		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.110		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.111		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.133		-	0.0423	Total TCDF	ND	0.0672	
1,2,3,4,6,7,8-HpCDF	ND	0.0983		-	0.0415	Total PeCDF	ND	0.0961	
1,2,3,4,7,8,9-HpCDF	ND	0.106		-	0.0532	Total HxCDF	ND	0.133	
OCDF	ND	0.212		-	0.0833	Total HpCDF	ND	0.106	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	78.6	40.0 - 135	
13C-1,2,3,7,8-PeCDD	73.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	69.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	71.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	79.0	40.0 - 135	
13C-OCDD	70.6	40.0 - 135	
13C-2,3,7,8-TCDF	78.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	81.2	40.0 - 135	
13C-2,3,4,7,8-PeCDF	85.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	83.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	78.2	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	79.8	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	81.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	79.0	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	92.5	40.0 - 135	
13C-OCDF	80.1	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	73.7	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/2/2019

Reviewed By: _____

Date: 12/2/2019

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EPA Method 8290
PCDD/F

FAL ID: 12774-001-OPR
Client ID: OPR
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: ng/ml

Acquired: 11-20-2019
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	11.0	7.00 - 13.0	
1,2,3,7,8-PeCDD	59.9	35.0 - 65.0	
1,2,3,4,7,8-HxCDD	59.9	35.0 - 65.0	
1,2,3,6,7,8-HxCDD	62.3	35.0 - 65.0	
1,2,3,7,8,9-HxCDD	62.7	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDD	59.6	35.0 - 65.0	
OCDD	121	70.0 - 130	
2,3,7,8-TCDF	11.3	7.00 - 13.0	
1,2,3,7,8-PeCDF	61.9	35.0 - 65.0	
2,3,4,7,8-PeCDF	61.0	35.0 - 65.0	
1,2,3,4,7,8-HxCDF	57.9	35.0 - 65.0	
1,2,3,6,7,8-HxCDF	58.8	35.0 - 65.0	
2,3,4,6,7,8-HxCDF	58.7	35.0 - 65.0	
1,2,3,7,8,9-HxCDF	57.8	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	60.1	35.0 - 65.0	
1,2,3,4,7,8,9-HpCDF	60.5	35.0 - 65.0	
OCDF	118	70.0 - 130	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	56.9	40.0 - 135	
13C-1,2,3,7,8-PeCDD	61.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	64.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	62.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	66.5	40.0 - 135	
13C-OCDD	65.5	40.0 - 135	
13C-2,3,7,8-TCDF	68.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	71.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	77.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	71.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	69.9	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	69.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	71.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	69.3	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	74.7	40.0 - 135	
13C-OCDF	84.4	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	63.5	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/2/2019

Reviewed By: _____

Date: 12/2/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12774-001-SA
Client ID: MOTCO-2019-DU1-01 (570-12498-1)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.01 g
% Solids: 70.89

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.301
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0537		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.151		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.169		-	0.0540				
1,2,3,6,7,8-HxCDD	1.05	-	J	0.105	0.0538	Total TCDD	0.234	-	J
1,2,3,7,8,9-HxCDD	0.649	-	J	0.0649	0.0518	Total PeCDD	0.321	-	J
1,2,3,4,6,7,8-HpCDD	5.88	-		0.0588	0.0695	Total HxCDD	7.91	-	
OCDD	45.9	-		0.0138	0.116	Total HpCDD	16.3	-	
2,3,7,8-TCDF	0.471	-	J	0.0471	0.0345				
1,2,3,7,8-PeCDF	ND	0.186		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.201		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.132		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.134		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.140		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.178		-	0.0423	Total TCDF	0.925	-	
1,2,3,4,6,7,8-HpCDF	1.05	-	J	0.0105	0.0415	Total PeCDF	0.977	-	J
1,2,3,4,7,8,9-HpCDF	ND	0.150		-	0.0532	Total HxCDF	1.19	-	J
OCDF	1.89	-	J	0.000567	0.0833	Total HpCDF	2.48	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	83.1	40.0 - 135	
13C-1,2,3,7,8-PeCDD	78.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	77.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	82.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	89.6	40.0 - 135	
13C-OCDD	85.3	40.0 - 135	
13C-2,3,7,8-TCDF	80.7	40.0 - 135	
13C-1,2,3,7,8-PeCDF	87.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	90.6	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	95.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	93.0	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	89.8	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	88.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	95.0	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	103	40.0 - 135	
13C-OCDF	96.6	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	79.4	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12774-002-SA
Client ID: MOTCO-2019-DU1-02 (570-12498-2)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.01 g
% Solids: 76.19

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.588
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0696		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.111		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.135		-	0.0540				
1,2,3,6,7,8-HxCDD	1.06	-	J	0.106	0.0538	Total TCDD	0.244	-	J
1,2,3,7,8,9-HxCDD	0.495	-	J	0.0495	0.0518	Total PeCDD	0.764	-	J
1,2,3,4,6,7,8-HpCDD	23.4	-		0.234	0.0695	Total HxCDD	18.9	-	
OCDD	161	-		0.0483	0.116	Total HpCDD	186	-	
2,3,7,8-TCDF	0.323	-	J	0.0323	0.0345				
1,2,3,7,8-PeCDF	ND	0.140		-	0.0417				
2,3,4,7,8-PeCDF	0.268	-	J	0.0804	0.0449				
1,2,3,4,7,8-HxCDF	0.229	-	J	0.0229	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.113		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.119		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.134		-	0.0423	Total TCDF	0.676	-	
1,2,3,4,6,7,8-HpCDF	1.41	-	J	0.0141	0.0415	Total PeCDF	1.35	-	J
1,2,3,4,7,8,9-HpCDF	ND	0.128		-	0.0532	Total HxCDF	2.94	-	
OCDF	1.91	-	J	0.000573	0.0833	Total HpCDF	3.93	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	96.6	40.0 - 135	
13C-1,2,3,7,8-PeCDD	90.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	86.7	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	88.5	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	96.1	40.0 - 135	
13C-OCDD	89.4	40.0 - 135	
13C-2,3,7,8-TCDF	94.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	100	40.0 - 135	
13C-2,3,4,7,8-PeCDF	105	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	100	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	95.6	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	97.8	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	102	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	99.1	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	110	40.0 - 135	
13C-OCDF	101	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	95.6	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12774-003-SA
Client ID: MOTCO-2019-DU1-03 (570-12498-3)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.03 g
% Solids: 62.32

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 1.47
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0774		-	0.0331				
1,2,3,7,8-PeCDD	0.266	-	J	0.266	0.0536				
1,2,3,4,7,8-HxCDD	0.387	-	J	0.0387	0.0540				
1,2,3,6,7,8-HxCDD	2.52	-		0.252	0.0538	Total TCDD	1.41	-	
1,2,3,7,8,9-HxCDD	1.32	-	J	0.132	0.0518	Total PeCDD	3.04	-	
1,2,3,4,6,7,8-HpCDD	21.7	-		0.217	0.0695	Total HxCDD	20.9	-	
OCDD	181	-		0.0543	0.116	Total HpCDD	61.8	-	
2,3,7,8-TCDF	0.983	-		0.0983	0.0345				
1,2,3,7,8-PeCDF	0.280	-	J	0.00840	0.0417				
2,3,4,7,8-PeCDF	0.635	-	J	0.191	0.0449				
1,2,3,4,7,8-HxCDF	0.680	-	J	0.0680	0.0351				
1,2,3,6,7,8-HxCDF	0.348	-	J	0.0348	0.0382				
2,3,4,6,7,8-HxCDF	0.445	-	J	0.0445	0.0379				
1,2,3,7,8,9-HxCDF	0.142	-	J	0.0142	0.0423	Total TCDF	6.26	-	
1,2,3,4,6,7,8-HpCDF	4.71	-		0.0471	0.0415	Total PeCDF	4.43	-	
1,2,3,4,7,8,9-HpCDF	0.394	-	J	0.00394	0.0532	Total HxCDF	6.21	-	
OCDF	7.27	-		0.00218	0.0833	Total HpCDF	11.2	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	94.5	40.0 - 135	
13C-1,2,3,7,8-PeCDD	83.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	90.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	88.0	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	99.9	40.0 - 135	
13C-OCDD	92.9	40.0 - 135	
13C-2,3,7,8-TCDF	103	40.0 - 135	
13C-1,2,3,7,8-PeCDF	103	40.0 - 135	
13C-2,3,4,7,8-PeCDF	106	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	101	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	98.3	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	103	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	109	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	103	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	117	40.0 - 135	
13C-OCDF	103	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	91.0	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/2/2019

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12774-004-SA
Client ID: MOTCO-2019-DU1-04 (570-12498-4)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.03 g
% Solids: 57.62

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 2.13
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.173	-	J	0.173	0.0331				
1,2,3,7,8-PeCDD	0.329	-	J	0.329	0.0536				
1,2,3,4,7,8-HxCDD	0.287	-	J	0.0287	0.0540				
1,2,3,6,7,8-HxCDD	2.84	-		0.284	0.0538	Total TCDD	2.44	-	
1,2,3,7,8,9-HxCDD	1.50	-	J	0.150	0.0518	Total PeCDD	4.47	-	
1,2,3,4,6,7,8-HpCDD	17.3	-		0.173	0.0695	Total HxCDD	23.4	-	
OCDD	115	-		0.0345	0.116	Total HpCDD	44.5	-	
2,3,7,8-TCDF	1.11	-	F	0.111	0.0345				
1,2,3,7,8-PeCDF	0.598	-	J	0.0179	0.0417				
2,3,4,7,8-PeCDF	1.18	-	J	0.354	0.0449				
1,2,3,4,7,8-HxCDF	2.09	-	J	0.209	0.0351				
1,2,3,6,7,8-HxCDF	0.626	-	J	0.0626	0.0382				
2,3,4,6,7,8-HxCDF	0.798	-	J	0.0798	0.0379				
1,2,3,7,8,9-HxCDF	0.329	-	J	0.0329	0.0423	Total TCDF	10.4	-	D,M
1,2,3,4,6,7,8-HpCDF	7.95	-		0.0795	0.0415	Total PeCDF	11.1	-	
1,2,3,4,7,8,9-HpCDF	0.826	-	J	0.00826	0.0532	Total HxCDF	13.3	-	
OCDF	9.74	-		0.00292	0.0833	Total HpCDF	19.3	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	98.5	40.0 - 135	
13C-1,2,3,7,8-PeCDD	93.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	90.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	90.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	101	40.0 - 135	
13C-OCDD	98.1	40.0 - 135	
13C-2,3,7,8-TCDF	97.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	106	40.0 - 135	
13C-2,3,4,7,8-PeCDF	109	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	103	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	101	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	105	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	107	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	105	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	113	40.0 - 135	
13C-OCDF	105	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	96.9	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/2/2019

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12774-005-SA
Client ID: MOTCO-2019-DU1-Comp (570-12498-5)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 72.36

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.796
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.107		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.148		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.185		-	0.0540				
1,2,3,6,7,8-HxCDD	1.73	-	J	0.173	0.0538	Total TCDD	0.247	-	J
1,2,3,7,8,9-HxCDD	0.958	-	J	0.0958	0.0518	Total PeCDD	1.66	-	J
1,2,3,4,6,7,8-HpCDD	13.9	-		0.139	0.0695	Total HxCDD	13.6	-	
OCDD	135	-		0.0405	0.116	Total HpCDD	56.8	-	
2,3,7,8-TCDF	0.607	-		0.0607	0.0345				
1,2,3,7,8-PeCDF	0.206	-	J	0.00618	0.0417				
2,3,4,7,8-PeCDF	0.465	-	J	0.140	0.0449				
1,2,3,4,7,8-HxCDF	0.540	-	J	0.0540	0.0351				
1,2,3,6,7,8-HxCDF	0.248	-	J	0.0248	0.0382				
2,3,4,6,7,8-HxCDF	0.280	-	J	0.0280	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.145		-	0.0423	Total TCDF	4.27	-	
1,2,3,4,6,7,8-HpCDF	3.03	-		0.0303	0.0415	Total PeCDF	3.57	-	
1,2,3,4,7,8,9-HpCDF	0.304	-	J	0.00304	0.0532	Total HxCDF	3.84	-	
OCDF	5.43	-		0.00163	0.0833	Total HpCDF	7.42	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	71.4	40.0 - 135	
13C-1,2,3,7,8-PeCDD	64.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	64.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	66.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	77.9	40.0 - 135	
13C-OCDD	73.7	40.0 - 135	
13C-2,3,7,8-TCDF	69.5	40.0 - 135	
13C-1,2,3,7,8-PeCDF	76.3	40.0 - 135	
13C-2,3,4,7,8-PeCDF	80.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	77.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	75.5	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	78.5	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	82.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	81.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	87.5	40.0 - 135	
13C-OCDF	80.7	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	72.7	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FAL ID: 12774-005-MS/MSD
Client ID: MOTCO-2019-DU1-Comp (570-12498-5)
Matrix: Solid

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Sample Amount: 10.02 g
MS Amount: 10.02 g
MSD Amount: 10.02 g

ICal: PCDDFAL3-8-22-19
Batch No: X5125
Units: pg/g

MS Acquired: 2019-11-21
MSD Acquired: 2019-11-21
GC Column: DB5MS

Compound	Amount Spiked (pg)	Sample Amount	MS Amount	MSD Amount	% RSD	Qual
2,3,7,8-TCDD	200	-	18.9	19.3	2.09	
1,2,3,7,8-PeCDD	1000	-	118	121	2.51	
1,2,3,4,7,8-HxCDD	1000	-	128	128	0.0	
1,2,3,6,7,8-HxCDD	1000	1.73	134	142	5.88	
1,2,3,7,8,9-HxCDD	1000	0.958	134	138	2.96	
1,2,3,4,6,7,8-HpCDD	1000	13.9	131	144	10.5	
OCDD	2000	135	402	460	19.5	
2,3,7,8-TCDF	200	0.607	19.3	20.6	6.72	
1,2,3,7,8-PeCDF	1000	0.206	114	116	1.74	
2,3,4,7,8-PeCDF	1000	0.465	114	120	5.13	
1,2,3,4,7,8-HxCDF	1000	0.540	119	119	0.0	
1,2,3,6,7,8-HxCDF	1000	0.248	118	121	2.51	
2,3,4,6,7,8-HxCDF	1000	0.280	118	118	0.0	
1,2,3,7,8,9-HxCDF	1000	-	121	120	0.830	
1,2,3,4,6,7,8-HpCDF	1000	3.03	118	122	3.42	
1,2,3,4,7,8,9-HpCDF	1000	0.304	115	119	3.42	
OCDF	2000	5.43	232	247	6.40	

Internal Standards		% Rec	% Rec	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	2000	71.4	76.7	82.8	40.0 - 135	
13C-1,2,3,7,8-PeCDD	2000	64.5	72.0	84.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	2000	64.5	79.1	78.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	2000	66.1	76.1	76.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	2000	77.9	99.1	92.9	40.0 - 135	
13C-OCDD	4000	73.7	83.5	89.8	40.0 - 135	
13C-2,3,7,8-TCDF	2000	69.5	92.0	83.7	40.0 - 135	
13C-1,2,3,7,8-PeCDF	2000	76.3	87.5	88.4	40.0 - 135	
13C-2,3,4,7,8-PeCDF	2000	80.2	91.9	91.3	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	2000	77.8	97.5	99.7	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	2000	75.5	92.8	93.0	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	2000	78.5	96.2	99.9	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	2000	82.8	96.0	107	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	2000	81.8	95.1	98.2	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	2000	87.5	107	102	40.0 - 135	
13C-OCDF	4000	80.7	96.9	97.9	40.0 - 135	

Cleanup Surrogate						
37Cl-2,3,7,8-TCDD	800	72.7	73.8	82.1	50.0 - 150	

Analyst: _____ Date: 12/2/2019

Reviewed By: DPV Date: 12/2/2019

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EPA Method 8290
PCDD/F

FAL ID: 12774-006-SA
Client ID: MOTCO-2019-DU1-Z-Layer-Comp (570-12498-7)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 70.77

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.0308
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0706		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.111		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.139		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.132		-	0.0538	Total TCDD	ND	0.0706	
1,2,3,7,8,9-HxCDD	ND	0.127		-	0.0518	Total PeCDD	ND	0.111	
1,2,3,4,6,7,8-HpCDD	0.736	-	J	0.00736	0.0695	Total HxCDD	0.723	-	J
OCDD	6.81	-		0.00204	0.116	Total HpCDD	2.27	-	J
2,3,7,8-TCDF	ND	0.0748		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.107		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.111		-	0.0449				
1,2,3,4,7,8-HxCDF	0.152	-	J	0.0152	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0835		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0835		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.0885		-	0.0423	Total TCDF	0.149	-	J
1,2,3,4,6,7,8-HpCDF	0.595	-	J	0.00595	0.0415	Total PeCDF	0.531	-	J
1,2,3,4,7,8,9-HpCDF	ND	0.118		-	0.0532	Total HxCDF	0.626	-	J
OCDF	0.723	-	J	0.000217	0.0833	Total HpCDF	1.13	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	98.4	40.0 - 135	
13C-1,2,3,7,8-PeCDD	94.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	88.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	93.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	109	40.0 - 135	
13C-OCDD	113	40.0 - 135	
13C-2,3,7,8-TCDF	95.6	40.0 - 135	
13C-1,2,3,7,8-PeCDF	101	40.0 - 135	
13C-2,3,4,7,8-PeCDF	106	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	111	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	107	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	113	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	125	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	114	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	121	40.0 - 135	
13C-OCDF	115	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	107	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FAL ID: 12774-007-SA
Client ID: MOTCO-2019-DU2a-01 (570-12498-8)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 54.68

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.00223
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0811		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.0977		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.111		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.113		-	0.0538	Total TCDD	0.496	-	J
1,2,3,7,8,9-HxCDD	ND	0.105		-	0.0518	Total PeCDD	0.399	-	J,M
1,2,3,4,6,7,8-HpCDD	0.195	-	J	0.00195	0.0695	Total HxCDD	0.250	-	J
OCDD	0.924	-	J	0.000277	0.116	Total HpCDD	0.611	-	J
2,3,7,8-TCDF	ND	0.0603		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.0936		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.0886		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0823		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0843		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0893		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.105		-	0.0423	Total TCDF	0.344	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.0947		-	0.0415	Total PeCDF	ND	0.0936	
1,2,3,4,7,8,9-HpCDF	ND	0.113		-	0.0532	Total HxCDF	ND	0.105	
OCDF	ND	0.148		-	0.0833	Total HpCDF	ND	0.113	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	82.1	40.0 - 135	
13C-1,2,3,7,8-PeCDD	79.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	76.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	77.3	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	84.5	40.0 - 135	
13C-OCDD	87.5	40.0 - 135	
13C-2,3,7,8-TCDF	86.8	40.0 - 135	
13C-1,2,3,7,8-PeCDF	89.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	94.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	90.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	86.4	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	89.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	94.0	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	91.4	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	94.0	40.0 - 135	
13C-OCDF	88.8	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	86.6	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

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EPA Method 8290
PCDD/F

FAL ID: 12774-008-SA
Client ID: MOTCO-2019-DU2a-02 (570-12498-9)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 62.93

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-20-2019
2005 WHO TEQ: 0.00184
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0828		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.0843		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.118		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.124		-	0.0538	Total TCDD	0.324	-	J
1,2,3,7,8,9-HxCDD	ND	0.113		-	0.0518	Total PeCDD	0.204	-	J,M
1,2,3,4,6,7,8-HpCDD	0.158	-	J	0.00158	0.0695	Total HxCDD	0.237	-	J
OCDD	0.881	-	J	0.000264	0.116	Total HpCDD	0.627	-	J
2,3,7,8-TCDF	ND	0.0746		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.0937		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.0956		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0620		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0672		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0637		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.0665		-	0.0423	Total TCDF	0.260	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.0922		-	0.0415	Total PeCDF	ND	0.0956	
1,2,3,4,7,8,9-HpCDF	ND	0.112		-	0.0532	Total HxCDF	ND	0.0672	
OCDF	ND	0.153		-	0.0833	Total HpCDF	ND	0.112	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	96.5	40.0 - 135	
13C-1,2,3,7,8-PeCDD	81.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	85.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	84.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	98.6	40.0 - 135	
13C-OCDD	101	40.0 - 135	
13C-2,3,7,8-TCDF	91.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	89.9	40.0 - 135	
13C-2,3,4,7,8-PeCDF	93.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	99.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	95.1	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	101	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	119	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	107	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	112	40.0 - 135	
13C-OCDF	103	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	106	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FAL ID: 12774-009-SA
Client ID: MOTCO-2019-DU2a-03 (570-12498-10)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 59.22

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00335
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0830		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.117		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.182		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.168		-	0.0538	Total TCDD	0.229	-	J
1,2,3,7,8,9-HxCDD	ND	0.163		-	0.0518	Total PeCDD	0.247	-	J,M
1,2,3,4,6,7,8-HpCDD	0.297	-	J	0.00297	0.0695	Total HxCDD	0.230	-	J
OCDD	1.25	-	J	0.000375	0.116	Total HpCDD	0.755	-	J
2,3,7,8-TCDF	ND	0.0891		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.140		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.145		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.144		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.160		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.152		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.184		-	0.0423	Total TCDF	0.314	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.158		-	0.0415	Total PeCDF	ND	0.145	
1,2,3,4,7,8,9-HpCDF	ND	0.178		-	0.0532	Total HxCDF	ND	0.184	
OCDF	ND	0.238		-	0.0833	Total HpCDF	ND	0.178	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	72.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	65.6	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	63.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	66.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	80.9	40.0 - 135	
13C-OCDD	79.6	40.0 - 135	
13C-2,3,7,8-TCDF	73.7	40.0 - 135	
13C-1,2,3,7,8-PeCDF	71.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	74.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	79.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	76.8	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	77.9	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	82.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	80.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	87.5	40.0 - 135	
13C-OCDF	82.5	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	76.5	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

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EPA Method 8290
PCDD/F

FAL ID: 12774-010-SA
Client ID: MOTCO-2019-DU2a-04 (570-12498-11)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 60.00

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00242
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0999		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.187		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.201		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.214		-	0.0538	Total TCDD	0.236	-	J
1,2,3,7,8,9-HxCDD	ND	0.194		-	0.0518	Total PeCDD	ND	0.187	
1,2,3,4,6,7,8-HpCDD	0.212	-	J	0.00212	0.0695	Total HxCDD	ND	0.214	
OCDD	0.993	-	J	0.000298	0.116	Total HpCDD	0.624	-	J
2,3,7,8-TCDF	ND	0.114		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.177		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.179		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.129		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.137		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.144		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.182		-	0.0423	Total TCDF	0.254	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.182		-	0.0415	Total PeCDF	ND	0.179	
1,2,3,4,7,8,9-HpCDF	ND	0.201		-	0.0532	Total HxCDF	ND	0.182	
OCDF	ND	0.297		-	0.0833	Total HpCDF	ND	0.201	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	46.5	40.0 - 135	
13C-1,2,3,7,8-PeCDD	40.3	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	40.7	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	42.0	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	45.9	40.0 - 135	
13C-OCDD	43.1	40.0 - 135	
13C-2,3,7,8-TCDF	44.9	40.0 - 135	
13C-1,2,3,7,8-PeCDF	45.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	46.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	50.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	48.7	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	48.3	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	47.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	46.3	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	52.1	40.0 - 135	
13C-OCDF	48.2	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	51.0	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FAL ID: 12774-011-SA
Client ID: MOTCO-2019-DU2a-Comp (570-12498-12)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.00 g
% Solids: 57.83

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00256
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0692		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.123		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.163		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.175		-	0.0538	Total TCDD	0.191	-	J
1,2,3,7,8,9-HxCDD	ND	0.158		-	0.0518	Total PeCDD	0.291	-	J,M
1,2,3,4,6,7,8-HpCDD	0.229	-	J	0.00229	0.0695	Total HxCDD	ND	0.175	
OCDD	0.890	-	J	0.000267	0.116	Total HpCDD	0.563	-	J
2,3,7,8-TCDF	ND	0.0781		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.0954		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.0970		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0881		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0909		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0963		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.113		-	0.0423	Total TCDF	0.263	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.114		-	0.0415	Total PeCDF	ND	0.0970	
1,2,3,4,7,8,9-HpCDF	ND	0.123		-	0.0532	Total HxCDF	ND	0.113	
OCDF	ND	0.191		-	0.0833	Total HpCDF	ND	0.123	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	72.8	40.0 - 135	
13C-1,2,3,7,8-PeCDD	63.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	67.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	68.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	74.6	40.0 - 135	
13C-OCDD	72.8	40.0 - 135	
13C-2,3,7,8-TCDF	70.7	40.0 - 135	
13C-1,2,3,7,8-PeCDF	70.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	73.3	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	80.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	76.9	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	77.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	81.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	75.6	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	82.6	40.0 - 135	
13C-OCDF	77.4	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	75.4	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FAL ID: 12774-012-SA
Client ID: MOTCO-2019-DU2a-Z-Layer-Comp (570-12498-14)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.01 g
% Solids: 57.94

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00277
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0661		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.115		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.145		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.161		-	0.0538	Total TCDD	0.376	-	J
1,2,3,7,8,9-HxCDD	ND	0.143		-	0.0518	Total PeCDD	0.257	-	J,M
1,2,3,4,6,7,8-HpCDD	0.242	-	J	0.00242	0.0695	Total HxCDD	0.308	-	J
OCDD	1.16	-	J	0.000348	0.116	Total HpCDD	0.630	-	J
2,3,7,8-TCDF	ND	0.0680		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.114		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.111		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0815		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0854		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0865		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.108		-	0.0423	Total TCDF	0.513	-	
1,2,3,4,6,7,8-HpCDF	ND	0.108		-	0.0415	Total PeCDF	ND	0.114	
1,2,3,4,7,8,9-HpCDF	ND	0.125		-	0.0532	Total HxCDF	ND	0.108	
OCDF	ND	0.168		-	0.0833	Total HpCDF	ND	0.125	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	85.5	40.0 - 135	
13C-1,2,3,7,8-PeCDD	75.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	75.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	76.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	88.0	40.0 - 135	
13C-OCDD	91.4	40.0 - 135	
13C-2,3,7,8-TCDF	84.6	40.0 - 135	
13C-1,2,3,7,8-PeCDF	82.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	85.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	96.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	92.4	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	93.7	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	96.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	92.7	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	97.9	40.0 - 135	
13C-OCDF	92.1	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	92.2	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

EPA Method 8290
PCDD/F

FAL ID: 12774-013-SA
Client ID: MOTCO-2019-DU2b-01 (570-12498-15)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 56.34

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00412
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0522		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.0984		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.118		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.133		-	0.0538	Total TCDD	0.324	-	J
1,2,3,7,8,9-HxCDD	ND	0.117		-	0.0518	Total PeCDD	0.197	-	J,M
1,2,3,4,6,7,8-HpCDD	0.365	-	J	0.00365	0.0695	Total HxCDD	0.265	-	J
OCDD	1.56	-	J	0.000468	0.116	Total HpCDD	0.957	-	J
2,3,7,8-TCDF	ND	0.0811		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.132		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.136		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0947		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0995		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0981		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.112		-	0.0423	Total TCDF	0.441	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.0962		-	0.0415	Total PeCDF	ND	0.136	
1,2,3,4,7,8,9-HpCDF	ND	0.114		-	0.0532	Total HxCDF	ND	0.112	
OCDF	ND	0.152		-	0.0833	Total HpCDF	ND	0.114	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	95.4	40.0 - 135	
13C-1,2,3,7,8-PeCDD	82.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	85.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	83.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	94.1	40.0 - 135	
13C-OCDD	96.5	40.0 - 135	
13C-2,3,7,8-TCDF	90.3	40.0 - 135	
13C-1,2,3,7,8-PeCDF	91.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	91.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	97.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	92.4	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	99.4	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	105	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	100	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	103	40.0 - 135	
13C-OCDF	97.1	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	105	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FAL ID: 12774-014-SA
Client ID: MOTCO-2019-DU2b-02 (570-12498-16)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.04 g
% Solids: 54.34

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00373
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0639		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.112		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.133		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.141		-	0.0538	Total TCDD	0.370	-	J
1,2,3,7,8,9-HxCDD	ND	0.128		-	0.0518	Total PeCDD	0.263	-	J,M
1,2,3,4,6,7,8-HpCDD	0.320	-	J	0.00320	0.0695	Total HxCDD	0.303	-	J
OCDD	1.78	-	J	0.000534	0.116	Total HpCDD	0.815	-	J
2,3,7,8-TCDF	ND	0.0740		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.118		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.118		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0873		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0980		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0978		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.110		-	0.0423	Total TCDF	0.525	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.0916		-	0.0415	Total PeCDF	ND	0.118	
1,2,3,4,7,8,9-HpCDF	ND	0.109		-	0.0532	Total HxCDF	ND	0.110	
OCDF	ND	0.234		-	0.0833	Total HpCDF	0.154	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	95.3	40.0 - 135	
13C-1,2,3,7,8-PeCDD	83.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	79.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	79.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	88.5	40.0 - 135	
13C-OCDD	90.9	40.0 - 135	
13C-2,3,7,8-TCDF	90.5	40.0 - 135	
13C-1,2,3,7,8-PeCDF	87.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	91.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	95.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	89.4	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	93.4	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	97.9	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	91.1	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	95.4	40.0 - 135	
13C-OCDF	91.9	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	110	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/2/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FAL ID: 12774-015-SA
Client ID: MOTCO-2019-DU2b-03 (570-12498-17)
Matrix: Solid
Batch No: X5125

Date Extracted: 11-15-2019
Date Received: 11-14-2019
Amount: 10.03 g
% Solids: 50.13

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-21-2019
2005 WHO TEQ: 0.00288
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0748		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.108		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.198		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.180		-	0.0538	Total TCDD	ND	0.0748	
1,2,3,7,8,9-HxCDD	ND	0.177		-	0.0518	Total PeCDD	0.212	-	J,M
1,2,3,4,6,7,8-HpCDD	0.256	-	J	0.00256	0.0695	Total HxCDD	0.317	-	J
OCDD	1.07	-	J	0.000321	0.116	Total HpCDD	0.594	-	J
2,3,7,8-TCDF	ND	0.0897		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.140		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.141		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.182		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.185		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0998		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.117		-	0.0423	Total TCDF	0.283	-	J
1,2,3,4,6,7,8-HpCDF	ND	0.188		-	0.0415	Total PeCDF	ND	0.141	
1,2,3,4,7,8,9-HpCDF	ND	0.114		-	0.0532	Total HxCDF	ND	0.185	
OCDF	ND	0.167		-	0.0833	Total HpCDF	ND	0.188	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	101	40.0 - 135	
13C-1,2,3,7,8-PeCDD	88.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	67.7	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	72.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	90.9	40.0 - 135	
13C-OCDD	94.2	40.0 - 135	
13C-2,3,7,8-TCDF	96.9	40.0 - 135	
13C-1,2,3,7,8-PeCDF	93.9	40.0 - 135	
13C-2,3,4,7,8-PeCDF	99.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	57.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	56.0	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	106	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	112	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	50.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	107	40.0 - 135	
13C-OCDF	76.9	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	102	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/2/2019

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

12774
OOC

Chain of Custody Record

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-10107.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 1 of 4
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-12498-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 11/20/2019			
City: El Dorado Hills	TAT Requested (days):			
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-12498			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MOTCO-2019-DU1-01 (570-12498-1)	10/31/19	09:47 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-02 (570-12498-2)	10/31/19	09:30 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-03 (570-12498-3)	10/31/19	08:10 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-04 (570-12498-4)	10/31/19	08:55 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-Comp (570-12498-5)	10/31/19	08:10 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-Comp (570-12498-5MS)	10/31/19	08:10 Pacific	MS	Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-Comp (570-12498-5MSD)	10/31/19	08:10 Pacific	MSD	Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU1-Z-Layer-Comp (570-12498-7)	10/31/19	08:10 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-01 (570-12498-8)	10/28/19	15:56 Pacific		Solid			X	1	10 day TAT; J Flag

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		11/13/19 1420		Fedex 3pp	11/14/2019 1345	Frontier
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

000021 of 000024

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

12774
COC

Chain of Custody Record

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-10107.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 2 of 4
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-12498-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 11/20/2019			Preservation Codes:
City: El Dorado Hills	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-12498			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MOTCO-2019-DU2a-02 (570-12498-9)	10/28/19	15:14 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-03 (570-12498-10)	10/28/19	14:16 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-04 (570-12498-11)	10/28/19	13:15 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-Comp (570-12498-12)	10/28/19	13:15 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-Z-Layer-Comp (570-12498-14)	10/28/19	13:15 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-01 (570-12498-15)	10/31/19	10:43 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-02 (570-12498-16)	10/31/19	11:40 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-03 (570-12498-17)	10/31/19	13:13 Pacific		Solid			X	1	10 day TAT; J Flag
~~MOTCO-2019-DU2b-04 (570-12498-18)~~	~~10/31/19~~	12:37 Pacific		~~Solid~~			X	1	10 day TAT; J Flag KL 11-14-19

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	11/13/19 1420		[signature]	11/14/2019 1345	Frontier
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **12774**

Client:	Eurofins Calscience, Inc.
Client Project ID:	570-12498
Date Received:	11/14/2019
Time Received:	01:45 pm
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	15
Duplicates:	0
Storage Location:	R-3

Method of Delivery:	Golden State Overnight
Tracking Number:	546526999
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	No
pH Range of Aqueous Sample	N/A

Anomalies or additional comments:

Please note that the samples were received in clear glass jars. NELAP requires samples be received in amber glass bottles or jars. Although this anomaly will not affect your results, we are required by NELAP to make a note of it. We will proceed with analysis unless directed otherwise by you.

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com


Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501
12774
Chain of Custody Record
eurofins
Client Information (Sub Contract Lab)
Frontier Analytical Laboratory
5172 Hillsdale Circle
El Dorado Hills
CA, 95762
Analysis Requested
570-12498
Frontier Analytical Laboratory
12774-011-SA
Client ID: MOTCO-2019-DU2a-Comp
Storage: R-3
570-12498-C-12
12774-012-SA
570-12498-B-14
12774-013-SA
570-12498-B-15
12774-015-SA
570-12498-B-17
12774-014-SA
570-12498-B-16
12774-005-MSD
570-12498-B-5 MSD
12774-006-SA
570-12498-B-7
12774-007-SA
570-12498-B-8
12774-008-SA
570-12498-B-9
12774-009-SA
570-12498-B-10
12774-010-SA
570-12498-B-11
12774-001-SA
570-12498-B-1
12774-002-SA
570-12498-B-2
12774-003-SA
570-12498-B-3
12774-004-SA
570-12498-B-4
12774-005-SA
570-12498-C-5
12774-005-MS
570-12498-B-5 MS
2019/11/14

December 6, 2019

FAL Project ID: 12775 (Amended)

[redacted]
Eurofins Calscience, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427

[redacted],

The following are the amended results associated with Frontier Analytical Laboratory project (FAL) **12775**. The original report was e-mailed to you on 12/3/2019. On 12/4/2019 you contacted us by e-mail to request we revise the sample identification for sample 12775-007-SA from MOTCO-2019-DU3-014 (570-12498-25) to MOTCO-2019-DU3-04 (570-12498-25). This amended report reflects this revision and has been paginated with an "A" to distinguish it from the original report. FAL project 12775 corresponds to your project number **570-12498**. Fourteen solid samples were received on 11/14/2019. These samples were extracted and analyzed by EPA Method 8290 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for these samples has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). A ten business day turnaround time was requested for this project.

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custodies, your e-mail dated 12/4/2019, our sample login form and a sample photo. The attached results and electronic data deliverable (EDD) are specifically for the samples referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of California ELAP certificate number is **2934**. This report and the EDD have been emailed to you. A hardcopy of this report will not be sent to you unless specifically requested.

If you have any questions regarding project **12775**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

[redacted]
Director

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **12775**

Received on: **11/14/2019** Project Due: **12/03/2019** Storage: **R-3**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
12775-001-SA	0	570-12498	MOTCO-2019-DU2b-04 (570-12498-18)	EPA 8290 D/F	Solid	10/31/2019	12:37 pm	11/30/2019
12775-002-SA	0	570-12498	MOTCO-2019-DU2b-Comp (570-12498-19)	EPA 8290 D/F	Solid	10/31/2019	10:43 am	11/30/2019
12775-003-SA	0	570-12498	MOTCO-2019-DU2b-Z-Layer-Comp (570-12498-21)	EPA 8290 D/F	Solid	10/31/2019	10:43 am	11/30/2019
12775-004-SA	0	570-12498	MOTCO-2019-DU3-01 (570-12498-22)	EPA 8290 D/F	Solid	10/30/2019	09:20 am	11/29/2019
12775-005-SA	0	570-12498	MOTCO-2019-DU3-02 (570-12498-23)	EPA 8290 D/F	Solid	10/30/2019	10:04 am	11/29/2019
12775-006-SA	0	570-12498	MOTCO-2019-DU3-03 (570-12498-24)	EPA 8290 D/F	Solid	10/30/2019	10:42 am	11/29/2019
12775-007-SA	0	570-12498	MOTCO-2019-DU3-04 (570-12498-25)	EPA 8290 D/F	Solid	10/30/2019	11:19 am	11/29/2019
12775-008-SA	0	570-12498	MOTCO-2019-DU3-Comp (570-12498-26)	EPA 8290 D/F	Solid	10/30/2019	09:20 am	11/29/2019
12775-009-SA	0	570-12498	MOTCO-2019-DU4-01 (570-12498-29)	EPA 8290 D/F	Solid	10/30/2019	05:00 pm	11/29/2019
12775-010-SA	0	570-12498	MOTCO-2019-DU4-02 (570-12498-30)	EPA 8290 D/F	Solid	10/30/2019	04:15 pm	11/29/2019
12775-011-SA	0	570-12498	MOTCO-2019-DU4-03 (570-12498-31)	EPA 8290 D/F	Solid	10/30/2019	03:05 pm	11/29/2019
12775-012-SA	0	570-12498	MOTCO-2019-DU4-04 (570-12498-32)	EPA 8290 D/F	Solid	10/30/2019	02:27 pm	11/29/2019
12775-013-SA	0	570-12498	MOTCO-2019-DU4-Comp (570-12498-33)	EPA 8290 D/F	Solid	10/30/2019	02:27 pm	11/29/2019
12775-014-SA	0	570-12498	MOTCO-2019-DU4-Z-Layer-Comp (570-12498-35)	EPA 8290 D/F	Solid	10/30/2019	02:27 pm	11/29/2019

FAL Sample ID	Notes
12775-007-SA	Sample ID provided by Carla to Kathy via email 12/04/2019.

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EPA Method 8290
PCDD/F

FAL ID: 12775-001-MB
Client ID: Method Blank
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 0.0
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0847		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.156		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.238		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.243		-	0.0538	Total TCDD	ND	0.0847	
1,2,3,7,8,9-HxCDD	ND	0.225		-	0.0518	Total PeCDD	ND	0.156	
1,2,3,4,6,7,8-HpCDD	ND	0.152		-	0.0695	Total HxCDD	ND	0.243	
OCDD	ND	0.382		-	0.116	Total HpCDD	ND	0.152	
2,3,7,8-TCDF	ND	0.0948		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.113		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.122		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.120		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.124		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.133		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.161		-	0.0423	Total TCDF	ND	0.0948	
1,2,3,4,6,7,8-HpCDF	ND	0.141		-	0.0415	Total PeCDF	ND	0.122	
1,2,3,4,7,8,9-HpCDF	ND	0.163		-	0.0532	Total HxCDF	ND	0.161	
OCDF	ND	0.246		-	0.0833	Total HpCDF	ND	0.163	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	84.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	80.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	85.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	85.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	93.5	40.0 - 135	
13C-OCDD	80.1	40.0 - 135	
13C-2,3,7,8-TCDF	91.8	40.0 - 135	
13C-1,2,3,7,8-PeCDF	93.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	97.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	95.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	97.7	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	94.0	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	94.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	88.6	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	95.8	40.0 - 135	
13C-OCDF	88.7	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	85.8	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/2/2019

Reviewed By: _____

Date: 12/3/2019

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EPA Method 8290
PCDD/F

FAL ID: 12775-001-OPR
Client ID: OPR
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: ng/ml

Acquired: 11-23-2019
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	11.2	7.00 - 13.0	
1,2,3,7,8-PeCDD	63.2	35.0 - 65.0	
1,2,3,4,7,8-HxCDD	62.7	35.0 - 65.0	
1,2,3,6,7,8-HxCDD	63.5	35.0 - 65.0	
1,2,3,7,8,9-HxCDD	63.1	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDD	60.9	35.0 - 65.0	
OCDD	126	70.0 - 130	
2,3,7,8-TCDF	11.2	7.00 - 13.0	
1,2,3,7,8-PeCDF	62.3	35.0 - 65.0	
2,3,4,7,8-PeCDF	62.1	35.0 - 65.0	
1,2,3,4,7,8-HxCDF	61.8	35.0 - 65.0	
1,2,3,6,7,8-HxCDF	61.4	35.0 - 65.0	
2,3,4,6,7,8-HxCDF	61.3	35.0 - 65.0	
1,2,3,7,8,9-HxCDF	60.6	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	61.9	35.0 - 65.0	
1,2,3,4,7,8,9-HpCDF	62.1	35.0 - 65.0	
OCDF	120	70.0 - 130	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	81.6	40.0 - 135	
13C-1,2,3,7,8-PeCDD	88.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	87.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	89.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	100	40.0 - 135	
13C-OCDD	92.4	40.0 - 135	
13C-2,3,7,8-TCDF	89.0	40.0 - 135	
13C-1,2,3,7,8-PeCDF	99.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	105	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	95.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	95.5	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	92.4	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	91.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	91.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	102	40.0 - 135	
13C-OCDF	101	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	88.5	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/2/2019

Reviewed By: _____

Date: 12/3/2019

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EPA Method 8290
PCDD/F

FAL ID: 12775-001-MB
Client ID: Method Blank
Matrix: Solid
Batch No: X5143

Date Extracted: 11-27-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL4-12-2-19
GC Column: DB5MS
Units: pg/g

Acquired: 12-02-2019
2005 WHO TEQ: 0.0
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0965		-	0.0464				
1,2,3,7,8-PeCDD	ND	0.187		-	0.0791				
1,2,3,4,7,8-HxCDD	ND	0.229		-	0.0846				
1,2,3,6,7,8-HxCDD	ND	0.242		-	0.0993	Total TCDD	ND	0.0965	
1,2,3,7,8,9-HxCDD	ND	0.217		-	0.0861	Total PeCDD	ND	0.187	
1,2,3,4,6,7,8-HpCDD	ND	0.248		-	0.0980	Total HxCDD	ND	0.242	
OCDD	ND	0.798		-	0.122	Total HpCDD	ND	0.248	
2,3,7,8-TCDF	ND	0.0795		-	0.0397				
1,2,3,7,8-PeCDF	ND	0.115		-	0.0626				
2,3,4,7,8-PeCDF	ND	0.118		-	0.0713				
1,2,3,4,7,8-HxCDF	ND	0.132		-	0.0513				
1,2,3,6,7,8-HxCDF	ND	0.144		-	0.0576				
2,3,4,6,7,8-HxCDF	ND	0.169		-	0.0623				
1,2,3,7,8,9-HxCDF	ND	0.186		-	0.0715	Total TCDF	ND	0.0795	
1,2,3,4,6,7,8-HpCDF	ND	0.186		-	0.0753	Total PeCDF	ND	0.118	
1,2,3,4,7,8,9-HpCDF	ND	0.208		-	0.0868	Total HxCDF	ND	0.186	
OCDF	ND	0.467		-	0.156	Total HpCDF	ND	0.208	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	70.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	89.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	86.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	83.9	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	70.3	40.0 - 135	
13C-OCDD	46.5	40.0 - 135	
13C-2,3,7,8-TCDF	87.1	40.0 - 135	
13C-1,2,3,7,8-PeCDF	84.6	40.0 - 135	
13C-2,3,4,7,8-PeCDF	88.3	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	98.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	86.5	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	79.9	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	83.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	69.3	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	78.3	40.0 - 135	
13C-OCDF	58.8	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	83.5	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/3/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FAL ID: 12775-001-OPR
Client ID: OPR
Matrix: Solid
Batch No: X5143

Date Extracted: 11-27-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL4-12-2-19
GC Column: DB5MS
Units: ng/ml

Acquired: 12-02-2019
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	11.8	7.00 - 13.0	
1,2,3,7,8-PeCDD	50.7	35.0 - 65.0	
1,2,3,4,7,8-HxCDD	50.3	35.0 - 65.0	
1,2,3,6,7,8-HxCDD	51.9	35.0 - 65.0	
1,2,3,7,8,9-HxCDD	48.7	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDD	49.9	35.0 - 65.0	
OCDD	104	70.0 - 130	
2,3,7,8-TCDF	9.96	7.00 - 13.0	
1,2,3,7,8-PeCDF	51.0	35.0 - 65.0	
2,3,4,7,8-PeCDF	51.9	35.0 - 65.0	
1,2,3,4,7,8-HxCDF	51.1	35.0 - 65.0	
1,2,3,6,7,8-HxCDF	51.1	35.0 - 65.0	
2,3,4,6,7,8-HxCDF	51.8	35.0 - 65.0	
1,2,3,7,8,9-HxCDF	52.8	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	53.6	35.0 - 65.0	
1,2,3,4,7,8,9-HpCDF	52.6	35.0 - 65.0	
OCDF	102	70.0 - 130	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	67.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	83.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	80.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	78.4	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	74.9	40.0 - 135	
13C-OCDD	57.7	40.0 - 135	
13C-2,3,7,8-TCDF	78.6	40.0 - 135	
13C-1,2,3,7,8-PeCDF	79.9	40.0 - 135	
13C-2,3,4,7,8-PeCDF	81.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	91.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	81.2	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	79.7	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	84.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	71.4	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	82.4	40.0 - 135	
13C-OCDF	71.3	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	80.1	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/3/2019

Reviewed By: DPV
Date: 12/3/2019

000006A of 000027A

EPA Method 8290
PCDD/F

FAL ID: 12775-001-SA
Client ID: MOTCO-2019-DU2b-04 (570-12498-18)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.03 g
% Solids: 54.65

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 0.00525
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0838		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.148		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.186		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.204		-	0.0538	Total TCDD	0.467	-	J
1,2,3,7,8,9-HxCDD	ND	0.182		-	0.0518	Total PeCDD	0.283	-	J,M
1,2,3,4,6,7,8-HpCDD	0.449	-	J	0.00449	0.0695	Total HxCDD	ND	0.204	
OCDD	2.52	-	J	0.000756	0.116	Total HpCDD	1.13	-	J
2,3,7,8-TCDF	ND	0.0906		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.125		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.127		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.108		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.106		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.117		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.150		-	0.0423	Total TCDF	0.552	-	
1,2,3,4,6,7,8-HpCDF	ND	0.158		-	0.0415	Total PeCDF	ND	0.127	
1,2,3,4,7,8,9-HpCDF	ND	0.173		-	0.0532	Total HxCDF	ND	0.150	
OCDF	ND	0.248		-	0.0833	Total HpCDF	ND	0.173	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	86.2	40.0 - 135	
13C-1,2,3,7,8-PeCDD	80.6	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	83.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	81.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	85.0	40.0 - 135	
13C-OCDD	83.3	40.0 - 135	
13C-2,3,7,8-TCDF	86.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	89.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	92.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	93.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	93.8	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	91.2	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	92.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	87.3	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	95.4	40.0 - 135	
13C-OCDF	90.6	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	82.5	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FAL ID: 12775-002-SA
Client ID: MOTCO-2019-DU2b-Comp (570-12498-19)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 55.43

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 0.00332
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0942		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.150		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.144		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.151		-	0.0538	Total TCDD	0.433	-	J
1,2,3,7,8,9-HxCDD	ND	0.138		-	0.0518	Total PeCDD	0.312	-	J,M
1,2,3,4,6,7,8-HpCDD	0.299	-	J	0.00299	0.0695	Total HxCDD	ND	0.151	
OCDD	1.10	-	J	0.000330	0.116	Total HpCDD	0.809	-	J
2,3,7,8-TCDF	ND	0.0912		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.140		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.148		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.107		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.103		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.106		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.132		-	0.0423	Total TCDF	0.533	-	
1,2,3,4,6,7,8-HpCDF	ND	0.111		-	0.0415	Total PeCDF	ND	0.148	
1,2,3,4,7,8,9-HpCDF	ND	0.131		-	0.0532	Total HxCDF	ND	0.132	
OCDF	ND	0.196		-	0.0833	Total HpCDF	ND	0.131	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	87.1	40.0 - 135	
13C-1,2,3,7,8-PeCDD	77.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	84.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	85.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	91.1	40.0 - 135	
13C-OCDD	87.5	40.0 - 135	
13C-2,3,7,8-TCDF	88.3	40.0 - 135	
13C-1,2,3,7,8-PeCDF	90.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	92.6	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	94.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	95.8	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	96.8	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	100	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	91.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	101	40.0 - 135	
13C-OCDF	94.7	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	84.4	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FAL ID: 12775-003-SA
Client ID: MOTCO-2019-DU2b-Z-Layer-Comp (570-12498-21)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 53.69

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 0.00196
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0767		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.119		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.175		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.173		-	0.0538	Total TCDD	0.295	-	J
1,2,3,7,8,9-HxCDD	ND	0.163		-	0.0518	Total PeCDD	0.167	-	J,M
1,2,3,4,6,7,8-HpCDD	0.172	-	J	0.00172	0.0695	Total HxCDD	ND	0.175	
OCDD	0.811	-	J	0.000243	0.116	Total HpCDD	0.499	-	J
2,3,7,8-TCDF	ND	0.0809		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.113		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.119		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0758		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0774		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0841		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.101		-	0.0423	Total TCDF	0.515	-	
1,2,3,4,6,7,8-HpCDF	ND	0.0743		-	0.0415	Total PeCDF	ND	0.119	
1,2,3,4,7,8,9-HpCDF	ND	0.0905		-	0.0532	Total HxCDF	ND	0.101	
OCDF	ND	0.208		-	0.0833	Total HpCDF	ND	0.0905	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	81.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	74.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	74.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	77.4	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	82.1	40.0 - 135	
13C-OCDD	78.6	40.0 - 135	
13C-2,3,7,8-TCDF	86.3	40.0 - 135	
13C-1,2,3,7,8-PeCDF	85.6	40.0 - 135	
13C-2,3,4,7,8-PeCDF	88.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	86.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	86.2	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	83.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	86.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	80.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	91.2	40.0 - 135	
13C-OCDF	84.2	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	74.0	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-004-SA
Client ID: MOTCO-2019-DU3-01 (570-12498-22)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 59.89

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 0.0480
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0987		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.165		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.252		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.264		-	0.0538	Total TCDD	0.212	-	J
1,2,3,7,8,9-HxCDD	ND	0.242		-	0.0518	Total PeCDD	1.00	-	J,M
1,2,3,4,6,7,8-HpCDD	2.26	-	J	0.0226	0.0695	Total HxCDD	1.49	-	J
OCDD	17.1	-		0.00513	0.116	Total HpCDD	5.33	-	
2,3,7,8-TCDF	0.138	-	J	0.0138	0.0345				
1,2,3,7,8-PeCDF	ND	0.154		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.172		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.116		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.117		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.122		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.146		-	0.0423	Total TCDF	0.469	-	J
1,2,3,4,6,7,8-HpCDF	0.609	-	J	0.00609	0.0415	Total PeCDF	0.200	-	J
1,2,3,4,7,8,9-HpCDF	ND	0.0921		-	0.0532	Total HxCDF	0.560	-	J
OCDF	1.18	-	J	0.000354	0.0833	Total HpCDF	1.57	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	84.4	40.0 - 135	
13C-1,2,3,7,8-PeCDD	78.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	78.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	80.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	88.5	40.0 - 135	
13C-OCDD	84.1	40.0 - 135	
13C-2,3,7,8-TCDF	90.5	40.0 - 135	
13C-1,2,3,7,8-PeCDF	93.3	40.0 - 135	
13C-2,3,4,7,8-PeCDF	96.4	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	91.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	90.5	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	90.0	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	93.5	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	90.6	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	96.1	40.0 - 135	
13C-OCDF	93.8	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	80.5	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-005-SA
Client ID: MOTCO-2019-DU3-02 (570-12498-23)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.01 g
% Solids: 43.24

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 2.81
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.181	-	J	0.181	0.0331				
1,2,3,7,8-PeCDD	0.326	-	J	0.326	0.0536				
1,2,3,4,7,8-HxCDD	0.590	-	J	0.0590	0.0540				
1,2,3,6,7,8-HxCDD	2.40	-	J	0.240	0.0538	Total TCDD	4.15	-	M
1,2,3,7,8,9-HxCDD	1.24	-	J	0.124	0.0518	Total PeCDD	4.05	-	
1,2,3,4,6,7,8-HpCDD	88.8	-		0.888	0.0695	Total HxCDD	44.8	-	
OCDD	966	-		0.290	0.116	Total HpCDD	605	-	
2,3,7,8-TCDF	0.919	-		0.0919	0.0345				
1,2,3,7,8-PeCDF	0.392	-	J	0.0118	0.0417				
2,3,4,7,8-PeCDF	0.786	-	J	0.236	0.0449				
1,2,3,4,7,8-HxCDF	1.03	-	J	0.103	0.0351				
1,2,3,6,7,8-HxCDF	0.567	-	J	0.0567	0.0382				
2,3,4,6,7,8-HxCDF	0.675	-	J	0.0675	0.0379				
1,2,3,7,8,9-HxCDF	0.349	-	J	0.0349	0.0423	Total TCDF	7.79	-	
1,2,3,4,6,7,8-HpCDF	8.45	-		0.0845	0.0415	Total PeCDF	4.92	-	
1,2,3,4,7,8,9-HpCDF	0.689	-	J	0.00689	0.0532	Total HxCDF	13.4	-	
OCDF	23.8	-		0.00714	0.0833	Total HpCDF	32.9	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	96.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	90.4	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	91.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	104	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	99.7	40.0 - 135	
13C-OCDD	99.4	40.0 - 135	
13C-2,3,7,8-TCDF	98.7	40.0 - 135	
13C-1,2,3,7,8-PeCDF	106	40.0 - 135	
13C-2,3,4,7,8-PeCDF	108	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	101	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	100	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	105	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	107	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	92.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	106	40.0 - 135	
13C-OCDF	109	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	92.6	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-006-SA
Client ID: MOTCO-2019-DU3-03 (570-12498-24)
Matrix: Solid
Batch No: X5143

Date Extracted: 11-27-2019
Date Received: 11-14-2019
Amount: 10.04 g
% Solids: 43.02

ICal: PCDDFAL4-12-2-19
GC Column: DB5MS
Units: pg/g

Acquired: 12-03-2019
2005 WHO TEQ: 2.94
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.394	-	J	0.394	0.0464				
1,2,3,7,8-PeCDD	0.561	-	J	0.561	0.0791				
1,2,3,4,7,8-HxCDD	0.819	-	J	0.0819	0.0846				
1,2,3,6,7,8-HxCDD	2.52	-		0.252	0.0993	Total TCDD	6.52	-	
1,2,3,7,8,9-HxCDD	1.45	-	J	0.145	0.0861	Total PeCDD	5.43	-	
1,2,3,4,6,7,8-HpCDD	49.3	-		0.493	0.0980	Total HxCDD	40.0	-	
OCDD	341	-		0.102	0.122	Total HpCDD	286	-	
2,3,7,8-TCDF	1.39	-	F	0.139	0.0397				
1,2,3,7,8-PeCDF	0.581	-	J	0.0174	0.0626				
2,3,4,7,8-PeCDF	1.08	-	J	0.324	0.0713				
1,2,3,4,7,8-HxCDF	1.43	-	J	0.143	0.0513				
1,2,3,6,7,8-HxCDF	0.657	-	J	0.0657	0.0576				
2,3,4,6,7,8-HxCDF	0.926	-	J	0.0926	0.0623				
1,2,3,7,8,9-HxCDF	0.467	-	J	0.0467	0.0715	Total TCDF	13.8	-	D,M
1,2,3,4,6,7,8-HpCDF	7.10	-		0.0710	0.0753	Total PeCDF	9.47	-	
1,2,3,4,7,8,9-HpCDF	0.903	-	J	0.00903	0.0868	Total HxCDF	15.2	-	
OCDF	16.5	-		0.00495	0.156	Total HpCDF	25.9	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	86.8	40.0 - 135	
13C-1,2,3,7,8-PeCDD	90.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	86.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	86.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	82.5	40.0 - 135	
13C-OCDD	72.6	40.0 - 135	
13C-2,3,7,8-TCDF	88.5	40.0 - 135	
13C-1,2,3,7,8-PeCDF	88.2	40.0 - 135	
13C-2,3,4,7,8-PeCDF	91.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	96.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	86.6	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	87.5	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	94.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	79.0	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	86.8	40.0 - 135	
13C-OCDF	81.4	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	86.3	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/3/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-007-SA
Client ID: MOTCO-2019-DU3-04 (570-12498-25)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 41.30

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 2.13
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.292	-	J	0.292	0.0331				
1,2,3,7,8-PeCDD	0.430	-	J	0.430	0.0536				
1,2,3,4,7,8-HxCDD	0.533	-	J	0.0533	0.0540				
1,2,3,6,7,8-HxCDD	1.72	-	J	0.172	0.0538	Total TCDD	6.04	-	
1,2,3,7,8,9-HxCDD	1.21	-	J	0.121	0.0518	Total PeCDD	4.56	-	
1,2,3,4,6,7,8-HpCDD	29.1	-		0.291	0.0695	Total HxCDD	19.5	-	
OCDD	270	-		0.0810	0.116	Total HpCDD	108	-	
2,3,7,8-TCDF	1.11	-	F	0.111	0.0345				
1,2,3,7,8-PeCDF	0.574	-	J	0.0172	0.0417				
2,3,4,7,8-PeCDF	0.877	-	J	0.263	0.0449				
1,2,3,4,7,8-HxCDF	1.02	-	J	0.102	0.0351				
1,2,3,6,7,8-HxCDF	0.479	-	J	0.0479	0.0382				
2,3,4,6,7,8-HxCDF	0.573	-	J	0.0573	0.0379				
1,2,3,7,8,9-HxCDF	0.332	-	J	0.0332	0.0423	Total TCDF	10.4	-	
1,2,3,4,6,7,8-HpCDF	5.28	-		0.0528	0.0415	Total PeCDF	6.50	-	
1,2,3,4,7,8,9-HpCDF	0.550	-	J	0.00550	0.0532	Total HxCDF	9.37	-	
OCDF	11.1	-		0.00333	0.0833	Total HpCDF	15.5	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	55.2	40.0 - 135	
13C-1,2,3,7,8-PeCDD	52.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	51.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	54.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	57.7	40.0 - 135	
13C-OCDD	55.2	40.0 - 135	
13C-2,3,7,8-TCDF	53.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	58.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	60.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	59.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	58.8	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	59.3	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	60.0	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	56.6	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	62.9	40.0 - 135	
13C-OCDF	60.4	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	52.9	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____ Date: 12/6/2019

Reviewed By: DPV Date: 12/6/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-008-SA
Client ID: MOTCO-2019-DU3-Comp (570-12498-26)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.01 g
% Solids: 43.33

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 2.71
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.268	-	J	0.268	0.0331				
1,2,3,7,8-PeCDD	0.396	-	J	0.396	0.0536				
1,2,3,4,7,8-HxCDD	0.482	-	J	0.0482	0.0540				
1,2,3,6,7,8-HxCDD	2.10	-	J	0.210	0.0538	Total TCDD	3.64	-	
1,2,3,7,8,9-HxCDD	1.18	-	J	0.118	0.0518	Total PeCDD	3.56	-	M
1,2,3,4,6,7,8-HpCDD	55.9	-		0.559	0.0695	Total HxCDD	29.2	-	
OCDD	538	-		0.161	0.116	Total HpCDD	276	-	
2,3,7,8-TCDF	1.24	-	F	0.124	0.0345				
1,2,3,7,8-PeCDF	0.910	-	J	0.0273	0.0417				
2,3,4,7,8-PeCDF	0.908	-	J	0.272	0.0449				
1,2,3,4,7,8-HxCDF	2.57	-		0.257	0.0351				
1,2,3,6,7,8-HxCDF	0.689	-	J	0.0689	0.0382				
2,3,4,6,7,8-HxCDF	0.673	-	J	0.0673	0.0379				
1,2,3,7,8,9-HxCDF	0.440	-	J	0.0440	0.0423	Total TCDF	9.23	-	
1,2,3,4,6,7,8-HpCDF	6.87	-		0.0687	0.0415	Total PeCDF	7.54	-	
1,2,3,4,7,8,9-HpCDF	0.994	-	J	0.00994	0.0532	Total HxCDF	13.3	-	
OCDF	16.5	-		0.00495	0.0833	Total HpCDF	20.9	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	54.1	40.0 - 135	
13C-1,2,3,7,8-PeCDD	52.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	51.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	51.3	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	55.7	40.0 - 135	
13C-OCDD	55.8	40.0 - 135	
13C-2,3,7,8-TCDF	55.1	40.0 - 135	
13C-1,2,3,7,8-PeCDF	59.9	40.0 - 135	
13C-2,3,4,7,8-PeCDF	62.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	60.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	60.7	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	60.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	60.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	57.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	63.3	40.0 - 135	
13C-OCDF	62.5	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	52.4	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/3/2019

EPA Method 8290
PCDD/F

FAL ID: 12775-009-SA
Client ID: MOTCO-2019-DU4-01 (570-12498-29)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.03 g
% Solids: 71.78

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 0.0102
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0690		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.175		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.165		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.168		-	0.0538	Total TCDD	0.211	-	J
1,2,3,7,8,9-HxCDD	ND	0.156		-	0.0518	Total PeCDD	ND	0.175	
1,2,3,4,6,7,8-HpCDD	0.628	-	J	0.00628	0.0695	Total HxCDD	0.499	-	J
OCDD	4.61	-	J	0.00138	0.116	Total HpCDD	1.67	-	J
2,3,7,8-TCDF	ND	0.0836		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.120		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.128		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.135		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.136		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.154		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.188		-	0.0423	Total TCDF	0.124	-	J
1,2,3,4,6,7,8-HpCDF	0.239	-	J	0.00239	0.0415	Total PeCDF	ND	0.128	
1,2,3,4,7,8,9-HpCDF	ND	0.0774		-	0.0532	Total HxCDF	ND	0.188	
OCDF	0.334	-	J	0.000100	0.0833	Total HpCDF	0.550	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	79.8	40.0 - 135	
13C-1,2,3,7,8-PeCDD	76.6	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	77.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	79.3	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	85.4	40.0 - 135	
13C-OCDD	73.4	40.0 - 135	
13C-2,3,7,8-TCDF	83.9	40.0 - 135	
13C-1,2,3,7,8-PeCDF	88.4	40.0 - 135	
13C-2,3,4,7,8-PeCDF	91.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	89.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	90.0	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	88.9	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	88.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	83.0	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	92.1	40.0 - 135	
13C-OCDF	83.1	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	76.0	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/3/2019

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-010-SA
Client ID: MOTCO-2019-DU4-02 (570-12498-30)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 62.93

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-23-2019
2005 WHO TEQ: 1.43
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.292	-	J	0.292	0.0331				
1,2,3,7,8-PeCDD	0.214	-	J	0.214	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.295		-	0.0540				
1,2,3,6,7,8-HxCDD	1.90	-	J	0.190	0.0538	Total TCDD	1.79	-	
1,2,3,7,8,9-HxCDD	1.14	-	J	0.114	0.0518	Total PeCDD	3.73	-	
1,2,3,4,6,7,8-HpCDD	12.4	-		0.124	0.0695	Total HxCDD	15.5	-	
OCDD	105	-		0.0315	0.116	Total HpCDD	42.3	-	
2,3,7,8-TCDF	1.57	-	F	0.157	0.0345				
1,2,3,7,8-PeCDF	0.240	-	J	0.00720	0.0417				
2,3,4,7,8-PeCDF	0.518	-	J	0.155	0.0449				
1,2,3,4,7,8-HxCDF	0.370	-	J	0.0370	0.0351				
1,2,3,6,7,8-HxCDF	0.341	-	J	0.0341	0.0382				
2,3,4,6,7,8-HxCDF	0.304	-	J	0.0304	0.0379				
1,2,3,7,8,9-HxCDF	0.188	-	J	0.0188	0.0423	Total TCDF	7.67	-	
1,2,3,4,6,7,8-HpCDF	2.03	-	J	0.0203	0.0415	Total PeCDF	4.58	-	
1,2,3,4,7,8,9-HpCDF	0.252	-	J	0.00252	0.0532	Total HxCDF	4.76	-	
OCDF	4.71	-	J	0.00141	0.0833	Total HpCDF	6.95	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	49.6	40.0 - 135	
13C-1,2,3,7,8-PeCDD	48.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	46.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	49.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	54.0	40.0 - 135	
13C-OCDD	49.3	40.0 - 135	
13C-2,3,7,8-TCDF	51.1	40.0 - 135	
13C-1,2,3,7,8-PeCDF	55.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	57.4	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	55.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	56.9	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	55.1	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	55.0	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	51.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	57.5	40.0 - 135	
13C-OCDF	54.2	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	51.2	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-011-SA
Client ID: MOTCO-2019-DU4-03 (570-12498-31)
Matrix: Solid
Batch No: X5143

Date Extracted: 11-27-2019
Date Received: 11-14-2019
Amount: 10.10 g
% Solids: 47.63

ICal: PCDDFAL4-12-2-19
GC Column: DB5MS
Units: pg/g

Acquired: 12-03-2019
2005 WHO TEQ: 3.44
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.533	-		0.533	0.0464				
1,2,3,7,8-PeCDD	0.744	-	J	0.744	0.0791				
1,2,3,4,7,8-HxCDD	0.817	-	J	0.0817	0.0846				
1,2,3,6,7,8-HxCDD	3.33	-		0.333	0.0993	Total TCDD	7.76	-	
1,2,3,7,8,9-HxCDD	1.69	-	J	0.169	0.0861	Total PeCDD	11.3	-	
1,2,3,4,6,7,8-HpCDD	40.2	-		0.402	0.0980	Total HxCDD	45.0	-	
OCDD	250	-		0.0750	0.122	Total HpCDD	152	-	
2,3,7,8-TCDF	2.31	-	F	0.231	0.0397				
1,2,3,7,8-PeCDF	0.729	-	J	0.0219	0.0626				
2,3,4,7,8-PeCDF	1.38	-	J	0.414	0.0713				
1,2,3,4,7,8-HxCDF	1.23	-	J	0.123	0.0513				
1,2,3,6,7,8-HxCDF	0.749	-	J	0.0749	0.0576				
2,3,4,6,7,8-HxCDF	1.15	-	J	0.115	0.0623				
1,2,3,7,8,9-HxCDF	0.473	-	J	0.0473	0.0715	Total TCDF	15.8	-	
1,2,3,4,6,7,8-HpCDF	6.37	-		0.0637	0.0753	Total PeCDF	12.3	-	
1,2,3,4,7,8,9-HpCDF	0.787	-	J	0.00787	0.0868	Total HxCDF	18.2	-	
OCDF	16.1	-		0.00483	0.156	Total HpCDF	24.6	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	92.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	96.3	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	95.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	91.5	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	90.4	40.0 - 135	
13C-OCDD	81.6	40.0 - 135	
13C-2,3,7,8-TCDF	96.2	40.0 - 135	
13C-1,2,3,7,8-PeCDF	94.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	100	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	102	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	92.1	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	94.5	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	100	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	85.0	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	96.5	40.0 - 135	
13C-OCDF	89.5	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	92.2	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/3/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12775-012-SA
Client ID: MOTCO-2019-DU4-04 (570-12498-32)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.04 g
% Solids: 63.87

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-24-2019
2005 WHO TEQ: 2.23
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0909		-	0.0331				
1,2,3,7,8-PeCDD	0.383	-	J	0.383	0.0536				
1,2,3,4,7,8-HxCDD	0.495	-	J	0.0495	0.0540				
1,2,3,6,7,8-HxCDD	2.76	-		0.276	0.0538	Total TCDD	1.80	-	
1,2,3,7,8,9-HxCDD	1.31	-	J	0.131	0.0518	Total PeCDD	3.39	-	
1,2,3,4,6,7,8-HpCDD	66.1	-		0.661	0.0695	Total HxCDD	41.8	-	
OCDD	531	-		0.159	0.116	Total HpCDD	534	-	
2,3,7,8-TCDF	0.867	-		0.0867	0.0345				
1,2,3,7,8-PeCDF	0.318	-	J	0.00954	0.0417				
2,3,4,7,8-PeCDF	0.651	-	J	0.195	0.0449				
1,2,3,4,7,8-HxCDF	0.780	-	J	0.0780	0.0351				
1,2,3,6,7,8-HxCDF	0.462	-	J	0.0462	0.0382				
2,3,4,6,7,8-HxCDF	0.572	-	J	0.0572	0.0379				
1,2,3,7,8,9-HxCDF	0.219	-	J	0.0219	0.0423	Total TCDF	5.38	-	
1,2,3,4,6,7,8-HpCDF	6.41	-		0.0641	0.0415	Total PeCDF	5.75	-	
1,2,3,4,7,8,9-HpCDF	0.538	-	J	0.00538	0.0532	Total HxCDF	12.6	-	
OCDF	17.4	-		0.00522	0.0833	Total HpCDF	23.8	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	88.5	40.0 - 135	
13C-1,2,3,7,8-PeCDD	84.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	79.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	87.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	94.3	40.0 - 135	
13C-OCDD	90.5	40.0 - 135	
13C-2,3,7,8-TCDF	88.1	40.0 - 135	
13C-1,2,3,7,8-PeCDF	89.4	40.0 - 135	
13C-2,3,4,7,8-PeCDF	92.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	97.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	97.2	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	96.4	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	99.0	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	92.3	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	102	40.0 - 135	
13C-OCDF	100	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	88.3	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: DPV
Date: 12/3/2019

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EPA Method 8290
PCDD/F

FAL ID: 12775-013-SA
Client ID: MOTCO-2019-DU4-Comp (570-12498-33)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 63.32

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-24-2019
2005 WHO TEQ: 1.36
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0962		-	0.0331				
1,2,3,7,8-PeCDD	0.229	-	J	0.229	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.200		-	0.0540				
1,2,3,6,7,8-HxCDD	1.77	-	J	0.177	0.0538	Total TCDD	1.57	-	
1,2,3,7,8,9-HxCDD	0.872	-	J	0.0872	0.0518	Total PeCDD	2.88	-	
1,2,3,4,6,7,8-HpCDD	35.9	-		0.359	0.0695	Total HxCDD	18.1	-	
OCDD	343	-		0.103	0.116	Total HpCDD	132	-	
2,3,7,8-TCDF	0.737	-		0.0737	0.0345				
1,2,3,7,8-PeCDF	0.217	-	J	0.00651	0.0417				
2,3,4,7,8-PeCDF	0.455	-	J	0.137	0.0449				
1,2,3,4,7,8-HxCDF	0.545	-	J	0.0545	0.0351				
1,2,3,6,7,8-HxCDF	0.344	-	J	0.0344	0.0382				
2,3,4,6,7,8-HxCDF	0.398	-	J	0.0398	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.189		-	0.0423	Total TCDF	5.02	-	
1,2,3,4,6,7,8-HpCDF	4.87	-		0.0487	0.0415	Total PeCDF	4.38	-	
1,2,3,4,7,8,9-HpCDF	0.376	-	J	0.00376	0.0532	Total HxCDF	7.86	-	
OCDF	8.97	-		0.00269	0.0833	Total HpCDF	14.1	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	73.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	76.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	70.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	76.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	77.7	40.0 - 135	
13C-OCDD	75.2	40.0 - 135	
13C-2,3,7,8-TCDF	72.2	40.0 - 135	
13C-1,2,3,7,8-PeCDF	77.5	40.0 - 135	
13C-2,3,4,7,8-PeCDF	79.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	86.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	87.4	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	82.4	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	80.1	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	78.4	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	84.0	40.0 - 135	
13C-OCDF	84.0	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	71.9	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/3/2019

EPA Method 8290
PCDD/F

FAL ID: 12775-014-SA
Client ID: MOTCO-2019-DU4-Z-Layer-Comp (570-12498-35)
Matrix: Solid
Batch No: X5128

Date Extracted: 11-19-2019
Date Received: 11-14-2019
Amount: 10.02 g
% Solids: 69.80

ICal: PCDDFAL3-8-22-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-24-2019
2005 WHO TEQ: 0.0806
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0602		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.180		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.175		-	0.0540				
1,2,3,6,7,8-HxCDD	0.264	-	J	0.0264	0.0538	Total TCDD	0.127	-	J
1,2,3,7,8,9-HxCDD	ND	0.179		-	0.0518	Total PeCDD	ND	0.180	
1,2,3,4,6,7,8-HpCDD	3.84	-		0.0384	0.0695	Total HxCDD	2.30	-	J
OCDD	37.9	-		0.0114	0.116	Total HpCDD	9.77	-	
2,3,7,8-TCDF	ND	0.0589		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.0888		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.0915		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.119		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.125		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.113		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.139		-	0.0423	Total TCDF	0.112	-	J
1,2,3,4,6,7,8-HpCDF	0.420	-	J	0.00420	0.0415	Total PeCDF	ND	0.0915	
1,2,3,4,7,8,9-HpCDF	ND	0.103		-	0.0532	Total HxCDF	0.524	-	J
OCDF	0.797	-	J	0.000239	0.0833	Total HpCDF	1.54	-	J

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	94.6	40.0 - 135	
13C-1,2,3,7,8-PeCDD	90.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	89.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	88.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	95.9	40.0 - 135	
13C-OCDD	87.2	40.0 - 135	
13C-2,3,7,8-TCDF	99.9	40.0 - 135	
13C-1,2,3,7,8-PeCDF	101	40.0 - 135	
13C-2,3,4,7,8-PeCDF	105	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	91.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	93.3	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	103	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	105	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	72.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	105	40.0 - 135	
13C-OCDF	94.7	40.0 - 135	

Cleanup Surrogate		
37Cl-2,3,7,8-TCDD	97.2	50.0 - 150

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/2/2019

Reviewed By: _____
Date: 12/3/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0999 * Fax (916) 934-0999 * www.frontieranalytical.com

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

12775
OC

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-10107.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 2 of 4
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-12498-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 11/20/2019			
City: El Dorado Hills	TAT Requested (days):			
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-12498			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MOTCO-2019-DU2a-02 (570-12498-9)	10/28/19	15:14 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-03 (570-12498-10)	10/28/19	14:16 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-04 (570-12498-11)	10/28/19	13:15 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-Comp (570-12498-12)	10/28/19	13:15 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2a-Z-Layer-Comp (570-12498-14)	10/28/19	13:15 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-01 (570-12498-15)	10/31/19	10:43 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-02 (570-12498-16)	10/31/19	11:40 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-03 (570-12498-17)	10/31/19	13:13 Pacific		Solid			X	1	10 day TAT; J Flag
MOTCO-2019-DU2b-04 (570-12498-18)	10/31/19	12:37 Pacific		Solid			X	1	10 day TAT; J Flag

KZ 11.14.19

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [redacted]	Date/Time: 11/13/19 1420	Company	[redacted]	Date/Time: 11/14/2019 1345	Company Frontier
Relinquished by:	Date/Time:	Company		Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: GSO 546526994

1 of 2

000021A of 000027A

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

12775
0°C

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-10107.3
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 3 of 4
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-12498-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 11/20/2019			
City: El Dorado Hills	TAT Requested (days):			
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-12498			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
2 MOTCO-2019-DU2b-Comp (570-12498-19)	10/31/19	10:43 Pacific		Solid			X	1	10 day TAT; J Flag
3 MOTCO-2019-DU2b-Z-Layer-Comp (570-12498-21)	10/31/19	10:43 Pacific		Solid			X	1	10 day TAT; J Flag
4 MOTCO-2019-DU3-01 (570-12498-22)	10/30/19	09:20 Pacific		Solid			X	1	10 day TAT; J Flag
5 MOTCO-2019-DU3-02 (570-12498-23)	10/30/19	10:04 Pacific		Solid			X	1	10 day TAT; J Flag
6 MOTCO-2019-DU3-03 (570-12498-24)	10/30/19	10:42 Pacific		Solid			X	1	10 day TAT; J Flag
7 MOTCO-2019-DU3-04 (570-12498-25) DAN 12/6/2019 as per client	10/30/19	11:19 Pacific		Solid			X	1	10 day TAT; J Flag
8 MOTCO-2019-DU3-Comp (570-12498-26) Request on 12/4/2019.	10/30/19	09:20 Pacific		Solid			X	1	10 day TAT; J Flag
9 MOTCO-2019-DU4-01 (570-12498-29)	10/30/19	17:00 Pacific		Solid			X	1	10 day TAT; J Flag
10 MOTCO-2019-DU4-02 (570-12498-30)	10/30/19	16:15 Pacific		Solid			X	1	10 day TAT; J Flag

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [redacted]	Date/Time: 11/13/19 1420	Company	[redacted]	Date/Time: 11-14-19 1345	Company Frontier
Relinquished by:	Date/Time:	Company		Date/Time:	Company
Relinquished by:	Date/Time:	Company		Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 6SO 546526999 2 of 3

000022A of 000027A

12775
OC

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-10107.4
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 4 of 4
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-12498-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 11/20/2019			
City: El Dorado Hills	TAT Requested (days):			
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-12498			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
11	MOTCO-2019-DU4-03 (570-12498-31)	10/30/19	15:05 Pacific		Solid			X	1	10 day TAT; J Flag
12	MOTCO-2019-DU4-04 (570-12498-32)	10/30/19	14:27 Pacific		Solid			X	1	10 day TAT; J Flag
13	MOTCO-2019-DU4-Comp (570-12498-33)	10/30/19	14:27 Pacific		Solid			X	1	10 day TAT; J Flag
14	MOTCO-2019-DU4-Z-Layer-Comp (570-12498-35)	10/30/19	14:27 Pacific		Solid			X	1	10 day TAT; J Flag

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by: [redacted]	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 11/13/19 1420	Company	[redacted]	Date/Time: 11-14-19 1345	Company Frontier
Relinquished by:	Date/Time:	Company		Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact:	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
Δ Yes Δ No		0.0 5465269994

3 of 3

[redacted]

Sent: Wednesday, December 04, 2019 10:26 AM
To: Kathy Zipp
Subject: RE: 12775 L1 Summary / EDD 570-12498

[redacted]

There was a mistake on this COC and I did not notice ☹
I'm so sorry.

Would you revise the sample ID for sample 12755-007? I have it listed as DU3-014 and it should be DU3-04.

[redacted]
Project Manager
Marine Chemistry
714-895-5494

From: [redacted]
Sent: Tuesday, December 03, 2019 3:06 PM
[redacted]
Subject: 12775 L1 Summary / EDD 570-12498

EXTERNAL EMAIL*

[redacted]

Attached please find the results, EDD and a copy of the corresponding invoice for Eurofins Calscience project number (**570-12498**). The original invoice has been e-mailed to your accounting department.

If you have any comments or suggestions on how we can continue to improve our reports, please feel free to contact me or follow the link below to take our short survey.

Thank you for using Frontier Analytical Laboratory for your analytical needs.

Sincerely,

[redacted]

Frontier Analytical Laboratory
5172 Hillsdale Circle
El Dorado Hills, CA 95762
Tel: (916) 934-0900
Fax: (916) 934-0999
Website: www.frontieranalytical.com

FRONTIER ANALYTICAL LABORATORY

Please tell us how we're doing. http://www.frontieranalytical.com/external/survey_new/survey.stm

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Notify us here to report this email as spam.

* WARNING - EXTERNAL: This email originated from outside of Eurofins. Do not click any links or open any attachments unless you trust the sender and know that the content is safe!

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **12775**

Client:	Eurofins Calscience, Inc.
Client Project ID:	570-12498
Date Received:	11/14/2019
Time Received:	01:45 pm
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	14
Duplicates:	0
Storage Location:	R-3

Method of Delivery:	Golden State Overnight
Tracking Number:	546526999
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	No
pH Range of Aqueous Sample	N/A

Anomalies or additional comments:

Please note that the samples were received in clear glass jars. NELAP requires samples be received in amber glass bottles or jars. Although this anomaly will not affect your results, we are required by NELAP to make a note of it. We will proceed with analysis unless directed otherwise by you.

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com


Eurofins Calscience LLC
Chain of Custody Record
12775
0oc
Analysis Requested
12775-011-SA
12775-012-SA
12775-013-SA
12775-014-SA
12775-006-SA
12775-007-SA
12775-008-SA
12775-009-SA
12775-010-SA
12775-001-SA
12775-002-SA
12775-003-SA
12775-004-SA
12775-005-SA
2019/11/14

December 3, 2019

FAL Project ID: 12796

[redacted]
Eurofins Calscience, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427

[redacted]

The following results are associated with Frontier Analytical Laboratory project **12796**. This corresponds to your project number **570-12498**. One solid sample was received on 11/21/2019. This sample was extracted and analyzed by EPA Method 8290 for tetra through octa chlorinated dibenzo dioxins and furans. The Toxic Equivalency (TEQ) for this sample has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). A ten business day turnaround time was requested for this project.

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custodies, our sample login form and a sample photo. The attached results and electronic data deliverable (EDD) are specifically for the sample referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of California ELAP certificate number is **2934**. This report and the EDD have been emailed to you. A hardcopy of this report will not be sent to you unless specifically requested.

If you have any questions regarding project **12796**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

[redacted]
Director

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **12796**

Received on: **11/21/2019** Project Due: **12/10/2019** Storage: **R-4**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
12796-001-SA	0	570-12498	MOTCO-2019-DU3-Z-Layer-Comp (570-12498-28)	EPA 8290 D/F	Solid	10/30/2019	09:20 am	11/29/2019

EPA Method 8290
PCDD/F

FAL ID: 12796-001-MB
Client ID: Method Blank
Matrix: Solid
Batch No: X5138

Date Extracted: 11-25-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-11-26-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-30-2019
2005 WHO TEQ: 0.0
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0874		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.0957		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.122		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.123		-	0.0538	Total TCDD	ND	0.0874	
1,2,3,7,8,9-HxCDD	ND	0.112		-	0.0518	Total PeCDD	ND	0.0957	
1,2,3,4,6,7,8-HpCDD	ND	0.186		-	0.0695	Total HxCDD	ND	0.123	
OCDD	ND	0.457		-	0.116	Total HpCDD	ND	0.186	
2,3,7,8-TCDF	ND	0.0886		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.0863		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.0888		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0781		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0972		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.102		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.121		-	0.0423	Total TCDF	ND	0.0886	
1,2,3,4,6,7,8-HpCDF	ND	0.101		-	0.0415	Total PeCDF	ND	0.0888	
1,2,3,4,7,8,9-HpCDF	ND	0.126		-	0.0532	Total HxCDF	ND	0.121	
OCDF	ND	0.170		-	0.0833	Total HpCDF	ND	0.126	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	72.6	40.0 - 135	
13C-1,2,3,7,8-PeCDD	70.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	78.7	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	78.5	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	76.4	40.0 - 135	
13C-OCDD	70.0	40.0 - 135	
13C-2,3,7,8-TCDF	75.8	40.0 - 135	
13C-1,2,3,7,8-PeCDF	78.9	40.0 - 135	
13C-2,3,4,7,8-PeCDF	81.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	95.7	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	79.0	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	78.0	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	77.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	69.0	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	77.0	40.0 - 135	
13C-OCDF	74.7	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	78.7	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/3/2019

Reviewed By: _____

Date: 12/3/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12796-001-OPR
Client ID: OPR
Matrix: Solid
Batch No: X5138

Date Extracted: 11-25-2019
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-11-26-19
GC Column: DB5MS
Units: ng/ml

Acquired: 11-30-2019
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	8.98	7.00 - 13.0	
1,2,3,7,8-PeCDD	49.5	35.0 - 65.0	
1,2,3,4,7,8-HxCDD	48.7	35.0 - 65.0	
1,2,3,6,7,8-HxCDD	50.0	35.0 - 65.0	
1,2,3,7,8,9-HxCDD	49.1	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDD	49.0	35.0 - 65.0	
OCDD	105	70.0 - 130	
2,3,7,8-TCDF	9.58	7.00 - 13.0	
1,2,3,7,8-PeCDF	48.1	35.0 - 65.0	
2,3,4,7,8-PeCDF	47.1	35.0 - 65.0	
1,2,3,4,7,8-HxCDF	48.3	35.0 - 65.0	
1,2,3,6,7,8-HxCDF	49.0	35.0 - 65.0	
2,3,4,6,7,8-HxCDF	48.9	35.0 - 65.0	
1,2,3,7,8,9-HxCDF	49.0	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	50.0	35.0 - 65.0	
1,2,3,4,7,8,9-HpCDF	49.2	35.0 - 65.0	
OCDF	95.5	70.0 - 130	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	80.9	40.0 - 135	
13C-1,2,3,7,8-PeCDD	82.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	91.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	90.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	89.5	40.0 - 135	
13C-OCDD	82.8	40.0 - 135	
13C-2,3,7,8-TCDF	94.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	97.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	94.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	104	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	90.8	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	91.8	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	95.4	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	81.4	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	96.0	40.0 - 135	
13C-OCDF	92.0	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	90.1	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 12/3/2019

Reviewed By: DPV

Date: 12/3/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12796-001-SA
Client ID: MOTCO-2019-DU3-Z-Layer-Comp (570-12498-28)
Matrix: Solid
Batch No: X5138

Date Extracted: 11-25-2019
Date Received: 11-21-2019
Amount: 10.02 g
% Solids: 55.92

ICal: PCDDFAL3-11-26-19
GC Column: DB5MS
Units: pg/g

Acquired: 11-30-2019
2005 WHO TEQ: 4.17
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.218	-	J	0.218	0.0331				
1,2,3,7,8-PeCDD	0.433	-	J	0.433	0.0536				
1,2,3,4,7,8-HxCDD	0.707	-	J	0.0707	0.0540				
1,2,3,6,7,8-HxCDD	3.54	-		0.354	0.0538	Total TCDD	3.08	-	
1,2,3,7,8,9-HxCDD	1.44	-	J	0.144	0.0518	Total PeCDD	3.85	-	M
1,2,3,4,6,7,8-HpCDD	128	-		1.28	0.0695	Total HxCDD	27.0	-	
OCDD	2580	-		0.774	0.116	Total HpCDD	371	-	
2,3,7,8-TCDF	0.789	-		0.0789	0.0345				
1,2,3,7,8-PeCDF	0.397	-	J	0.0119	0.0417				
2,3,4,7,8-PeCDF	0.700	-	J	0.210	0.0449				
1,2,3,4,7,8-HxCDF	1.28	-	J	0.128	0.0351				
1,2,3,6,7,8-HxCDF	0.882	-	J	0.0882	0.0382				
2,3,4,6,7,8-HxCDF	1.16	-	J	0.116	0.0379				
1,2,3,7,8,9-HxCDF	0.408	-	J	0.0408	0.0423	Total TCDF	7.96	-	
1,2,3,4,6,7,8-HpCDF	19.2	-		0.192	0.0415	Total PeCDF	7.55	-	
1,2,3,4,7,8,9-HpCDF	1.38	-	J	0.0138	0.0532	Total HxCDF	23.7	-	
OCDF	60.5	-		0.0182	0.0833	Total HpCDF	65.1	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	66.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	61.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	69.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	66.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	68.2	40.0 - 135	
13C-OCDD	61.6	40.0 - 135	
13C-2,3,7,8-TCDF	68.3	40.0 - 135	
13C-1,2,3,7,8-PeCDF	69.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	71.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	68.6	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	62.4	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	65.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	72.4	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	60.1	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	69.5	40.0 - 135	
13C-OCDF	63.1	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	66.6	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____
Date: 12/3/2019

Reviewed By: DPV
Date: 12/3/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

12796 DOC

Chain of Custody Record

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-11264.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-12498-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 11/20/2019			
City: El Dorado Hills	TAT Requested (days):			
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-12498			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MOTCO-2019-DU3-Z-Layer-Comp (570-12498-28)	10/30/19	09:20 Pacific		Solid			X	1	10 day TAT; J Flag

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by: [redacted]	Date:	Time: [redacted]		Method of Shipment:	
Relinquished by:	Date/Time: 11/20/19 1420	Company	Received by:	Date/Time: 11/21/19 1005	Company Frontier
Relinquished by:	Date/Time:	Company		Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 000006 of 000008

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **12796**

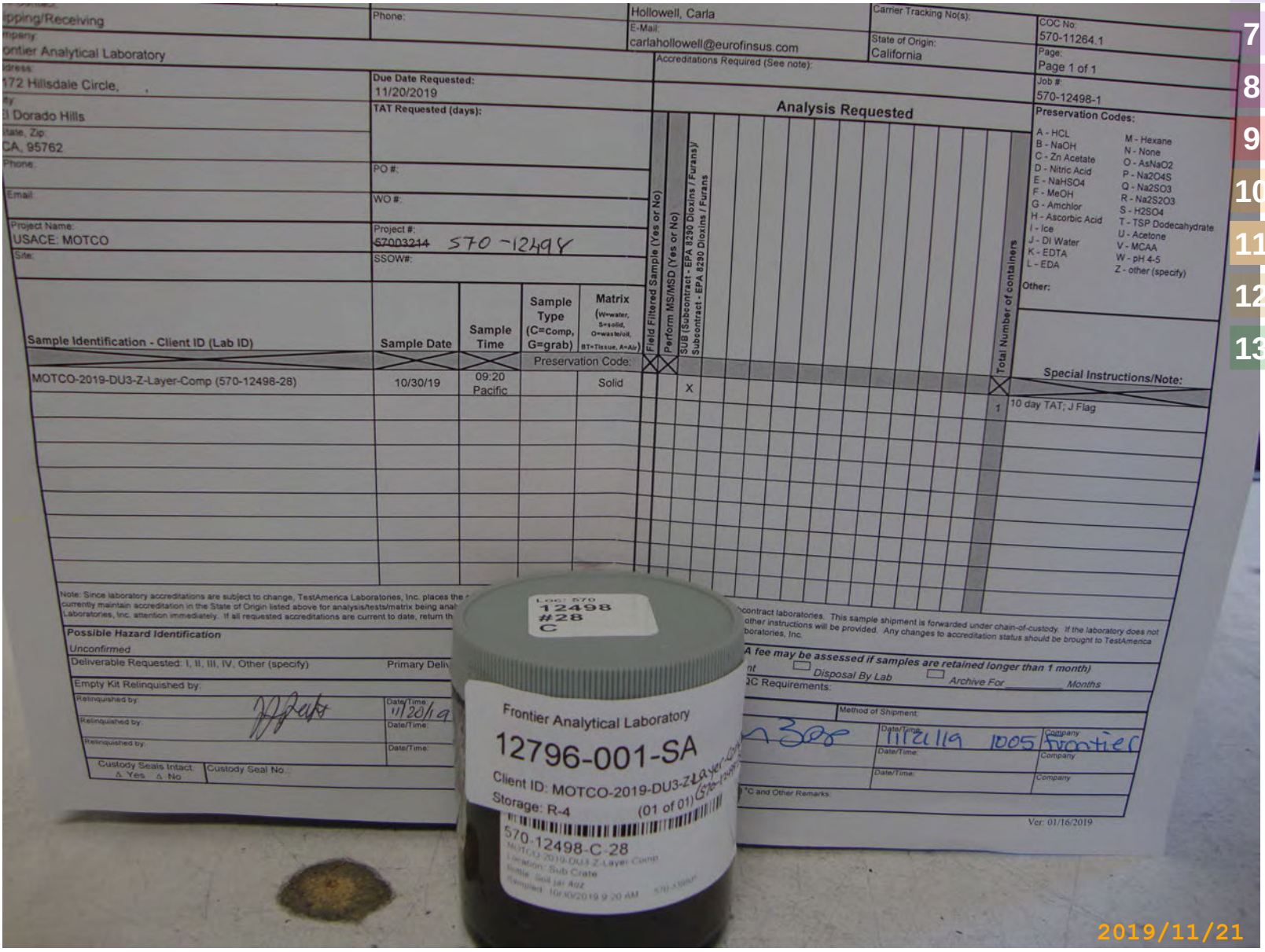
Client:	Eurofins Calscience, Inc.
Client Project ID:	570-12498
Date Received:	11/21/2019
Time Received:	10:05 am
Received By:	KZ
Logged In By:	KZ
# of Samples Received:	1
Duplicates:	0
Storage Location:	R-4

Method of Delivery:	Golden State Overnight
Tracking Number:	547012406
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	No
pH Range of Aqueous Sample	N/A

Anomalies or additional comments:

Please note that the sample was received in a clear glass jar. NELAP requires samples are received in amber glass bottles or jars. Although this anomaly will not affect your results, we are required by NELAP to make a note of it. We will proceed with analysis unless directed otherwise by you.

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com


Shipping/Receiving
Company:
Frontier Analytical Laboratory
Address:
5172 Hillsdale Circle,
City:
El Dorado Hills
State, Zip:
CA, 95762
Phone:
Email:
Project Name:
USACE: MOTCO
Site:
Phone:
Due Date Requested:
11/20/2019
TAT Requested (days):
PO #:
WO #:
Project #:
57003214 570-12498
SSOW#:
Hollowell, Carla
E-Mail:
carlahollowell@eurofinsus.com
Carrier Tracking No(s):
State of Origin:
California
Accreditations Required (See note):
COC No:
570-11264.1
Page:
Page 1 of 1
Job #:
570-12498-1
Analysis Requested
Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:
Sample Identification - Client ID (Lab ID)
Sample Date
Sample Time
Sample Type (C=Comp, G=grab)
Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)
Preservation Code:
Field Filtered Sample (Yes or No)
Perform MS/MSD (Yes or No)
SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans
Total Number of containers
Special Instructions/Note:
MOTCO-2019-DU3-Z-Layer-Comp (570-12498-28)
10/30/19
09:20 Pacific
Solid
X
1
10 day TAT; J Flag
Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)
Primary Deliv
Empty Kit Relinquished by:
Relinquished by:
Date/Time:
11/20/19
Custody Seals Intact:
Custody Seal No.:
Disposal By Lab
Archive For
Months
Method of Shipment:
Date/Time:
11/21/19 1005
Company
Frontier
Ver: 01/16/2019
Loc: 570
12498
#28
C
Frontier Analytical Laboratory
12796-001-SA
Client ID: MOTCO-2019-DU3-Z-Layer-Comp (570-12498-28)
Storage: R-4
(01 of 01)
570-12498-C-28
MOTCO-2019-DU3-Z-Layer-Comp
Location: Sub Crate
Bottle: 8oz Jar 4oz
Sampled: 10/30/2019 9:20 AM

2019/11/21

Loc: 570
12498

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

REQUESTED ANALYSIS

570-12498 Chain of Custody

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	* See Analyte List	
1	DU1-01	MOTCO-2019-DU1-01	10/31/19	09:47	Sed	1	glass jar	X	1
2	DU1-02	MOTCO-2019-DU1-02	10/31/19	09:30	Sed	1	glass jar	X	2
3	DU1-03	MOTCO-2019-DU1-03	10/31/19	08:10	Sed	1	glass jar	X	3
4	DU1-04	MOTCO-2019-DU1-04	10/31/19	08:55	Sed	1	glass jar	X	4
5	DU1-Comp	MOTCO-2019-DU1-Comp	10/31/19	08:10	Sed	2	glass jar	X	5
6	DU1-Comp	MOTCO-2019-DU1-Comp	10/31/19	08:10	Sed	1	ziplock bag	X	6
7	DU1-Z-Layer-Comp	MOTCO-2019-DU1-Z-Layer-Comp	10/31/19	08:10	Sed	1	glass jar	X	7
8									
9									
10									

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

Use MOTCO-2019-DU1-Comp to perform duplicate and MS/MSD on sample run.

RELINQUISHED BY

Sig[redacted]	
Pri[redacted]	
Organization: Pacific EcoRisk	**Organization:** EA
DATE: 11/8/19 **TIME:** 0935	**DATE:** 11/8/19 **TIME:** 1630

RECEIVED BY

Signature: [redacted]	**Signature:** [redacted]
Print: [redacted]	**Print:** [redacted]
Organization: ECI	**Organization:** EC
DATE: 11/8/19 **TIME:** 0935	**DATE:** 11/9/19 **TIME:** 0830

***MATRIX CODES:** (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

1.2/1.7, 1.4/1.9, 1.0/1.5 SCG

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS * See Analyte List										
1	DU2a-01	MOTCO-2019-DU2a-01	10/28/19	15:56	Sed	1	glass jar	X		8								
2	DU2a-02	MOTCO-2019-DU2a-02	10/28/19	15:14	Sed	1	glass jar	X		9								
3	DU2a-03	MOTCO-2019-DU2a-03	10/28/19	14:16	Sed	1	glass jar	X		10								
4	DU2a-04	MOTCO-2019-DU2a-04	10/28/19	13:15	Sed	1	glass jar	X		11								
5	DU2a-Comp	MOTCO-2019-DU2a-Comp	10/28/19	13:15	Sed	1	glass jar	X		12								
6	DU2a-Comp	MOTCO-2019-DU2a-Comp	10/28/19	13:15	Sed	1	ziplock bag	X		13								
7	DU2a-Z-Layer-Comp	MOTCO-2019-DU2a-Z-Layer-Comp	10/28/19	13:15	Sed	1	glass jar	X		14								
8																		
9																		
10																		

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

RELINQUISHED BY		RECEIVED BY	
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	Pacific EcoRisk	**Organization:**	ECL
DATE:	11/8/19 **TIME:** 0935	**DATE:**	11/8/19 **TIME:** 1630
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	ECL	**Organization:**	ECL
DATE:	11/8/19 **TIME:** 0935	**DATE:**	11/9/19 **TIME:** 0830

***MATRIX CODES:** (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

1.2/1.7, 1.4/1.9, 1.0/1.8 SCC

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS: * See Analyte List										
1	DU2b-01	MOTCO-2019-DU2b-01	10/31/19	10:43	Sed	1	glass jar	X		15								
2	DU2b-02	MOTCO-2019-DU2b-02	10/31/19	11:40	Sed	1	glass jar	X		16								
3	DU2b-03	MOTCO-2019-DU2b-03	10/31/19	13:13	Sed	1	glass jar	X		17								
4	DU2b-04	MOTCO-2019-DU2b-04	10/31/19	12:37	Sed	1	glass jar	X		18								
5	DU2b-Comp	MOTCO-2019-DU2b-Comp	10/31/19	10:43	Sed	1	glass jar	X		19								
6	DU2b-Comp	MOTCO-2019-DU2b-Comp	10/31/19	10:43	Sed	1	ziplock bag	X		20								
7	DU2b-Z-Layer-Comp	MOTCO-2019-DU2b-Z-Layer-Comp	10/31/19	10:43	Sed	1	glass jar	X		21								
8																		
9																		
10																		

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

RELINQUISHED BY	RELINQUISHED BY
Signature: [redacted]	Signature: [redacted]
Print: [redacted]	Print: [redacted]
Organization: Pacific EcoRisk	Organization: [illegible]
DATE: 11/8/19 TIME: 0935	DATE: 11/8/19 TIME: 1630
RECEIVED BY	**RECEIVED BY**
Signature: [redacted]	Signature: [redacted]
Print: [redacted]	Print: [redacted]
Organization: [illegible]	Organization: [illegible]
DATE: 11/8/19 TIME: 0935	DATE: 11/9/19 TIME: 0830

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

1.2/1.7, 1.4/1.9, 1.0/1.5 SCG

12498

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS * See Analyte List										
1	DU3-01	MOTCO-2019-DU3-01	10/30/19	09:20	Sed	1	glass jar	X		22								
2	DU3-02	MOTCO-2019-DU3-02	10/30/19	10:04	Sed	1	glass jar	X		23								
3	DU3-03	MOTCO-2019-DU3-03	10/30/19	10:42	Sed	1	glass jar	X		24								
4	DU3-04	MOTCO-2019-DU3-04	10/30/19	11:19	Sed	1	glass jar	X		25								
5	DU3-Comp	MOTCO-2019-DU3-Comp	10/30/19	09:20	Sed	1	glass jar	X		26								
6	DU3-Comp	MOTCO-2019-DU3-Comp	10/30/19	09:20	Sed	1	ziplock bag	X		27								
7	DU3-Z-Layer-Comp	MOTCO-2019-DU3-Z-Layer-Comp	10/30/19	09:20	Sed	1	glass jar	X		28								
8																		
9																		
10																		

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

RELINQUISHED BY

Signature: [redacted]	**Signature:** [redacted]
Print: [redacted]	**Print:** [redacted]
Organization: Pacific EcoRisk	**Organization:** [illegible]
DATE: 11/8/19 **TIME:** 0935	**DATE:** 11/8/19 **TIME:** 1630

RECEIVED BY

Signature: [redacted]	**Signature:** [redacted]
Print: [redacted]	**Print:**
Organizati [redacted]	**Organization:**
DATE: 11/8/19 **TIME:** 0935	**DATE:** 11/9/19 **TIME:** 0830

***MATRIX CODES:** (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

1.2/1.7, 1.4/1.9, 1.0/1.5 SCG

12498

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

REQUESTED ANALYSIS

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	* See Analyte List										
1	DU4-01	MOTCO-2019-DU4-01	10/30/19	17:00	Sed	1	glass jar	X		29								
2	DU4-02	MOTCO-2019-DU4-02	10/30/19	16:15	Sed	1	glass jar	X		30								
3	DU4-03	MOTCO-2019-DU4-03	10/30/19	15:05	Sed	1	glass jar	X		31								
4	DU4-04	MOTCO-2019-DU4-04	10/30/19	14:27	Sed	1	glass jar	X		32								
5	DU4-Comp	MOTCO-2019-DU4-Comp	10/30/19	14:27	Sed	1	glass jar	X		33								
6	DU4-Comp	MOTCO-2019-DU4-Comp	10/30/19	14:27	Sed	1	ziplock bag	X		34								
7	DU4-Z-Layer-Comp	MOTCO-2019-DU4-Z-Layer-Comp	10/30/19	14:27	Sed	1	glass jar	X		35								
8																		
9																		
10																		

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

RELINQUISHED BY

Signature:	[redacted]	**Signature:** [redacted]
Print:	[redacted]	**Print:** [redacted]
Organization: Pacific EcoRisk		**Organization:** EC
DATE: 11/8/19	**TIME:** 0935	**DATE:** 11/8/19 **TIME:** 1030

RECEIVED BY

Signature:	[redacted]	**Signature:** [redacted]
Print:	[redacted]	**Print:** [redacted]
Organization: EC		**Organization:** EC
DATE: 11/8/19	**TIME:** 0935	**DATE:** 11/9/19 **TIME:** 0830

***MATRIX CODES:** (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

1.0/1.5 SC6

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Grain Size	ASTM D4464(M)	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
Mercury	EPA 7471A	0.02 mg/kg	X
Selenium	EPA 7742	0.1 mg/kg	X
2,4'-DDD	EPA 8081B	1 µg/kg	X
2,4'-DDE	EPA 8081B	1 µg/kg	X
2,4'-DDT	EPA 8081B	1 µg/kg	X
4,4'-DDD	EPA 8081B	1 µg/kg	X
4,4'-DDE	EPA 8081B	1 µg/kg	X
4,4'-DDT	EPA 8081B	1 µg/kg	X
Total DDT	EPA 8081B	1 µg/kg	X
Aldrin	EPA 8081B	2 µg/kg	X
alpha-BHC	EPA 8081B	2 µg/kg	X
beta-BHC	EPA 8081B	2 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	2 µg/kg	X
delta-BHC	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Dieldrin	EPA 8081B	2 µg/kg	X
Endosulfan I	EPA 8081B	2 µg/kg	X
Endosulfan II	EPA 8081B	2 µg/kg	X
Endosulfan Sulfate	EPA 8081B	2 µg/kg	X
Endrin	EPA 8081B	2 µg/kg	X
Endrin Aldehyde	EPA 8081B	2 µg/kg	X
Heptachlor	EPA 8081B	2 µg/kg	X
Heptachlor Epoxide	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 018	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 028	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 031	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 033	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 044	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 049	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 052	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 056	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 060	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 066	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 070	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 074	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 087	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 095	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 097	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 099	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 101	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 105	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 110	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 118	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 128	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 132	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 138	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 141	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 149	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 151	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 153	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 156	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 158	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 170	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 174	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 177	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 180	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 183	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 187	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 194	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 195	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 201	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 203	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
Acenaphthene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benzo(a)pyrene	EPA 8270C	20 µg/kg	X
Benzo(e)pyrene	EPA 8270C	20 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	20 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	20 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	20 µg/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzothiophene	EPA 8270C	20 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	20 µg/kg	X
Fluoranthene	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	20 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins			X
Dioxins/Furans	EPA 8290	1 ng/kg	X

QA/QC

Please use MOTCO-2019-DU1-Comp to perform duplicate and MS/MSD on sample run. Standard TAT.
Samples frozen since 11/5/19.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Grain Size	ASTM D4464(M)	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
Mercury	EPA 7471A	0.02 mg/kg	X
Selenium	EPA 7742	0.1 mg/kg	X
2,4'-DDD	EPA 8081B	1 µg/kg	X
2,4'-DDE	EPA 8081B	1 µg/kg	X
2,4'-DDT	EPA 8081B	1 µg/kg	X
4,4'-DDD	EPA 8081B	1 µg/kg	X
4,4'-DDE	EPA 8081B	1 µg/kg	X
4,4'-DDT	EPA 8081B	1 µg/kg	X
Total DDT	EPA 8081B	1 µg/kg	X
Aldrin	EPA 8081B	2 µg/kg	X
alpha-BHC	EPA 8081B	2 µg/kg	X
beta-BHC	EPA 8081B	2 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	2 µg/kg	X
delta-BHC	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Dieldrin	EPA 8081B	2 µg/kg	X
Endosulfan I	EPA 8081B	2 µg/kg	X
Endosulfan II	EPA 8081B	2 µg/kg	X
Endosulfan Sulfate	EPA 8081B	2 µg/kg	X
Endrin	EPA 8081B	2 µg/kg	X
Endrin Aldehyde	EPA 8081B	2 µg/kg	X
Heptachlor	EPA 8081B	2 µg/kg	X
Heptachlor Epoxide	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 018	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 028	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 031	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 033	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 044	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 049	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 052	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 056	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 060	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 066	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 070	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 074	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 087	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 095	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 097	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 099	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 101	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 105	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 110	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 118	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 128	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 132	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 138	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 141	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 149	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 151	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 153	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 156	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 158	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 170	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 174	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 177	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 180	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 183	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 187	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 194	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 195	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 201	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 203	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
Acenaphthene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benzo(a)pyrene	EPA 8270C	20 µg/kg	X
Benzo(e)pyrene	EPA 8270C	20 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	20 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	20 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	20 µg/kg	X

12498

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzothiophene	EPA 8270C	20 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	20 µg/kg	X
Fluoranthene	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	20 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins			X
Dioxins/Furans	EPA 8290	1 ng/kg	X

QA/QC

Please use MOTCO-2019-DU1-Comp to perform duplicate and MS/MSD on sample run. Standard TAT.
Samples frozen since 11/5/19.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

570-12498 Chain of Custody

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS: * See Analyte List
1	DU3-Z-Layer-Comp	MOTCO-2019-DU3-Z-Layer-Comp	10/30/19	09:20	Sed	2	glass jar	X
2								
3								
4								
5								
6								
7								
8								
9								
10								

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

Additional sample mass sent for analysis. MOTCO-2019-DU3-Z-Layer-Comp is a replacement sample for 570-12498-28.

RELINQUISHED BY	RELINQUISHED BY
Signature: [redacted]	Signature: [redacted]
Print:	Print:
Organization: Pacific EcoRisk	Organization: EE
DATE: 11/14/19 TIME: 1245	DATE: 11/14/19 TIME: 1650
RECEIVED BY	
Signature: [redacted]	Signature: [redacted]
Print:	Print:
Organization: EE	Organization: EE
DATE: 11/14/19 TIME: 1245	DATE: 11/15/19 TIME: 0950

***MATRIX CODES**: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	EPA 160.3	0.10%	X
Solids, Volatile	160.4		
Total Organic Carbon	EPA 415.1	0.10%	X
Sulfides	9030M		
Grain Size	ASTM D4464(M)	0.10%	X
Ammonia as Nitrogen	350.3M		
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
Mercury	EPA 7471A	0.02 mg/kg	X
Selenium	EPA 7742	0.1 mg/kg	X
2,4'-DDD	EPA 8081B	1 µg/kg	X
2,4'-DDE	EPA 8081B	1 µg/kg	X
2,4'-DDT	EPA 8081B	1 µg/kg	X
4,4'-DDD	EPA 8081B	1 µg/kg	X
4,4'-DDE	EPA 8081B	1 µg/kg	X
4,4'-DDT	EPA 8081B	1 µg/kg	X
Total DDT	EPA 8081B	1 µg/kg	X
Aldrin	EPA 8081B	2 µg/kg	X
alpha-BHC	EPA 8081B	2 µg/kg	X
beta-BHC	EPA 8081B	2 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	2 µg/kg	X
delta-BHC	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Dieldrin	EPA 8081B	2 µg/kg	X
Endosulfan I	EPA 8081B	2 µg/kg	X
Endosulfan II	EPA 8081B	2 µg/kg	X
Endosulfan Sulfate	EPA 8081B	2 µg/kg	X
Endrin	EPA 8081B	2 µg/kg	X
Endrin Aldehyde	EPA 8081B	2 µg/kg	X
Endrin ketone	EPA 8081B	2 µg/kg	
Heptachlor	EPA 8081B	2 µg/kg	X
Heptachlor Epoxide	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 018	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 028	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 031	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 033	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 044	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 049	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 052	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 056	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 060	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 066	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 070	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 074	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 087	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 095	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 097	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 099	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 101	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 105	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 110	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 118	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 128	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 132	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 138	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 141	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 149	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 151	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 153	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 156	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 158	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 170	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 174	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 177	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 180	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 183	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 187	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 194	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 195	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 201	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 203	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
Acenaphthene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benzo(a)pyrene	EPA 8270C	20 µg/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**

Project #: 30945

Site #: **Individual Cores**: MOTCO-2019-DU1-01, MOTCO-2019-DU1-02, MOTCO-2019-DU1-03, MOTCO-2019-DU1-04, MOTCO-2019-DU2a-01, MOTCO-2019-DU2a-02, MOTCO-2019-DU2a-03, MOTCO-2019-DU2a-04, MOTCO-2019-DU2b-01, MOTCO-2019-DU2b-02, MOTCO-2019-DU2b-03, MOTCO-2019-DU2b-04, MOTCO-2019-DU3-01, MOTCO-2019-DU3-02, MOTCO-2019-DU3-03, MOTCO-2019-DU3-04, MOTCO-2019-DU4-01, MOTCO-2019-DU4-02, MOTCO-2019-DU4-03, and MOTCO-2019-DU4-04. **Composite Samples**: MOTCO-2019-DU1-Comp, MOTCO-2019-DU1-Z-Layer-Comp, MOTCO-2019-DU2a-Comp, MOTCO-2019-DU2a-Z-Layer-Comp, MOTCO-2019-DU2b-Comp, MOTCO-2019-DU2b-Z-Layer-Comp, MOTCO-2019-DU3-Comp, MOTCO-2019-DU3-Z-Layer-Comp, MOTCO-2019-DU4-Comp, and MOTCO-2019-DU4-Z-Layer-Comp.

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Benzo(e)pyrene	EPA 8270C	20 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	20 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	20 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	20 µg/kg	X
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzothiophene	EPA 8270C	20 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	20 µg/kg	X
Fluoranthene	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	20 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins			X
Dioxins/Furans	EPA 8290	1 ng/kg	X

QA/QC

Please use MOTCO-2019-DU1-Comp to perform duplicate and MS/MSD on sample run. Standard TAT.
Sample frozen since 11/5/19.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

12498

GSO GLS

800-322-5555
www.gso.com

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Tracking #: 546881835

SDS

GSO GLS

800-322-5555
www.gso.com

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H

Tracking #: 546881836

SDS

GSO GLS

800-322-5555
www.gso.com

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Ship To
CEL
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD: $0.00
Weight: 0 lb(s)
Reference:
PACIFIC ECORISK
Delivery Instructions:

Signature Type: STANDARD

Tracking #: 546881837

SDS

GARDEN GROVE

570-12498 Waybill

S92841A

11326484

ORC CA927-CL0

Print Date: 11/8/2019 3:12 PM

Package 3 of 3

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional packages - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.

GSO GLS

800-322-5555
www.gso.com

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Ship To
CEL
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD: $0.00
Weight: 0 lb(s)
Reference:
ARCADIS,P66,PACIFIC ECORISK,WEISS
Delivery Instructions:

Signature Type: STANDARD

Tracking #: 546945210

NPS

GARDEN GROVE

S92841A

11597328

ORC CA927-CL0

Print Date: 11/14/2019 3:00 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.
Step 2: Fold this page in half.
Step 3: Securely attach this label to your package and do not cover the barcode.

TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all of the GSO service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at www.gso.com.

570-12498 Waybill

Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-12498-1

Login Number: 12498
List Number: 1
Creator: Castro, Joy

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Container received broken. No volume could be salvaged for analysis.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-12498-2
Client Project/Site: USACE: MOTCO

For:
Pacific EcoRisk Inc
2250 Cordelia Rd
Fairfield, California 94534

[redacted]

Authorized for release by:
12/19/2019 8:14:09 PM

[redacted], Project Manager I
(714)895-5494
carlahollowell@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Job ID: 570-12498-2

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-12498-2

Comments
No additional comments.

Receipt
The samples were received on 11/9/2019 8:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.5º C, 1.7º C and 1.9º C.

Receipt Exceptions

Container for the following sample was received broken: MOTCO-2019-DU3-Z-Layer-Comp (570-12498-28).

Received replacement for the broken jar today, 11/18/19 @ 0950; 2-8oz jar.

Metals
Method 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-38419 and 570-38998 and analytical batch 570-39524 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-38944 and 570-38967 and analytical batch 570-39530 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 6020: Due to sample matrix effect on the internal standard (ISTD), a dilution was required for the following samples: MOTCO-2019-DU2a-01 (570-12498-8), MOTCO-2019-DU2a-02 (570-12498-9), MOTCO-2019-DU2a-03 (570-12498-10), MOTCO-2019-DU2a-04 (570-12498-11), MOTCO-2019-DU2a-Comp (570-12498-12), MOTCO-2019-DU2a-Z-Layer-Comp (570-12498-14), MOTCO-2019-DU2b-01 (570-12498-15), MOTCO-2019-DU2b-02 (570-12498-16), MOTCO-2019-DU2b-03 (570-12498-17), MOTCO-2019-DU2b-04 (570-12498-18), MOTCO-2019-DU2b-Comp (570-12498-19), MOTCO-2019-DU2b-Z-Layer-Comp (570-12498-21), MOTCO-2019-DU3-01 (570-12498-22), MOTCO-2019-DU3-02 (570-12498-23), MOTCO-2019-DU3-03 (570-12498-24), MOTCO-2019-DU3-04 (570-12498-25) and MOTCO-2019-DU4-02 (570-12498-30).

The results in this report are being reported from the analysis performed before the above-mentioned necessary diluiton. The internal standard was out of range in the intial run due to suspected matrix interference and, for that reason, these results are estimates and may not reflect the true value of specific parameters present in the associated samples. This was explained to Pacific EcoRisk team members on December 18, 2019. Results were reported pursuant to a request for more data from Pacific EcoRisk.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.38	0.165	mg/Kg	☼	12/13/19 15:30	12/19/19 13:40	20
Selenium	**0.494**	**J**	1.38	0.363	mg/Kg	☼	12/13/19 15:30	12/19/19 13:40	20
Silver	**0.806**	**J**	1.38	0.195	mg/Kg	☼	12/13/19 15:30	12/19/19 13:40	20

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.33	0.160	mg/Kg	☼	12/13/19 15:30	12/19/19 13:43	20
Selenium	ND		1.33	0.352	mg/Kg	☼	12/13/19 15:30	12/19/19 13:43	20
Silver	**0.446**	**J**	1.33	0.189	mg/Kg	☼	12/13/19 15:30	12/19/19 13:43	20

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.212**	**J**	1.51	0.181	mg/Kg	☼	12/13/19 15:30	12/19/19 13:46	20
Selenium	**0.400**	**J**	1.51	0.398	mg/Kg	☼	12/13/19 15:30	12/19/19 13:46	20
Silver	**0.384**	**J**	1.51	0.214	mg/Kg	☼	12/13/19 15:30	12/19/19 13:46	20

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.369**	**J**	1.59	0.191	mg/Kg	☼	12/13/19 15:30	12/19/19 13:48	20
Selenium	**0.874**	**J**	1.59	0.420	mg/Kg	☼	12/13/19 15:30	12/19/19 13:48	20
Silver	**0.333**	**J**	1.59	0.226	mg/Kg	☼	12/13/19 15:30	12/19/19 13:48	20

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.173**	**J**	1.40	0.168	mg/Kg	☼	12/13/19 15:30	12/19/19 13:51	20
Selenium	**0.640**	**J**	1.40	0.370	mg/Kg	☼	12/13/19 15:30	12/19/19 13:51	20
Silver	ND		1.40	0.199	mg/Kg	☼	12/13/19 15:30	12/19/19 13:51	20

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-7
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.45	0.174	mg/Kg	☼	12/13/19 15:30	12/19/19 14:01	20
Selenium	**0.391**	**J**	1.45	0.383	mg/Kg	☼	12/13/19 15:30	12/19/19 14:01	20
Silver	**0.989**	**J**	1.45	0.206	mg/Kg	☼	12/13/19 15:30	12/19/19 14:01	20

Client Sample ID: MOTCO-2019-DU2a-01
Date Collected: 10/28/19 15:56
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-8
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.88	0.226	mg/Kg	☼	12/13/19 18:00	12/16/19 18:43	20
Selenium	**0.534**	**J**	1.88	0.496	mg/Kg	☼	12/13/19 18:00	12/16/19 18:43	20
Silver	**0.676**	**J**	1.88	0.267	mg/Kg	☼	12/13/19 18:00	12/16/19 18:43	20

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU2a-02
Date Collected: 10/28/19 15:14
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-9
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.58	0.190	mg/Kg	☼	12/13/19 18:00	12/16/19 18:54	20
Selenium	**0.576**	**J**	1.58	0.418	mg/Kg	☼	12/13/19 18:00	12/16/19 18:54	20
Silver	**0.776**	**J**	1.58	0.225	mg/Kg	☼	12/13/19 18:00	12/16/19 18:54	20

Client Sample ID: MOTCO-2019-DU2a-03
Date Collected: 10/28/19 14:16
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-10
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.60	0.192	mg/Kg	☼	12/13/19 18:00	12/18/19 18:49	20
Selenium	ND		1.60	0.423	mg/Kg	☼	12/13/19 18:00	12/18/19 18:49	20
Silver	**0.310**	**J**	1.60	0.227	mg/Kg	☼	12/13/19 18:00	12/18/19 18:49	20

Client Sample ID: MOTCO-2019-DU2a-04
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-11
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.54	0.185	mg/Kg	☼	12/13/19 18:00	12/18/19 18:52	20
Selenium	**0.467**	**J**	1.54	0.407	mg/Kg	☼	12/13/19 18:00	12/18/19 18:52	20
Silver	ND		1.54	0.219	mg/Kg	☼	12/13/19 18:00	12/18/19 18:52	20

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-12
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.69	0.203	mg/Kg	☼	12/13/19 18:00	12/18/19 18:55	20
Selenium	ND		1.69	0.446	mg/Kg	☼	12/13/19 18:00	12/18/19 18:55	20
Silver	ND		1.69	0.240	mg/Kg	☼	12/13/19 18:00	12/18/19 18:55	20

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp
Date Collected: 10/28/19 13:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-14
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.227**	**J**	1.83	0.220	mg/Kg	☼	12/13/19 18:00	12/18/19 18:58	20
Selenium	**0.856**	**J**	1.83	0.483	mg/Kg	☼	12/13/19 18:00	12/18/19 18:58	20
Silver	ND		1.83	0.260	mg/Kg	☼	12/13/19 18:00	12/18/19 18:58	20

Client Sample ID: MOTCO-2019-DU2b-01
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-15
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.213**	**J**	1.76	0.211	mg/Kg	☼	12/13/19 18:00	12/18/19 19:00	20
Selenium	**0.550**	**J**	1.76	0.465	mg/Kg	☼	12/13/19 18:00	12/18/19 19:00	20
Silver	ND		1.76	0.250	mg/Kg	☼	12/13/19 18:00	12/18/19 19:00	20

Client Sample ID: MOTCO-2019-DU2b-02
Date Collected: 10/31/19 11:40
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-16
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.255**	**J**	1.85	0.222	mg/Kg	☼	12/13/19 18:00	12/18/19 19:03	20
Selenium	**0.763**	**J**	1.85	0.489	mg/Kg	☼	12/13/19 18:00	12/18/19 19:03	20
Silver	ND		1.85	0.263	mg/Kg	☼	12/13/19 18:00	12/18/19 19:03	20

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU2b-03
Date Collected: 10/31/19 13:13
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-17
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.98	0.238	mg/Kg	☼	12/13/19 18:00	12/18/19 19:06	20
Selenium	**0.600**	**J**	1.98	0.523	mg/Kg	☼	12/13/19 18:00	12/18/19 19:06	20
Silver	ND		1.98	0.281	mg/Kg	☼	12/13/19 18:00	12/18/19 19:06	20

Client Sample ID: MOTCO-2019-DU2b-04
Date Collected: 10/31/19 12:37
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-18
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.92	0.230	mg/Kg	☼	12/13/19 18:00	12/18/19 19:22	20
Selenium	**0.596**	**J**	1.92	0.507	mg/Kg	☼	12/13/19 18:00	12/18/19 19:22	20
Silver	**0.378**	**J**	1.92	0.273	mg/Kg	☼	12/13/19 18:00	12/18/19 19:22	20

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-19
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.226**	**J**	1.81	0.217	mg/Kg	☼	12/13/19 18:00	12/18/19 19:25	20
Selenium	**0.701**	**J**	1.81	0.478	mg/Kg	☼	12/13/19 18:00	12/18/19 19:25	20
Silver	ND		1.81	0.257	mg/Kg	☼	12/13/19 18:00	12/18/19 19:25	20

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp
Date Collected: 10/31/19 10:43
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-21
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.96	0.235	mg/Kg	☼	12/13/19 18:00	12/18/19 19:28	20
Selenium	**0.660**	**J**	1.96	0.517	mg/Kg	☼	12/13/19 18:00	12/18/19 19:28	20
Silver	ND		1.96	0.278	mg/Kg	☼	12/13/19 18:00	12/18/19 19:28	20

Client Sample ID: MOTCO-2019-DU3-01
Date Collected: 10/30/19 09:20
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-22
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.52	0.183	mg/Kg	☼	12/13/19 18:00	12/18/19 19:31	20
Selenium	**0.515**	**J**	1.52	0.402	mg/Kg	☼	12/13/19 18:00	12/18/19 19:31	20
Silver	ND		1.52	0.216	mg/Kg	☼	12/13/19 18:00	12/18/19 19:31	20

Client Sample ID: MOTCO-2019-DU3-02
Date Collected: 10/30/19 10:04
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-23
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.348**	**J**	1.74	0.209	mg/Kg	☼	12/13/19 18:00	12/18/19 19:33	20
Selenium	**0.465**	**J**	1.74	0.460	mg/Kg	☼	12/13/19 18:00	12/18/19 19:33	20
Silver	ND		1.74	0.247	mg/Kg	☼	12/13/19 18:00	12/18/19 19:33	20

Client Sample ID: MOTCO-2019-DU3-03
Date Collected: 10/30/19 10:42
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-24
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.390**	**J**	1.96	0.235	mg/Kg	☼	12/13/19 18:00	12/18/19 19:36	20
Selenium	ND		1.96	0.517	mg/Kg	☼	12/13/19 18:00	12/18/19 19:36	20
Silver	ND		1.96	0.278	mg/Kg	☼	12/13/19 18:00	12/18/19 19:36	20

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Method: 6020 - Metals (ICP/MS)

Client Sample ID: MOTCO-2019-DU3-04
Date Collected: 10/30/19 11:19
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-25
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.409**	**J**	2.01	0.241	mg/Kg	☼	12/13/19 18:00	12/18/19 19:39	20
Selenium	**0.927**	**J**	2.01	0.531	mg/Kg	☼	12/13/19 18:00	12/18/19 19:39	20
Silver	ND		2.01	0.285	mg/Kg	☼	12/13/19 18:00	12/18/19 19:39	20

Client Sample ID: MOTCO-2019-DU4-02
Date Collected: 10/30/19 16:15
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-30
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.640**	**J**	1.58	0.189	mg/Kg	☼	12/13/19 18:00	12/18/19 19:42	20
Selenium	ND		1.58	0.416	mg/Kg	☼	12/13/19 18:00	12/18/19 19:42	20
Silver	ND		1.58	0.224	mg/Kg	☼	12/13/19 18:00	12/18/19 19:42	20

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-38967/1-A ^20
Matrix: Solid
Analysis Batch: 39530

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38967

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.01	0.121	mg/Kg		12/13/19 15:30	12/16/19 20:55	20
Selenium	ND		1.01	0.267	mg/Kg		12/13/19 15:30	12/16/19 20:55	20
Silver	ND		1.01	0.143	mg/Kg		12/13/19 15:30	12/16/19 20:55	20

Lab Sample ID: LCS 570-38967/2-A ^20
Matrix: Solid
Analysis Batch: 39530

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38967

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	24.6	25.39		mg/Kg		103	80 - 120
Cadmium	24.6	26.25		mg/Kg		107	80 - 120
Chromium	24.6	25.41		mg/Kg		103	80 - 120
Copper	24.6	25.75		mg/Kg		105	80 - 120
Lead	24.6	24.87		mg/Kg		101	80 - 120
Nickel	24.6	25.99		mg/Kg		105	80 - 120
Selenium	24.6	25.75		mg/Kg		105	80 - 120
Silver	12.3	12.09		mg/Kg		98	80 - 120
Zinc	24.6	26.02		mg/Kg		106	80 - 120

Lab Sample ID: LCSD 570-38967/3-A ^20
Matrix: Solid
Analysis Batch: 39530

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38967

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	24.4	25.13		mg/Kg		103	80 - 120	1	20
Cadmium	24.4	26.15		mg/Kg		107	80 - 120	0	20
Chromium	24.4	25.23		mg/Kg		103	80 - 120	1	20
Copper	24.4	25.86		mg/Kg		106	80 - 120	0	20
Lead	24.4	25.38		mg/Kg		104	80 - 120	2	20
Nickel	24.4	25.00		mg/Kg		103	80 - 120	4	20
Selenium	24.4	24.96		mg/Kg		102	80 - 120	3	20
Silver	12.2	11.97		mg/Kg		98	80 - 120	1	20
Zinc	24.4	26.44		mg/Kg		108	80 - 120	2	20

Lab Sample ID: MB 570-38998/1-A ^20
Matrix: Solid
Analysis Batch: 39524

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38998

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		0.980	0.118	mg/Kg		12/13/19 18:00	12/16/19 18:32	20
Selenium	ND		0.980	0.259	mg/Kg		12/13/19 18:00	12/16/19 18:32	20
Silver	ND		0.980	0.139	mg/Kg		12/13/19 18:00	12/16/19 18:32	20

Lab Sample ID: LCS 570-38998/2-A ^20
Matrix: Solid
Analysis Batch: 39524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38998

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	24.4	25.40		mg/Kg		104	80 - 120

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 570-38998/2-A ^20
Matrix: Solid
Analysis Batch: 39524

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38998

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	24.4	25.62		mg/Kg		105	80 - 120
Chromium	24.4	25.13		mg/Kg		103	80 - 120
Copper	24.4	25.93		mg/Kg		106	80 - 120
Lead	24.4	24.73		mg/Kg		101	80 - 120
Nickel	24.4	25.35		mg/Kg		104	80 - 120
Selenium	24.4	25.18		mg/Kg		103	80 - 120
Silver	12.2	11.78		mg/Kg		97	80 - 120
Zinc	24.4	25.83		mg/Kg		106	80 - 120

Lab Sample ID: LCSD 570-38998/3-A ^20
Matrix: Solid
Analysis Batch: 39524

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38998

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	25.1	25.95		mg/Kg		103	80 - 120	2	20
Cadmium	25.1	26.36		mg/Kg		105	80 - 120	3	20
Chromium	25.1	25.83		mg/Kg		103	80 - 120	3	20
Copper	25.1	26.29		mg/Kg		105	80 - 120	1	20
Lead	25.1	25.50		mg/Kg		101	80 - 120	3	20
Nickel	25.1	25.96		mg/Kg		103	80 - 120	2	20
Selenium	25.1	25.31		mg/Kg		101	80 - 120	1	20
Silver	12.6	12.37		mg/Kg		98	80 - 120	5	20
Zinc	25.1	27.15		mg/Kg		108	80 - 120	5	20

Lab Sample ID: 570-12498-8 MS
Matrix: Sediment
Analysis Batch: 39524

Client Sample ID: MOTCO-2019-DU2a-01
Prep Type: Total/NA
Prep Batch: 38998

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	6.19		43.3	48.29		mg/Kg	☼	97	72 - 132
Cadmium	ND		43.3	47.14		mg/Kg	☼	109	85 - 121
Chromium	55.1		43.3	95.82		mg/Kg	☼	94	20 - 182
Copper	25.8		43.3	65.50		mg/Kg	☼	92	25 - 157
Lead	7.13		43.3	47.67		mg/Kg	☼	94	62 - 134
Nickel	69.8		43.3	113.8		mg/Kg	☼	102	46 - 154
Selenium	0.534	J	43.3	43.46		mg/Kg	☼	99	54 - 132
Silver	0.676	J	21.7	19.56		mg/Kg	☼	87	78 - 126
Zinc	65.9		43.3	107.5		mg/Kg	☼	96	23 - 173

Lab Sample ID: 570-12498-8 MSD
Matrix: Sediment
Analysis Batch: 39524

Client Sample ID: MOTCO-2019-DU2a-01
Prep Type: Total/NA
Prep Batch: 38998

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	6.19		42.5	47.91		mg/Kg	☼	98	72 - 132	1	13
Cadmium	ND		42.5	46.64		mg/Kg	☼	110	85 - 121	1	12
Chromium	55.1		42.5	96.16		mg/Kg	☼	97	20 - 182	0	15
Copper	25.8		42.5	65.92		mg/Kg	☼	94	25 - 157	1	22
Lead	7.13		42.5	46.83		mg/Kg	☼	93	62 - 134	2	23

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 570-12498-8 MSD
Matrix: Sediment
Analysis Batch: 39524

Client Sample ID: MOTCO-2019-DU2a-01
Prep Type: Total/NA
Prep Batch: 38998

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nickel	69.8		42.5	110.9		mg/Kg	☼	97	46 - 154	3	15
Selenium	0.534	J	42.5	43.24		mg/Kg	☼	100	54 - 132	1	14
Silver	0.676	J	21.3	19.77		mg/Kg	☼	90	78 - 126	1	15
Zinc	65.9		42.5	106.1		mg/Kg	☼	94	23 - 173	1	18

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Client Sample ID: MOTCO-2019-DU1-01
Date Collected: 10/31/19 09:47
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-1
Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.00 g	100 mL	38967	12/13/19 15:30	X7RL	ECL 1
Total/NA	Analysis	6020		20			40238	12/19/19 13:40	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU1-02
Date Collected: 10/31/19 09:30
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-2
Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.02 g	100 mL	38967	12/13/19 15:30	X7RL	ECL 1
Total/NA	Analysis	6020		20			40238	12/19/19 13:43	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU1-03
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-3
Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.04 g	100 mL	38967	12/13/19 15:30	X7RL	ECL 1
Total/NA	Analysis	6020		20			40238	12/19/19 13:46	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU1-04
Date Collected: 10/31/19 08:55
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-4
Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.06 g	100 mL	38967	12/13/19 15:30	X7RL	ECL 1
Total/NA	Analysis	6020		20			40238	12/19/19 13:48	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 10/31/19 08:10
Date Received: 11/09/19 08:30

Lab Sample ID: 570-12498-5
Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.95 g	100 mL	38967	12/13/19 15:30	X7RL	ECL 1
Total/NA	Analysis	6020		20			40238	12/19/19 13:51	UFLE	ECL 1
	Instrument ID: ICPMS05									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Client Sample ID: MOTCO-2019-DU1-Z-Layer-Comp
Lab Sample ID: 570-12498-7
Date Collected: 10/31/19 08:10
Matrix: Sediment
Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.07 g	100 mL	38967	12/13/19 15:30	X7RL	ECL 1
Total/NA	Analysis	6020		20			40238	12/19/19 14:01	UFLE	ECL 1
	Instrument ID:	ICPMS05								

Client Sample ID: MOTCO-2019-DU2a-01
Lab Sample ID: 570-12498-8
Date Collected: 10/28/19 15:56
Matrix: Sediment
Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.90 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			39524	12/16/19 18:43	UFLE	ECL 1
	Instrument ID:	ICPMS05								

Client Sample ID: MOTCO-2019-DU2a-02
Lab Sample ID: 570-12498-9
Date Collected: 10/28/19 15:14
Matrix: Sediment
Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.06 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			39524	12/16/19 18:54	UFLE	ECL 1
	Instrument ID:	ICPMS05								

Client Sample ID: MOTCO-2019-DU2a-03
Lab Sample ID: 570-12498-10
Date Collected: 10/28/19 14:16
Matrix: Sediment
Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.08 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 18:49	UFLE	ECL 1
	Instrument ID:	ICPMS05								

Client Sample ID: MOTCO-2019-DU2a-04
Lab Sample ID: 570-12498-11
Date Collected: 10/28/19 13:15
Matrix: Sediment
Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.07 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 18:52	UFLE	ECL 1
	Instrument ID:	ICPMS05								

Client Sample ID: MOTCO-2019-DU2a-Comp

Lab Sample ID: 570-12498-12

Date Collected: 10/28/19 13:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.02 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 18:55	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2a-Z-Layer-Comp

Lab Sample ID: 570-12498-14

Date Collected: 10/28/19 13:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.91 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 18:58	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-01

Lab Sample ID: 570-12498-15

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.98 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:00	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-02

Lab Sample ID: 570-12498-16

Date Collected: 10/31/19 11:40

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.05 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:03	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-03

Lab Sample ID: 570-12498-17

Date Collected: 10/31/19 13:13

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.00 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:06	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-04

Lab Sample ID: 570-12498-18

Date Collected: 10/31/19 12:37

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.97 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:22	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-Comp

Lab Sample ID: 570-12498-19

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.04 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:25	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-Z-Layer-Comp

Lab Sample ID: 570-12498-21

Date Collected: 10/31/19 10:43

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.90 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:28	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU3-01

Lab Sample ID: 570-12498-22

Date Collected: 10/30/19 09:20

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			1.96 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:31	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU3-02

Lab Sample ID: 570-12498-23

Date Collected: 10/30/19 10:04

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.02 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:33	UFLE	ECL 1
	Instrument ID: ICPMS05									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Client Sample ID: MOTCO-2019-DU3-03

Lab Sample ID: 570-12498-24

Date Collected: 10/30/19 10:42

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.05 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:36	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU3-04

Lab Sample ID: 570-12498-25

Date Collected: 10/30/19 11:19

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.09 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:39	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU4-02

Lab Sample ID: 570-12498-30

Date Collected: 10/30/19 16:15

Matrix: Sediment

Date Received: 11/09/19 08:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38419	12/11/19 18:10	C4LT	ECL 1
Total/NA	Prep	3050B			2.09 g	100 mL	38998	12/13/19 18:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			40116	12/18/19 19:42	UFLE	ECL 1
	Instrument ID: ICPMS05									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-20

Method Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Method	Method Description	Protocol	Laboratory
6020	Metals (ICP/MS)	SW846	ECL 1
3050B	Preparation, Metals	SW846	ECL 1
Homogenize Prep	Preparation, Homogenization	None	ECL 1

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-12498-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-12498-1	MOTCO-2019-DU1-01	Sediment	10/31/19 09:47	11/09/19 08:30	
570-12498-2	MOTCO-2019-DU1-02	Sediment	10/31/19 09:30	11/09/19 08:30	
570-12498-3	MOTCO-2019-DU1-03	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-4	MOTCO-2019-DU1-04	Sediment	10/31/19 08:55	11/09/19 08:30	
570-12498-5	MOTCO-2019-DU1-Comp	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-7	MOTCO-2019-DU1-Z-Layer-Comp	Sediment	10/31/19 08:10	11/09/19 08:30	
570-12498-8	MOTCO-2019-DU2a-01	Sediment	10/28/19 15:56	11/09/19 08:30	
570-12498-9	MOTCO-2019-DU2a-02	Sediment	10/28/19 15:14	11/09/19 08:30	
570-12498-10	MOTCO-2019-DU2a-03	Sediment	10/28/19 14:16	11/09/19 08:30	
570-12498-11	MOTCO-2019-DU2a-04	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-12	MOTCO-2019-DU2a-Comp	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-14	MOTCO-2019-DU2a-Z-Layer-Comp	Sediment	10/28/19 13:15	11/09/19 08:30	
570-12498-15	MOTCO-2019-DU2b-01	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-16	MOTCO-2019-DU2b-02	Sediment	10/31/19 11:40	11/09/19 08:30	
570-12498-17	MOTCO-2019-DU2b-03	Sediment	10/31/19 13:13	11/09/19 08:30	
570-12498-18	MOTCO-2019-DU2b-04	Sediment	10/31/19 12:37	11/09/19 08:30	
570-12498-19	MOTCO-2019-DU2b-Comp	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-21	MOTCO-2019-DU2b-Z-Layer-Comp	Sediment	10/31/19 10:43	11/09/19 08:30	
570-12498-22	MOTCO-2019-DU3-01	Sediment	10/30/19 09:20	11/09/19 08:30	
570-12498-23	MOTCO-2019-DU3-02	Sediment	10/30/19 10:04	11/09/19 08:30	
570-12498-24	MOTCO-2019-DU3-03	Sediment	10/30/19 10:42	11/09/19 08:30	
570-12498-25	MOTCO-2019-DU3-04	Sediment	10/30/19 11:19	11/09/19 08:30	
570-12498-30	MOTCO-2019-DU4-02	Sediment	10/30/19 16:15	11/09/19 08:30	

Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-12498-2

Login Number: 12498
List Number: 1
Creator: Castro, Joy

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	False	Container received broken. No volume could be salvaged for analysis.
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-15054-1
Client Project/Site: USACE: MOTCO
Revision: 1

For:
Pacific EcoRisk Inc
2250 Cordelia Rd
Fairfield, California 94534

[redacted]

Authorized for release by:
2/17/2020 3:35:51 PM

[redacted], Project Manager I
(714)895-5494
carlahollowell@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Job ID: 570-15054-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-15054-1

Comments
The sample was analyzed outside of the EPA recommended holding times for some analyses; however, the sample is a sediment and was frozen prior to holding time expiration at -18C. The sample remained frozen until the laboratory was ready to prepare the sample for analysis. Eurofins Calscience follows SWAMP crtieria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in sediment samples. The criteria states that holding times may be extended from six months to one year if stored frozen after collection. Therefore, the sample results have not been flagged as exceeding the EPA recommended holding times.

Receipt
The samples were received on 12/6/2019 12:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

GC/MS Semi VOA
Method 8270C SIM CON: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-38688 and 570-38980 and analytical batch 570-39291 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8270C SIM CON: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-38688 and 570-38980 and analytical batch 570-39291 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8270C SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-38416, 570-38688 and 570-39069 and analytical batch 570-39282 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8270C SIM: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 570-38688 and 570-39069 and analytical batch 570-39282 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-38688 and 570-38766 and analytical batch 570-39248 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work

Job ID: 570-15054-1 (Continued)

Laboratory: Eurofins Calscience LLC (Continued)

Method Subcontract - EPA 8290 Dioxins / Furans: This method was subcontracted to Frontier Analytical Laboratory. The subcontract laboratory certification is different from that of the facility issuing the final report.

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.66	0.13	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-18	ND		0.33	0.11	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-28	ND		0.33	0.11	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-31	ND		0.33	0.083	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-33	ND		0.33	0.063	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-44	ND		0.33	0.25	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-49	ND		0.33	0.081	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-52	ND		0.33	0.31	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-56	ND		0.33	0.12	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-60	ND		0.33	0.086	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-66	ND		0.33	0.20	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-70	ND		0.33	0.12	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-74	ND		0.33	0.15	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-87	ND		0.33	0.18	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-95	ND		0.33	0.18	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-97	ND		0.33	0.076	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-99	ND		0.33	0.078	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-101	ND		0.33	0.073	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-105	ND		0.33	0.088	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-110	ND		0.33	0.056	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-118	ND		0.33	0.057	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-128	ND		0.33	0.20	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-132/153	ND		0.66	0.27	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-138/158	ND		0.66	0.58	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-141	ND		0.33	0.080	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-149	ND		0.33	0.19	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-151	ND		0.33	0.14	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-156	ND		0.33	0.13	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-170	ND		0.33	0.18	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-174	ND		0.33	0.069	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-177	ND		0.33	0.19	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-180	ND		0.33	0.15	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-183	ND		0.33	0.15	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-187	ND		0.33	0.17	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-194	ND		0.33	0.12	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-195	ND		0.33	0.099	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-201	ND		0.33	0.056	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1
PCB-203	ND		0.33	0.095	ug/Kg	☼	12/13/19 16:03	12/16/19 16:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*14 - 146*	*12/13/19 16:03*	*12/16/19 16:04*	*1*
p-Terphenyl-d14	*118*		*34 - 148*	*12/13/19 16:03*	*12/16/19 16:04*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		16	3.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
1-Methylnaphthalene	**2.9**	**J**	16	1.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
1-Methylphenanthrene	**4.9**	**J**	16	3.4	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
2,6-Dimethylnaphthalene	**4.5**	**J**	16	2.8	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
2-Methylnaphthalene	**4.6**	**J**	16	1.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Acenaphthene	**3.3**	**J**	16	0.83	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Acenaphthylene	ND		16	14	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Anthracene	**12**	**J**	16	1.1	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Benzo[a]anthracene	**32**		16	1.8	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Benzo[a]pyrene	**45**		16	2.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Benzo[b]fluoranthene	**43**		16	2.4	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Benzo[e]pyrene	**28**		16	3.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Benzo[g,h,i]perylene	**29**		16	2.4	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Benzo[k]fluoranthene	**26**		16	2.7	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Chrysene	**35**		16	1.3	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Dibenz(a,h)anthracene	**2.2**	**J**	16	1.7	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Dibenzothiophene	ND		16	2.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Fluoranthene	**70**		16	1.6	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Fluorene	**4.6**	**J**	16	1.4	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Indeno[1,2,3-cd]pyrene	**24**		16	2.0	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Naphthalene	**15**	**J**	16	1.3	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Perylene	**37**		16	3.9	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Phenanthrene	**33**		16	1.4	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Pyrene	**100**		16	1.2	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1
Biphenyl	ND		16	3.1	ug/Kg	☼	12/13/19 21:26	12/16/19 17:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*22 - 130*	*12/13/19 21:26*	*12/16/19 17:24*	*1*
Nitrobenzene-d5	*67*		*20 - 145*	*12/13/19 21:26*	*12/16/19 17:24*	*1*
p-Terphenyl-d14	*104*		*33 - 147*	*12/13/19 21:26*	*12/16/19 17:24*	*1*

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method: Organotins SIM - Organotins (GC/MS SIM)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		4.6	1.1	ug/Kg	☼	12/12/19 15:50	12/16/19 15:37	1
Tributyltin	ND		4.6	2.3	ug/Kg	☼	12/12/19 15:50	12/16/19 15:37	1
Dibutyltin	ND		4.6	1.1	ug/Kg	☼	12/12/19 15:50	12/16/19 15:37	1
Monobutyltin	ND		4.6	2.1	ug/Kg	☼	12/12/19 15:50	12/16/19 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*66*		*27 - 135*	*12/12/19 15:50*	*12/16/19 15:37*	*1*

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method: 8081A - Organochlorine Pesticides (GC)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	**0.29**	**J p**	1.6	0.24	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
2,4'-DDE	ND		3.3	1.4	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
2,4'-DDT	**0.24**	**J**	1.6	0.22	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
4,4'-DDD	**1.7**		1.6	0.40	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
4,4'-DDE	**0.97**	**J**	1.6	0.27	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
4,4'-DDT	ND		1.6	0.49	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Aldrin	ND		1.6	0.29	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
alpha-BHC	ND		3.3	1.8	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
beta-BHC	ND		1.6	1.2	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Chlordane	ND		16	1.1	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
delta-BHC	ND		3.3	1.5	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Dieldrin	ND		1.6	0.16	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Endosulfan I	ND		1.6	0.17	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Endosulfan II	ND		1.6	0.32	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Endosulfan sulfate	ND		1.6	0.45	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Endrin	ND		1.6	0.17	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Endrin aldehyde	ND		3.3	1.8	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
gamma-BHC	ND		1.6	0.31	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Heptachlor	ND		1.6	0.24	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Heptachlor epoxide	ND		1.6	0.20	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1
Toxaphene	ND		33	5.1	ug/Kg	☼	12/12/19 21:25	12/16/19 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*68*		*23 - 140*	*12/12/19 21:25*	*12/16/19 13:54*	*1*
DCB Decachlorobiphenyl (Surr)	*97*		*26 - 146*	*12/12/19 21:25*	*12/16/19 13:54*	*1*

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method: 6020 - Metals (ICP/MS)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**7.61**	**J**	8.01	3.12	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Cadmium	ND		8.01	0.961	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Chromium	**51.0**		16.0	0.937	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Copper	**25.0**		8.01	0.929	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Lead	**17.1**		8.01	1.10	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Nickel	**64.8**		8.01	1.03	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Selenium	ND		8.01	2.12	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Silver	ND		8.01	1.14	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100
Zinc	**76.2**		40.1	6.35	mg/Kg	☼	12/13/19 15:00	12/17/19 12:13	100

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method: 7471A - Mercury (CVAA)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000698		0.000821	0.0000579	mg/Kg	☼		12/11/19 20:32	1

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

General Chemistry

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	0.650		0.0821	0.0285	%	☼		12/12/19 09:22	1
Percent Solids	60.9		0.1	0.1	%			12/09/19 13:54	1

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method: D4464 - Particle Size Distribution of Catalytic Material (Laser light scattering)

Client Sample ID: SF-10 Comp
Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay(less than 0.00391 mm)	**25.56**		0.01	0.01	%			12/11/19 19:09	1
Coarse Sand (0.5mm to 1mm)	ND		0.01	0.01	%			12/11/19 19:09	1
Fine Sand (0.125 to 0.25mm)	**2.00**		0.01	0.01	%			12/11/19 19:09	1
Gravel (greater than 2 mm)	ND		0.01	0.01	%			12/11/19 19:09	1
Medium Sand (0.25 to 0.5 mm)	ND		0.01	0.01	%			12/11/19 19:09	1
Silt (0.00391 to 0.0625mm)	**56.18**		0.01	0.01	%			12/11/19 19:09	1
Total Silt and Clay (0 to 0.0626mm)	**81.75**		0.01	0.01	%			12/11/19 19:09	1
Very Coarse Sand (1 to 2mm)	ND		0.01	0.01	%			12/11/19 19:09	1
Very Fine Sand (0.0625 to 0.125 mm)	**16.25**		0.01	0.01	%			12/11/19 19:09	1

PARTICLE SIZE SUMMARY

(ASTM D422 / D4464M)

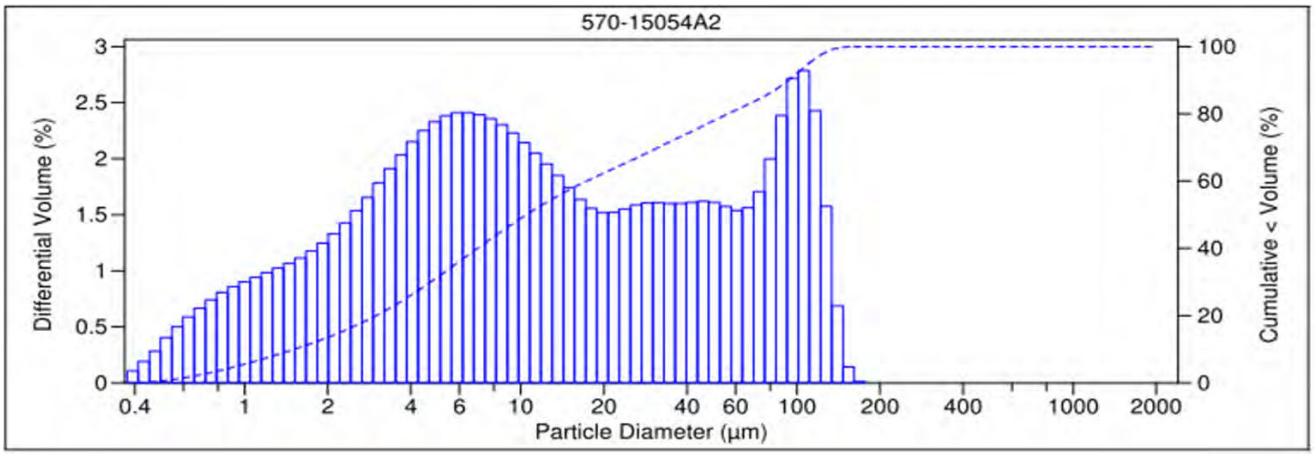
Pacific EcoRisk

Date Sampled:	11/01/19
Date Received:	12/06/19
Work Order No:	570-15054
Date Analyzed:	12/11/19
Method:	ASTM D4464M

Project: USACE: MOTCO

Sample ID	Depth ft	Description	Mean Grain Size mm
SF-10 Comp		Silt	0.029

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	0.00	2.00	16.25	56.18	25.56	81.75



V 3.0

Surrogate Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Sediment — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-15054-1	SF-10 Comp	71	67	104

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-15091-A-1-S MS	Matrix Spike	79	68	106
570-15091-A-1-T MSD	Matrix Spike Duplicate	79	68	106
570-15110-B-1-N MSD	Matrix Spike Duplicate	70	66	99
LCS 570-39069/2-A	Lab Control Sample	95	96	110
LCSD 570-39069/3-A	Lab Control Sample Dup	95	95	109
MB 570-39069/1-A	Method Blank	65	35	109

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Sediment — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		FBP	TPHd14
Lab Sample ID	Client Sample ID	(14-146)	(34-148)
570-15054-1	SF-10 Comp	80	118

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		FBP	TPHd14
Lab Sample ID	Client Sample ID	(14-146)	(34-148)
570-15110-B-1-K MS	Matrix Spike	80	116
570-15110-B-1-L MSD	Matrix Spike Duplicate	78	114
LCS 570-38980/2-A	Lab Control Sample	92	113
LCSD 570-38980/3-A	Lab Control Sample Dup	78	101
MB 570-38980/1-A	Method Blank	92	101

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
TPHd14 = p-Terphenyl-d14

Surrogate Summary

Client: Pacific EcoRisk Inc
Job ID: 570-15054-1
Project/Site: USACE: MOTCO

Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TPTT (27-135)
570-15054-1	SF-10 Comp	66

Surrogate Legend
TPTT = Tripentyltin

Method: Organotins SIM - Organotins (GC/MS SIM)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TPTT (27-135)
570-15110-B-1-G MS	Matrix Spike	67
570-15110-B-1-H MSD	Matrix Spike Duplicate	73
LCS 570-38651/2-A	Lab Control Sample	70
LCSD 570-38651/3-A	Lab Control Sample Dup	66
MB 570-38651/1-A	Method Blank	70

Surrogate Legend
TPTT = Tripentyltin

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Sediment **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	TCX1 (23-140)	DCB1 (26-146)
570-15054-1	SF-10 Comp	68	97

Surrogate Legend
TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	TCX1 (23-140)	DCB1 (26-146)
570-15091-A-1-M MS	Matrix Spike	77	111
570-15091-A-1-N MSD	Matrix Spike Duplicate	80	102
570-15110-B-1-E MS	Matrix Spike	80	96
570-15110-B-1-F MSD	Matrix Spike Duplicate	38 p	90
LCS 570-38766/2-A	Lab Control Sample	83	101
LCS 570-38766/6-A	Lab Control Sample	84	106
LCSD 570-38766/3-A	Lab Control Sample Dup	87	106
LCSD 570-38766/7-A	Lab Control Sample Dup	89	107
MB 570-38766/1-A	Method Blank	91	115

Surrogate Legend
TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-39069/1-A
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39069

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
1-Methylnaphthalene	ND		10	0.72	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
1-Methylphenanthrene	ND		10	2.1	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
2-Methylnaphthalene	ND		10	0.72	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Acenaphthene	ND		10	0.51	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Acenaphthylene	ND		10	8.5	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Anthracene	ND		10	0.67	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Benzo[a]anthracene	ND		10	1.1	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Benzo[a]pyrene	ND		10	1.4	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Benzo[b]fluoranthene	ND		10	1.5	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Benzo[k]fluoranthene	ND		10	1.6	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Chrysene	ND		10	0.78	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Dibenz(a,h)anthracene	ND		10	1.1	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Dibenzothiophene	ND		10	1.3	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Fluoranthene	ND		10	0.97	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Fluorene	ND		10	0.84	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Indeno[1,2,3-cd]pyrene	ND		10	1.2	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Naphthalene	ND		10	0.78	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Perylene	ND		10	2.4	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Phenanthrene	ND		10	0.84	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Pyrene	ND		10	0.75	ug/Kg		12/13/19 21:26	12/16/19 12:02	1
Biphenyl	ND		10	1.9	ug/Kg		12/13/19 21:26	12/16/19 12:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*65*		*22 - 130*	*12/13/19 21:26*	*12/16/19 12:02*	*1*
Nitrobenzene-d5	*35*		*20 - 145*	*12/13/19 21:26*	*12/16/19 12:02*	*1*
p-Terphenyl-d14	*109*		*33 - 147*	*12/13/19 21:26*	*12/16/19 12:02*	*1*

Lab Sample ID: LCS 570-39069/2-A
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39069

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	100	90.67		ug/Kg		91	54 - 132
2-Methylnaphthalene	100	96.33		ug/Kg		96	50 - 127
Acenaphthene	100	85.75		ug/Kg		86	53 - 125
Acenaphthylene	100	90.08		ug/Kg		90	50 - 123
Anthracene	100	93.79		ug/Kg		94	50 - 132
Benzo[a]anthracene	100	89.85		ug/Kg		90	50 - 133
Benzo[a]pyrene	100	90.20		ug/Kg		90	50 - 134
Benzo[b]fluoranthene	100	80.31		ug/Kg		80	50 - 142
Benzo[g,h,i]perylene	100	83.75		ug/Kg		84	50 - 130
Benzo[k]fluoranthene	100	90.68		ug/Kg		91	49 - 150
Chrysene	100	89.74		ug/Kg		90	51 - 129
Dibenz(a,h)anthracene	100	84.23		ug/Kg		84	50 - 133

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-39069/2-A
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39069

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoranthene			100	94.32		ug/Kg		94	55 - 127		
Fluorene			100	89.87		ug/Kg		90	55 - 127		
Indeno[1,2,3-cd]pyrene			100	84.04		ug/Kg		84	50 - 148		
Naphthalene			100	84.34		ug/Kg		84	51 - 129		
Phenanthrene			100	86.51		ug/Kg		87	50 - 122		
Pyrene			100	103.6		ug/Kg		104	50 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*95*		*22 - 130*
Nitrobenzene-d5	*96*		*20 - 145*
p-Terphenyl-d14	*110*		*33 - 147*

Lab Sample ID: LCSD 570-39069/3-A
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 39069

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene			100	94.26		ug/Kg		94	54 - 132	4	20
2-Methylnaphthalene			100	99.71		ug/Kg		100	50 - 127	3	20
Acenaphthene			100	88.70		ug/Kg		89	53 - 125	3	20
Acenaphthylene			100	91.41		ug/Kg		91	50 - 123	1	20
Anthracene			100	97.74		ug/Kg		98	50 - 132	4	20
Benzo[a]anthracene			100	92.78		ug/Kg		93	50 - 133	3	20
Benzo[a]pyrene			100	93.57		ug/Kg		94	50 - 134	4	20
Benzo[b]fluoranthene			100	90.03		ug/Kg		90	50 - 142	11	20
Benzo[g,h,i]perylene			100	85.48		ug/Kg		85	50 - 130	2	20
Benzo[k]fluoranthene			100	97.00		ug/Kg		97	49 - 150	7	20
Chrysene			100	93.70		ug/Kg		94	51 - 129	4	20
Dibenz(a,h)anthracene			100	86.11		ug/Kg		86	50 - 133	2	20
Fluoranthene			100	97.58		ug/Kg		98	55 - 127	3	20
Fluorene			100	91.39		ug/Kg		91	55 - 127	2	20
Indeno[1,2,3-cd]pyrene			100	86.00		ug/Kg		86	50 - 148	2	20
Naphthalene			100	88.02		ug/Kg		88	51 - 129	4	20
Phenanthrene			100	90.10		ug/Kg		90	50 - 122	4	20
Pyrene			100	105.9		ug/Kg		106	50 - 134	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*95*		*22 - 130*
Nitrobenzene-d5	*95*		*20 - 145*
p-Terphenyl-d14	*109*		*33 - 147*

Lab Sample ID: 570-15091-A-1-S MS
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 39069

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1-Methylnaphthalene	3.5	J	249	192.2		ug/Kg	☼	76	34 - 136		
2-Methylnaphthalene	5.9	J	249	203.4		ug/Kg	☼	79	29 - 137		

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-15091-A-1-S MS
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 39069

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	4.6	J	249	194.4		ug/Kg	☼	76	29 - 137
Acenaphthylene	ND		249	219.3		ug/Kg	☼	88	29 - 131
Anthracene	17	J	249	249.5		ug/Kg	☼	93	26 - 134
Benzo[a]anthracene	54		249	258.0		ug/Kg	☼	82	24 - 150
Benzo[a]pyrene	81		249	269.8		ug/Kg	☼	76	29 - 149
Benzo[b]fluoranthene	68		249	245.1		ug/Kg	☼	71	21 - 153
Benzo[g,h,i]perylene	68		249	235.3		ug/Kg	☼	67	20 - 148
Benzo[k]fluoranthene	49		249	245.9		ug/Kg	☼	79	28 - 148
Chrysene	65		249	261.5		ug/Kg	☼	79	25 - 145
Dibenz(a,h)anthracene	4.2	J	249	186.5		ug/Kg	☼	73	20 - 132
Fluoranthene	120		249	325.0		ug/Kg	☼	81	20 - 151
Fluorene	12	J	249	212.8		ug/Kg	☼	80	36 - 132
Indeno[1,2,3-cd]pyrene	50		249	216.2		ug/Kg	☼	67	20 - 154
Naphthalene	13	J	249	185.2		ug/Kg	☼	69	20 - 150
Phenanthrene	61		249	257.6		ug/Kg	☼	79	20 - 144
Pyrene	170		249	384.0		ug/Kg	☼	85	20 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*79*		*22 - 130*
Nitrobenzene-d5	*68*		*20 - 145*
p-Terphenyl-d14	*106*		*33 - 147*

Lab Sample ID: 570-15091-A-1-T MSD
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 39069

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	3.5	J	249	195.8		ug/Kg	☼	77	34 - 136	2	29
2-Methylnaphthalene	5.9	J	249	203.3		ug/Kg	☼	79	29 - 137	0	31
Acenaphthene	4.6	J	249	189.1		ug/Kg	☼	74	29 - 137	3	28
Acenaphthylene	ND		249	216.9		ug/Kg	☼	87	29 - 131	1	32
Anthracene	17	J	249	238.5		ug/Kg	☼	89	26 - 134	5	27
Benzo[a]anthracene	54		249	263.5		ug/Kg	☼	84	24 - 150	2	24
Benzo[a]pyrene	81		249	264.0		ug/Kg	☼	74	29 - 149	2	22
Benzo[b]fluoranthene	68		249	250.8		ug/Kg	☼	73	21 - 153	2	26
Benzo[g,h,i]perylene	68		249	240.6		ug/Kg	☼	69	20 - 148	2	27
Benzo[k]fluoranthene	49		249	242.4		ug/Kg	☼	77	28 - 148	1	26
Chrysene	65		249	268.5		ug/Kg	☼	82	25 - 145	3	28
Dibenz(a,h)anthracene	4.2	J	249	187.3		ug/Kg	☼	73	20 - 132	0	26
Fluoranthene	120		249	327.4		ug/Kg	☼	82	20 - 151	1	26
Fluorene	12	J	249	212.0		ug/Kg	☼	80	36 - 132	0	27
Indeno[1,2,3-cd]pyrene	50		249	221.8		ug/Kg	☼	69	20 - 154	3	25
Naphthalene	13	J	249	185.8		ug/Kg	☼	69	20 - 150	0	33
Phenanthrene	61		249	255.0		ug/Kg	☼	78	20 - 144	1	27
Pyrene	170		249	395.5		ug/Kg	☼	90	20 - 150	3	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*79*		*22 - 130*

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-15091-A-1-T MSD
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 39069

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Nitrobenzene-d5	*68*		*20 - 145*
p-Terphenyl-d14	*106*		*33 - 147*

Lab Sample ID: 570-15110-B-1-N MSD
Matrix: Solid
Analysis Batch: 39282

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 39069

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		223	180.9		ug/Kg	☼	81	34 - 136	2	29
2-Methylnaphthalene	3.1	J	223	188.7		ug/Kg	☼	83	29 - 137	0	31
Acenaphthene	1.9	J	223	173.4		ug/Kg	☼	77	29 - 137	5	28
Acenaphthylene	ND		223	195.0		ug/Kg	☼	87	29 - 131	3	32
Anthracene	4.9	J	223	203.5		ug/Kg	☼	89	26 - 134	9	27
Benzo[a]anthracene	14	J	223	178.1		ug/Kg	☼	73	24 - 150	24	24
Benzo[a]pyrene	5.7	J F2	223	128.6	F2	ug/Kg	☼	55	29 - 149	55	22
Benzo[b]fluoranthene	8.6	J F2	223	134.5	F2	ug/Kg	☼	56	21 - 153	44	26
Benzo[g,h,i]perylene	ND	F2	223	94.72	F2	ug/Kg	☼	42	20 - 148	73	27
Benzo[k]fluoranthene	4.1	J F2	223	138.5	F2	ug/Kg	☼	60	28 - 148	36	26
Chrysene	17	J	223	179.4		ug/Kg	☼	73	25 - 145	24	28
Dibenz(a,h)anthracene	ND	F2	223	96.87	F2	ug/Kg	☼	43	20 - 132	53	26
Fluoranthene	60		223	260.4		ug/Kg	☼	90	20 - 151	3	26
Fluorene	6.5	J	223	177.9		ug/Kg	☼	77	36 - 132	10	27
Indeno[1,2,3-cd]pyrene	ND	F2	223	98.48	F2	ug/Kg	☼	44	20 - 154	63	25
Naphthalene	4.1	J	223	171.9		ug/Kg	☼	75	20 - 150	0	33
Phenanthrene	21	J	223	209.8		ug/Kg	☼	85	20 - 144	6	27
Pyrene	80		223	304.9		ug/Kg	☼	101	20 - 150	7	32

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2-Fluorobiphenyl (Surr)	*70*		*22 - 130*
Nitrobenzene-d5	*66*		*20 - 145*
p-Terphenyl-d14	*99*		*33 - 147*

Method: 8270C SIM CON - PCB Congeners (GC/MS)

Lab Sample ID: MB 570-38980/1-A
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38980

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-5/8	ND		0.40	0.077	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-18	ND		0.20	0.065	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-28	ND		0.20	0.069	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-31	ND		0.20	0.051	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-33	ND		0.20	0.038	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-44	ND		0.20	0.15	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-49	ND		0.20	0.050	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-52	ND		0.20	0.19	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-56	ND		0.20	0.076	ug/Kg		12/13/19 16:03	12/16/19 13:13	1

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: MB 570-38980/1-A
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38980

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
PCB-60	ND		0.20	0.052	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-66	ND		0.20	0.12	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-70	ND		0.20	0.072	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-74	ND		0.20	0.090	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-87	ND		0.20	0.11	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-95	ND		0.20	0.11	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-97	ND		0.20	0.046	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-99	ND		0.20	0.047	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-101	ND		0.20	0.044	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-105	ND		0.20	0.053	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-110	ND		0.20	0.034	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-118	ND		0.20	0.035	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-128	ND		0.20	0.12	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-132/153	ND		0.40	0.16	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-138/158	ND		0.40	0.35	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-141	ND		0.20	0.049	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-149	ND		0.20	0.12	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-151	ND		0.20	0.088	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-156	ND		0.20	0.077	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-170	ND		0.20	0.11	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-174	ND		0.20	0.042	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-177	ND		0.20	0.12	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-180	ND		0.20	0.092	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-183	ND		0.20	0.093	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-187	ND		0.20	0.10	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-194	ND		0.20	0.074	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-195	ND		0.20	0.060	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-201	ND		0.20	0.034	ug/Kg		12/13/19 16:03	12/16/19 13:13	1
PCB-203	ND		0.20	0.058	ug/Kg		12/13/19 16:03	12/16/19 13:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*92*		*14 - 146*	*12/13/19 16:03*	*12/16/19 13:13*	*1*
p-Terphenyl-d14	*101*		*34 - 148*	*12/13/19 16:03*	*12/16/19 13:13*	*1*

Lab Sample ID: LCS 570-38980/2-A
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38980

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-5/8	50.0	51.67		ug/Kg		103	50 - 150
PCB-18	50.0	42.08		ug/Kg		84	24 - 132
PCB-28	50.0	51.49		ug/Kg		103	31 - 133
PCB-44	50.0	47.81		ug/Kg		96	36 - 120
PCB-52	50.0	46.23		ug/Kg		92	31 - 121
PCB-66	50.0	50.51		ug/Kg		101	43 - 139
PCB-101	50.0	49.35		ug/Kg		99	37 - 121
PCB-105	50.0	50.52		ug/Kg		101	48 - 132
PCB-118	50.0	51.21		ug/Kg		102	46 - 136

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: LCS 570-38980/2-A
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38980

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-128			50.0	61.32		ug/Kg		123	40 - 130		
PCB-132/153			50.0	58.73		ug/Kg		117	50 - 150		
PCB-138/158			50.0	51.00		ug/Kg		102	50 - 150		
PCB-170			50.0	53.45		ug/Kg		107	40 - 124		
PCB-180			50.0	55.65		ug/Kg		111	41 - 143		
PCB-187			50.0	54.36		ug/Kg		109	39 - 129		
PCB-195			50.0	54.33		ug/Kg		109	44 - 128		
PCB-201			50.0	56.36		ug/Kg		113	50 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*92*		*14 - 146*
p-Terphenyl-d14	*113*		*34 - 148*

Lab Sample ID: LCSD 570-38980/3-A
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38980

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8			50.0	47.62		ug/Kg		95	50 - 150	8	25
PCB-18			50.0	40.38		ug/Kg		81	24 - 132	4	28
PCB-28			50.0	47.86		ug/Kg		96	31 - 133	7	26
PCB-44			50.0	45.99		ug/Kg		92	36 - 120	4	28
PCB-52			50.0	44.88		ug/Kg		90	31 - 121	3	27
PCB-66			50.0	50.39		ug/Kg		101	43 - 139	0	25
PCB-101			50.0	45.96		ug/Kg		92	37 - 121	7	27
PCB-105			50.0	48.06		ug/Kg		96	48 - 132	5	26
PCB-118			50.0	50.32		ug/Kg		101	46 - 136	2	25
PCB-128			50.0	57.75		ug/Kg		116	40 - 130	6	26
PCB-132/153			50.0	55.07		ug/Kg		110	50 - 150	6	25
PCB-138/158			50.0	48.33		ug/Kg		97	50 - 150	5	25
PCB-170			50.0	49.82		ug/Kg		100	40 - 124	7	29
PCB-180			50.0	54.76		ug/Kg		110	41 - 143	2	26
PCB-187			50.0	53.24		ug/Kg		106	39 - 129	2	26
PCB-195			50.0	52.01		ug/Kg		104	44 - 128	4	28
PCB-201			50.0	54.89		ug/Kg		110	50 - 150	3	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*78*		*14 - 146*
p-Terphenyl-d14	*101*		*34 - 148*

Lab Sample ID: 570-15110-B-1-K MS
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38980

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-5/8	ND		112	114.2		ug/Kg	☼	102	50 - 150		
PCB-18	ND		112	94.42		ug/Kg	☼	85	24 - 132		
PCB-28	ND		112	124.4		ug/Kg	☼	112	31 - 133		

Method: 8270C SIM CON - PCB Congeners (GC/MS) (Continued)

Lab Sample ID: 570-15110-B-1-K MS
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38980

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-44	ND		112	114.7		ug/Kg	☼	103	36 - 120
PCB-52	ND		112	112.3		ug/Kg	☼	101	31 - 121
PCB-66	ND		112	120.0		ug/Kg	☼	108	43 - 139
PCB-101	ND		112	114.4		ug/Kg	☼	103	37 - 121
PCB-105	ND		112	118.3		ug/Kg	☼	106	48 - 132
PCB-118	ND	F2 F1	112	175.8	F1	ug/Kg	☼	158	46 - 136
PCB-128	ND		112	143.7		ug/Kg	☼	129	40 - 130
PCB-132/153	ND		112	138.2		ug/Kg	☼	124	50 - 150
PCB-138/158	ND		112	120.3		ug/Kg	☼	108	50 - 150
PCB-170	ND		112	123.5		ug/Kg	☼	111	40 - 124
PCB-180	ND		112	138.3		ug/Kg	☼	124	41 - 143
PCB-187	ND		112	136.3		ug/Kg	☼	122	39 - 129
PCB-195	ND		112	126.2		ug/Kg	☼	113	44 - 128
PCB-201	ND		112	140.8		ug/Kg	☼	126	50 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*80*		*14 - 146*
p-Terphenyl-d14	*116*		*34 - 148*

Lab Sample ID: 570-15110-B-1-L MSD
Matrix: Solid
Analysis Batch: 39291

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 38980

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-5/8	ND		112	110.9		ug/Kg	☼	99	50 - 150	3	25
PCB-18	ND		112	91.76		ug/Kg	☼	82	24 - 132	3	28
PCB-28	ND		112	120.6		ug/Kg	☼	108	31 - 133	3	26
PCB-44	ND		112	104.1		ug/Kg	☼	93	36 - 120	10	28
PCB-52	ND		112	106.7		ug/Kg	☼	96	31 - 121	5	27
PCB-66	ND		112	116.6		ug/Kg	☼	105	43 - 139	3	25
PCB-101	ND		112	114.7		ug/Kg	☼	103	37 - 121	0	27
PCB-105	ND		112	116.8		ug/Kg	☼	105	48 - 132	1	26
PCB-118	ND	F2 F1	112	119.8	F2	ug/Kg	☼	107	46 - 136	38	25
PCB-128	ND		112	141.4		ug/Kg	☼	127	40 - 130	2	26
PCB-132/153	ND		112	133.4		ug/Kg	☼	120	50 - 150	4	25
PCB-138/158	ND		112	115.8		ug/Kg	☼	104	50 - 150	4	25
PCB-170	ND		112	123.6		ug/Kg	☼	111	40 - 124	0	29
PCB-180	ND		112	136.5		ug/Kg	☼	122	41 - 143	1	26
PCB-187	ND		112	131.7		ug/Kg	☼	118	39 - 129	3	26
PCB-195	ND		112	120.7		ug/Kg	☼	108	44 - 128	4	28
PCB-201	ND		112	134.0		ug/Kg	☼	120	50 - 150	5	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*78*		*14 - 146*
p-Terphenyl-d14	*114*		*34 - 148*

Method: Organotins SIM - Organotins (GC/MS SIM)

Lab Sample ID: MB 570-38651/1-A
Matrix: Solid
Analysis Batch: 39284

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38651

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrabutyltin	ND		3.0	0.74	ug/Kg		12/12/19 15:50	12/16/19 12:57	1
Tributyltin	ND		3.0	1.5	ug/Kg		12/12/19 15:50	12/16/19 12:57	1
Dibutyltin	ND		3.0	0.73	ug/Kg		12/12/19 15:50	12/16/19 12:57	1
Monobutyltin	ND		3.0	1.4	ug/Kg		12/12/19 15:50	12/16/19 12:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*70*		*27 - 135*	*12/12/19 15:50*	*12/16/19 12:57*	*1*

Lab Sample ID: LCS 570-38651/2-A
Matrix: Solid
Analysis Batch: 39284

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38651

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tetrabutyltin	100	77.86		ug/Kg		78	40 - 142
Tributyltin	100	73.45		ug/Kg		73	33 - 147

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*70*		*27 - 135*

Lab Sample ID: LCSD 570-38651/3-A
Matrix: Solid
Analysis Batch: 39284

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38651

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin	100	76.42		ug/Kg		76	40 - 142	2	20
Tributyltin	100	70.67		ug/Kg		71	33 - 147	4	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tripentyltin	*66*		*27 - 135*

Lab Sample ID: 570-15110-B-1-G MS
Matrix: Solid
Analysis Batch: 39284

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38651

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Tetrabutyltin	ND		213	157.8		ug/Kg	☼	74	33 - 129
Tributyltin	ND		213	151.5		ug/Kg	☼	71	34 - 142

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tripentyltin	*67*		*27 - 135*

Lab Sample ID: 570-15110-B-1-H MSD
Matrix: Solid
Analysis Batch: 39284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 38651

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tetrabutyltin	ND		210	176.3		ug/Kg	☼	84	33 - 129	11	36

Method: Organotins SIM - Organotins (GC/MS SIM) (Continued)

Lab Sample ID: 570-15110-B-1-H MSD
Matrix: Solid
Analysis Batch: 39284

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 38651

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tributyltin	ND		210	170.3		ug/Kg	☼	81	34 - 142	12	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tripentyltin	*73*		*27 - 135*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 570-38766/1-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38766

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		1.0	0.15	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
2,4'-DDE	ND		2.0	0.83	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
2,4'-DDT	ND		1.0	0.14	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
4,4'-DDD	ND		1.0	0.24	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
4,4'-DDE	ND		1.0	0.17	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
4,4'-DDT	ND		1.0	0.30	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Aldrin	ND		1.0	0.18	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
alpha-BHC	ND		2.0	1.1	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
beta-BHC	ND		1.0	0.71	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Chlordane	ND		10	0.68	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
delta-BHC	ND		2.0	0.94	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Dieldrin	ND		1.0	0.10	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Endosulfan I	ND		1.0	0.11	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Endosulfan II	ND		1.0	0.19	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Endosulfan sulfate	ND		1.0	0.27	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Endrin	ND		1.0	0.11	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Endrin aldehyde	ND		2.0	1.1	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
gamma-BHC	ND		1.0	0.19	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Heptachlor	ND		1.0	0.15	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Heptachlor epoxide	ND		1.0	0.13	ug/Kg		12/12/19 21:25	12/16/19 11:46	1
Toxaphene	ND		20	3.1	ug/Kg		12/12/19 21:25	12/16/19 11:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*91*		*23 - 140*	*12/12/19 21:25*	*12/16/19 11:46*	*1*
DCB Decachlorobiphenyl (Surr)	*115*		*26 - 146*	*12/12/19 21:25*	*12/16/19 11:46*	*1*

Lab Sample ID: LCS 570-38766/2-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	5.00	5.576		ug/Kg		112	50 - 149
4,4'-DDE	5.00	5.310		ug/Kg		106	48 - 144
4,4'-DDT	5.00	5.732		ug/Kg		115	37 - 149
Aldrin	5.00	4.562		ug/Kg		91	43 - 139
alpha-BHC	5.00	4.511		ug/Kg		90	51 - 138

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 570-38766/2-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
beta-BHC	5.00	5.436		ug/Kg		109	47 - 135
delta-BHC	5.00	4.608		ug/Kg		92	40 - 146
Dieldrin	5.00	5.078		ug/Kg		102	48 - 141
Endosulfan I	5.00	4.606		ug/Kg		92	43 - 139
Endosulfan II	5.00	5.328		ug/Kg		107	48 - 142
Endosulfan sulfate	5.00	5.135		ug/Kg		103	47 - 144
Endrin	5.00	5.121		ug/Kg		102	35 - 144
Endrin aldehyde	5.00	5.356		ug/Kg		107	35 - 138
gamma-BHC	5.00	4.585		ug/Kg		92	51 - 137
Heptachlor	5.00	4.630		ug/Kg		93	47 - 137
Heptachlor epoxide	5.00	4.730		ug/Kg		95	49 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*83*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*101*		*26 - 146*

Lab Sample ID: LCS 570-38766/6-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4'-DDD	5.00	4.949		ug/Kg		99	50 - 135
2,4'-DDE	5.00	4.431		ug/Kg		89	50 - 135
2,4'-DDT	5.00	5.262		ug/Kg		105	50 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*84*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*106*		*26 - 146*

Lab Sample ID: LCSD 570-38766/3-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	5.00	5.778		ug/Kg		116	50 - 149	4	17
4,4'-DDE	5.00	5.579		ug/Kg		112	48 - 144	5	18
4,4'-DDT	5.00	5.880		ug/Kg		118	37 - 149	3	17
Aldrin	5.00	4.825		ug/Kg		97	43 - 139	6	15
alpha-BHC	5.00	4.647		ug/Kg		93	51 - 138	3	17
beta-BHC	5.00	5.570		ug/Kg		111	47 - 135	2	17
delta-BHC	5.00	4.523		ug/Kg		90	40 - 146	2	20
Dieldrin	5.00	5.283		ug/Kg		106	48 - 141	4	16
Endosulfan I	5.00	4.778		ug/Kg		96	43 - 139	4	16
Endosulfan II	5.00	5.466		ug/Kg		109	48 - 142	3	16
Endosulfan sulfate	5.00	5.265		ug/Kg		105	47 - 144	3	16
Endrin	5.00	5.302		ug/Kg		106	35 - 144	3	18
Endrin aldehyde	5.00	5.340		ug/Kg		107	35 - 138	0	13
gamma-BHC	5.00	4.645		ug/Kg		93	51 - 137	1	17

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-38766/3-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38766

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Heptachlor			5.00	4.878		ug/Kg		98	47 - 137	5	17
Heptachlor epoxide			5.00	4.908		ug/Kg		98	49 - 135	4	17

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*87*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*106*		*26 - 146*

Lab Sample ID: LCSD 570-38766/7-A
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38766

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4'-DDD			5.00	5.132		ug/Kg		103	50 - 135	4	25
2,4'-DDE			5.00	4.906		ug/Kg		98	50 - 135	10	25
2,4'-DDT			5.00	5.502		ug/Kg		110	50 - 135	4	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*89*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*107*		*26 - 146*

Lab Sample ID: 570-15091-A-1-M MS
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	6.2	F1	12.5	19.96	E	ug/Kg	☼	110	12 - 180
4,4'-DDE	2.4	J	12.5	16.76		ug/Kg	☼	116	8 - 184
4,4'-DDT	1.3	J p	12.5	21.54	E	ug/Kg	☼	162	2 - 187
Aldrin	ND		12.5	11.73		ug/Kg	☼	94	9 - 153
alpha-BHC	ND		12.5	14.00		ug/Kg	☼	112	10 - 149
beta-BHC	ND		12.5	14.28		ug/Kg	☼	115	9 - 156
delta-BHC	ND		12.5	10.50		ug/Kg	☼	84	6 - 162
Dieldrin	ND		12.5	13.04		ug/Kg	☼	105	11 - 164
Endosulfan I	ND		12.5	12.31		ug/Kg	☼	99	4 - 156
Endosulfan II	ND		12.5	12.97		ug/Kg	☼	104	12 - 161
Endosulfan sulfate	ND		12.5	15.46		ug/Kg	☼	124	10 - 165
Endrin	ND		12.5	13.63		ug/Kg	☼	109	6 - 166
Endrin aldehyde	ND		12.5	9.458		ug/Kg	☼	76	1 - 156
gamma-BHC	ND		12.5	13.52		ug/Kg	☼	108	9 - 154
Heptachlor	ND		12.5	12.30		ug/Kg	☼	99	3 - 150
Heptachlor epoxide	ND		12.5	12.51		ug/Kg	☼	100	7 - 169

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*77*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*111*		*26 - 146*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-15091-A-1-N MSD
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	6.2	F1	12.5	30.79	E F1	ug/Kg	☼	197	12 - 180	43	79
4,4'-DDE	1.8	J	12.5	15.83		ug/Kg	☼	108	8 - 184	6	76
4,4'-DDT	2.3	J	12.5	13.63		ug/Kg	☼	99	2 - 187	45	78
Aldrin	ND		12.5	11.36		ug/Kg	☼	91	9 - 153	3	77
alpha-BHC	ND		12.5	14.84		ug/Kg	☼	119	10 - 149	6	85
beta-BHC	ND		12.5	13.21		ug/Kg	☼	106	9 - 156	8	78
delta-BHC	ND		12.5	9.555		ug/Kg	☼	77	6 - 162	9	85
Dieldrin	ND		12.5	12.73	p	ug/Kg	☼	102	11 - 164	2	77
Endosulfan I	ND		12.5	12.40		ug/Kg	☼	99	4 - 156	1	77
Endosulfan II	ND		12.5	17.47		ug/Kg	☼	140	12 - 161	30	77
Endosulfan sulfate	ND		12.5	14.63		ug/Kg	☼	117	10 - 165	5	73
Endrin	ND		12.5	13.90		ug/Kg	☼	111	6 - 166	2	82
Endrin aldehyde	ND		12.5	6.680	p	ug/Kg	☼	54	1 - 156	34	83
gamma-BHC	ND		12.5	14.20		ug/Kg	☼	114	9 - 154	5	79
Heptachlor	ND		12.5	10.35		ug/Kg	☼	83	3 - 150	17	85
Heptachlor epoxide	ND		12.5	12.22		ug/Kg	☼	98	7 - 169	2	79

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*80*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*102*		*26 - 146*

Lab Sample ID: 570-15110-B-1-E MS
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4'-DDD	0.89	J	11.2	13.66		ug/Kg	☼	114	50 - 135
2,4'-DDE	ND	F2	11.2	8.646	p	ug/Kg	☼	78	50 - 135
2,4'-DDT	2.7	F1	11.2	2.348	F1	ug/Kg	☼	-3	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*80*		*23 - 140*
DCB Decachlorobiphenyl (Surr)	*96*		*26 - 146*

Lab Sample ID: 570-15110-B-1-F MSD
Matrix: Solid
Analysis Batch: 39248

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 38766

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4'-DDD	0.89	J	11.1	12.88		ug/Kg	☼	108	50 - 135	6	25
2,4'-DDE	ND	F2	11.1	10.98		ug/Kg	☼	99	50 - 135	24	25
2,4'-DDT	2.7	F1	11.1	2.697	F1	ug/Kg	☼	0.05	50 - 135	14	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*38*	*p*	*23 - 140*
DCB Decachlorobiphenyl (Surr)	*90*		*26 - 146*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-38436/1-A ^20
Matrix: Solid
Analysis Batch: 39643

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38436

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.00	0.389	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Cadmium	ND		1.00	0.120	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Chromium	ND		2.00	0.117	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Copper	ND		1.00	0.116	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Lead	ND		1.00	0.137	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Nickel	ND		1.00	0.128	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Selenium	ND		1.00	0.264	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Silver	ND		1.00	0.142	mg/Kg		12/13/19 15:00	12/17/19 11:38	20
Zinc	ND		5.00	0.793	mg/Kg		12/13/19 15:00	12/17/19 11:38	20

Lab Sample ID: LCS 570-38436/2-A ^20
Matrix: Solid
Analysis Batch: 39643

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	25.1	26.38		mg/Kg		105	80 - 120
Cadmium	25.1	27.16		mg/Kg		108	80 - 120
Chromium	25.1	26.23		mg/Kg		104	80 - 120
Copper	25.1	27.40		mg/Kg		109	80 - 120
Lead	25.1	28.15		mg/Kg		112	80 - 120
Nickel	25.1	26.83		mg/Kg		107	80 - 120
Selenium	25.1	26.45		mg/Kg		105	80 - 120
Silver	12.6	12.41		mg/Kg		99	80 - 120
Zinc	25.1	27.60		mg/Kg		110	80 - 120

Lab Sample ID: LCSD 570-38436/3-A ^20
Matrix: Solid
Analysis Batch: 39643

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38436

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	25.6	26.98		mg/Kg		105	80 - 120	2	20
Cadmium	25.6	27.45		mg/Kg		107	80 - 120	1	20
Chromium	25.6	27.02		mg/Kg		105	80 - 120	3	20
Copper	25.6	27.88		mg/Kg		109	80 - 120	2	20
Lead	25.6	28.83		mg/Kg		112	80 - 120	2	20
Nickel	25.6	27.44		mg/Kg		107	80 - 120	2	20
Selenium	25.6	26.75		mg/Kg		104	80 - 120	1	20
Silver	12.8	13.10		mg/Kg		102	80 - 120	5	20
Zinc	25.6	29.13		mg/Kg		114	80 - 120	5	20

Lab Sample ID: 570-15091-A-1-H MS ^100
Matrix: Solid
Analysis Batch: 39643

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38436

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	12.8		60.5	69.46		mg/Kg	☼	94	72 - 132
Cadmium	ND		60.5	59.85		mg/Kg	☼	99	85 - 121
Chromium	76.2		60.5	128.0		mg/Kg	☼	86	20 - 182
Copper	61.9		60.5	114.5		mg/Kg	☼	87	25 - 157

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 570-15091-A-1-H MS ^100
Matrix: Solid
Analysis Batch: 39643

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 38436

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	24.1		60.5	83.88		mg/Kg	☼	99	62 - 134
Nickel	84.3		60.5	135.5		mg/Kg	☼	85	46 - 154
Selenium	ND		60.5	58.89		mg/Kg	☼	97	54 - 132
Silver	ND		30.3	24.64		mg/Kg	☼	81	78 - 126
Zinc	124		60.5	175.0		mg/Kg	☼	85	23 - 173

Lab Sample ID: 570-15091-A-1-I MSD ^100
Matrix: Solid
Analysis Batch: 39643

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 38436

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	12.8		61.7	71.86		mg/Kg	☼	96	72 - 132	3	13
Cadmium	ND		61.7	63.88		mg/Kg	☼	104	85 - 121	7	12
Chromium	76.2		61.7	135.1		mg/Kg	☼	95	20 - 182	5	15
Copper	61.9		61.7	120.6		mg/Kg	☼	95	25 - 157	5	22
Lead	24.1		61.7	85.50		mg/Kg	☼	99	62 - 134	2	23
Nickel	84.3		61.7	143.1		mg/Kg	☼	95	46 - 154	5	15
Selenium	ND		61.7	66.36		mg/Kg	☼	108	54 - 132	12	14
Silver	ND		30.9	25.51		mg/Kg	☼	83	78 - 126	3	15
Zinc	124		61.7	182.3		mg/Kg	☼	95	23 - 173	4	18

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-38430/1-A
Matrix: Solid
Analysis Batch: 38368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 38430

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.0877	0.00618	mg/Kg		12/11/19 18:38	12/11/19 20:11	1

Lab Sample ID: LCS 570-38430/2-A
Matrix: Solid
Analysis Batch: 38368

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 38430

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.820	0.8191		mg/Kg		100	85 - 121

Lab Sample ID: LCSD 570-38430/3-A
Matrix: Solid
Analysis Batch: 38368

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 38430

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.847	0.8487		mg/Kg		100	85 - 121	4	10

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 570-38912/4
Matrix: Solid
Analysis Batch: 38912

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		0.0500	0.0174	%			12/12/19 09:22	1

Lab Sample ID: LCS 570-38912/6
Matrix: Solid
Analysis Batch: 38912

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Carbon, Total Organic			3.00	2.839		%		95	80 - 120		

Lab Sample ID: LCSD 570-38912/7
Matrix: Solid
Analysis Batch: 38912

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic			3.00	2.821		%		94	80 - 120	1	20

Lab Sample ID: 570-15110-B-1-A MS
Matrix: Solid
Analysis Batch: 38912

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Carbon, Total Organic	1.59		6.69	7.203		%	☼	84	75 - 125		

Lab Sample ID: 570-15110-B-1-B MSD
Matrix: Solid
Analysis Batch: 38912

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	1.59		6.43	7.002		%	☼	84	75 - 125	3	25

Method: Moisture - Percent Moisture

Lab Sample ID: 570-15047-A-2 DU
Matrix: Solid
Analysis Batch: 37782

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	80.9			80.8		%				0.07	10

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Client Sample ID: SF-10 Comp

Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-1

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep					38416	12/11/19 17:52	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	39069	12/13/19 21:26	UM1W	ECL 1
Total/NA	Analysis	8270C SIM		1			39282	12/16/19 17:24	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Cleanup	Homogenize Prep					38416	12/11/19 17:52	C4LT	ECL 1
Total/NA	Prep	3541			20.0 g	2 mL	38980	12/13/19 16:03	UM1W	ECL 1
Total/NA	Analysis	8270C SIM CON		1			39291	12/16/19 16:04	AJ2Q	ECL 1
	Instrument ID: GCMSHHH									
Total/NA	Cleanup	Homogenize Prep					38416	12/11/19 17:52	C4LT	ECL 1
Total/NA	Prep	Organotin Prep			10.72 g	5 mL	38651	12/12/19 15:50	OM8W	ECL 1
Total/NA	Analysis	Organotins SIM		1			39284	12/16/19 15:37	AJ2Q	ECL 1
	Instrument ID: GCMSY									
Total/NA	Cleanup	Homogenize Prep					38416	12/11/19 17:52	C4LT	ECL 1
Total/NA	Prep	3541			20.1 g	2 mL	38766	12/12/19 21:25	UM1W	ECL 1
Total/NA	Analysis	8081A		1			39248	12/16/19 13:54	UHHN	ECL 1
	Instrument ID: GC44									
Total/NA	Cleanup	Homogenize Prep					38416	12/11/19 17:52	C4LT	ECL 1
Total/NA	Prep	3050B			2.05 g	100 mL	38436	12/13/19 15:00	MD3A	ECL 1
Total/NA	Analysis	6020		100			39643	12/17/19 12:13	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Analysis	7471A		1			38368	12/11/19 20:32	MD3A	ECL 1
	Instrument ID: HG8									
Total/NA	Cleanup	Homogenize Prep					38416	12/11/19 17:52	C4LT	ECL 1
Total/NA	Analysis	9060A		1	208.1 mg	208.1 mg	38912	12/12/19 09:22	CY2M	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			37782	12/09/19 13:54	UWCT	ECL 2
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp

Date Collected: 11/01/19 12:30
Date Received: 12/06/19 12:00

Lab Sample ID: 570-15054-2

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4464		1			38459	12/11/19 19:09	C4LT	ECL 1
	Instrument ID: NOEQUIP									

Laboratory References:

ECL = Eurofins Calscience LLC, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Frontier = Frontier Analytical Laboratory, 5172 Hillsdale Circle, El Dorado Hills, CA 95762

Accreditation/Certification Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Washington	State	C916-18	10-11-20

Method Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Method	Method Description	Protocol	Laboratory
8270C SIM	PAHs (GC/MS SIM)	SW846	ECL 1
8270C SIM CON	PCB Congeners (GC/MS)	SW846	ECL 1
Organotins SIM	Organotins (GC/MS SIM)	Lab SOP	ECL 1
8081A	Organochlorine Pesticides (GC)	SW846	ECL 1
6020	Metals (ICP/MS)	SW846	ECL 1
7471A	Mercury (CVAA)	SW846	ECL 1
9060A	Organic Carbon, Total (TOC)	SW846	ECL 1
Moisture	Percent Moisture	EPA	ECL 2
D4464	Particle Size Distribution of Catalytic Material (Laser light scattering)	ASTM	ECL 1
8290	SW846 8290 Dioxins	SW846	Frontier
3050B	Preparation, Metals	SW846	ECL 1
3541	Automated Soxhlet Extraction	SW846	ECL 1
7471A	Preparation, Mercury	SW846	ECL
Homogenize Prep	Preparation, Homogenization	None	ECL 1
Organotin Prep	Extraction (Organotins)	None	ECL 1

Protocol References:

ASTM = ASTM International
EPA = US Environmental Protection Agency
Lab SOP = Laboratory Standard Operating Procedure
None = None
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL = Eurofins Calscience LLC, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494
ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494
ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494
Frontier = Frontier Analytical Laboratory, 5172 Hillsdale Circle, El Dorado Hills, CA 95762

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15054-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-15054-1	SF-10 Comp	Sediment	11/01/19 12:30	12/06/19 12:00	
570-15054-2	SF-10 Comp	Sediment	11/01/19 12:30	12/06/19 12:00	

January 8, 2020

[redacted]
7440 Lincoln Way
Garden Grove, CA 92841-1427

[redacted]

The following results are associated with Frontier Analytical Laboratory (FAL) project number **12836**. This corresponds to your project number **570-15054**. One solid sample was received on 12/13/2019. This sample was extracted and analyzed by EPA Method 8290 for tetra through octa chlorinated dibenzo dioxin and furans. The Toxic Equivalency (TEQ) for your sample has been calculated using the 2005 World Health Organization's (WHO's) toxic equivalency factors (TEFs). Eurofins Calscience Inc. requested a fifteen business day turnaround time for project **12836**.

Please note that this sample was received past the EPA Method 8290 recommended extraction hold time of 30 days. EPA Method 8290 states the following: *"Section 8.3 Recommended sample storage and holding times-All samples must be stored at </=6^{0}C, or lower, in the dark, extracted within 30 days and completely analyzed within 45 days of extraction.* ***NOTE: The holding times listed in this method are recommendations. PCDDs and PCDFs are very stable in a variety of matrices, and holding times under the conditions listed in this section may be as long as a year for certain matrices***." I can confirm that your sample was stored at Frontier Analytical Laboratory within a temperature range of zero to four degrees Celsius prior to extraction.

The following report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains our sample tracking log and the analytical results. The Sample Receipt section contains your chain of custody, our sample login form and the sample photo. The attached results are specifically for the sample referenced in this report only. These results meet all National Environmental Laboratory Accreditation Program (NELAP) requirements and shall not be reproduced except in full. Frontier Analytical Laboratory's State of Oregon NELAP certificate number is **4041** and our State of California ELAP certificate number is **2934**. This report and the associated electronic data deliverable have been emailed to you. A hardcopy of this report will not be sent to you unless specifically requested.

If you have any questions regarding project **12836**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,

[redacted]

[redacted]
Director

Frontier Analytical Laboratory

Sample Tracking Log

FAL Project ID: **12836**

Received on: **12/13/2019** Project Due: **01/08/2020** Storage: **R-3**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time	Hold Time Due Date
12836-001-SA	0	570-15054	SF-10 Comp (570-15054-1)	EPA 8290 D/F	Solid	11/01/2019	12:30 pm	12/03/2019

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FAL ID: 12836-001-MB
Client ID: Method Blank
Matrix: Solid
Batch No: X5185

Date Extracted: 01-02-2020
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-11-26-19
GC Column: DB5MS
Units: pg/g

Acquired: 01-03-2020
2005 WHO TEQ: 0.0
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0931		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.161		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.200		-	0.0540				
1,2,3,6,7,8-HxCDD	ND	0.186		-	0.0538	Total TCDD	ND	0.0931	
1,2,3,7,8,9-HxCDD	ND	0.176		-	0.0518	Total PeCDD	ND	0.161	
1,2,3,4,6,7,8-HpCDD	ND	0.177		-	0.0695	Total HxCDD	ND	0.200	
OCDD	ND	0.409		-	0.116	Total HpCDD	ND	0.177	
2,3,7,8-TCDF	ND	0.0769		-	0.0345				
1,2,3,7,8-PeCDF	ND	0.103		-	0.0417				
2,3,4,7,8-PeCDF	ND	0.105		-	0.0449				
1,2,3,4,7,8-HxCDF	ND	0.0863		-	0.0351				
1,2,3,6,7,8-HxCDF	ND	0.0909		-	0.0382				
2,3,4,6,7,8-HxCDF	ND	0.0958		-	0.0379				
1,2,3,7,8,9-HxCDF	ND	0.112		-	0.0423	Total TCDF	ND	0.0769	
1,2,3,4,6,7,8-HpCDF	ND	0.0943		-	0.0415	Total PeCDF	ND	0.105	
1,2,3,4,7,8,9-HpCDF	ND	0.113		-	0.0532	Total HxCDF	ND	0.112	
OCDF	ND	0.250		-	0.0833	Total HpCDF	ND	0.113	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	73.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	74.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	80.9	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	84.2	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	80.1	40.0 - 135	
13C-OCDD	66.4	40.0 - 135	
13C-2,3,7,8-TCDF	86.2	40.0 - 135	
13C-1,2,3,7,8-PeCDF	87.7	40.0 - 135	
13C-2,3,4,7,8-PeCDF	88.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	87.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	87.3	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	85.7	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	88.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	74.1	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	87.5	40.0 - 135	
13C-OCDF	75.9	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	81.7	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 1/6/2020

Reviewed By: DPV

Date: 1/7/2020

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FAL ID: 12836-001-OPR
Client ID: OPR
Matrix: Solid
Batch No: X5185

Date Extracted: 01-02-2020
Date Received: NA
Amount: 10.00 g

ICal: PCDDFAL3-11-26-19
GC Column: DB5MS
Units: ng/ml

Acquired: 01-03-2020
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	9.15	7.00 - 13.0	
1,2,3,7,8-PeCDD	51.4	35.0 - 65.0	
1,2,3,4,7,8-HxCDD	51.3	35.0 - 65.0	
1,2,3,6,7,8-HxCDD	53.9	35.0 - 65.0	
1,2,3,7,8,9-HxCDD	52.6	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDD	52.0	35.0 - 65.0	
OCDD	108	70.0 - 130	
2,3,7,8-TCDF	10.6	7.00 - 13.0	
1,2,3,7,8-PeCDF	49.0	35.0 - 65.0	
2,3,4,7,8-PeCDF	48.8	35.0 - 65.0	
1,2,3,4,7,8-HxCDF	47.8	35.0 - 65.0	
1,2,3,6,7,8-HxCDF	48.1	35.0 - 65.0	
2,3,4,6,7,8-HxCDF	48.7	35.0 - 65.0	
1,2,3,7,8,9-HxCDF	49.4	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	50.3	35.0 - 65.0	
1,2,3,4,7,8,9-HpCDF	50.3	35.0 - 65.0	
OCDF	97.7	70.0 - 130	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	73.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	66.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	74.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	75.8	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	72.2	40.0 - 135	
13C-OCDD	62.9	40.0 - 135	
13C-2,3,7,8-TCDF	76.8	40.0 - 135	
13C-1,2,3,7,8-PeCDF	80.1	40.0 - 135	
13C-2,3,4,7,8-PeCDF	81.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	78.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	78.7	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	77.7	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	78.4	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	68.2	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	78.4	40.0 - 135	
13C-OCDF	69.8	40.0 - 135	

Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	77.7	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____

Date: 1/6/2020

Reviewed By: DPV

Date: 1/7/2020

5172 Hillsdale Circle * El Dorado Hills, CA 95762 * Tel (916) 934-0900 * Fax (916) 934-0999 * www.frontieranalytical.com

EPA Method 8290
PCDD/F

FRONTIER ANALYTICAL LABORATORY

FAL ID: 12836-001-SA
Client ID: SF-10 Comp (570-15054-1)
Matrix: Solid
Batch No: X5185

Date Extracted: 01-02-2020
Date Received: 12-13-2019
Amount: 5.01 g
% Solids: 52.66

ICal: PCDDFAL3-11-26-19
GC Column: DB5MS
Units: pg/g

Acquired: 01-04-2020
2005 WHO TEQ: 1.16
Basis: Dry Weight

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.126		-	0.0331				
1,2,3,7,8-PeCDD	ND	0.358		-	0.0536				
1,2,3,4,7,8-HxCDD	ND	0.417		-	0.0540				
1,2,3,6,7,8-HxCDD	1.64	-	J	0.164	0.0538	Total TCDD	1.13	-	
1,2,3,7,8,9-HxCDD	1.07	-	J	0.107	0.0518	Total PeCDD	1.01	-	J
1,2,3,4,6,7,8-HpCDD	20.4	-		0.204	0.0695	Total HxCDD	16.9	-	
OCDD	155	-		0.0465	0.116	Total HpCDD	54.5	-	
2,3,7,8-TCDF	0.865	-	J	0.0865	0.0345				
1,2,3,7,8-PeCDF	0.416	-	J	0.0125	0.0417				
2,3,4,7,8-PeCDF	0.870	-	J	0.261	0.0449				
1,2,3,4,7,8-HxCDF	0.950	-	J	0.0950	0.0351				
1,2,3,6,7,8-HxCDF	0.351	-	J	0.0351	0.0382				
2,3,4,6,7,8-HxCDF	0.652	-	J	0.0652	0.0379				
1,2,3,7,8,9-HxCDF	0.291	-	J	0.0291	0.0423	Total TCDF	7.96	-	
1,2,3,4,6,7,8-HpCDF	4.83	-	J	0.0483	0.0415	Total PeCDF	7.13	-	
1,2,3,4,7,8,9-HpCDF	0.478	-	J	0.00478	0.0532	Total HxCDF	8.47	-	
OCDF	9.04	-	J	0.00271	0.0833	Total HpCDF	12.6	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	94.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	85.2	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	88.0	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	93.9	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	89.3	40.0 - 135	
13C-OCDD	71.6	40.0 - 135	
13C-2,3,7,8-TCDF	96.4	40.0 - 135	
13C-1,2,3,7,8-PeCDF	94.8	40.0 - 135	
13C-2,3,4,7,8-PeCDF	93.3	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	96.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	98.1	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	96.1	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	101	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	83.3	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	98.2	40.0 - 135	
13C-OCDF	80.5	40.0 - 135	
Cleanup Surrogate			
37Cl-2,3,7,8-TCDD	94.3	50.0 - 150	

A	Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
B	Analyte is present in Method Blank
C	Chemical Interference
D	Presence of Diphenyl Ethers
DNQ	Analyte concentration is below calibration range
E	Analyte concentration is above calibration range
F	Analyte confirmation on secondary column
J	Analyte concentration is below calibration range
M	Maximum possible concentration
ND	Analyte Not Detected at Detection Limit Level
NP	Not Provided
P	Pre-filtered through a Whatman 0.7um GF/F filter
S	Sample acceptance criteria not met
X	Matrix interferences
*	Result taken from dilution or reinjection

Analyst: _____ Date: 1/6/2020

Reviewed By: DPV Date: 1/7/2020

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Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

12836
OOC

Chain of Custody Record

eurofins | Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-14414.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Frontier Analytical Laboratory		Accreditations Required (See note):		Job #: 570-15054-1
Address: 5172 Hillsdale Circle, ,	Due Date Requested: 12/20/2019			
City: El Dorado Hills	TAT Requested (days):			
State, Zip: CA, 95762				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003214~~ 570-15054			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Subcontract - EPA 8290 Dioxins / Furans)/ Subcontract - EPA 8290 Dioxins / Furans	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SF-10 Comp (570-15054-1)	11/1/19	12:30 Pacific		Solid			X	1	10 day TAT; J Flag
15-TAT from Carla to Kelly									

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time:	Company	Received by:
Relinquished by:	Date/Time:	Company	Received by:
Relinquished by:	Date/Time:	Company	Received by:

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 000006 of 000008

Rev. 11/6/2019

2/17/2020 (Rev. 1)

Frontier Analytical Laboratory

Sample Login Form

FAL Project ID: **12836**

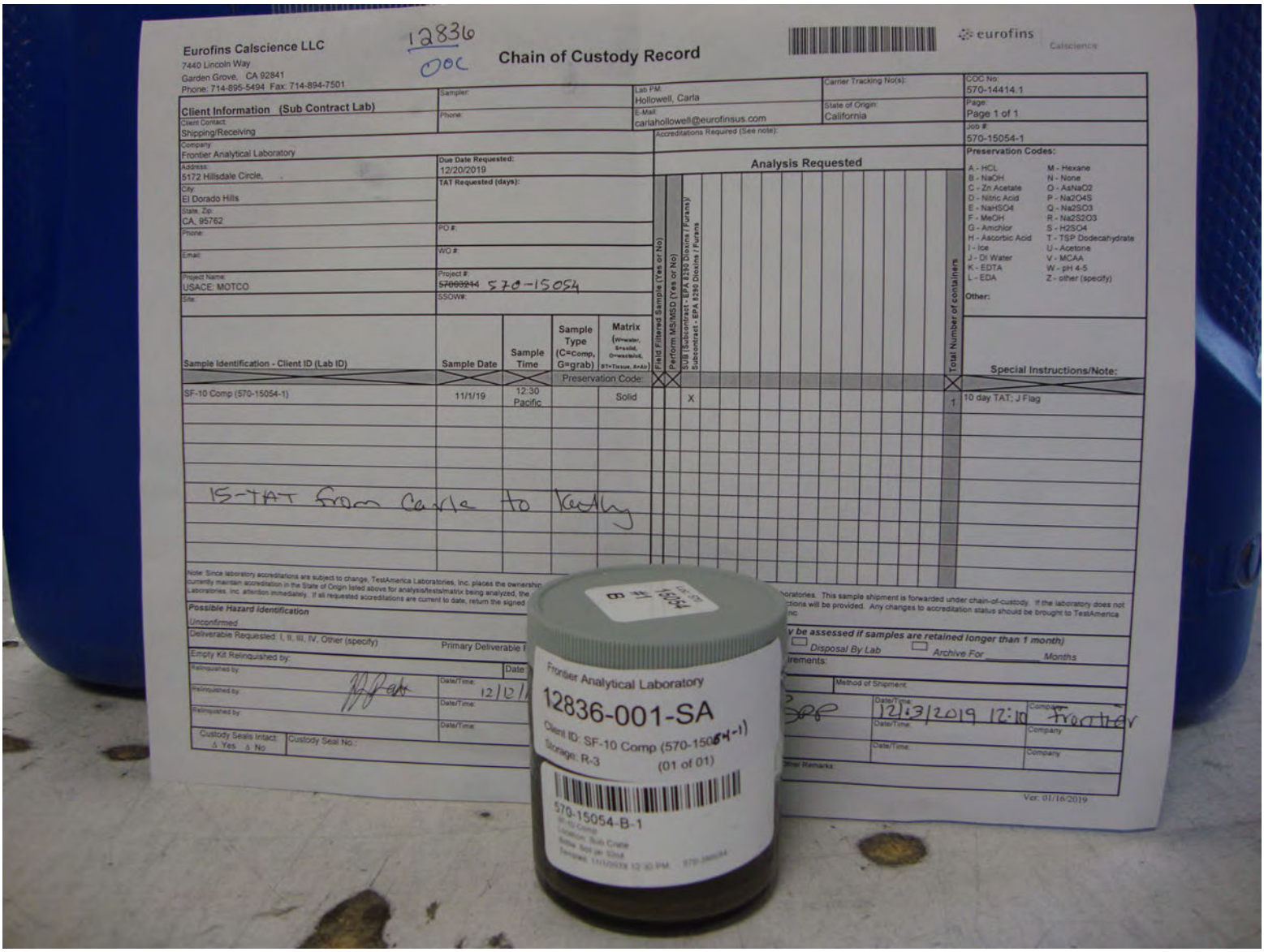
Client:	Eurofins Calscience, Inc.
Client Project ID:	570-15054
Date Received:	12/13/2019
Time Received:	12:10 pm
Received By:	KZ
Logged In By:	EH
# of Samples Received:	1
Duplicates:	0
Storage Location:	R-3

Method of Delivery:	Golden State Overnight
Tracking Number:	547012348
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test aqueous sample for residual Chlorine	No
Sodium Thiosulfate Added	No
Adequate Sample Volume	Yes
Appropriate Sample Container	No
pH Range of Aqueous Sample	N/A

Anomalies or additional comments:

Please note that the samples were received past the EPA Method hold time of thirty days from sampling date. The client was informed and authorized us to go ahead with analysis. In addition, the samples were received in clear glass jars. NELAP requires samples be received in amber glass bottles or jars. Although this anomaly will not affect your results, we are required by NELAP to make a note of it. We will proceed with analysis unless directed otherwise by you.

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Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501
12836
OOC
Chain of Custody Record
eurofins
Calscience
Client Information (Sub Contract Lab)
Shipping/Receiving
Frontier Analytical Laboratory
5172 Hillsdale Circle,
El Dorado Hills
CA, 95762
Lab PM: Hollowell, Carla
E-Mail: carlahollowell@eurofinsus.com
State of Origin: California
COC No: 570-14414.1
Page: Page 1 of 1
Job #: 570-15054-1
Due Date Requested: 12/20/2019
TAT Requested (days):
Project Name: USACE: MOTCO
Project #: 570-15054
Analysis Requested
Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)
Other:
Sample Identification - Client ID (Lab ID)
Sample Date
Sample Time
Sample Type (C=Comp, G=grab)
Matrix
Preservation Code:
Field Filtered Sample (Yes or No)
Perform MS/MSD (Yes or No)
SUB (Subcontract - EPA 8290 Dioxins / Furans)
Total Number of containers
Special Instructions/Note:
SF-10 Comp (570-15054-1)
11/1/19
12:30 Pacific
Solid
X
1
10 day TAT; J Flag
15-TAT from Carla to Kelly
Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify)
Primary Deliverable
Empty Kit Relinquished by:
Relinquished by:
Custody Seals Intact:
Custody Seal No.:
Method of Shipment:
Disposal By Lab
Archive For
Months
Ver: 01/16/2019
Frontier Analytical Laboratory
12836-001-SA
Client ID: SF-10 Comp (570-15054-1)
Storage: R-3
(01 of 01)
570-15054-B-1

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

REQUESTED ANALYSIS

570-15054 Chain of Custody

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	* See Analyte List
1	SF-10	SF-10 Comp	11/1/19	12:30	Sed	1	glass jar	X
2	SF-10	SF-10 Comp	11/1/19	12:30	Sed	1	ziplock bag	X
3								
4								
5								
6								
7								
8								
9								
10								

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

Signature: [redacted]	**SHEI** [redacted]
Print:	**Print:**
Organization: Pacific EcoRisk	**Organization:** ERC
DATE: 12-5-19 **TIME:** 1420	**DATE:** 12/5/19 **TIME:** 1650

RECEIVED BY

Signat [redacted]	**Signature** [redacted]
Print:	**Print:**
Organization: ERC	**Organization:**
DATE: 12/6/19 **TIME:** 1420	**DATE:** 12/6/19 **TIME:** 12:00

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

1-4-1-9 5-6 Custody Seal

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent:	**USACE: MOTCO**
Project #:	30945
Site #:	SF-10 Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Total Organic Carbon	EPA 9060A	0.10%	X
Grain Size	ASTM D4464(M)	0.10%	X
Arsenic	EPA 6020	2 mg/kg	X
Cadmium	EPA 6020	0.3 mg/kg	X
Chromium	EPA 6020	5 mg/kg	X
Copper	EPA 6020	5 mg/kg	X
Lead	EPA 6020	5 mg/kg	X
Nickel	EPA 6020	5 mg/kg	X
Silver	EPA 6020	0.2 mg/kg	X
Zinc	EPA 6020	1 mg/kg	X
Mercury	EPA 7471A	0.02 mg/kg	X
Selenium	EPA 7742	0.1 mg/kg	X
2,4'-DDD	EPA 8081B	1 µg/kg	X
2,4'-DDE	EPA 8081B	1 µg/kg	X
2,4'-DDT	EPA 8081B	1 µg/kg	X
4,4'-DDD	EPA 8081B	1 µg/kg	X
4,4'-DDE	EPA 8081B	1 µg/kg	X
4,4'-DDT	EPA 8081B	1 µg/kg	X
Total DDT	EPA 8081B	1 µg/kg	X
Aldrin	EPA 8081B	2 µg/kg	X
alpha-BHC	EPA 8081B	2 µg/kg	X
beta-BHC	EPA 8081B	2 µg/kg	X
gamma-BHC (Lindane)	EPA 8081B	2 µg/kg	X
delta-BHC	EPA 8081B	2 µg/kg	X
Chlordane	EPA 8081B	20 µg/kg	X
Dieldrin	EPA 8081B	2 µg/kg	X
Endosulfan I	EPA 8081B	2 µg/kg	X
Endosulfan II	EPA 8081B	2 µg/kg	X
Endosulfan Sulfate	EPA 8081B	2 µg/kg	X
Endrin	EPA 8081B	2 µg/kg	X
Endrin Aldehyde	EPA 8081B	2 µg/kg	X
Heptachlor	EPA 8081B	2 µg/kg	X
Heptachlor Epoxide	EPA 8081B	2 µg/kg	X
Toxaphene	EPA 8081B	20 µg/kg	X
PCB 008	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 018	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 028	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 031	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 033	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 044	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 049	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 052	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 056	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 060	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 066	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 070	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 074	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 087	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 095	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 097	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 099	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 101	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**
Project #: 30945
Site #: SF-10 Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
PCB 105	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 110	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 118	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 128	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 132	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 138	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 141	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 149	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 151	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 153	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 156	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 158	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 170	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 174	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 177	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 180	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 183	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 187	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 194	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 195	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 201	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
PCB 203	EPA 8270C or EPA8082 ECD	0.5 µg/kg	X
Acenaphthene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benzo(a)pyrene	EPA 8270C	20 µg/kg	X
Benzo(e)pyrene	EPA 8270C	20 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	20 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	20 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	20 µg/kg	X
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzothiophene	EPA 8270C	20 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	20 µg/kg	X
Fluoranthene	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	20 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
Di-butyltin	Krone 1989	10 µg/kg	X
Mono-Butyltin	Krone 1989	10 µg/kg	X
Tetra-butyltin	Krone 1989	10 µg/kg	X
Tri-butyltin	Krone 1989	10 µg/kg	X
Total Butyltins			X
Dioxins/Furans	EPA 8290	1 ng/kg	X

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent:	**USACE: MOTCO**
Project #:	30945
Site #:	SF-10 Comp

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
QA/QC			

Please use MOTCO-2019-DU1-Comp to perform duplicate and MS/MSD on sample run. Standard TAT.
Samples frozen since 11/5/19.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

570-15054 Waybill

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Ship To
CEL
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD: $0.00
Weight: 0 lb(s)
Reference:
PACIFIC ECORISK,PORT COSTA
WTP,SCHNITZER,APT
Delivery Instructions:

Signature Type: STANDARD

Tracking #: 547184376

NPS

GARDEN GROVE

S92841A

12565974

ORC CA927-CL0

Print Date: 12/5/2019 3:48 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.
Step 2: Fold this page in half.
Step 3: Securely attach this label to your package and do not cover the barcode.

TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all of the GSO service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at www.gso.com.

Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-15054-1

Login Number: 15054
List Number: 1
Creator: Ramos, Maribel

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix C

Eurofins Data Report for Individual Z-Layer Core Sediment Analyses

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-15644-1
Client Project/Site: USACE: MOTCO

For:
Pacific EcoRisk Inc
2250 Cordelia Rd
Fairfield, California 94534

[redacted]

Authorized for release by:
12/30/2019 10:11:33 AM

[redacted], Project Manager I
(714)895-5494
carlahollowell@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Job ID: 570-15644-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-15644-1

Comments
No additional comments.

Receipt
The samples were received on 12/13/2019 11:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method: 8270C SIM - PAHs (GC/MS SIM) - DL

Client Sample ID: MOTCO-2019-DU3-02-Z-Layer
Date Collected: 10/30/19 10:04
Date Received: 12/13/19 11:10

Lab Sample ID: 570-15644-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	20	J	91	18	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
1-Methylnaphthalene	18	J	91	6.6	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
1-Methylphenanthrene	21	J	91	19	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
2,6-Dimethylnaphthalene	77	J	91	16	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
2-Methylnaphthalene	13	J	91	6.6	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Acenaphthene	1900		91	4.6	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Acenaphthylene	ND		91	78	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Anthracene	130		91	6.1	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Benzo[a]anthracene	94		91	10	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Benzo[a]pyrene	26	J	91	12	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Benzo[b]fluoranthene	33	J	91	13	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Benzo[e]pyrene	23	J	91	18	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Benzo[g,h,i]perylene	ND		91	13	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Benzo[k]fluoranthene	30	J	91	15	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Chrysene	76	J	91	7.1	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Dibenz(a,h)anthracene	ND		91	9.7	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Dibenzothiophene	56	J	91	12	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Fluoranthene	730		91	8.8	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Fluorene	140		91	7.6	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Indeno[1,2,3-cd]pyrene	ND		91	11	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Naphthalene	39	J	91	7.1	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Perylene	410		91	22	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Phenanthrene	890		91	7.7	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Pyrene	610		91	6.8	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5
Biphenyl	ND		91	17	ug/Kg	☼	12/17/19 17:55	12/22/19 20:06	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*74*		*22 - 130*	*12/17/19 17:55*	*12/22/19 20:06*	*5*
Nitrobenzene-d5	*52*		*20 - 145*	*12/17/19 17:55*	*12/22/19 20:06*	*5*
p-Terphenyl-d14	*96*		*33 - 147*	*12/17/19 17:55*	*12/22/19 20:06*	*5*

Client Sample ID: MOTCO-2019-DU4-03-Z-Layer
Date Collected: 10/30/19 15:05
Date Received: 12/13/19 11:10

Lab Sample ID: 570-15644-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	30	J	95	19	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
1-Methylnaphthalene	15	J	95	6.9	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
1-Methylphenanthrene	49	J	95	20	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
2,6-Dimethylnaphthalene	38	J	95	16	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
2-Methylnaphthalene	18	J	95	6.9	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Acenaphthene	560		95	4.8	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Acenaphthylene	ND		95	81	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Anthracene	330		95	6.4	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Benzo[a]anthracene	600		95	11	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Benzo[a]pyrene	330		95	13	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Benzo[b]fluoranthene	390		95	14	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Benzo[e]pyrene	230		95	19	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Benzo[g,h,i]perylene	150		95	14	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Benzo[k]fluoranthene	370		95	15	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Chrysene	790		95	7.4	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Method: 8270C SIM - PAHs (GC/MS SIM) - DL (Continued)

Client Sample ID: MOTCO-2019-DU4-03-Z-Layer
Date Collected: 10/30/19 15:05
Date Received: 12/13/19 11:10

Lab Sample ID: 570-15644-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	17	J	95	10	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Dibenzothiophene	44	J	95	13	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Fluoranthene	2100		95	9.2	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Fluorene	290		95	8.0	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Indeno[1,2,3-cd]pyrene	140		95	12	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Naphthalene	58	J	95	7.4	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Perylene	260		95	23	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Phenanthrene	850		95	8.0	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Pyrene	1800		95	7.1	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5
Biphenyl	ND		95	18	ug/Kg	☼	12/17/19 17:55	12/22/19 20:27	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*83*		*22 - 130*	*12/17/19 17:55*	*12/22/19 20:27*	*5*
Nitrobenzene-d5	*33*		*20 - 145*	*12/17/19 17:55*	*12/22/19 20:27*	*5*
p-Terphenyl-d14	*108*		*33 - 147*	*12/17/19 17:55*	*12/22/19 20:27*	*5*

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

General Chemistry

Client Sample ID: MOTCO-2019-DU3-02-Z-Layer
Date Collected: 10/30/19 10:04
Date Received: 12/13/19 11:10

Lab Sample ID: 570-15644-1
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	54.5		0.1	0.1	%			12/16/19 11:09	1

Client Sample ID: MOTCO-2019-DU4-03-Z-Layer
Date Collected: 10/30/19 15:05
Date Received: 12/13/19 11:10

Lab Sample ID: 570-15644-2
Matrix: Sediment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	52.2		0.1	0.1	%			12/16/19 11:09	1

Surrogate Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Sediment

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-15644-1 - DL	MOTCO-2019-DU3-02-Z-Layer	74	52	96
570-15644-2 - DL	MOTCO-2019-DU4-03-Z-Layer	83	33	108

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(22-130)	(20-145)	(33-147)
570-15814-A-3-B MS	Matrix Spike	79	74	93
570-15814-A-3-C MSD	Matrix Spike Duplicate	76	65	100
LCS 570-39739/2-A	Lab Control Sample	79	59	94
LCSD 570-39739/3-A	Lab Control Sample Dup	75	58	91
MB 570-39739/1-A	Method Blank	68	44	83

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-39739/1-A
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 39739

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
1-Methylnaphthalene	ND		10	0.72	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
1-Methylphenanthrene	ND		10	2.1	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
2-Methylnaphthalene	ND		10	0.72	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Acenaphthene	ND		10	0.51	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Acenaphthylene	ND		10	8.5	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Anthracene	ND		10	0.67	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Benzo[a]anthracene	ND		10	1.1	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Benzo[a]pyrene	ND		10	1.4	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Benzo[b]fluoranthene	ND		10	1.5	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Benzo[k]fluoranthene	ND		10	1.6	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Chrysene	ND		10	0.78	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Dibenz(a,h)anthracene	ND		10	1.1	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Dibenzothiophene	ND		10	1.3	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Fluoranthene	ND		10	0.97	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Fluorene	ND		10	0.84	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Indeno[1,2,3-cd]pyrene	ND		10	1.2	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Naphthalene	ND		10	0.78	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Perylene	ND		10	2.4	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Phenanthrene	ND		10	0.84	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Pyrene	ND		10	0.75	ug/Kg		12/17/19 17:55	12/19/19 15:08	1
Biphenyl	ND		10	1.9	ug/Kg		12/17/19 17:55	12/19/19 15:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*68*		*22 - 130*	*12/17/19 17:55*	*12/19/19 15:08*	*1*
Nitrobenzene-d5	*44*		*20 - 145*	*12/17/19 17:55*	*12/19/19 15:08*	*1*
p-Terphenyl-d14	*83*		*33 - 147*	*12/17/19 17:55*	*12/19/19 15:08*	*1*

Lab Sample ID: LCS 570-39739/2-A
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39739

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	100	78.43		ug/Kg		78	54 - 132
2-Methylnaphthalene	100	83.44		ug/Kg		83	50 - 127
Acenaphthene	100	78.69		ug/Kg		79	53 - 125
Acenaphthylene	100	88.04		ug/Kg		88	50 - 123
Anthracene	100	87.63		ug/Kg		88	50 - 132
Benzo[a]anthracene	100	94.27		ug/Kg		94	50 - 133
Benzo[a]pyrene	100	102.8		ug/Kg		103	50 - 134
Benzo[b]fluoranthene	100	100.3		ug/Kg		100	50 - 142
Benzo[g,h,i]perylene	100	100.8		ug/Kg		101	50 - 130
Benzo[k]fluoranthene	100	95.51		ug/Kg		96	49 - 150
Chrysene	100	84.56		ug/Kg		85	51 - 129
Dibenz(a,h)anthracene	100	108.2		ug/Kg		108	50 - 133

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-39739/2-A
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 39739

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoranthene	100	90.19		ug/Kg		90	55 - 127
Fluorene	100	83.84		ug/Kg		84	55 - 127
Indeno[1,2,3-cd]pyrene	100	101.2		ug/Kg		101	50 - 148
Naphthalene	100	72.76		ug/Kg		73	51 - 129
Phenanthrene	100	81.54		ug/Kg		82	50 - 122
Pyrene	100	85.94		ug/Kg		86	50 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*79*		*22 - 130*
Nitrobenzene-d5	*59*		*20 - 145*
p-Terphenyl-d14	*94*		*33 - 147*

Lab Sample ID: LCSD 570-39739/3-A
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 39739

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	100	76.65		ug/Kg		77	54 - 132	2	20
2-Methylnaphthalene	100	81.14		ug/Kg		81	50 - 127	3	20
Acenaphthene	100	76.89		ug/Kg		77	53 - 125	2	20
Acenaphthylene	100	85.64		ug/Kg		86	50 - 123	3	20
Anthracene	100	83.02		ug/Kg		83	50 - 132	5	20
Benzo[a]anthracene	100	91.35		ug/Kg		91	50 - 133	3	20
Benzo[a]pyrene	100	97.60		ug/Kg		98	50 - 134	5	20
Benzo[b]fluoranthene	100	96.92		ug/Kg		97	50 - 142	3	20
Benzo[g,h,i]perylene	100	95.63		ug/Kg		96	50 - 130	5	20
Benzo[k]fluoranthene	100	92.03		ug/Kg		92	49 - 150	4	20
Chrysene	100	82.16		ug/Kg		82	51 - 129	3	20
Dibenz(a,h)anthracene	100	103.0		ug/Kg		103	50 - 133	5	20
Fluoranthene	100	86.39		ug/Kg		86	55 - 127	4	20
Fluorene	100	81.32		ug/Kg		81	55 - 127	3	20
Indeno[1,2,3-cd]pyrene	100	97.11		ug/Kg		97	50 - 148	4	20
Naphthalene	100	70.34		ug/Kg		70	51 - 129	3	20
Phenanthrene	100	78.37		ug/Kg		78	50 - 122	4	20
Pyrene	100	84.30		ug/Kg		84	50 - 134	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*75*		*22 - 130*
Nitrobenzene-d5	*58*		*20 - 145*
p-Terphenyl-d14	*91*		*33 - 147*

Lab Sample ID: 570-15814-A-3-B MS
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 39739

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	ND		129	98.35		ug/Kg	☼	76	34 - 136
2-Methylnaphthalene	ND		129	102.5		ug/Kg	☼	79	29 - 137

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-15814-A-3-B MS
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 39739

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		129	103.0		ug/Kg	☼	80	29 - 137
Acenaphthylene	ND		129	116.6		ug/Kg	☼	90	29 - 131
Anthracene	ND		129	118.0		ug/Kg	☼	91	26 - 134
Benzo[a]anthracene	ND		129	122.2		ug/Kg	☼	94	24 - 150
Benzo[a]pyrene	ND		129	133.4		ug/Kg	☼	103	29 - 149
Benzo[b]fluoranthene	ND		129	133.0		ug/Kg	☼	103	21 - 153
Benzo[g,h,i]perylene	ND		129	124.3		ug/Kg	☼	96	20 - 148
Benzo[k]fluoranthene	ND		129	120.7		ug/Kg	☼	93	28 - 148
Chrysene	ND		129	108.7		ug/Kg	☼	84	25 - 145
Dibenz(a,h)anthracene	ND		129	138.2		ug/Kg	☼	107	20 - 132
Fluoranthene	ND		129	121.1		ug/Kg	☼	93	20 - 151
Fluorene	ND		129	109.7		ug/Kg	☼	85	36 - 132
Indeno[1,2,3-cd]pyrene	ND		129	129.2		ug/Kg	☼	100	20 - 154
Naphthalene	ND		129	89.15		ug/Kg	☼	69	20 - 150
Phenanthrene	ND		129	109.3		ug/Kg	☼	84	20 - 144
Pyrene	ND		129	112.6		ug/Kg	☼	87	20 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*79*		*22 - 130*
Nitrobenzene-d5	*74*		*20 - 145*
p-Terphenyl-d14	*93*		*33 - 147*

Lab Sample ID: 570-15814-A-3-C MSD
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 39739

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		130	93.21		ug/Kg	☼	72	34 - 136	5	29
2-Methylnaphthalene	ND		130	97.05		ug/Kg	☼	75	29 - 137	5	31
Acenaphthene	ND		130	104.2		ug/Kg	☼	80	29 - 137	1	28
Acenaphthylene	ND		130	118.6		ug/Kg	☼	91	29 - 131	2	32
Anthracene	ND		130	126.8		ug/Kg	☼	97	26 - 134	7	27
Benzo[a]anthracene	ND		130	129.1		ug/Kg	☼	99	24 - 150	5	24
Benzo[a]pyrene	ND		130	141.5		ug/Kg	☼	109	29 - 149	6	22
Benzo[b]fluoranthene	ND		130	136.4		ug/Kg	☼	105	21 - 153	3	26
Benzo[g,h,i]perylene	ND		130	130.7		ug/Kg	☼	100	20 - 148	5	27
Benzo[k]fluoranthene	ND		130	131.1		ug/Kg	☼	101	28 - 148	8	26
Chrysene	ND		130	115.2		ug/Kg	☼	89	25 - 145	6	28
Dibenz(a,h)anthracene	ND		130	145.7		ug/Kg	☼	112	20 - 132	5	26
Fluoranthene	ND		130	130.1		ug/Kg	☼	100	20 - 151	7	26
Fluorene	ND		130	113.6		ug/Kg	☼	87	36 - 132	3	27
Indeno[1,2,3-cd]pyrene	ND		130	136.4		ug/Kg	☼	105	20 - 154	5	25
Naphthalene	ND		130	82.93		ug/Kg	☼	64	20 - 150	7	33
Phenanthrene	ND		130	115.8		ug/Kg	☼	89	20 - 144	6	27
Pyrene	ND		130	120.5		ug/Kg	☼	93	20 - 150	7	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*76*		*22 - 130*

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-15814-A-3-C MSD
Matrix: Solid
Analysis Batch: 40098

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 39739

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5	*65*		*20 - 145*
p-Terphenyl-d14	*100*		*33 - 147*

Method: Moisture - Percent Moisture

Lab Sample ID: 570-15674-A-1 DU
Matrix: Solid
Analysis Batch: 39294

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	82.3			83.2		%				1	10

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Client Sample ID: MOTCO-2019-DU3-02-Z-Layer

Lab Sample ID: 570-15644-1

Date Collected: 10/30/19 10:04

Matrix: Sediment

Date Received: 12/13/19 11:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep	DL				39566	12/17/19 10:32	C4LT	ECL 1
Total/NA	Prep	3541	DL		20.1 g	2 mL	39739	12/17/19 17:55	UM1W	ECL 1
Total/NA	Analysis	8270C SIM	DL	5			40781	12/22/19 20:06	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Analysis	Moisture		1			39294	12/16/19 11:09	UXCH	ECL 2
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-03-Z-Layer

Lab Sample ID: 570-15644-2

Date Collected: 10/30/19 15:05

Matrix: Sediment

Date Received: 12/13/19 11:10

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Cleanup	Homogenize Prep	DL				39566	12/17/19 10:32	C4LT	ECL 1
Total/NA	Prep	3541	DL		20.1 g	2 mL	39739	12/17/19 17:55	UM1W	ECL 1
Total/NA	Analysis	8270C SIM	DL	5			40781	12/22/19 20:27	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Analysis	Moisture		1			39294	12/16/19 11:09	UXCH	ECL 2
	Instrument ID: NOEQUIP									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-20

Method Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Method	Method Description	Protocol	Laboratory
8270C SIM	PAHs (GC/MS SIM)	SW846	ECL 1
Moisture	Percent Moisture	EPA	ECL 2
3541	Automated Soxhlet Extraction	SW846	ECL 1
Homogenize Prep	Preparation, Homogenization	None	ECL 1

Protocol References:

EPA = US Environmental Protection Agency

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-15644-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-15644-1	MOTCO-2019-DU3-02-Z-Layer	Sediment	10/30/19 10:04	12/13/19 11:10	
570-15644-2	MOTCO-2019-DU4-03-Z-Layer	Sediment	10/30/19 15:05	12/13/19 11:10	

15644

570-15644 Chain of Custody

Pacific EcoRisk ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707) 207-7760

Eurofins Caus... **JSTODY RECORD**

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS * See Analyte List
1	DU4-03	MOTCO-2019-DU3-02-Z-Layer	10/30/19	10:04	Sed	1	ziplock bag	X
2	DU4-04	MOTCO-2019-DU4-03-Z-Layer	10/30/19	15:05	Sed	1	zuplock bag	X
3								
4								
5								
6								
7								
8								
9								
10								

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Bulk sediment sample date/time reflects collection date/time of oldest sample in the composite.

Standard TAT

	RELINQUISHED BY	RECEIVED BY
Signature:	[redacted]	**Signature:** [redacted]
Print:	[redacted]	**Print:** [redacted]
Organization:	Pacific EcoRisk	**Organization:** ECI
DATE:	12/12/19 **TIME:** 1233	**DATE:** 12/12/19 **TIME:** 1630
Signature:	[redacted]	**Signature:** [redacted]
Print:	[redacted]	**Print:** [redacted]
Organization:	ECI	**Organization:** ECI
DATE:	12/12/19 **TIME:** 1233	**DATE:** 12/13/19 **TIME:** 11:10

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

1-4/1-9 SG
* Custody Seal

12/30/2019

15644

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**
Project #: 30945
Site #: MOTCO-2019-DU3-02-Z-Layer and MOTCO-2019-DU4-03-Z-Layer

ANALYTE	METHOD	TARGETED MRL	ANALYSIS REQUESTED
Solids, Total	SM 2540B	0.10%	X
Acenaphthene	EPA 8270C	20 µg/kg	X
Acenaphthylene	EPA 8270C	20 µg/kg	X
Anthracene	EPA 8270C	20 µg/kg	X
Benz(a)anthracene	EPA 8270C	20 µg/kg	X
Benzo(a)pyrene	EPA 8270C	20 µg/kg	X
Benzo(e)pyrene	EPA 8270C	20 µg/kg	X
Benzo(b)fluoranthene	EPA 8270C	20 µg/kg	X
Benzo(g,h,i)perylene	EPA 8270C	20 µg/kg	X
Benzo(k)fluoranthene	EPA 8270C	20 µg/kg	X
Biphenyl	EPA 8270C	20 µg/kg	X
Chrysene	EPA 8270C	20 µg/kg	X
Dibenz(a,h)anthracene	EPA 8270C	20 µg/kg	X
Dibenzothiophene	EPA 8270C	20 µg/kg	X
Dimethylnapthalene 2, 6-	EPA 8270C	20 µg/kg	X
Fluoranthene	EPA 8270C	20 µg/kg	X
Fluorene	EPA 8270C	20 µg/kg	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	20 µg/kg	X
Methylnapthalene, 1-	EPA 8270C	20 µg/kg	X
Methylnapthalene, 2-	EPA 8270C	20 µg/kg	X
Methylphenanthrene, 1-	EPA 8270C	20 µg/kg	X
Naphthalene	EPA 8270C	20 µg/kg	X
Perylene	EPA 8270C	20 µg/kg	X
Phenanthrene	EPA 8270C	20 µg/kg	X
Pyrene	EPA 8270C	20 µg/kg	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	20 µg/kg	X
QA/QC			

Samples frozen since 11/5/19.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-15644-1

Login Number: 15644
List Number: 1
Creator: Ramos, Maribel

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix D

Eurofins Data Report for the Sediment MET Elutriate Analyses Reports

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-13783-1
Client Project/Site: USACE: MOTCO
Revision: 1

For:
Pacific EcoRisk Inc
2250 Cordelia Rd
Fairfield, California 94534

[redacted]

Authorized for release by:
1/23/2020 12:29:17 PM

[redacted] Project Manager I
(714)895-5494
carlahollowell@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-13783-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-13783-1

Job ID: 570-13783-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-13783-1

Comments
No additional comments.

Receipt
The samples were received on 11/22/2019 10:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.3º C.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work
Methods 1640 - Dissolved Metals (EFGS), 1640 - Total Metals (EFGS), Total LL Mercury 1631 (EFGS): These methods were subcontracted to Eurofins Frontier Global Sciences LLC. The subcontract laboratory certifications are different from that of the facility issuing the final report.

General Chemistry

Client Sample ID: MOTCO-2019-DU1-Comp
Date Collected: 11/21/19 09:39
Date Received: 11/22/19 10:15

Lab Sample ID: 570-13783-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	20.6		1.00	0.829	mg/L			11/27/19 15:00	1

Client Sample ID: MOTCO-2019-DU2a-Comp
Date Collected: 11/21/19 09:44
Date Received: 11/22/19 10:15

Lab Sample ID: 570-13783-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	29.5		1.00	0.829	mg/L			11/27/19 15:00	1

Client Sample ID: MOTCO-2019-DU2b-Comp
Date Collected: 11/21/19 09:48
Date Received: 11/22/19 10:15

Lab Sample ID: 570-13783-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	28.7		1.00	0.829	mg/L			11/27/19 15:00	1

Client Sample ID: MOTCO-2019-DU3-Comp
Date Collected: 11/21/19 09:53
Date Received: 11/22/19 10:15

Lab Sample ID: 570-13783-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	13.3		1.00	0.829	mg/L			11/27/19 15:00	1

Client Sample ID: MOTCO-2019-DU4-Comp
Date Collected: 11/21/19 09:56
Date Received: 11/22/19 10:15

Lab Sample ID: 570-13783-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	19.5		1.00	0.829	mg/L			11/27/19 15:00	1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 570-35863/1
Matrix: Water
Analysis Batch: 35863

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.00	0.829	mg/L			11/27/19 15:00	1

Lab Sample ID: LCS 570-35863/2
Matrix: Water
Analysis Batch: 35863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Suspended Solids			100	104.0		mg/L		104	85 - 115		

Lab Sample ID: LCSD 570-35863/3
Matrix: Water
Analysis Batch: 35863

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids			100	104.0		mg/L		104	85 - 115	0	10

Lab Sample ID: 570-13783-1 DU
Matrix: Water
Analysis Batch: 35863

Client Sample ID: MOTCO-2019-DU1-Comp
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	20.6			19.70		mg/L				4	10

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-13783-1

Client Sample ID: MOTCO-2019-DU1-Comp
Lab Sample ID: 570-13783-1
Date Collected: 11/21/19 09:39
Matrix: Water
Date Received: 11/22/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	35863	11/27/19 15:00	XL6Z	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp
Lab Sample ID: 570-13783-2
Date Collected: 11/21/19 09:44
Matrix: Water
Date Received: 11/22/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	35863	11/27/19 15:00	XL6Z	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp
Lab Sample ID: 570-13783-3
Date Collected: 11/21/19 09:48
Matrix: Water
Date Received: 11/22/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	35863	11/27/19 15:00	XL6Z	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp
Lab Sample ID: 570-13783-4
Date Collected: 11/21/19 09:53
Matrix: Water
Date Received: 11/22/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	35863	11/27/19 15:00	XL6Z	ECL 1
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp
Lab Sample ID: 570-13783-5
Date Collected: 11/21/19 09:56
Matrix: Water
Date Received: 11/22/19 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	1000 mL	1000 mL	35863	11/27/19 15:00	XL6Z	ECL 1
	Instrument ID: NOEQUIP									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

FGS = Eurofins Frontier Global Sciences LLC, 5755 8th Street E, Tacoma, WA 98424

Accreditation/Certification Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-13783-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-29-19
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-20

Method Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-13783-1

Method	Method Description	Protocol	Laboratory
SM 2540D	Solids, Total Suspended (TSS)	SM	ECL 1
1631	Low Level Mercury by 1631	EPA	FGS
1640	EPA 1640 Metals	EPA	FGS

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

FGS = Eurofins Frontier Global Sciences LLC, 5755 8th Street E, Tacoma, WA 98424

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO

Job ID: 570-13783-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-13783-1	MOTCO-2019-DU1-Comp	Water	11/21/19 09:39	11/22/19 10:15	
570-13783-2	MOTCO-2019-DU2a-Comp	Water	11/21/19 09:44	11/22/19 10:15	
570-13783-3	MOTCO-2019-DU2b-Comp	Water	11/21/19 09:48	11/22/19 10:15	
570-13783-4	MOTCO-2019-DU3-Comp	Water	11/21/19 09:53	11/22/19 10:15	
570-13783-5	MOTCO-2019-DU4-Comp	Water	11/21/19 09:56	11/22/19 10:15	

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11720 Northcreek Pkwy N, Suite 400
Bothell, WA 98011
425.686.1996 Phone
425.686.3096 Fax

23 January 2020

[redacted]
Eurofins Calscience, LLC
7440 Lincoln Way
Garden Grove, CA 92841

RE: EPA 1640

Enclosed are the analytical results for samples received by Eurofins Frontier Global Sciences. All quality control measurements are within established control limits and there were no analytical difficulties encountered with the exception of those listed in the case narrative section of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

[redacted]

[redacted]
Project Manager

eurofins | Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MOTCO-2019-DU1-Comp (570-13783-1) TOTALS	9K00231-01	Water	21-Nov-19 09:39	27-Nov-19 11:00
MOTCO-2019-DU1-Comp (570-13783-1) DISSOLVED	9K00231-02	Water	21-Nov-19 09:39	27-Nov-19 11:00
MOTCO-2019-DU2A-Comp (570-13783-2) TOTALS	9K00231-07	Water	21-Nov-19 09:44	27-Nov-19 11:00
MOTCO-2019-DU2A-Comp (570-13783-2) DISSOLVED	9K00231-08	Water	21-Nov-19 09:44	27-Nov-19 11:00
MOTCO-2019-DU2b-Comp (570-13783-3) TOTALS	9K00231-09	Water	21-Nov-19 09:48	27-Nov-19 11:00
MOTCO-2019-DU2b-Comp (570-13783-3) DISSOLVED	9K00231-10	Water	21-Nov-19 09:48	27-Nov-19 11:00
MOTCO-2019-DU3-Comp (570-13783-4) TOTALS	9K00231-11	Water	21-Nov-19 09:53	27-Nov-19 11:00
MOTCO-2019-DU3-Comp (570-13783-4) DISSOLVED	9K00231-12	Water	21-Nov-19 09:53	27-Nov-19 11:00
MOTCO-2019-DU4-Comp (570-13783-5) TOTALS	9K00231-13	Water	21-Nov-19 09:56	27-Nov-19 11:00
MOTCO-2019-DU4-Comp (570-13783-5) DISSOLVED	9K00231-14	Water	21-Nov-19 09:56	27-Nov-19 11:00
Filter Blank	9K00231-15	Water	27-Nov-19 00:00	27-Nov-19 11:00

[redacted]

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

This report was revisied for the following reason: See Narrative for Details

Amy Goodall, Project Manager

eurofins | Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

REVISED REPORT (1/23/2020)

Report was revised per client request. Original report did not include total Selenium, and the total samples included non-requested analyte results. This has been corrected in this revised report.

SAMPLE RECEIPT

Samples were received at Eurofins Frontier Global Sciences (EFGS) on 27-Nov-19 11:00. The samples were received intact, on-ice within a sealed cooler at

Cooler	Temp C°
Default Cooler	-0.1

EFGS filtered the dissolved samples on the day of receipt.

Client originally requested EPA 1640, but after discussion with the lab, client approved analyzing via EPA 1638.

SAMPLE PREPARATION AND ANALYSIS

Samples were prepared and analyzed for total mercury by flow injection atomic fluorescence spectrometry (FI-AFS) in accordance with EPA 1631E.

Samples were prepared and analyzed for total recoverable metals by inductively coupled plasma mass spectrometry (ICP-MS) in accordance with EPA 1638 (EFGS-054).

ANALYTICAL AND QUALITY CONTROL ISSUES

Method blanks were prepared for every preparation to assess possible blank contribution from the sample preparation procedure. The method blanks were carried through the entire analytical procedure. All blanks fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

Liquid spikes, certified reference material (CRM) or a quality control samples (QCS) were prepared for every preparation as a measure of accuracy. All liquid spikes, CRMs and/or QCS samples fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

As an additional measure of the accuracy of the methods used and to check for matrix interference, matrix spikes (MS) and matrix spike

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries fell within the established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

A reasonable measure of the precision of the analytical methods is the relative percent difference (RPD) between a matrix spike recovery and a matrix spike duplicate recovery and between laboratory control sample recovery and laboratory control sample duplicate recoveries. All of the relative percent differences fell within established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

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Frontier Global Sciences

Sample Receipt Checklist

Client: Eurofins Calscience Date & Time Received: 11:00 11/26/19 Date Labeled: 11/27/19 Labeled By: emb

Matrix: Water Received By: emb Label Verified By: HJB 11/27/19

of Coolers Received: 1 Samples Arrived By: X Shipping Service ____ Courier ____ Hand ____ Other (Specify:____)

Coolant: ☐ None/Ambient ☒ Loose Ice ☐ Gel Ice ☐ Dry Ice Coolant Required (Y) N Temp Blank Used: Y (N) for Cooler(s):____

Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: Y/N

Samples from Wisconsin have special requirements. Shipment received includes samples from Wisconsin: Y (N)

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	Y	
Custody Seals are present and intact:	Y	
Custody seals signed:	Y	

TID: 18113984 CF: +0.1 °C				Date/time: 11/26/19		By: emb	
Cooler 1: -0.7 °C	w/ CF: -0.1 °C			Cooler 4: °C	w/ CF: °C		
Cooler 2: °C	w/ CF: °C			Cooler 5: °C	w/ CF: °C		
Cooler 3: °C	w/ CF: °C			Cooler 6: °C	w/ CF: °C		

Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	Y	
Date and time of collection:	Y	
Sampled by:	Y	
Preservation type:	Y	
Requested analyses:	Y	
Required signatures:	Y	
Internal COC required:	N	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	Y	
Sample labels are present and legible:	Y	
Sample ID on container/bag matches COC:	Y	
Correct sample containers used:	Y	
Samples received within holding times:	Y	
Sample volume sufficient for requested analyses:	Y	
Correct preservative used for requested analyses:	Y	

Anomalies/Non-conformances (attach additional pages if needed):

9K00231

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

9140023

Chain of Custody Record

eurofins Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-12203.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Frontier Global Sciences LLC		Accreditations Required (See note):		Job #: 570-13783-1
Address: 5755 8th Street E, ,	Due Date Requested: 12/6/2019			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO	Project #: ~~57003303~~ 570-13783			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (Total LL Mercury 1631 (EFGS))/ Total LL Mercury 1631 (EFGS)	SUB (1640 - Total Metals (EFGS))/ 1640 - Total Metals (EFGS)	SUB (1640 - Dissolved Metals (EFGS))/ 1640 - Dissolved Metals (EFGS)	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
MOTCO-2019-DU1-Comp (570-13783-1)	11/21/19	09:39 Pacific		Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter
MOTCO-2019-DU1-Comp (570-13783-1MS)	11/21/19	09:39 Pacific	MS	Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter
MOTCO-2019-DU1-Comp (570-13783-1MSD)	11/21/19	09:39 Pacific	MSD	Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter
MOTCO-2019-DU2a-Comp (570-13783-2)	11/21/19	09:44 Pacific		Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter
MOTCO-2019-DU2b-Comp (570-13783-3)	11/21/19	09:48 Pacific		Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter
MOTCO-2019-DU3-Comp (570-13783-4)	11/21/19	09:53 Pacific		Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter
MOTCO-2019-DU4-Comp (570-13783-5)	11/21/19	09:56 Pacific		Water			X	X	X	3	, Selenium, As, Cd, Cr, Cu, Pb, Ni, Ag, Zn - Pls filter

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
		11/26/19 1645				
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

fed 7770 9423 1140

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Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU1-Comp (570-13783-1) TOTALS

9K00231-01

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2796 EPA 1631 Oxidation											
Mercury	**6.69**	0.83	5.00	ng/L	10	F912239	19-Dec-19	9L20005	19-Dec-19	EPA 1631E	
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Selenium	**0.08**	0.05	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J

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Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU1-Comp (570-13783-1) DISSOLVED

9K00231-02

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Silver	ND	0.015	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Arsenic	**4.63**	0.03	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Cadmium	ND	0.018	0.030	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Chromium	**0.34**	0.21	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J
Copper	**0.88**	0.40	1.00	µg/L	1	F001280	20-Jan-20	0A22007	21-Jan-20	EPA 1638	J
Nickel	**1.70**	0.23	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Lead	ND	0.027	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Zinc	**0.85**	0.82	1.00	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J

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5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU2A-Comp (570-13783-2) TOTALS

9K00231-07

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2796 EPA 1631 Oxidation											
Mercury	**2.94**	0.08	0.50	ng/L	1	F912239	19-Dec-19	9L20005	19-Dec-19	EPA 1631E	
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Selenium	**0.24**	0.05	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

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5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU2A-Comp (570-13783-2) DISSOLVED

9K00231-08

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Silver	**0.018**	0.015	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J
Arsenic	**3.12**	0.03	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Cadmium	ND	0.018	0.030	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Chromium	**0.50**	0.21	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Copper	**1.82**	0.40	1.00	µg/L	1	F001280	20-Jan-20	0A22007	21-Jan-20	EPA 1638	
Nickel	**1.31**	0.23	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Lead	ND	0.027	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Zinc	**1.40**	0.82	1.00	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

Eurofins Frontier Global Sciences, LLC

[redacted]

Amy Goodall, Project Manager

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

This report was revisied for the following reason: See Narrative for Details

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5755 8th Street East
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Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU2b-Comp (570-13783-3) TOTALS

9K00231-09

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2796 EPA 1631 Oxidation											
Mercury	**2.63**	0.08	0.50	ng/L	1	F912239	19-Dec-19	9L20005	19-Dec-19	EPA 1631E	
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Selenium	**0.26**	0.05	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

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Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU2b-Comp (570-13783-3) DISSOLVED

9K00231-10

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Silver	**0.018**	0.015	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J
Arsenic	**2.99**	0.03	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Cadmium	ND	0.018	0.030	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Chromium	**0.49**	0.21	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J
Copper	**1.26**	0.40	1.00	µg/L	1	F001280	20-Jan-20	0A22007	21-Jan-20	EPA 1638	
Nickel	**1.51**	0.23	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Lead	**0.061**	0.027	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Zinc	**1.13**	0.82	1.00	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

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7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU3-Comp (570-13783-4) TOTALS

9K00231-11

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2796 EPA 1631 Oxidation											
Mercury	**3.25**	0.08	0.50	ng/L	1	F912239	19-Dec-19	9L20005	19-Dec-19	EPA 1631E	
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Selenium	**0.13**	0.05	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

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Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU3-Comp (570-13783-4) DISSOLVED

9K00231-12

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Silver	**0.031**	0.015	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J
Arsenic	**11.6**	0.03	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Cadmium	ND	0.018	0.030	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Chromium	**0.78**	0.21	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Copper	**1.54**	0.40	1.00	µg/L	1	F001280	20-Jan-20	0A22007	21-Jan-20	EPA 1638	
Nickel	**0.90**	0.23	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Lead	ND	0.027	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Zinc	**0.83**	0.82	1.00	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	J

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7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU4-Comp (570-13783-5) TOTALS

9K00231-13

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2796 EPA 1631 Oxidation											
Mercury	**5.43**	0.08	0.50	ng/L	1	F912239	19-Dec-19	9L20005	19-Dec-19	EPA 1631E	
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Selenium	**0.11**	0.05	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

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7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

MOTCO-2019-DU4-Comp (570-13783-5) DISSOLVED

9K00231-14

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Silver	ND	0.015	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Arsenic	**2.14**	0.03	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Cadmium	ND	0.018	0.030	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Chromium	**0.56**	0.21	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Copper	**1.40**	0.40	1.00	µg/L	1	F001280	20-Jan-20	0A22007	21-Jan-20	EPA 1638	
Nickel	**0.96**	0.23	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	
Lead	ND	0.027	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	U
Zinc	**1.54**	0.82	1.00	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	

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7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Filter Blank

9K00231-15

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2836 Closed Vessel Water Oven Digestion											
Silver	ND	0.015	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, U
Arsenic	ND	0.03	0.10	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, U
Cadmium	ND	0.018	0.030	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, U
Chromium	**0.44**	0.21	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, J
Copper	ND	0.40	1.00	µg/L	1	F001280	20-Jan-20	0A22007	21-Jan-20	EPA 1638	U
Nickel	ND	0.23	0.50	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, U
Lead	ND	0.027	0.040	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, U
Zinc	ND	0.82	1.00	µg/L	1	F001260	20-Jan-20	0A21009	20-Jan-20	EPA 1638	FB, U

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Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F001260 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Blank (F001260-BLK1)					Prepared & Analyzed: 20-Jan-20						
Arsenic	ND	0.03	0.10	µg/L							U
Silver	ND	0.015	0.040	µg/L							U
Blank (F001260-BLK2)					Prepared & Analyzed: 20-Jan-20						
Arsenic	ND	0.03	0.10	µg/L							U
Silver	ND	0.015	0.040	µg/L							U
LCS (F001260-BS1)					Prepared & Analyzed: 20-Jan-20						
Arsenic	20.26	0.03	0.10	µg/L	20.000		101	85-115			
Silver	6.486	0.015	0.040	µg/L	8.0000		81.1	74-119			
LCS Dup (F001260-BSD1)					Prepared & Analyzed: 20-Jan-20						
Arsenic	20.25	0.03	0.10	µg/L	20.000		101	85-115	0.0659	20	
Silver	6.988	0.015	0.040	µg/L	8.0000		87.4	74-119	7.46	20	
Matrix Spike (F001260-MS1)		**Source: 9K00231-01**			Prepared & Analyzed: 20-Jan-20						
Arsenic	24.79	0.03	0.10	µg/L	20.000	4.95	99.2	85-115			
Silver	6.360	0.015	0.040	µg/L	8.0000	0.022	79.2	74-119			
Matrix Spike (F001260-MS2)		**Source: 9L00084-02**			Prepared & Analyzed: 20-Jan-20						
Arsenic	28.47	0.03	0.10	µg/L	20.000	7.74	104	85-115			
Silver	6.274	0.015	0.040	µg/L	8.0000	0.022	78.2	74-119			
Matrix Spike (F001260-MS3)		**Source: 9K00231-02**			Prepared & Analyzed: 20-Jan-20						
Arsenic	24.75	0.03	0.10	µg/L	20.000	4.63	101	85-115			
Silver	6.624	0.015	0.040	µg/L	8.0000	ND	82.8	74-119			
Matrix Spike Dup (F001260-MSD1)		**Source: 9K00231-01**			Prepared & Analyzed: 20-Jan-20						
Arsenic	25.14	0.03	0.10	µg/L	20.000	4.95	101	85-115	1.42	20	
Silver	6.540	0.015	0.040	µg/L	8.0000	0.022	81.5	74-119	2.80	20	

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7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F001260 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Matrix Spike Dup (F001260-MSD2)		**Source: 9L00084-02**			Prepared & Analyzed: 20-Jan-20						
Arsenic	29.50	0.03	0.10	µg/L	20.000	7.74	109	85-115	3.54	20	
Silver	6.844	0.015	0.040	µg/L	8.0000	0.022	85.3	74-119	8.69	20	
Matrix Spike Dup (F001260-MSD3)		**Source: 9K00231-02**			Prepared & Analyzed: 20-Jan-20						
Arsenic	24.52	0.03	0.10	µg/L	20.000	4.63	99.5	85-115	0.925	20	
Silver	6.212	0.015	0.040	µg/L	8.0000	ND	77.7	74-119	6.41	20	
Batch F912239 - EFGS SOP2796 EPA 1631 Oxidation											
Blank (F912239-BLK1)					Prepared & Analyzed: 19-Dec-19						
Mercury	ND	0.08	0.50	ng/L							U
Blank (F912239-BLK2)					Prepared & Analyzed: 19-Dec-19						
Mercury	ND	0.08	0.50	ng/L							U
Blank (F912239-BLK3)					Prepared & Analyzed: 19-Dec-19						
Mercury	ND	0.08	0.50	ng/L							U
LCS (F912239-BS1)					Prepared & Analyzed: 19-Dec-19						
Mercury	4.92	0.08	0.50	ng/L	5.0000		98.4	80-120			
LCS Dup (F912239-BSD1)					Prepared & Analyzed: 19-Dec-19						
Mercury	4.71	0.08	0.50	ng/L	5.0000		94.3	80-120	4.29	24	
Duplicate (F912239-DUP1)		**Source: 9K00004-27RE1**			Prepared & Analyzed: 19-Dec-19						
Mercury	0.24	0.08	0.50	ng/L		0.24			2.30	24	J

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Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F912239 - EFGS SOP2796 EPA 1631 Oxidation											
Duplicate (F912239-DUP2)		**Source: 9K00004-28**			Prepared & Analyzed: 19-Dec-19						
Mercury	0.22	0.08	0.50	ng/L		0.21			1.81	24	J
Matrix Spike (F912239-MS1)		**Source: 9L00069-01**			Prepared & Analyzed: 19-Dec-19						
Mercury	71.55	0.83	5.00	ng/L	50.500	16.47	109	71-125			
Matrix Spike (F912239-MS2)		**Source: 9K00231-01**			Prepared & Analyzed: 19-Dec-19						
Mercury	56.01	0.83	5.00	ng/L	50.500	6.69	97.7	71-125			
Matrix Spike Dup (F912239-MSD1)		**Source: 9L00069-01**			Prepared & Analyzed: 19-Dec-19						
Mercury	67.73	0.83	5.00	ng/L	50.500	16.47	102	71-125	5.48	24	
Matrix Spike Dup (F912239-MSD2)		**Source: 9K00231-01**			Prepared & Analyzed: 19-Dec-19						
Mercury	58.46	0.83	5.00	ng/L	50.500	6.69	103	71-125	4.28	24	

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Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F001260 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Blank (F001260-BLK1)					Prepared & Analyzed: 20-Jan-20						
Chromium	ND	0.21	0.50	µg/L							U
Nickel	ND	0.23	0.50	µg/L							U
Zinc	ND	0.82	1.00	µg/L							U
Selenium	ND	0.05	0.10	µg/L							U
Cadmium	ND	0.018	0.030	µg/L							U
Lead	ND	0.027	0.040	µg/L							U
Blank (F001260-BLK2)					Prepared & Analyzed: 20-Jan-20						
Chromium	ND	0.21	0.50	µg/L							U
Nickel	ND	0.23	0.50	µg/L							U
Zinc	ND	0.82	1.00	µg/L							U
Selenium	ND	0.05	0.10	µg/L							U
Cadmium	ND	0.018	0.030	µg/L							U
Lead	ND	0.027	0.040	µg/L							U
LCS (F001260-BS1)					Prepared & Analyzed: 20-Jan-20						
Chromium	19.52	0.21	0.50	µg/L	20.000		97.6	85-115			
Nickel	21.23	0.23	0.50	µg/L	20.000		106	68-134			
Zinc	20.42	0.82	1.00	µg/L	20.000		102	46-146			
Selenium	19.98	0.05	0.10	µg/L	20.000		99.9	59-149			
Cadmium	15.41	0.018	0.030	µg/L	16.000		96.3	84-113			
Lead	20.19	0.027	0.040	µg/L	20.000		101	72-143			
LCS Dup (F001260-BSD1)					Prepared & Analyzed: 20-Jan-20						
Chromium	20.54	0.21	0.50	µg/L	20.000		103	85-115	5.08	20	
Nickel	21.18	0.23	0.50	µg/L	20.000		106	68-134	0.240	20	
Zinc	20.64	0.82	1.00	µg/L	20.000		103	46-146	1.10	20	
Selenium	20.16	0.05	0.10	µg/L	20.000		101	59-149	0.905	20	
Cadmium	15.64	0.018	0.030	µg/L	16.000		97.8	84-113	1.51	20	
Lead	20.34	0.027	0.040	µg/L	20.000		102	72-143	0.751	20	

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Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F001260 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Matrix Spike (F001260-MS1)		**Source: 9K00231-01**			Prepared & Analyzed: 20-Jan-20						
Chromium	21.26	0.21	0.50	µg/L	20.000	0.99	101	85-115			
Nickel	22.91	0.23	0.50	µg/L	20.000	2.76	101	68-134			
Zinc	20.18	0.82	1.00	µg/L	20.000	2.40	88.9	46-146			
Selenium	18.03	0.05	0.10	µg/L	20.000	0.08	89.8	59-149			
Cadmium	14.22	0.018	0.030	µg/L	16.000	ND	88.9	84-113			
Lead	18.97	0.027	0.040	µg/L	20.000	0.366	93.0	72-143			
Matrix Spike (F001260-MS2)		**Source: 9L00084-02**			Prepared & Analyzed: 20-Jan-20						
Chromium	20.08	0.21	0.50	µg/L	20.000	0.59	97.5	85-115			
Nickel	21.23	0.23	0.50	µg/L	20.000	3.06	90.8	68-134			
Zinc	18.44	0.82	1.00	µg/L	20.000	1.52	84.6	46-146			
Selenium	15.83	0.05	0.10	µg/L	20.000	0.14	78.5	59-149			
Cadmium	13.38	0.018	0.030	µg/L	16.000	ND	83.6	84-113			
Lead	17.27	0.027	0.040	µg/L	20.000	0.156	85.6	72-143			
Matrix Spike (F001260-MS3)		**Source: 9K00231-02**			Prepared & Analyzed: 20-Jan-20						
Chromium	19.86	0.21	0.50	µg/L	20.000	0.34	97.6	85-115			
Nickel	20.94	0.23	0.50	µg/L	20.000	1.70	96.2	68-134			
Zinc	18.28	0.82	1.00	µg/L	20.000	0.85	87.2	46-146			
Selenium	16.86	0.05	0.10	µg/L	20.000	0.10	83.8	59-149			
Cadmium	13.91	0.018	0.030	µg/L	16.000	ND	87.0	84-113			
Lead	17.89	0.027	0.040	µg/L	20.000	ND	89.4	72-143			
Matrix Spike Dup (F001260-MSD1)		**Source: 9K00231-01**			Prepared & Analyzed: 20-Jan-20						
Chromium	21.75	0.21	0.50	µg/L	20.000	0.99	104	85-115	2.28	20	
Nickel	22.08	0.23	0.50	µg/L	20.000	2.76	96.6	68-134	3.70	20	
Zinc	20.14	0.82	1.00	µg/L	20.000	2.40	88.7	46-146	0.196	20	
Selenium	17.48	0.05	0.10	µg/L	20.000	0.08	87.0	59-149	3.11	20	
Cadmium	14.31	0.018	0.030	µg/L	16.000	ND	89.4	84-113	0.661	20	
Lead	18.86	0.027	0.040	µg/L	20.000	0.366	92.5	72-143	0.537	20	

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5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F001260 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Matrix Spike Dup (F001260-MSD2)		**Source: 9L00084-02**			Prepared & Analyzed: 20-Jan-20						
Chromium	22.02	0.21	0.50	µg/L	20.000	0.59	107	85-115	9.19	20	
Nickel	21.95	0.23	0.50	µg/L	20.000	3.06	94.4	68-134	3.34	20	
Zinc	19.55	0.82	1.00	µg/L	20.000	1.52	90.1	46-146	5.82	20	
Selenium	17.11	0.05	0.10	µg/L	20.000	0.14	84.8	59-149	7.73	20	
Cadmium	14.02	0.018	0.030	µg/L	16.000	ND	87.6	84-113	4.63	20	
Lead	18.09	0.027	0.040	µg/L	20.000	0.156	89.7	72-143	4.64	20	
Matrix Spike Dup (F001260-MSD3)		**Source: 9K00231-02**			Prepared & Analyzed: 20-Jan-20						
Chromium	20.69	0.21	0.50	µg/L	20.000	0.34	102	85-115	4.12	20	
Nickel	21.16	0.23	0.50	µg/L	20.000	1.70	97.3	68-134	1.04	20	
Zinc	19.03	0.82	1.00	µg/L	20.000	0.85	90.9	46-146	4.01	20	
Selenium	17.32	0.05	0.10	µg/L	20.000	0.10	86.1	59-149	2.67	20	
Cadmium	14.31	0.018	0.030	µg/L	16.000	ND	89.4	84-113	2.80	20	
Lead	18.40	0.027	0.040	µg/L	20.000	ND	92.0	72-143	2.81	20	
Batch F001280 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Blank (F001280-BLK1)					Prepared & Analyzed: 20-Jan-20						
Copper	0.58	0.40	1.00	µg/L							J
Blank (F001280-BLK2)					Prepared & Analyzed: 20-Jan-20						
Copper	0.69	0.40	1.00	µg/L							J
LCS (F001280-BS1)					Prepared & Analyzed: 20-Jan-20						
Copper	20.67	0.40	1.00	µg/L	20.000		103	51-145			
LCS Dup (F001280-BSD1)					Prepared & Analyzed: 20-Jan-20						
Copper	20.90	0.40	1.00	µg/L	20.000		104	51-145	1.09	20	

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Tacoma, WA 98424
Phone: (253) 922-2310

Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch F001280 - EFGS SOP2836 Closed Vessel Water Oven Digestion											
Matrix Spike (F001280-MS1)		**Source: 9K00231-01RE1**			Prepared & Analyzed: 20-Jan-20						
Copper	20.58	0.40	1.00	µg/L	20.000	1.50	95.4	51-145			
Matrix Spike (F001280-MS2)		**Source: 9L00084-02RE1**			Prepared: 20-Jan-20 Analyzed: 21-Jan-20						
Copper	21.22	0.40	1.00	µg/L	20.000	2.10	95.6	51-145			
Matrix Spike (F001280-MS3)		**Source: 9K00231-02RE1**			Prepared: 20-Jan-20 Analyzed: 21-Jan-20						
Copper	20.30	0.40	1.00	µg/L	20.000	0.88	97.1	51-145			
Matrix Spike Dup (F001280-MSD1)		**Source: 9K00231-01RE1**			Prepared & Analyzed: 20-Jan-20						
Copper	20.73	0.40	1.00	µg/L	20.000	1.50	96.2	51-145	0.701	20	
Matrix Spike Dup (F001280-MSD2)		**Source: 9L00084-02RE1**			Prepared: 20-Jan-20 Analyzed: 21-Jan-20						
Copper	21.65	0.40	1.00	µg/L	20.000	2.10	97.7	51-145	1.97	20	
Matrix Spike Dup (F001280-MSD3)		**Source: 9K00231-02RE1**			Prepared: 20-Jan-20 Analyzed: 21-Jan-20						
Copper	20.03	0.40	1.00	µg/L	20.000	0.88	95.7	51-145	1.38	20	

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Eurofins Calscience, LLC	Project: EPA 1640	
7440 Lincoln Way	Project Number: 570-13783	**Reported:**
Garden Grove CA, 92841	Project Manager: Carla Lee Hollowell	23-Jan-20 12:04

Notes and Definitions

U	Analyte was not detected and is reported as less than the LOD or as defined by the client. The LOD has been adjusted for any dilution or concentration of the sample.
J	The result is an estimated concentration.
FB	This blank is a filtration blank. Data is reported for informational purposes only.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the method detection limit if reported to the MDL or above the reporting limit if reported to the MRL.
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

13783

Pacific EcoRisk

ENVIRONMENTAL CONSULTING & TESTING

2250 Cordelia Rd., Fairfield, CA 94534

(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
Cell:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

570-13783 Chain of Custody

	Station Code	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Total Mercury (EPA 1631E) HNO3 Preserved	2540D - TSS	Dissolved Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn) - filter upon receipt, EPA 1640 *	Total Selenium (EPA 1640)							
								REQUESTED ANALYSIS										
1	DU1-Comp	MOTCO-2019-DU1-Comp	11/21/19	0939	MET	12	Multiple	X	X	X	X							
2	DU2a-Comp	MOTCO-2019-DU2a-Comp	11/21/19	0944	MET	4	Multiple	X	X	X	X							
3	DU2b-Comp	MOTCO-2019-DU2b-Comp	11/21/19	0948	MET	4	Multiple	X	X	X	X							
4	DU3-Comp	MOTCO-2019-DU3-Comp	11/21/19	0953	MET	4	Multiple	X	X	X	X							
5	DU4-Comp	MOTCO-2019-DU4-Comp	11/21/19	0956	MET	4	Multiple	X	X	X	X							
6																		
7																		
8																		
9																		
10																		

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:

Sample date/time reflects collection date/time of MET after 24-hr settling period.

Perform duplicate, MS/MSD on MOTCO-2019-DU1-Comp.

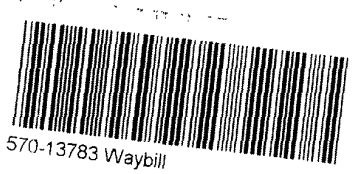
The dissolved metals samples are unfiltered. Please filter them upon receipt.

Standard TAT

RELINQUISHED BY		**RELINQUISHED**	
Signature:	[redacted]	**Signature:**	[redacted]
Print:		**Print:**	
Organization: PER		**Organization:**	
DATE: 11/21/19	**TIME:** 1337	**DATE:** 11/22/19	**TIME** 10:18
RECEIVED BY			
Signature:		**Signature:**	
Print:		**Print:**	
Organization:		**Organization:**	
DATE:	**TIME:**	**DATE:**	**TIME**

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

13783



YULIYA KHADIYEVA

2250 CORDELIA ROAD

FAIRFIELD, CA 94534
UNITED STATES US

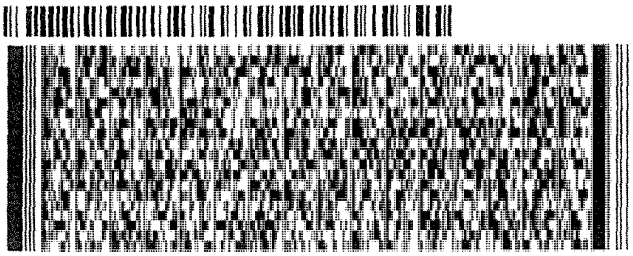
B
T4160

BILL

TO CARLA HOLLOWELL
EUROFINS CALSCIENCE
7440 LINCOLN WAY

GARDEN GROVE CA 92841
(714) 894-7501 REF 30945

INV
PO DEPT



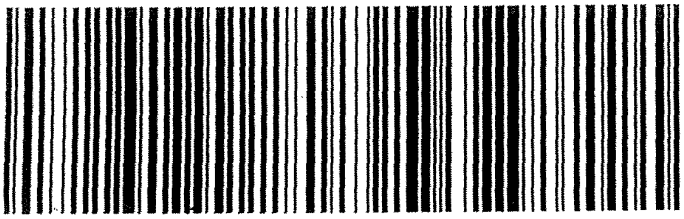
FedEx Express

FRI - 22 NOV 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7770 5386 4018

92 APVA

92841
CA-US SNA



Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-13783-1

Login Number: 13783
List Number: 1
Creator: Patel, Jayesh

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix E

Sediment Porewater Water Quality Analyses and Overlying Water Ammonia Analyses Performed in Support of Bioassay Testing

Table E-1. Sediment porewater initial water quality characteristics for *Leptocheirus plumulosus* toxicity tests.

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.46	23.7	1.05	0.044
SF-10	7.44	23.4	3.51	0.059
MOTCO-2019-DU1	NM	NM	8.91	0.110
MOTCO-2019-DU2a	7.50	22.6	3.22	0.063
MOTCO-2019-DU2b	7.35	20.3	3.65	0.051
MOTCO-2019-DU3	7.02	22.3	10.8	0.010
MOTCO-2019-DU4	7.31	23.0	8.52	0.016

NM – Not measured due to insufficient volume.

Table E-2. Sediment porewater final water quality characteristics for *Leptocheirus plumulosus* toxicity tests.

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.25	29.2	<1.00	0.082
SF-10	7.56	24.6	<1.00	0.197
MOTCO-2019-DU1	7.69	24.9	1.67	0.732
MOTCO-2019-DU2a	7.49	23.7	<1.00	0.144
MOTCO-2019-DU2b	7.39	26.1	<1.00	0.058
MOTCO-2019-DU3	7.27	24.7	1.76	0.077
MOTCO-2019-DU4	7.62	26.6	1.67	0.143

Table E-3. Sediment overlying water total ammonia levels for *Leptocheirus plumulosus* tests.

Sample ID	Total Ammonia (mg/L N)	
	Test Initiation	Test Termination
Lab Control	<1.00	<1.00
SF-10	<1.00	<1.00
MOTCO-2019-DU1	<1.00	<1.00
MOTCO-2019-DU2a	<1.00	<1.00
MOTCO-2019-DU2b	<1.00	<1.00
MOTCO-2019-DU3	<1.00	<1.00
MOTCO-2019-DU4	<1.00	<1.00

Table E-4. Sediment porewater initial water quality characteristics for *Neanthes arenacoedentata* tests.

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.45	28.3	<1.00	0.028
SF-10	7.44	28.6	3.93	0.046
MOTCO-2019-DU1	7.58	29.7	4.46	0.173
MOTCO-2019-DU2a	7.54	29.5	1.08	0.067
MOTCO-2019-DU2b	7.51	28.6	14.3	0.114
MOTCO-2019-DU3	6.94	29.0	6.40	0.040
MOTCO-2019-DU4	7.17	29.8	10.9	0.039

Table E-5. Sediment porewater final water quality characteristics for *Neanthes arenacoedentata* tests.

Sample ID	pH	Salinity (ppt)	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
Lab Control	7.23	32.3	<1.00	0.026
SF-10	7.24	29.3	1.58	0.159
MOTCO-2019-DU1	NM	NM	1.74	0.171
MOTCO-2019-DU2a	7.16	29.9	7.12	0.034
MOTCO-2019-DU2b	7.22	29.3	11.0	0.053
MOTCO-2019-DU3	6.94	32.2	2.58	0.037
MOTCO-2019-DU4	7.20	29.6	3.64	0.071

NM – Not measured due to insufficient volume.

Table E-6. Sediment overlying water total ammonia levels for *Neanthes arenacoedentata* tests.

Sample ID	Total Ammonia (mg/L N)	
	Test Initiation	Test Termination
Lab Control	<1.00	<1.00
SF-10	<1.00	<1.00
MOTCO-2019-DU1	<1.00	<1.00
MOTCO-2019-DU2a	1.51	2.03
MOTCO-2019-DU2b	<1.00	1.08
MOTCO-2019-DU3	1.08	<1.00
MOTCO-2019-DU4	<1.00	<1.00

Table E-7. Total Ammonia Levels for Standard Elutriate Test (SET) and Modified Elutriate Test (MET) Samples.

Sample ID	Total Ammonia (mg/L N)	Total Ammonia (mg/L N)
	SET	MET
MOTCO-2019-DU1	2.63	2.48
MOTCO-2019-DU2a	5.10	4.35
MOTCO-2019-DU2b	8.28	7.57
MOTCO-2019-DU3	5.20	8.46
MOTCO-2019-DU4	3.87	4.67

Table E-8. Sediment overlying water total ammonia levels for *Macoma nasuta* bioaccumulation tests.

Sample ID	Total Ammonia (mg/L N)				
	Day 0	Day 7	Day 14	Day 21	Day 28
Lab Control	<1.00	<1.00	<1.00	<1.00	<1.00
SF-10	<1.00	<1.00	1.58	<1.00	<1.00
MOTCO-2019-DU1	1.16	1.88	2.39	<1.00	1.47
MOTCO-2019-DU2a	5.69	3.31	5.50	4.27	3.96
MOTCO-2019-DU2b	2.83	3.30	6.53	2.48	2.44
MOTCO-2019-DU3	2.92	2.59	3.59	3.00	1.93
MOTCO-2019-DU4	3.41	3.03	4.40	2.49	2.12

Table E-9. Sediment overlying water total ammonia levels for *Nereis virens* bioaccumulation tests.

Sample ID	Total Ammonia (mg/L N)				
	Day 0	Day 7	Day 14	Day 21	Day 28
Lab Control	<1.00	<1.00	<1.00	<1.00	<1.00
SF-10	<1.00	<1.00	<1.00	<1.00	<1.00
MOTCO-2019-DU1	1.12	4.11	1.95	1.19	<1.00
MOTCO-2019-DU2a	5.42	11.2	5.36	2.74	<1.00
MOTCO-2019-DU2b	8.52	18.3	4.26	1.91	<1.00
MOTCO-2019-DU3	2.43	7.15	2.64	2.19	<1.00
MOTCO-2019-DU4	3.54	15.1	4.19	2.10	<1.00

Appendix F

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Military Ocean Terminal Concord (MOTCO) Sediments to the Amphipod, *Leptocheirus plumulosus*

CETIS Summary Report

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Batch ID:	10-8028-9961	**Test Type:**	Survival	**Analyst:**	Robert Gee
Start Date:	23 Dec-19 09:03	**Protocol:**	ASTM E1611-00 (2007)	**Diluent:**	Not Applicable
Ending Date:	02 Jan-20 08:48	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Test Length:	10d	**Taxon:**	Malacostraca	**Source:**	Aquatic Research Organis **Age:** N/A

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
CMOT_1219LP_C1	15-9302-0096	23 Dec-19 09:03	23 Dec-19 09:03	n/a (26.3 °C)	USACE	30945
SF-10	06-5220-4317	01 Nov-19 12:30	02 Nov-19 10:00	51d 21h		
2019-DU1-COMP	05-4032-1787	31 Oct-19 08:10	05 Nov-19 16:00	53d 1h		
2019-DU2a-COMP	20-5409-4978	28 Oct-19 13:15	05 Nov-19 14:30	55d 20h		
2019-DU2b-COMP	05-0411-7998	31 Oct-19 10:43	05 Nov-19 17:00	52d 22h		
2019-DU3-COMP	04-0961-2047	30 Oct-19 09:20	05 Nov-19 12:45	54d		
2019-DU4-COMP	16-9881-3308	30 Oct-19 14:27	05 Nov-19 15:00	53d 19h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
CMOT_1219LP_C1	Control Sediment	Concord MOTCO	LABQA	
SF-10	Sediment	Concord MOTCO	SF-10	
2019-DU1-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU1-Comp	
2019-DU2a-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU2a-COMP	
2019-DU2b-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU2b-COMP	
2019-DU3-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU3-COMP	
2019-DU4-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU4-COMP	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
13-2769-8032	Survival Rate	Equal Variance t Two-Sample Test	0.4737	SF-10 passed survival rate	1
01-8438-5419	Survival Rate	Equal Variance t Two-Sample Test	0.0347	2019-DU1-COMP failed survival rate	1
15-5167-7336	Survival Rate	Equal Variance t Two-Sample Test	0.3666	2019-DU2a-COMP passed survival rate	1
19-7312-0768	Survival Rate	Equal Variance t Two-Sample Test	0.0626	2019-DU2b-COMP passed survival rate	1
12-4854-0694	Survival Rate	Equal Variance t Two-Sample Test	0.1414	2019-DU3-COMP passed survival rate	1
07-6699-8914	Survival Rate	Equal Variance t Two-Sample Test	0.1251	2019-DU4-COMP passed survival rate	1

Survival Rate Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	0.900	1.000	0.020	0.045	4.61%	0.00%
SF-10	RS	5	0.970	0.936	1.000	0.950	1.000	0.012	0.027	2.82%	0.00%
2019-DU1-COMP		5	0.860	0.725	0.995	0.750	1.000	0.049	0.108	12.60%	11.34%
2019-DU2a-COMP		5	0.950	0.842	1.000	0.800	1.000	0.039	0.087	9.12%	2.06%
2019-DU2b-COMP		5	0.850	0.654	1.000	0.600	1.000	0.071	0.158	18.60%	12.37%
2019-DU3-COMP		5	0.950	0.950	0.950	0.950	0.950	0.000	0.000	0.00%	2.06%
2019-DU4-COMP		5	0.930	0.859	1.000	0.850	1.000	0.026	0.057	6.13%	4.12%

Survival Rate Detail

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
CMOT_1219LP_C1	CS	0.900	1.000	1.000	0.950	1.000
SF-10	RS	0.950	0.950	1.000	0.950	1.000
2019-DU1-COMP		0.750	1.000	0.750	0.900	0.900
2019-DU2a-COMP		1.000	0.800	1.000	0.950	1.000
2019-DU2b-COMP		0.800	0.600	1.000	0.950	0.900
2019-DU3-COMP		0.950	0.950	0.950	0.950	0.950
2019-DU4-COMP		0.950	0.900	0.850	0.950	1.000

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Survival Rate Binomials

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
CMOT_1219LP_C1	CS	18/20	20/20	20/20	19/20	20/20
SF-10	RS	19/20	19/20	20/20	19/20	20/20
2019-DU1-COMP		15/20	20/20	15/20	18/20	18/20
2019-DU2a-COMP		20/20	16/20	20/20	19/20	20/20
2019-DU2b-COMP		16/20	12/20	20/20	19/20	18/20
2019-DU3-COMP		19/20	19/20	19/20	19/20	19/20
2019-DU4-COMP		19/20	18/20	17/20	19/20	20/20

10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86569-86574 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11905

Day of Test	Test Replicate	Lab Control					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	26.3	7.84	7.4	20.8	20	Date: 12/23/19
	Rep B	26.2	7.85	7.4	20.7	20	Time: 0903
	Rep C	26.1	7.83	7.5	20.7	20	WQ: AS
	Rep D	26.2	7.85	7.5	20.7	20	Scientist Initiation: TK
	Rep E	26.0	7.84	7.5	20.9	20	Scientist Confirmation: JL
Day 1	Rep A	26.1	7.70	~~8.0~~ 7.3 SAT 12/24/19	21.6		Date: ~~12-24-19~~ Time: WQ: SAT 1125
Day 2	Rep B	25.8	7.89	7.2	21.5		Date: 12/25/19 Time: WQ: SAT 0821
Day 3	Rep C	25.6	7.90	7.0	~~22.5~~ 21.8 12/26/19		Date: 12/26/19 Time: 1100 WQ: AS
Day 4	Rep D	25.7	8.14	7.2	21.4		Date: 12-27-19 Time: WQ: SAT 0945
Day 5	Rep E	25.6	8.07	7.3	21.7		Date: 12-28-19 Time: WQ: SAT 0946
Day 6	Rep A	24.1	8.01	7.3	21.2		Date: 12/29/19 Time: 1010 WQ: TA
Day 7	Rep B	25.4	8.11	7.5	21.6		Date: 12/30/19 Time: 0846 WQ: AS
Day 8	Rep C	25.6	8.03	7.6	21.9		Date: 12/31/19 Time: 0853 WQ: AS
Day 9	Rep D	25.7	8.05	7.3	21.5		Date: 1/1/20 Time: 0910 WQ: AS
Day 10	Rep A	25.1	8.02	~~7.8~~ 7.1 1/2/20 AS	~~23.7~~ 21.6 1/1/20 AS	18	Date: 1/2/20
	Rep B	25.5	8.13	~~8.0~~ 7.1 1/2/20 AS	~~23.1~~ 21.2 1/1/20 AS	20	Time: 0848
	Rep C	25.3	8.05	~~7.7~~ 7.1 1/2/20 AS	~~23.3~~ 21.5 1/2/20 AS	20	WQ: AS
	Rep D	25.4	8.04	~~7.7~~ 7.1 1/2/20 AS	~~22.7~~ 21.3 1/1/20 AS	19	Scientist Counts: RG
	Rep E	25.4	8.07	~~8.0~~ 7.1 1/2/20 AS	~~23.1~~ 21.6 1/1/20 AS	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	~~7.83~~ 7.46 12/23/19 AS	~~7.5~~ 6.5 12/23/19 AS	~~21.4~~ 23.7 12/23/19 AS	0.044	1.05	Date: 12/23/19 Time: 0923 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0903 WQ: AS
	Meter ID	PH25	RD11	EC14	DR3900	DR3806	
Day 10	Porewater	7.25	7.7	29.2	0.082	<1.00	Date: 1/2/20 Time: WQ: MB 1200
	Overlying Water					0	Date: 1/2/20 Time: 0940 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	DR3800	

CETIS Analytical Report

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	13-2769-8032	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	03 Jan-20 8:47	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	SF-10 passed survival rate	4.29%

Equal Variance t Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		Reference Sed	0.068	1.86	0.094	8	CDF	0.4737	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2.972E-05	2.972E-05	1	0.00462	0.9475	Non-Significant Effect
Error	0.0514182	0.0064273	8			
Total	0.0514479		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.33	23.2	0.4333	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.796	0.741	0.0128	Normal Distribution

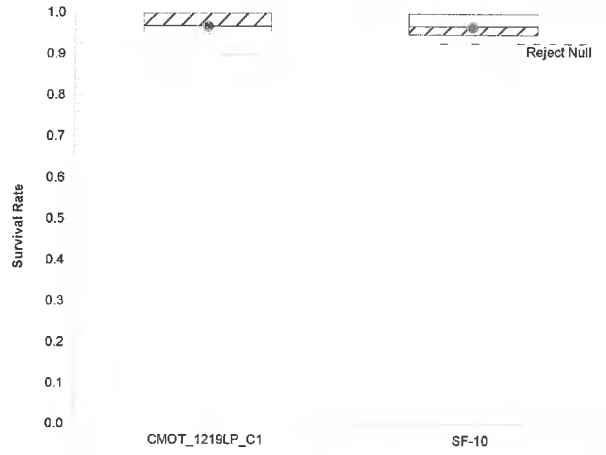
Survival Rate Summary

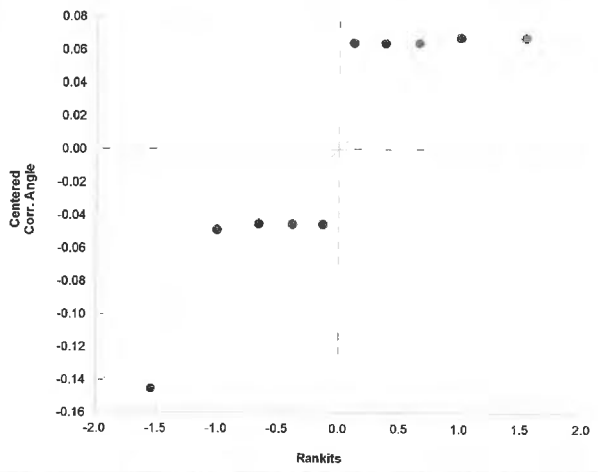
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	1.000	0.900	1.000	0.020	4.61%	0.00%
SF-10	RS	5	0.970	0.936	1.000	0.950	0.950	1.000	0.012	2.82%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	1.39	1.28	1.51	1.46	1.25	1.46	0.0424	6.80%	0.00%
SF-10	RS	5	1.39	1.31	1.47	1.35	1.35	1.46	0.0278	4.47%	0.25%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86569 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11905

Day of Test	Test Replicate	SF-10					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	26.1	7.85	7.6	20.9	20	Date: 12/23/19 Time: 0917 WQ: AS
	Rep B	25.9	7.85	7.5	20.7	20	
	Rep C	25.5	7.85	7.5	20.8	20	Scientist Initiation: TK
	Rep D	25.3	7.85	7.5	20.9	20	Scientist Confirmation: JL
	Rep E	25.7	7.83	7.6	21.0	20	
Day 1	Rep A	26.2	7.72	~~8.1~~	21.4		Date: 12-24-19 Time: WQ: SAT 1126
Day 2	Rep B	25.9	7.85	7.0	21.8		Date: 12/25/19 Time: WQ: SUN 0821
Day 3	Rep C	26.3	7.82	7.0	~~22.1~~ 21.6		Date: 12/26/19 Time: 1100 WQ: ME
Day 4	Rep D	26.0	8.14	7.2	21.5		Date: 12-27-19 Time: WQ: SAT 0957
Day 5	Rep E	25.5	7.97	7.3	21.7		Date: 12-28-19 Time: WQ: SAT 0958
Day 6	Rep A	24.6	7.98	7.2	20.0		Date: 12/29/19 Time: 1045 WQ: TA
Day 7	Rep B	25.8	7.93	7.3	21.8		Date: 12/30/19 Time: 0850 WQ: AS
Day 8	Rep C	26.0	8.04	7.6	21.8		Date: 12/31/19 Time: 0858 WQ: AS
Day 9	Rep D	26.0	8.03	7.4	21.8		Date: 1/1/20 Time: 0914 WQ: AS
Day 10	Rep A	25.4	8.00	7.1	~~23.4~~ 21.8	19	Date: 1/2/20 Time: 0908 WQ: AS Scientist Counts: RG
	Rep B	25.6	7.99	7.1	~~22.3~~ 20.6	19	
	Rep C	25.5	8.01	7.1	~~22.2~~ 20.8	20	
	Rep D	25.7	8.05	7.1	~~22.4~~ 20.8	19	
	Rep E	25.6	8.03	7.1	~~23.3~~ 21.8	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.44	7.1	23.4	0.059	3.51	Date: 12/23/19 Time: 1051 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0900 WQ: AS
	Meter ID	PH28	RD11	EC14	DR3900	PR3800	
Day 10	Porewater	7.56	7.9	24.6	0.197	<1.00	Date: 1/2/20 Time: 1200 WQ: MB
	Overlying Water					0	Date: 1/2/20 Time: 0903 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	PR3800	

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	01-8438-5419	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	03 Jan-20 8:47	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU1-COMP failed survival rate	8.36%

Equal Variance t Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU1-COMP*	2.1	1.86	0.163	8	CDF	0.0347	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0845222	0.0845222	1	4.39	0.0694	Non-Significant Effect
Error	0.153905	0.0192381	8			
Total	0.238427		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.28	23.2	0.2766	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.889	0.741	0.1655	Normal Distribution

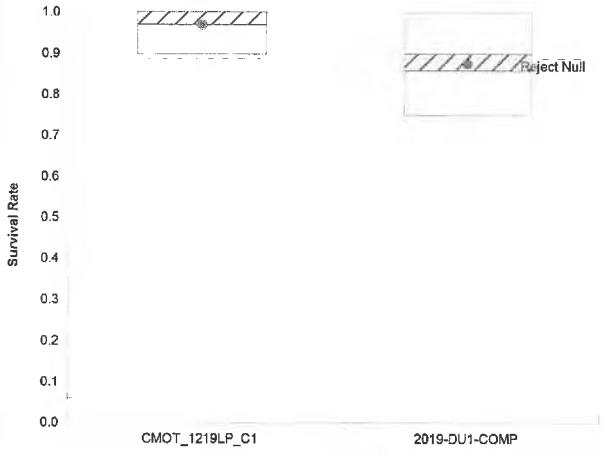
Survival Rate Summary

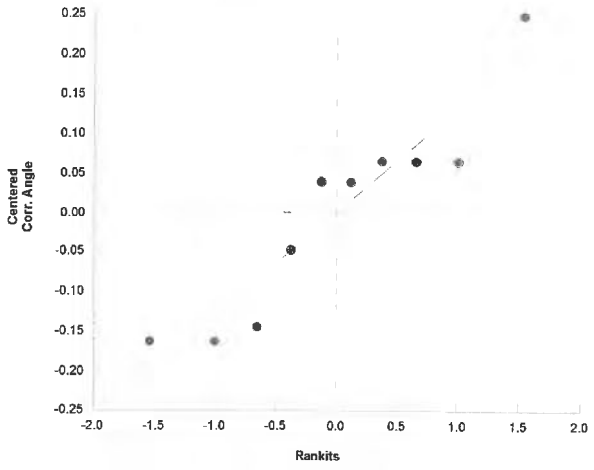
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	1.000	0.900	1.000	0.020	4.61%	0.00%
2019-DU1-COMP		5	0.860	0.725	0.995	0.900	0.750	1.000	0.049	12.60%	11.34%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	1.39	1.28	1.51	1.46	1.25	1.46	0.0424	6.80%	0.00%
2019-DU1-COMP		5	1.21	0.997	1.42	1.25	1.05	1.46	0.0768	14.19%	13.19%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86570 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11905

Day of Test	Test Replicate	MOTCO-2019-DU1-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	25.6	7.86	7.6	21.0	20	Date: 12/23/19
	Rep B	25.5	7.87	7.5	21.8	20	Time: 0923
	Rep C	25.5	7.87	7.6	21.8	20	WQ: AS
	Rep D	25.7	7.88	7.5	21.6	20	Scientist Initiation: TK
	Rep E	25.9	7.87	7.4	21.8	20	Scientist Confirmation:
Day 1	Rep A	26.3	7.74	8.13 7.3 12/24/19	21.2		Date: 12-24-19 Time: WQ: SAT 1127
Day 2	Rep B	25.6	7.95	7.2	21.8		Date: 12/25/19 Time: WQ: SAT 0923
Day 3	Rep C	25.9	7.86	7.0	21.8 7.5 12/26/19		Date: 12/26/19 Time: WQ: AS
Day 4	Rep D	25.8	8.12	7.2	21.3		Date: 12-27-19 Time: WQ: SAT 0947
Day 5	Rep E	25.5	7.87	7.3	20.9		Date: 12-28-19 Time: WQ: SAT 0955
Day 6	Rep A	24.7	7.91	7.1	21.1		Date: 12/29/19 Time: 1050 WQ: TA
Day 7	Rep B	25.0	7.97	7.3	21.8		Date: 12/30/19 Time: 0852 WQ: AS
Day 8	Rep C	25.2	7.95	7.5	21.7		Date: 12/31/19 Time: 0906 WQ: AS
Day 9	Rep D	25.2	7.92	7.5	21.5		Date: 1/1/20 Time: 0918 WQ: AS
Day 10	Rep A	25.0	7.92	7.2	21.5	15	Date: 1/2/20
	Rep B	24.7	7.89	7.2	21.8	20	Time: 0921
	Rep C	24.6	7.88	7.2	21.7	15	WQ: AS
	Rep D	25.0	7.88	7.2	21.4	18	Scientist Counts: RB
	Rep E	25.3	7.91	7.3	21.8	18	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	*	*	*	0.110	8.91	Date: 12/23/19 Time: 1113 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0900 WQ: AS
	Meter ID	PH25	RD11	EC14	DR3900	DR3800	
Day 10	Porewater	7.69	7.5	24.9	0.732	1.67	Date: 1/1/20 Time: WQ: MB 1200
	Overlying Water					0	Date: 1/2/20 Time: 0953 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	DR3800	

* - not enough porewater to do chems

10 Day Marine/Estuarine Sediment Test				Pacific EcoRisk
Analysis ID:	15-5167-7336	**Endpoint:**	Survival Rate	**CETIS Version:** CETISv1.9.6
Analyzed:	03 Jan-20 8:47	**Analysis:**	Parametric-Two Sample	**Status Level:** 1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU2a-COMP passed survival rate	7.49%

Equal Variance t Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU2a-COMP	0.353	1.86	0.149	8	CDF	0.3666	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0020135	0.0020135	1	0.125	0.7332	Non-Significant Effect
Error	0.129211	0.0161514	8			
Total	0.131225		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.59	23.2	0.3786	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.797	0.741	0.0133	Normal Distribution

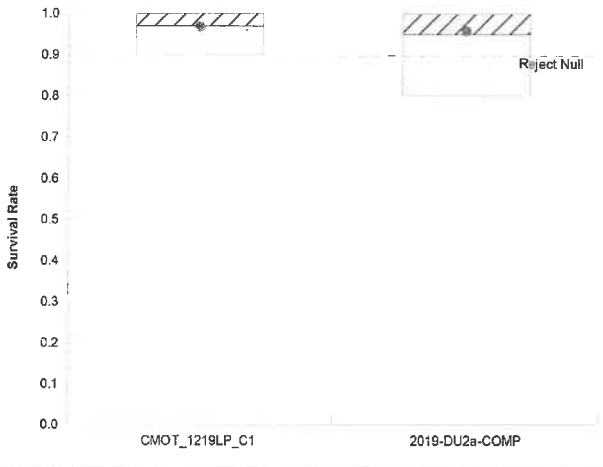
Survival Rate Summary

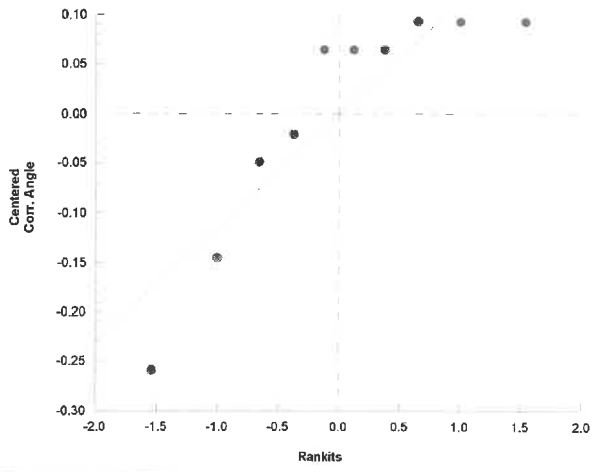
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	1.000	0.900	1.000	0.020	4.61%	0.00%
2019-DU2a-COMP		5	0.950	0.842	1.000	1.000	0.800	1.000	0.039	9.12%	2.06%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	1.39	1.28	1.51	1.46	1.25	1.46	0.0424	6.80%	0.00%
2019-DU2a-COMP		5	1.37	1.18	1.56	1.46	1.11	1.46	0.0683	11.18%	2.04%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86571 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11905

Day of Test	Test Replicate	MOTCO-2019-DU2a-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	25.2	7.81	7.5	21.7	20	Date: 12/23/19
	Rep B	25.2	7.81	7.5	21.5	20	Time: 0932
	Rep C	25.3	7.81	7.4	21.5	20	WQ: AS
	Rep D	25.4	7.73	7.2	21.3	20	Scientist Initiation: TK
	Rep E	25.6	7.80	7.5	21.7	20	Scientist Confirmation: JL
Day 1	Rep A	25.7	7.56	6.9	21.1		Date: 12-24-19 Time: WQ: SAT 1128
Day 2	Rep B	25.8	7.79	7.1	21.5		Date: 12/25/19 Time: WQ: SAT 0924
Day 3	Rep C	26.1	7.65	6.9	21.8		Date: 12/26/19 Time: 1100 WQ: AS
Day 4	Rep D	25.5	7.84	7.0	20.8		Date: 12-27-19 Time: WQ: SAT 0948
Day 5	Rep E	25.7	7.71	7.0	21.8		Date: 12-28-19 Time: WQ: SAT 0947
Day 6	Rep A	24.2	7.57	6.9	20.5		Date: 12/29/19 Time: 1053 WQ: TA
Day 7	Rep B	25.2	7.71	7.4	20.7		Date: 12/30/19 Time: 0857 WQ: AS
Day 8	Rep C	25.3	7.62	7.5	21.0		Date: 12/31/19 Time: 0909 WQ: AS
Day 9	Rep D	25.2	7.62	7.3	21.9		Date: 1/1/20 Time: 0920 WQ: AS
Day 10	Rep A	24.8	7.53	6.5	21.9	20	Date: 1/2/20
	Rep B	24.4	7.60	6.6	20.2	16	Time: 0940
	Rep C	24.3	7.56	6.6	19.7	20	WQ: AS
	Rep D	24.5	7.54	6.6	21.2	19	Scientist Counts: RB
	Rep E	24.9	7.63	6.7	21.5	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.50	7.7	22.6	0.063	3.22	Date: 12/23/19 Time: 1052 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0908 WQ: AS
	Meter ID	PH25	RP11	EC14	DR3900	DR3800	
Day 10	Porewater	7.49	7.8	23.7	0.44	<1.00	Date: 1/2/20 Time: WQ: MB 1200
	Overlying Water					<1.00	Date: 1/2/20 Time: 0943 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	DR3800	

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	19-7312-0768	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	03 Jan-20 8:48	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU2b-COMP passed survival rate	10.91%

Equal Variance t Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU2b-COMP	1.71	1.86	0.201	8	CDF	0.0626	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0854315	0.0854315	1	2.93	0.1252	Non-Significant Effect
Error	0.233175	0.0291468	8			
Total	0.318606		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	5.48	23.2	0.1281	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.954	0.741	0.7186	Normal Distribution

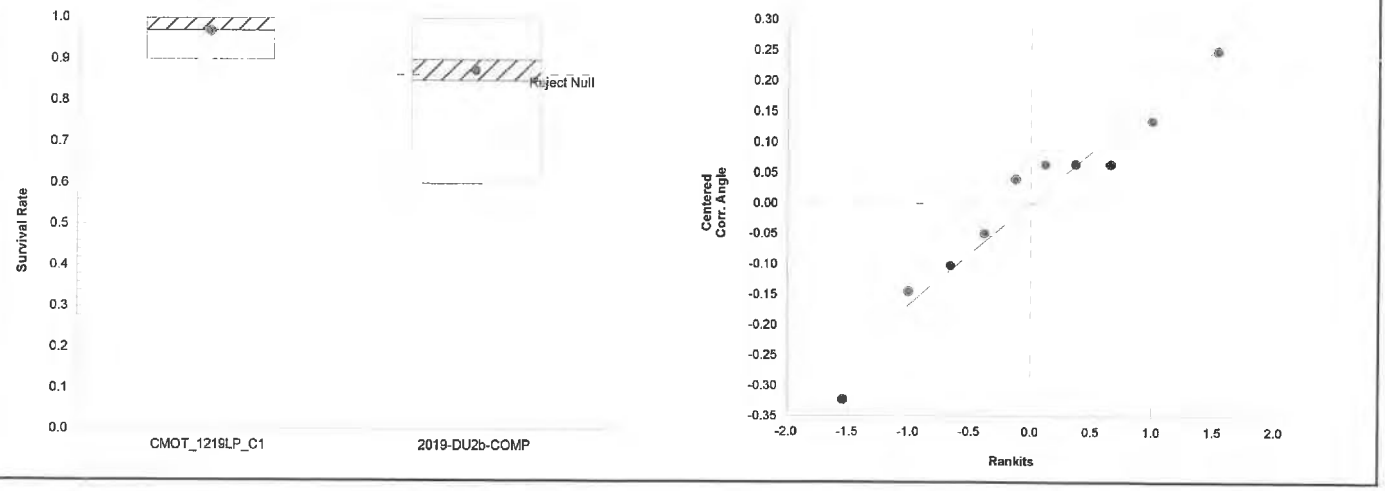
Survival Rate Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	1.000	0.900	1.000	0.020	4.61%	0.00%
2019-DU2b-COMP		5	0.850	0.654	1.000	0.900	0.600	1.000	0.071	18.60%	12.37%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	1.39	1.28	1.51	1.46	1.25	1.46	0.0424	6.80%	0.00%
2019-DU2b-COMP		5	1.21	0.934	1.48	1.25	0.886	1.46	0.0993	18.36%	13.26%

Graphics



10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86572 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11965

Day of Test	Test Replicate	MOTCO-2019-DU2b-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	25.1	7.75	7.6	21.8	20	Date: 12/23/19
	Rep B	25.3	7.77	7.5	21.6	20	Time: 0933
	Rep C	25.4	7.77	7.5	21.7	20	WQ: AS
	Rep D	25.5	7.78	7.6	21.4	20	Scientist Initiation: TK
	Rep E	26.0	7.78	7.5	21.6	20	Scientist Confirmation:
Day 1	Rep A	25.8	7.56	7.1	21.5		Date: 12/24/19 Time: 1129 WQ: SAT
Day 2	Rep B	25.7	7.76	7.1	21.1		Date: 12/25/19 Time: 0826 WQ: SAT
Day 3	Rep C	25.9	7.62	7.0	21.9		Date: 12/26/19 Time: 1100 WQ: AS
Day 4	Rep D	25.6	7.84	6.8	21.1		Date: 12/27/19 Time: 0950 WQ: SAT
Day 5	Rep E	25.5	7.71	7.3	21.0		Date: 12-28-19 Time: 0951 WQ: SAT
Day 6	Rep A	24.7	7.62	7.0	20.6		Date: 12/29/19 Time: 1056 WQ: TA
Day 7	Rep B	25.1	7.72	7.3	19.2		Date: 12/30/19 Time: 0900 WQ: AS
Day 8	Rep C	25.3	7.62	7.4	21.6		Date: 12/31/19 Time: 0912 WQ: AS
Day 9	Rep D	25.7	7.60	7.3	21.5		Date: 1/1/20 Time: 0923 WQ: AS
Day 10	Rep A	24.5	7.55	6.4	21.2	16	Date: 1/2/20
	Rep B	24.2	7.59	6.5	19.1	12	Time: 0949
	Rep C	24.2	7.55	6.6	21.0	20	WQ: AS
	Rep D	24.5	7.54	6.6	20.9	19	Scientist Counts: RB
	Rep E	25.0	7.54	6.7	21.6	18	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.35	7.4	20.3	0.051	3.65	Date: 12/23/19 Time: 1130 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0800 WQ: AS
	Meter ID	PH 25	RD11	EC14	DR3900	DR3800	
Day 10	Porewater	7.39	8.6	26.1	0.058	<1.00	Date: 1/2/20 Time: 1200 WQ: MD
	Overlying Water					<1.00	Date: 1/2/20 Time: 0943 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	DR3800	

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	12-4854-0694	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	03 Jan-20 8:48	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU3-COMP passed survival rate	3.49%

Equal Variance t Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU3-COMP	1.15	1.86	0.079	8	CDF	0.1414	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0059629	0.0059629	1	1.33	0.2827	Non-Significant Effect
Error	0.0359661	0.0044958	8			
Total	0.041929		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	20.4	11.3	0.0019	Unequal Variances
	Mod Levene Equality of Variance Test	2.55	13.7	0.1615	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.818	0.741	0.0238	Normal Distribution

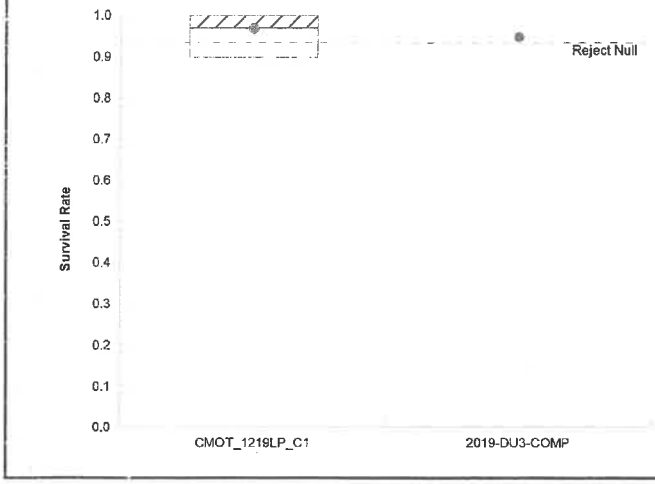
Survival Rate Summary

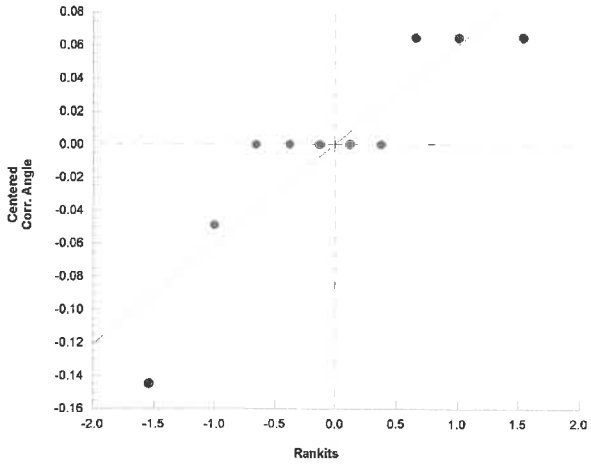
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	1.000	0.900	1.000	0.020	4.61%	0.00%
2019-DU3-COMP		5	0.950	0.950	0.950	0.950	0.950	0.950	0.000	0.00%	2.06%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	1.39	1.28	1.51	1.46	1.25	1.46	0.0424	6.80%	0.00%
2019-DU3-COMP		5	1.35	1.35	1.35	1.35	1.35	1.35	0	0.00%	3.50%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86573 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11905

Day of Test	Test Replicate	MOTCO-2019-DU3-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	25.5	7.81	7.7	20.8	20	Date: 12/23/19
	Rep B	25.7	7.81	7.5	20.7	20	Time: 0938
	Rep C	25.7	7.81	7.5	20.7	20	WQ: AS
	Rep D	25.8	7.80	7.6	20.3	20	Scientist Initiation: TK
	Rep E	26.1	7.79	7.4	20.8	20	Scientist Confirmation: JL
Day 1	Rep A	25.9	7.65	7.2	21.7		Date: 12-24-19 Time: WQ: SAT 1129
Day 2	Rep B	25.7	7.76	7.0	21.9		Date: 12/25/19 Time: WQ: SJB 0828
Day 3	Rep C	25.5	7.83	7.1	21.7		Date: 12/26/19 Time: 1103 WQ: RM
Day 4	Rep D	25.5	8.07	7.2	21.2		Date: 12-27-19 Time: WQ: SAT 0951
Day 5	Rep E	25.3	7.68	6.7	21.5		Date: 12-28-19 Time: WQ: SAT 0949
Day 6	Rep A	24.1	7.86	7.0	20.5		Date: 12/29/19 Time: 1103 WQ: TA
Day 7	Rep B	24.9	7.85	7.0	21.9		Date: 12/30/19 Time: 1108 12/31/19 AS WQ: AS 0902
Day 8	Rep C	24.9	7.95	7.5	21.7		Date: 12/31/19 Time: 0914 WQ: AS
Day 9	Rep D	25.3	7.97	7.5	21.1		Date: 1/1/20 Time: 0928 WQ: AS
Day 10	Rep A	24.5	7.90	6.9	21.5	19	Date: 1/2/20
	Rep B	24.1	7.86	6.9	21.2	19	Time: 0956
	Rep C	24.1	7.89	7.1	21.2	19	WQ: AS
	Rep D	24.3	7.91	7.3	20.5	19	Scientist Counts: RC
	Rep E	24.7	7.82	7.4	21.9	19	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.02	7.1	22.3	0.010	10.8	Date: 12/23/19 Time: 1119 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0900 WQ: AS
	Meter ID	PH25	RD11	EC14	DR3900	DR3800	
Day 10	Porewater	7.27	8.5	24.7	0.077	1.76	Date: 1/2/20 Time: WQ: MB 1200
	Overlying Water					0	Date: 1/2/20 Time: 0943 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	DR3800	

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	07-6699-8914	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	03 Jan-20 8:48	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU4-COMP passed survival rate	5.70%

Equal Variance t Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU4-COMP	1.24	1.86	0.12	8	CDF	0.1251	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0159311	0.0159311	1	1.54	0.2503	Non-Significant Effect
Error	0.0829507	0.0103688	8			
Total	0.0988818		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.31	23.2	0.8019	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.916	0.741	0.3223	Normal Distribution

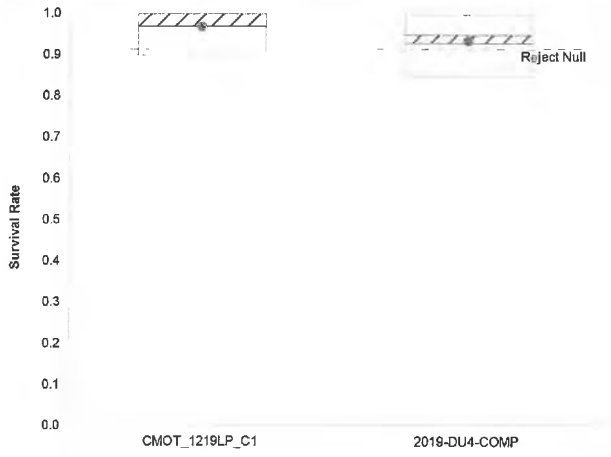
Survival Rate Summary

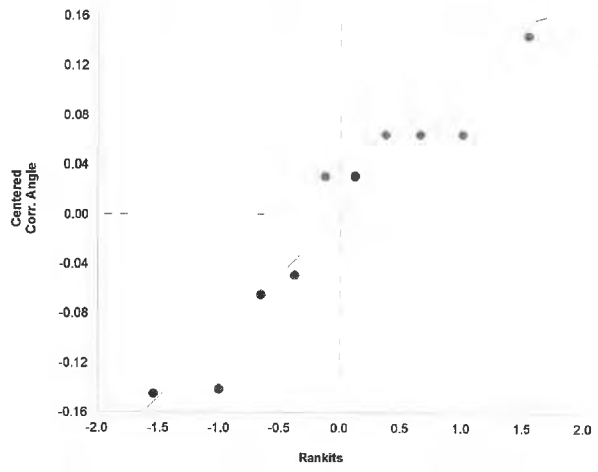
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	0.970	0.914	1.000	1.000	0.900	1.000	0.020	4.61%	0.00%
2019-DU4-COMP		5	0.930	0.859	1.000	0.950	0.850	1.000	0.026	6.13%	4.12%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219LP_C1	CS	5	1.39	1.28	1.51	1.46	1.25	1.46	0.0424	6.80%	0.00%
2019-DU4-COMP		5	1.31	1.18	1.45	1.35	1.17	1.46	0.0485	8.25%	5.73%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: USACE: MOTCO Test ID#: 86574 Date (Day 0): 12/23/19

Species: *Leptocheirus plumulosus* Project #: 30945 Organism Supplier: ARO

Organism Log # : 11905

Day of Test	Test Replicate	MOTCO-2019-DU4-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	25.7	7.82	7.6	20.8	20	Date: 12-23-19
	Rep B	26.0	7.83	7.4	20.7	20	Time: 0944
	Rep C	26.4	7.84	7.4	20.7	20	WQ: AS
	Rep D	26.4	7.84	7.4	20.5	20	Scientist Initiation: JL
	Rep E	26.3	7.83	7.4	20.9	20	Scientist Confirmation: TK
Day 1	Rep A	26.1	7.67	7.0	21.4		Date: 12-24-19 Time: WQ: SAT 1130
Day 2	Rep B	25.5	7.81	6.9	21.3		Date: 12/25/19 Time: WQ: SAT 0829
Day 3	Rep C	25.2	7.63	7.0	21.9		Date: 12/26/19 Time: 1109 WQ: AS
Day 4	Rep D	24.9	7.67	6.4	21.1		Date: 12-27-19 Time: WQ: SAT 0953
Day 5	Rep E	24.6	7.88	7.4	19.8		Date: 12-28-19 Time: WQ: SAT 0948
Day 6	Rep A	24.1	7.82	6.9	20.9		Date: 12/29/19 Time: 1108 WQ: TA
Day 7	Rep B	24.6	7.79	6.8	21.7		Date: 12/30/19 Time: 0905 WQ: AS
Day 8	Rep C	24.7	7.84	7.3	21.2		Date: 12/31/19 Time: 0917 WQ: AS
Day 9	Rep D	24.6	7.74	7.1	21.7		Date: 1/1/20 Time: 0935 WQ: AS
Day 10	Rep A	24.0	7.82	6.9	21.5	19	Date: 1/2/20
	Rep B	24.0	7.78	6.5	21.9	18	Time: 1004
	Rep C	24.2	7.81	6.8	21.2	17	WQ: AS
	Rep D	24.1	7.73	6.8	21.9	19	Scientist Counts: TK
	Rep E	24.4	7.84	6.9	21.3	20	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.31	7.2	23.0	0.016	8.52	Date: 12/23/19 Time: 1125 WQ: AS
	Overlying Water					<1.00	Date: 12/23/19 Time: 0800 WQ: AS
	Meter ID	PH25	RD11	EC14	DR3900	DR 3800	
Day 10	Porewater	7.62	8.5	24.6	0.143	1.67	Date: 1/2/20 Time: WQ: MB 1200
	Overlying Water					<1.00	Date: 1/2/20 Time: 0903 WQ: AS
	Meter ID	PH26	RD13	EC13	DR3900	DR3800	

Appendix G

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Amphipod, *Leptocheirus plumulosus*

CETIS Summary Report

Acute Amphipod Survival Test — Pacific EcoRisk

Batch ID:	02-8032-1201	**Test Type:**	Survival (96h)	**Analyst:**	Mike McElroy
Start Date:	23 Dec-19 16:00	**Protocol:**	EPA/600/R-01/020 (2001)	**Diluent:**	Diluted Seawater
Ending Date:	27 Dec-19 15:31	**Species:**	Leptocheirus plumulosus	**Brine:**	Not Applicable
Test Length:	96h	**Taxon:**	Malacostraca	**Source:**	Aquatic Research Organis **Age:** NA

Sample ID:	03-3845-7183	**Code:**	KCl	**Project:**	31146
Sample Date:	23 Dec-19 16:00	**Material:**	Potassium chloride	**Source:**	Reference Toxicant
Receipt Date:	23 Dec-19 16:00	**CAS (PC):**		**Station:**	In House
Sample Age:	n/a (24.4 °C)	**Client:**	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
18-5181-3781	96h Survival Rate	Dunnett Multiple Comparison Test		1	2	1.414		18.2%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	mg/L	95% LCL	95% UCL	TU	S
07-9787-4671	96h Survival Rate	Trimmed Spearman-Kärber		EC50	1.33	1.2	1.47		1

96h Survival Rate Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.25		2	0.950	0.315	1.000	0.900	1.000	0.050	0.071	7.44%	5.00%
0.5		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		2	0.900	0.000	1.000	0.800	1.000	0.100	0.141	15.71%	10.00%
2		2	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
4		2	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

96h Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2
0	LW	1.000	1.000
0.25		0.900	1.000
0.5		1.000	1.000
1		1.000	0.800
2		0.000	0.000
4		0.000	0.000

96h Survival Rate Binomials

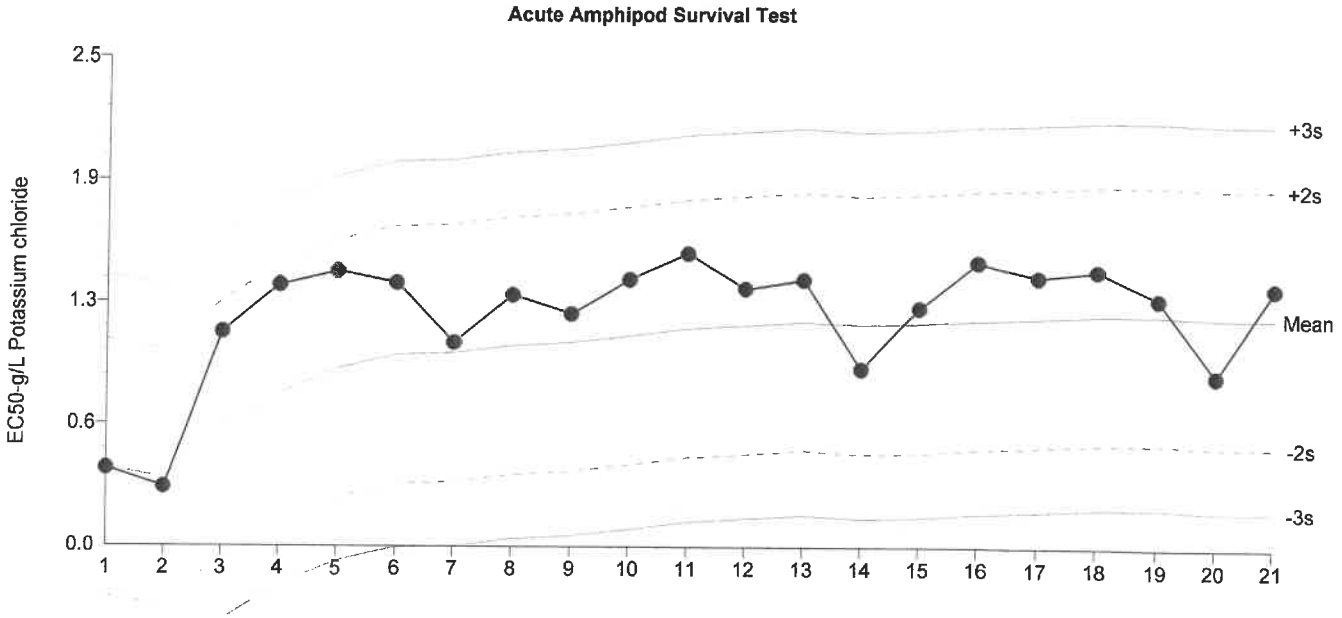
Conc-mg/L	Code	Rep 1	Rep 2
0	LW	10/10	10/10
0.25		9/10	10/10
0.5		10/10	10/10
1		10/10	8/10
2		0/10	0/10
4		0/10	0/10

CETIS QC Plot

Report Date: 03 Jan-20 08:27 (1 of 1)

Acute Amphipod Survival Test — **Pacific EcoRisk**

Test Type: Survival (96h) **Organism:** Leptocheirus plumulosus (Amphipod) **Material:** Potassium chloride
Protocol: EPA/600/R-01/020 (2001) **Endpoint:** 96h Survival Rate **Source:** Reference Toxicant-REF



Mean:	1.174	**Count:**	20	**-2s Warning Limit:**	0.5161	**-3s Action Limit:**	0.1869
Sigma:	0.3292	**CV:**	28.00%	**+2s Warning Limit:**	1.833	**+3s Action Limit:**	2.162

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Jan	21	14:30	0.3976	-0.7764	-2.358	(-)		17-9027-4290	04-6885-5044
2		Mar	24	16:45	0.302	-0.872	-2.649	(-)		06-9088-3226	02-7709-3796
3		Apr	10	15:50	1.095	-0.07851	-0.2385			01-6744-6153	16-3209-5871
4			12	16:52	1.336	0.1623	0.4929			14-2749-0047	21-0724-8309
5			18	15:40	1.406	0.2319	0.7045			11-3078-9910	21-0077-5534
6			20	17:53	1.347	0.1734	0.5266			06-7749-4242	05-1101-4036
7		May	9	17:50	1.042	-0.1325	-0.4025			13-9937-5878	04-9522-7383
8			23	14:45	1.286	0.1119	0.3398			16-6565-6736	04-9947-7179
9			31	16:40	1.19	0.01557	0.04729			09-9345-3748	10-3679-9061
10		Jun	7	17:15	1.366	0.192	0.5834			05-9700-2938	12-0186-4744
11			14	16:30	1.5	0.326	0.9903			20-6460-0512	12-6056-2203
12	2019	Jan	5	14:15	1.32	0.1455	0.442			00-0300-4895	15-5929-3469
13		Apr	25	12:20	1.366	0.192	0.5834			01-6534-1486	03-0033-3930
14		May	1	12:36	0.9102	-0.2638	-0.8014			08-1293-5814	16-8998-0892
15			17	15:05	1.222	0.04819	0.1464			04-1915-8846	16-7808-3078
16			30	10:40	1.456	0.2817	0.8556			15-8381-7846	15-9791-0240
17		Jun	20	14:45	1.381	0.2074	0.6299			21-1187-8501	08-0037-2724
18		Jul	19	15:50	1.414	0.2402	0.7297			08-8552-3180	09-8360-6151
19		Nov	26	15:50	1.272	0.09849	0.2992			00-0063-9126	17-7398-1446
20		Dec	10	14:14	0.8798	-0.2942	-0.8936			16-3822-9922	11-5631-4347
21			23	16:00	1.327	0.1531	0.465			19-9951-7039	07-9787-4671

Analyst: _____ QA: RG

96 Hour Marine Reference Toxicant Test Data

Client: **Reference Toxicant** Organism Log #: 11905

Test Material: Potassium Chloride Organism Supplier: ARO

Test ID#: 86575 Project # 31146 Species: *Leptocheirus plumulosus*

Test Date: 12/23/19 Randomization: 2.6.1 Control/Diluent: 20 ppt Seawater

Treatment (g KCl /L)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	# Live Organisms A	# Live Organisms B	SIGN-OFF
Control	24.4	7.64		7.7		20.2		10	10	Date: 12/23/19
0.25	24.6	7.65		7.5		21.0		10	10	Test Solution Prep: TK
0.5	24.5	7.66		7.7		21.5		10	10	New WQ: MH
1	24.6	7.67		7.9		22.7		10	10	Initiation Time: 1600
2	24.5	7.68		7.8		~~22.7~~ 24.7		10	10	Initiation Signoff: TK
4	24.5	7.76		9.5		29.2		10	10	RT Batch #: – 32
Meter ID:	35A	PH24		RD10		EC10				
Control	26.1		7.67		7.5		20.8			Date: 12/24/19
0.25	26.0		7.74		7.5		21.4			Count Time: 0810
0.5	26.0		7.75		7.5		21.9			Count Signoff: JL
1	26.1		7.79		7.5		23.2			Old WQ: MH
2	26.1		7.79		7.6		25.4			
4	26.2		7.78		7.6		30.1			
Meter ID:	93A		PH26		RD13		EC13			
Control	26.0		7.68		7.0		22.1			Date: 12/25/19
0.25	26.1		7.75		7.0		23.1			Count Time: 0925
0.5	26.4		7.77		7.0		22.9			Count Signoff: Le
1	25.9		7.78		7.1		25.3			Old WQ: SOB
2	25.9		7.78		7.0		27.5			
4	26.0		7.80		7.0		31.9			
Meter ID:	35A		PH24		RD10		EC10			
Control	25.4		7.69		7.2		22.1			Date: 12/26/19
0.25	25.4		7.73		7.4		25.1			Count Time: 1133
0.5	25.9		7.76		7.5		24.0			Count Signoff: Le
1	25.1		7.75		7.4		28.1			Old WQ: JR
2	25.4		7.74		6.9		30.0			
4	25.4		7.75		7.0		33.5			
Meter ID:	97A		PH25		RD10		EC12			
Control	24.9		7.86		6.8		25.7	10	10	Date: 12/27/19
0.25	25.0		7.94		6.8		27.4	9	10	Termination Time: 1531
0.5	25.3		7.94		6.8		25.1	10	10	Termination Signoff: JL
1	25.1		7.93		6.8		31.7	10	8	Old WQ: Le
2	25.0		7.76		5.8		32.6	0	0	
4	25.0		7.90		6.4		36.7	0	0	
Meter ID:	111A		PH25		RD11		EC14			

Appendix H

Test Data and Summary of Statistics for the Ammonia Toxicity Evaluation of the Amphipod, *Leptocheirus plumulosus*

CETIS Summary Report

Acute Amphipod Survival Test — Pacific EcoRisk

Batch ID:	11-0309-9020	Test Type:	Survival (96h)	Analyst:	James Lem
Start Date:	23 Dec-19 16:05	Protocol:	EPA/600/R-01/020 (2001)	Diluent:	Diluted Seawater
Ending Date:	27 Dec-19 15:45	Species:	Leptocheirus plumulosus	Brine:	Not Applicable
Test Length:	96h	Taxon:	Malacostraca	Source:	Aquatic Research Organis Age: N/A

Sample ID:	16-8786-3659	Code:	NH3	Project:	31147
Sample Date:	23 Dec-19 16:05	Material:	Ammonia	Source:	Reference Toxicant
Receipt Date:	23 Dec-19 16:05	CAS (PC):		Station:	In House
Sample Age:	n/a (24.6 °C)	Client:	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓ NOEL	LOEL	TOEL	TU	PMSD	S
03-5124-4745	96h Survival Rate	Dunnett Multiple Comparison Test	120	>120	n/a		8.73%	1

96h Survival Rate Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	2	0.950	0.315	1.000	0.900	1.000	0.050	0.071	7.44%	0.00%
7.5		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
15		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
30		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
60		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
120		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%

96h Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2
0	LW	1.000	0.900
7.5		1.000	1.000
15		1.000	1.000
30		1.000	1.000
60		1.000	1.000
120		1.000	1.000

96h Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2
0	LW	10/10	9/10
7.5		10/10	10/10
15		10/10	10/10
30		10/10	10/10
60		10/10	10/10
120		10/10	10/10

96 Hour Marine Reference Toxicant Test Data

Client: **Reference Toxicant** Organism Log #: 11905

Test Material: Ammonia Organism Supplier: ARC

Test ID#: 86576 Project # 31147 Species: *Leptocheirus plumulosus*

Test Date: 12/23/19 Randomization: 2.6.2 Control/Diluent: 20 ppt Seawater

Treatment (mg NH3-N /L)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms		SIGN-OFF
		new	old	new	old	new	old	A	B	
Control	24.6	7.76		7.9		20.1		10	10	Date: 12/23/19
7.5	24.5	7.75		8.0		20.4		10	10	Test Solution Prep: TK
15	24.6	7.72		7.9		20.5		10	10	New WQ: AS
30	24.7	7.69		8.0		20.6		10	10	Initiation Time: 1605
60	24.6	7.65		8.0		20.7		10	10	Initiation Signoff: TK
120	24.6	7.57		8.0		20.9		10	10	Ref Tox Stock Batch # –
Meter ID:	35A	PH25		RD11		EC14				
Control	25.9		7.73		7.5		20.7			Date: 12/24/19
7.5	25.8		7.78		7.5		20.8			Count Time: 0805
15	25.8		7.76		7.5		21.2			Count Signoff: JL
30	25.9		7.81		7.5		20.9			Old WQ: SQB
60	26.0		7.77		7.5		21.2			PM Inspection: TK
120	26.0		7.69		7.5		21.5			
Meter ID:	93A		PH24		RD10		EC10			
Control	25.8		7.67		7.1		21.8			Date: 12/25/19
7.5	26.0		7.70		7.2		22.0			Count Time: 0920
15	26.2		7.70		7.1		22.2			Count Signoff: Le
30	25.8		7.66		7.1		22.3			Old WQ: SQB
60	25.8		7.57		7.1		22.6			PM Inspection: TK
120	26.0		7.45		7.0		22.6			
Meter ID:	35A		PH24		RD10		EC10			
Control	25.4		7.73		7.5		23.4			Date: 12/26/19
7.5	25.5		7.72		7.5		23.2			Count Time: 1130
15	25.6		7.68		7.4		23.1			Count Signoff: Le
30	25.3		7.58		7.5		23.4			Old WQ: JR
60	25.1		7.41		7.4		24.2			PM Inspection: RG
120	25.2		7.27		7.5		23.6			
Meter ID:	97A		PH25		RD10		EC12			
Control	25.1		7.78		7.2		25.3	10	9	Date: 12/27/19
7.5	25.1		7.80		6.9		24.4	10	10	Termination Time: 1545
15	25.0		7.76		6.8		24.2	10	10	Termination Signoff: JL
30	24.9		7.69		6.9		25.3	10	10	Old WQ: YY
60	24.8		7.51		6.9		25.3	10	10	
120	24.9		7.28		6.8		24.9	10	10	
Meter ID:	111A		PH25		RD11		EC14			

Appendix I

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Military Ocean Terminal Concord (MOTCO) Sediments to the Polychaete, *Neanthes arenaceodentata*

CETIS Summary Report

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Batch ID:	17-3792-1555	**Test Type:**	Survival	**Analyst:**	Ashleigh Findley		
Start Date:	02 Dec-19 15:20	**Protocol:**	ASTM E1611-00 (2007)	**Diluent:**	Not Applicable		
Ending Date:	12 Dec-19 13:49	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable		
Test Length:	9d 22h	**Taxon:**	Polychaeta	**Source:**	Aquatic Tox. Sup.	**Age:**	N/A

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
CMOT_1219NA_C1	04-2524-1919	02 Dec-19 15:20	02 Dec-19 15:20	n/a (19.6 °C)	USACE	30945
SF-10	06-5220-4317	01 Nov-19 12:30	02 Nov-19 10:00	31d 3h		
2019-DU1-COMP	05-4032-1787	31 Oct-19 08:10	05 Nov-19 16:00	32d 7h		
2019-DU2a-COMP	20-5409-4978	28 Oct-19 13:15	05 Nov-19 14:30	35d 2h		
2019-DU2b-COMP	05-0411-7998	31 Oct-19 10:43	05 Nov-19 17:00	32d 5h		
2019-DU3-COMP	04-0961-2047	30 Oct-19 09:20	05 Nov-19 12:45	33d 6h		
2019-DU4-COMP	16-9881-3308	30 Oct-19 14:27	05 Nov-19 15:00	33d 1h		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
CMOT_1219NA_C1	Control Sediment	Concord MOTCO	LABQA	
SF-10	Sediment	Concord MOTCO	SF-10	
2019-DU1-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU1-Comp	
2019-DU2a-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU2a-COMP	
2019-DU2b-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU2b-COMP	
2019-DU3-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU3-COMP	
2019-DU4-COMP	Sediment	Concord MOTCO	MOTCO-2019-DU4-COMP	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
10-2043-2731	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	SF-10 passed survival rate	1
15-9533-9958	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU1-COMP passed survival rate	1
15-9403-1267	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU2a-COMP passed survival rate	1
02-7987-4407	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU2b-COMP passed survival rate	1
10-5046-4155	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU3-COMP passed survival rate	1
05-4907-6790	Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU4-COMP passed survival rate	1

Survival Rate Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
SF-10	RS	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2019-DU1-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2019-DU2a-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2019-DU2b-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2019-DU3-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2019-DU4-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

Survival Rate Detail

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
CMOT_1219NA_C1	CS	1.000	1.000	1.000	1.000	1.000
SF-10	RS	1.000	1.000	1.000	1.000	1.000
2019-DU1-COMP		1.000	1.000	1.000	1.000	1.000
2019-DU2a-COMP		1.000	1.000	1.000	1.000	1.000
2019-DU2b-COMP		1.000	1.000	1.000	1.000	1.000
2019-DU3-COMP		1.000	1.000	1.000	1.000	1.000
2019-DU4-COMP		1.000	1.000	1.000	1.000	1.000

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Survival Rate Binomials

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
CMOT_1219NA_C1	CS	10/10	10/10	10/10	10/10	10/10
SF-10	RS	10/10	10/10	10/10	10/10	10/10
2019-DU1-COMP		10/10	10/10	10/10	10/10	10/10
2019-DU2a-COMP		10/10	10/10	10/10	10/10	10/10
2019-DU2b-COMP		10/10	10/10	10/10	10/10	10/10
2019-DU3-COMP		10/10	10/10	10/10	10/10	10/10
2019-DU4-COMP		10/10	10/10	10/10	10/10	10/10

10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: - Organism Supplier: ATS

Sample ID#: 52926 Organism Log#: 11867

Day of Test	Test Replicate	Paradise Cove (Control Sediment)					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	19.7	7.79	7.7	30.9	10	Date: 12-2-19
	Rep B	19.4	7.78	7.8	30.6	10	Initiation Time: 1520
	Rep C	19.4	7.77	7.6	30.5	10	WQ: YL WQ Time: 1010
	Rep D	18.8	7.76	7.8	30.9	10	Scientist Initiation: TK
	Rep E	18.8	7.74	7.8	31.0	10	Scientist Confirmation: TK
Day 1	Rep A	20.2	7.71	7.5	30.9		Date: 12/3/19 Time: 0920 WQ: AS
Day 2	Rep B	19.7	7.67	7.3	31.6		Date: 12/4/19 Time: 1103 WQ: AS
Day 3	Rep C	19.8	7.72	7.9	31.5		Date: 12-5-19 Time: WQ: YL 0715
Day 4	Rep D	19.5	7.77	7.9	30.9		Date: 12/6/19 Time: WQ: YL 0800
Day 5	Rep E	20.4	7.57	7.0	31.2		Date: 12-7-19 Time: WQ: SAT 0900
Day 6	Rep A	20.0	7.70	7.4	31.4		Date: 12/8/19 Time: 0963 WQ: AS
Day 7	Rep B	19.7	7.70	7.6	31.6		Date: 12/9/19 Time: 1156 WQ: AS
Day 8	Rep C	20.2	7.66	7.8	31.4		Date: 12/10/19 Time: WQ: YL 1230
Day 9	Rep D	19.6	7.83	8.1	30.8		Date: 12/11/19 Time: WQ: YL 0800
Day 10	Rep A	19.7	7.71	7.2	30.9	10	Date: 12/12/19
	Rep B	19.9	7.75	7.3	31.7	10	Termination Time: 1349
	Rep C	20.0	7.76	7.4	31.6	10	WQ: AS WQ Time: 0920
	Rep D	20.2	7.77	7.2	30.9	10	Scientist Counts: TF
	Rep E	20.1	7.73	7.4	30.7	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.45	6.3	28.3	0.028	<1.00	Date: 12/2/19 Time: WQ: YL 1130
	Overlying Water					<1.00	Date: 12/2/19 Time: WQ: YL 1100
Day 10	Porewater	7.23	5.6	32.3	0.026	<1.00	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					<1.00	Date: 12/12/19 Time: 0930 WQ: AS

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	10-2043-2731	**Endpoint:** Survival Rate	**CETIS Version:** CETISv1.9.6
Analyzed:	19 Dec-19 9:02	**Analysis:** Nonparametric-Two Sample	**Status Level:** 1

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		Reference Sed	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

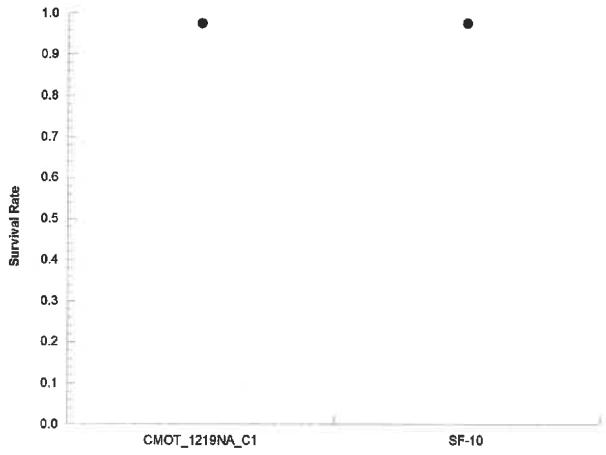
Survival Rate Summary

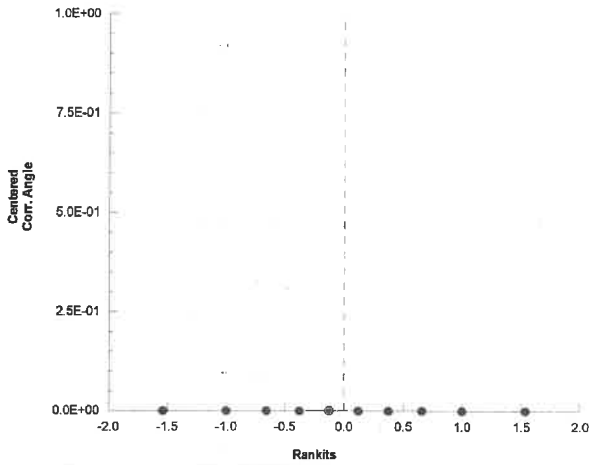
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
SF-10	RS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
SF-10	RS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: 85977 Organism Supplier: ATS

Sample ID#: 542601 Organism Log#: 118167

Day of Test	Test Replicate	SF-10 (Reference Sediment)					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	19.6	7.70	7.8	31.0	10	Date: 12-2-19
	Rep B	19.4	7.79	7.8	30.5	10	Initiation Time: 1520
	Rep C	19.3	7.78	7.8	30.7	10	WQ: YK WQ Time: 1010
	Rep D	19.3	7.75	7.9	29.8	10	Scientist Initiation: TK
	Rep E	19.3	7.74	7.8	30.4	10	Scientist Confirmation: TK
Day 1	Rep A	20.4	7.76	7.6	31.3		Date: 12/3/19 Time: 0930 WQ: AS
Day 2	Rep B	21.1	7.74	7.4	30.6		Date: 12/4/19 Time: 1103 WQ: AS
Day 3	Rep C	19.9	7.85	7.8	31.5		Date: 12/5/19 Time: WQ: YK 0715
Day 4	Rep D	19.8	7.86	7.5	31.0		Date: 12/6/19 Time: WQ: YK 0800
Day 5	Rep E	20.3	7.84	7.3	31.4		Date: 12-7-19 Time: WQ: SAT 0921
Day 6	Rep A	19.8	7.70	6.5	30.7		Date: 12/8/19 Time: 0935 WQ: AS
Day 7	Rep B	20.0	7.75	8.0	31.2		Date: 12/9/19 Time: 1157 WQ: AS
Day 8	Rep C	20.1	7.76	7.9	31.3		Date: 12/10/19 Time: WQ: YK 1230
Day 9	Rep D	20.1	7.85	8.1	30.0		Date: 12-11-19 Time: WQ: YK 0800
Day 10	Rep A	19.7	7.71	7.5	30.9	10	Date: 12/12/19
	Rep B	20.0	7.75	7.4	30.7	10	Termination Time: 1349
	Rep C	19.9	7.75	7.6	31.1	10	WQ: AS WQ Time: 1017
	Rep D	20.0	7.75	7.6	30.5	10	Scientist Counts: TK
	Rep E	19.7	7.78	7.6	31.8	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.44	7.3	28.6	0.046	3.93	Date: 12-2-19 Time: WQ: YK 1130
	Overlying Water					<1.00	Date: 12-2-19 Time: WQ: YK 1100
Day 10	Porewater	7.24	5.9	29.3	0.159	~~3.93~~ 1.58	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					<1.00	Date: 12/12/19 Time: 0930 WQ: AS

10 Day Marine/Estuarine Sediment Test				Pacific EcoRisk
Analysis ID:	15-9533-9958	**Endpoint:** Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 9:02	**Analysis:** Nonparametric-Two Sample	**Status Level:**	1

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU1-COMP	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

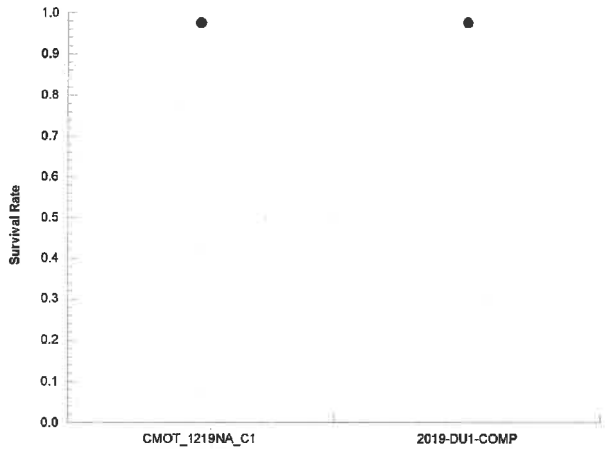
Survival Rate Summary

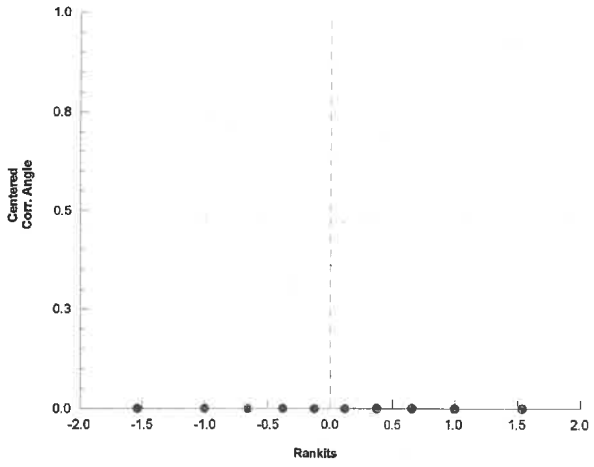
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
2019-DU1-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
2019-DU1-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: 85972 Organism Supplier: ATS

Sample ID#: 54277 Organism Log#: 11867

Day of Test	Test Replicate	MOTCO-2019-DU1-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	19.4	7.79	7.9	31.3	10	Date: 12-2-19
	Rep B	19.8	7.83	7.8	30.8	10	Initiation Time: 1520
	Rep C	19.4	7.77	7.8	30.7	10	WQ: YM WQ Time: 1010
	Rep D	19.3	7.80	7.9	30.7	10	Scientist Initiation: TK
	Rep E	19.3	7.74	8.0	31.1	10	Scientist Confirmation: TK
Day 1	Rep A	20.0	7.84	7.7	31.4		Date: 12/3/19 Time: 0922 WQ: AS
Day 2	Rep B	20.3	7.69	7.4	30.72		Date: 12/4/19 Time: 1103 WQ: AS
Day 3	Rep C	19.7	7.81	7.8	31.5		Date: 12-5-19 Time: WQ: YM 0715
Day 4	Rep D	19.3	7.82	7.8	30.9		Date: 12/6/19 Time: WQ: YM 0800
Day 5	Rep E	20.4	7.75	7.2	30.8		Date: 12-7-19 Time: WQ: SAT 0901
Day 6	Rep A	19.8	7.79	7.6	31.7		Date: 12/8/19 Time: 0925 WQ: AS
Day 7	Rep B	19.5	7.70	7.7	30.4		Date: 12/9/19 Time: 1156 WQ: AS
Day 8	Rep C	19.7	7.67	7.8	31.2		Date: 12/10/19 Time: WQ: YM 1230
Day 9	Rep D	19.4	7.85	8.1	30.6		Date: 12/11/19 Time: WQ: YM 0900
Day 10	Rep A	19.5	7.75	7.4	31.2	10	Date: 12/12/19
	Rep B	19.7	7.79	7.4	30.6	10	Termination Time: 1349
	Rep C	19.6	7.64	7.3	31.6	10	WQ: AS WQ Time: 0946
	Rep D	19.8	7.68	7.4	31.1	10	Scientist Counts: TK
	Rep E	20.1	7.68	7.4	31.6	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.58	7.6	29.7	0.173	4.46	Date: 12-2-19 Time: WQ: YM 1130
	Overlying Water					<1.00	Date: 12-2-19 Time: WQ: YM 1100
Day 10	Porewater	*	*	*	0.171	1.74	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					2.180	Date: 12/12/19 Time: 0930 WQ: AS

* - insufficient amt. Porewater

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	15-9403-1267	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 9:02	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU2a-COMP	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

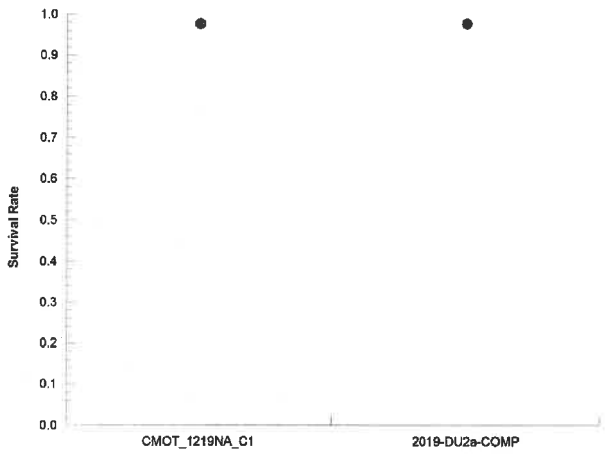
Survival Rate Summary

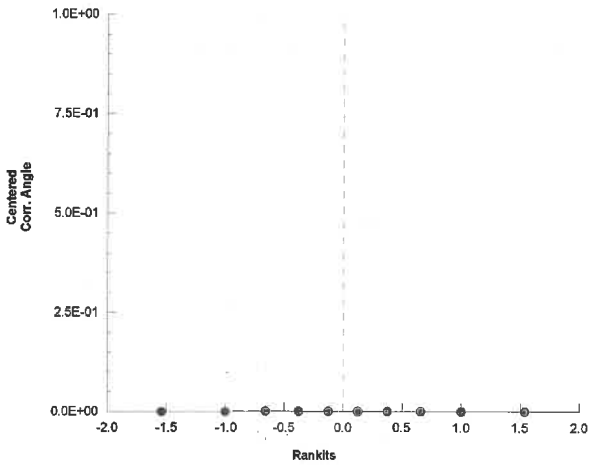
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
2019-DU2a-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
2019-DU2a-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: 85973 Organism Supplier: ATS

Sample ID#: 54282 Organism Log#: 11867

Day of Test	Test Replicate	MOTCO-2019-DU2a-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	20.0	7.71	7.9	30.9	10	Date: 12-2-19
	Rep B	20.2	7.77	7.8	30.4	10	Initiation Time: 1520
	Rep C	19.6	7.72	7.9	30.7	10	WQ: YL WQ Time: 1010
	Rep D	19.4	7.72	7.9	30.9	10	Scientist Initiation: TK
	Rep E	19.8	7.73	8.0	30.8	10	Scientist Confirmation: TK
Day 1	Rep A	20.4	7.81	7.5	31.7		Date: 12/3/19 Time: 0922 WQ: AS
Day 2	Rep B	20.8	7.66	7.4	30.9		Date: 12/4/19 Time: 1103 WQ: AS
Day 3	Rep C	19.7	7.76	7.8	31.5		Date: 12/5/19 Time: WQ: YL 0715
Day 4	Rep D	19.2	7.77	8.0	30.3		Date: 12/6/19 Time: WQ: YL 0800
Day 5	Rep E	20.4	7.69	7.6	31.5		Date: 12-7-19 Time: WQ: SAT 0905
Day 6	Rep A	19.9	7.77	7.6	31.1		Date: 12/8/19 Time: 0905 WQ: AS
Day 7	Rep B	19.6	7.64	7.7	30.4		Date: 12/9/19 Time: 1157 WQ: AS
Day 8	Rep C	19.8	7.61	7.8	30.7		Date: 12/10/19 Time: WQ: YL 1230
Day 9	Rep D	19.5	7.78	8.0	32.0		Date: 12/11/19 Time: WQ: YL 0900
Day 10	Rep A	19.7	7.63	7.5	30.6	10	Date: 12/12/19
	Rep B	19.7	7.62	7.4	29.5	10	Termination Time: 1349
	Rep C	19.5	7.60	7.3	30.6	10	WQ: AS WQ Time: 0950
	Rep D	19.6	7.58	7.3	31.2	10	Scientist Counts: TK
	Rep E	19.9	7.60	7.5	30.1	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.54	8.1	29.5	0.067	1.08	Date: 12-2-19 Time: WQ: YL 1130
	Overlying Water					1.51	Date: 12-2-19 Time: WQ: YL 1100
Day 10	Porewater	7.16	6.6	29.9	0.034	7.12	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					2.03	Date: 12/12/19 Time: 0930 WQ: AS

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	02-7987-4407	**Endpoint:** Survival Rate	**CETIS Version:** CETISv1.9.6
Analyzed:	19 Dec-19 9:02	**Analysis:** Nonparametric-Two Sample	**Status Level:** 1

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU2b-COMP	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

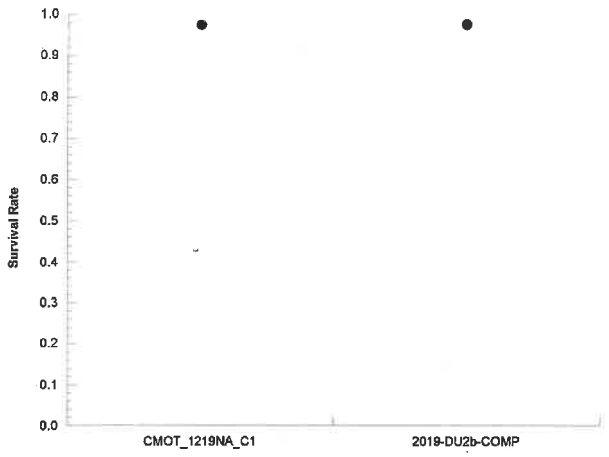
Survival Rate Summary

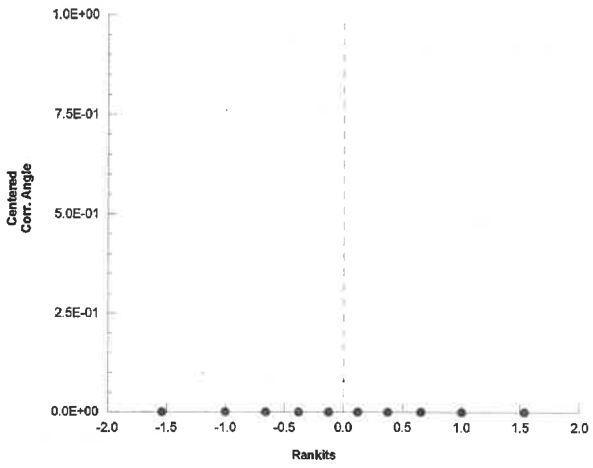
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
2019-DU2b-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
2019-DU2b-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: 85974 Organism Supplier: ATS

Sample ID#: 54287 Organism Log#: 11867

Day of Test	Test Replicate	MOTCO-2019-DU2b-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	19.7	7.77	7.8	30.6	10	Date: 12-2-19
	Rep B	19.6	7.78	7.7	30.4	10	Initiation Time: 1520
	Rep C	19.6	7.69	7.7	30.3	10	WQ: [illegible] WQ Time: 1010
	Rep D	19.7	7.76	7.9	30.6	10	Scientist Initiation: [illegible]
	Rep E	19.9	7.76	7.8	30.6	10	Scientist Confirmation: TK
Day 1	Rep A	20.5	7.78	7.4	31.4		Date: 12/3/19 Time: 0927 WQ: AS
Day 2	Rep B	21.0	7.68	7.5	31.2		Date: 12/4/19 Time: 1107 WQ: AS
Day 3	Rep C	19.9	7.76	7.8	31.0		Date: 12/5/19 Time: WQ: [illegible] 0715
Day 4	Rep D	19.3	7.74	8.0	31.4		Date: 12/6/19 Time: WQ: [illegible] 0800
Day 5	Rep E	20.5	7.63	7.4	31.9		Date: 12-7-19 Time: WQ: SAT 0910
Day 6	Rep A	19.9	7.76	7.5	31.0		Date: 12/8/19 Time: 0905 WQ: AS
Day 7	Rep B	19.6	7.62	7.8	30.4		Date: 12/9/19 Time: 1157 WQ: AS
Day 8	Rep C	19.8	7.64	7.8	29.7		Date: 12/10/19 Time: WQ: [illegible] 1230
Day 9	Rep D	19.6	7.75	7.9	31.4		Date: 12/11/19 Time: WQ: [illegible] 0800
Day 10	Rep A	19.7	7.50	7.4	31.6	10	Date: 12/12/19
	Rep B	19.4	7.53	7.4	31.2	10	Termination Time: 1349
	Rep C	19.3	7.46	7.3	30.7	10	WQ: AS WQ Time: 1001
	Rep D	19.5	7.46	7.4	31.1	10	Scientist Counts: TF
	Rep E	20.0	7.45	7.4	30.8	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.57	7.9	28.6	0.114	14.3	Date: 12-2-19 Time: WQ: [illegible] 1130
	Overlying Water					<1.00	Date: 12-2-19 Time: WQ: [illegible] 1100
Day 10	Porewater	7.22	6.8	29.3	0.053	11.0	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					1.08	Date: 12/12/19 Time: 0930 WQ: AS

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	10-5046-4155	**Endpoint:** Survival Rate	**CETIS Version:** CETISv1.9.6
Analyzed:	19 Dec-19 9:02	**Analysis:** Nonparametric-Two Sample	**Status Level:** 1

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU3-COMP	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

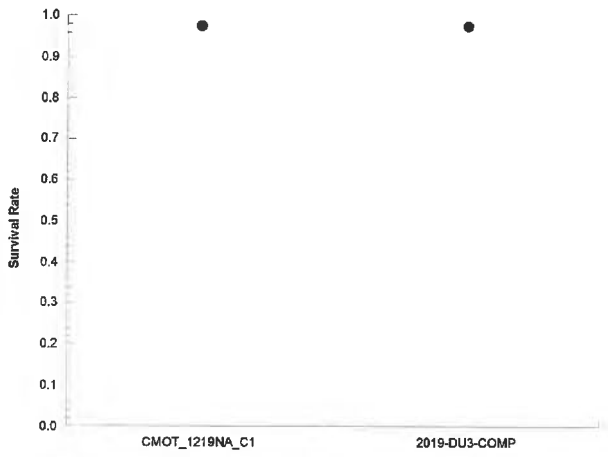
Survival Rate Summary

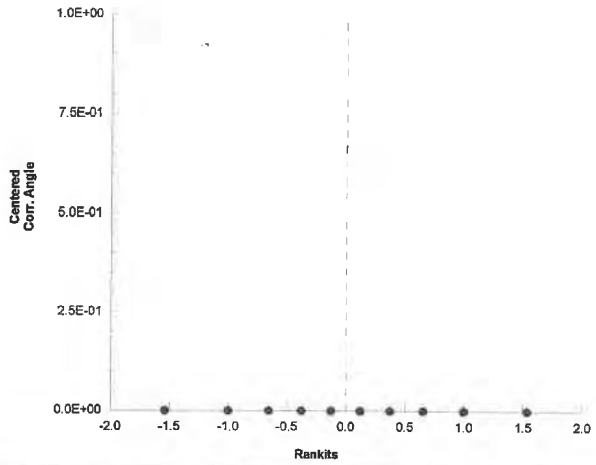
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
2019-DU3-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
2019-DU3-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: 85975 Organism Supplier: ATS

Sample ID#: 54292 Organism Log#: 11867

Day of Test	Test Replicate	MOTCO-2019-DU3-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	19.5	7.78	7.7	30.5	10	Date: 12-2-19
	Rep B	19.4	7.77	7.7	30.4	10	Initiation Time: 1520
	Rep C	19.4	7.76	7.8	30.3	10	WQ: YL WQ Time: 1010
	Rep D	19.6	7.76	7.8	30.4	10	Scientist Initiation: TY
	Rep E	19.9	7.76	7.7	30.5	10	Scientist Confirmation: TK
Day 1	Rep A	20.7	7.73	7.5	31.4		Date: 12/3/19 Time: 0930 WQ: AS
Day 2	Rep B	21.0	7.71	7.3	31.0		Date: 12/4/19 Time: 1103 WQ: AS
Day 3	Rep C	19.8	7.81	7.8	31.2		Date: 12/5/19 Time: WQ: YL 0715
Day 4	Rep D	19.4	7.84	8.0	30.2		Date: 12/6/19 Time: WQ: YL 0800
Day 5	Rep E	20.1	7.73	7.6	31.6		Date: 12-7-19 Time: WQ: SAT 0912
Day 6	Rep A	20.0	7.77	7.5	31.0		Date: 12/8/19 Time: 0905 WQ: AS
Day 7	Rep B	19.5	7.71	7.9	30.6		Date: 12/9/19 Time: 1157 WQ: AS
Day 8	Rep C	19.8	7.66	7.9	30.2		Date: 12/10/19 Time: WQ: YL 1230
Day 9	Rep D	19.6	7.80	8.0	30.2		Date: 12-11-19 Time: WQ: YL 0800
Day 10	Rep A	19.8	7.69	7.4	31.0	10	Date: 12/12/19
	Rep B	19.4	7.76	7.3	31.4	10	Termination Time: 1749
	Rep C	19.3	7.76	7.4	30.8	10	WQ: AS WQ Time: 1001
	Rep D	19.4	7.76	7.5	30.4	10	Scientist Counts: TY
	Rep E	19.7	7.77	7.5	31.1	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	6.94	6.7	29.0	0.0240	6.40	Date: 12/2/19 Time: WQ: YL 1130
	Overlying Water					1.08	Date: 12-2-19 Time: WQ: YL 1100
Day 10	Porewater	6.94	5.4	32.2	0.037	2.58	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					<1.00	Date: 12/12/19 Time: 0920 WQ: AS

10 Day Marine/Estuarine Sediment Test — **Pacific EcoRisk**

Analysis ID:	05-4907-6790	**Endpoint:** Survival Rate	**CETIS Version:** CETISv1.9.6
Analyzed:	19 Dec-19 9:02	**Analysis:** Nonparametric-Two Sample	**Status Level:** 1

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Control Sed		2019-DU4-COMP	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

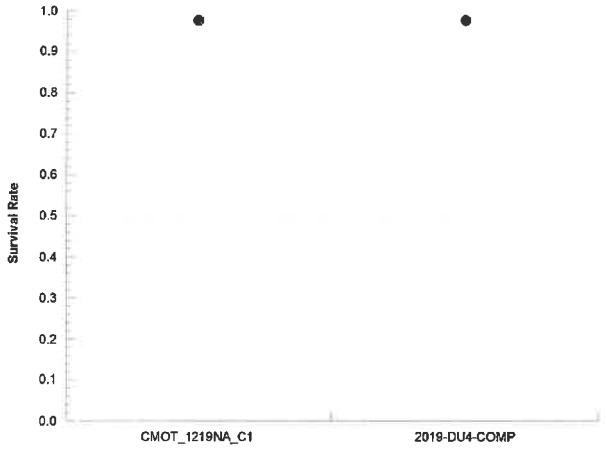
Survival Rate Summary

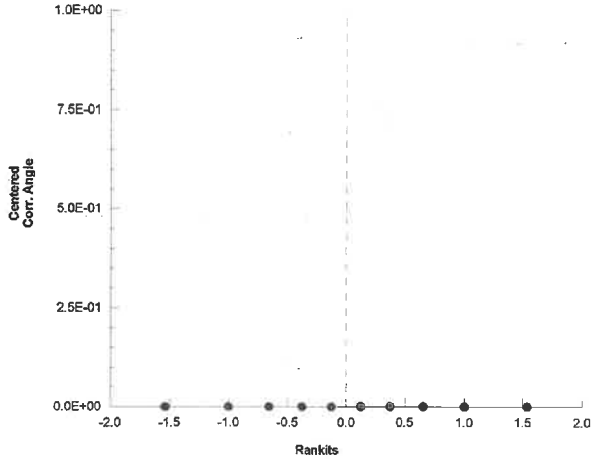
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
2019-DU4-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219NA_C1	CS	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
2019-DU4-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





10-Day Estuarine/Marine Sediment Toxicity Test Data

Client: **USACE: MOTCO** Project #: 30945 Date (Day 0): 12/2/19

Species: *Neanthes arenaceodentata* Test ID#: 85976 Organism Supplier: ATS

Sample ID#: 54297 Organism Log#: 11867

Day of Test	Test Replicate	MOTCO-2019-DU4-Comp					Sign-Off
		Temp (°C)	pH	D.O. (mg/L)	Salinity (ppt)	# Alive	
Day 0	Rep A	19.3	7.75	7.8	30.1	10	Date: 12-2-19
	Rep B	19.3	7.77	7.8	30.6	10	Initiation Time: 1520
	Rep C	19.2	7.78	7.8	30.0	10	WQ: YK WQ Time: 1010
	Rep D	19.2	7.77	7.9	29.8	10	Scientist Initiation: TK
	Rep E	19.2	7.76	7.8	30.1	10	Scientist Confirmation: TK
Day 1	Rep A	20.6	7.83	7.5	31.2		Date: 12/3/19 Time: 0929 WQ: AS
Day 2	Rep B	21.0	7.73	7.4	31.0		Date: 12/4/19 Time: 1103 WQ: AS
Day 3	Rep C	19.9	7.84	7.8	30.3		Date: 12/5/19 Time: WQ: YK 0715
Day 4	Rep D	19.4	7.85	7.4	30.5		Date: 12/6/19 Time: WQ: YK 0800
Day 5	Rep E	20.1	7.77	7.4	32.0		Date: 12-7-19 Time: WQ: SAT 0920
Day 6	Rep A	19.9	7.86	7.5	31.0		Date: 12/8/19 Time: 0905 WQ: AS
Day 7	Rep B	19.7	7.72	8.0	31.9		Date: 12/9/19 Time: 1157 WQ: AS
Day 8	Rep C	19.9	7.72	7.9	31.0		Date: 12/10/19 Time: WQ: YK 1230
Day 9	Rep D	19.7	7.83	8.0	31.2		Date: 12-11-19 Time: WQ: YK 0800
Day 10	Rep A	20.0	7.74	7.5	31.5	10	Date: 12/12/19
	Rep B	19.7	7.72	7.5	30.9	10	Termination Time: 1349
	Rep C	19.6	7.65	7.4	31.2	10	WQ: AS WQ Time: 1007
	Rep D	19.8	7.73	7.5	31.1	10	Scientist Counts: TF
	Rep E	19.7	7.73	7.5	31.1	10	

Day of Test	Matrix	pH	D.O. (mg/L)	Salinity (ppt)	Total Sulfide (mg/L)	Total Ammonia (mg/L)	Sign-Off
Day 0	Porewater	7.77	7.4	29.8	0.039	10.9	Date: 12-2-19 Time: WQ: YK 1130
	Overlying Water					<1.00	Date: 12-2-19 Time: WQ: YK 1100
Day 10	Porewater	7.20	6.0	29.6	0.071	3.64	Date: 12/12/19 Time: 1131 WQ: AS
	Overlying Water					<1.00	Date: 12/12/19 Time: 0930 WQ: AS

Appendix J

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Polychaete, *Neanthes arenaceodentata*

CETIS Summary Report

Acute Polychaete Survival Test — **Pacific EcoRisk**

Batch ID:	04-9977-9161	**Test Type:**	Survival	**Analyst:**	Ashleigh Findley		
Start Date:	02 Dec-19 16:15	**Protocol:**	ASTM E1611-00 (2007)	**Diluent:**	Diluted Seawater		
Ending Date:	06 Dec-19 16:35	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable		
Test Length:	4d 0h	**Taxon:**	Polychaeta	**Source:**	Aquatic Tox. Sup.	**Age:**	N/A

Sample ID:	01-5905-9456	**Code:**	KCl	**Project:**	31044
Sample Date:	02 Dec-19 16:15	**Material:**	Potassium chloride	**Source:**	Reference Toxicant
Receipt Date:	02 Dec-19 16:15	**CAS (PC):**		**Station:**	In House
Sample Age:	n/a (19.5 °C)	**Client:**	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
19-7653-1380	Survival Rate	Fisher Exact Test		1	2	1.414		n/a	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	g/L	95% LCL	95% UCL	TU	S
06-9457-6411	Survival Rate	Spearman-Kärber		EC50	1.97	1.66	2.33		1

Survival Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.5		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
2		2	0.600	0.600	0.600	0.600	0.600	0.000	0.000	0.00%	40.00%
3		2	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
4		2	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

Survival Rate Detail

Conc-g/L	Code	Rep 1	Rep 2
0	LW	1.000	1.000
0.5		1.000	1.000
1		1.000	1.000
2		0.600	0.600
3		0.000	0.000
4		0.000	0.000

Survival Rate Binomials

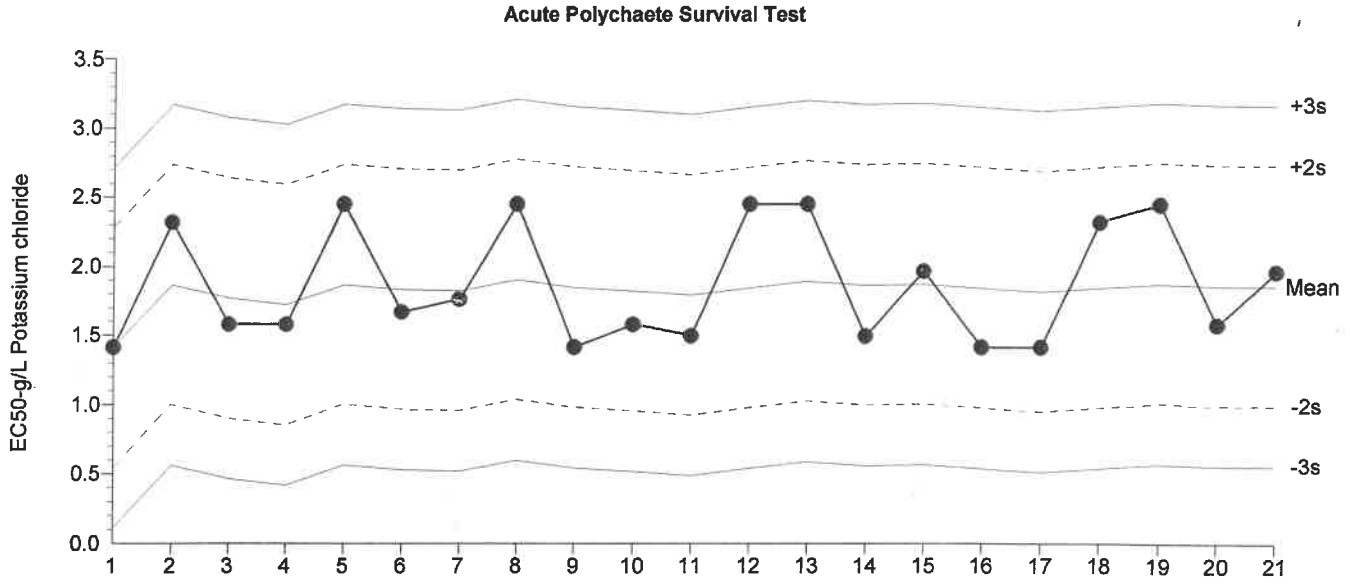
Conc-g/L	Code	Rep 1	Rep 2
0	LW	5/5	5/5
0.5		5/5	5/5
1		5/5	5/5
2		3/5	3/5
3		0/5	0/5
4		0/5	0/5

CETIS QC Plot

Report Date: 19 Dec-19 15:37 (1 of 1)

Acute Polychaete Survival Test — **Pacific EcoRisk**

Test Type:	Survival	**Organism:**	Neanthes arenaceodentata (Polycha	**Material:**	Potassium chloride
Protocol:	ASTM E1611-00 (2007)	**Endpoint:**	Survival Rate	**Source:**	Reference Toxicant-REF



Mean:	1.862	**Count:**	20	**-2s Warning Limit:**	0.9919	**-3s Action Limit:**	0.5569
Sigma:	0.435	**CV:**	23.40%	**+2s Warning Limit:**	2.732	**+3s Action Limit:**	3.167

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	May	27	14:37	1.414	-0.4478	-1.029			03-2221-2842	10-4964-3340
2		Jun	5	17:26	2.319	0.4566	1.05			12-6089-1903	19-1529-6042
3			13	16:57	1.578	-0.2836	-0.6519			18-9289-1862	07-7074-6545
4			28	15:29	1.578	-0.2836	-0.6519			12-3939-3004	20-0274-6118
5		Aug	3	16:00	2.449	0.5875	1.351			08-0001-5112	12-3521-5875
6			4	15:07	1.668	-0.1944	-0.447			04-7941-7360	12-7441-5185
7		Sep	27	16:35	1.762	-0.1003	-0.2305			04-1484-9253	02-6684-0598
8		Oct	14	16:15	2.449	0.5875	1.351			18-9147-5842	04-0238-1064
9			27	12:20	1.414	-0.4478	-1.029			15-7463-3083	07-3469-0849
10		Nov	16	14:21	1.578	-0.2836	-0.6519			11-3069-5363	10-4810-9685
11	2019	Jan	19	11:45	1.494	-0.3679	-0.8458			04-1726-0557	04-4357-6123
12		Mar	22	14:40	2.449	0.5875	1.351			08-2490-8085	01-8275-3767
13			30	15:08	2.449	0.5875	1.351			09-8104-7449	04-5848-6682
14		Apr	14	14:38	1.494	-0.3679	-0.8458			03-3285-3538	12-8328-6032
15			24	14:30	1.966	0.1043	0.2398			17-0306-5091	03-3815-0425
16			30	15:32	1.414	-0.4478	-1.029			08-8367-3594	01-6611-3473
17		May	29	13:20	1.414	-0.4478	-1.029			03-1230-5146	08-7059-9462
18		Jun	19	14:54	2.319	0.4566	1.05			05-8834-6209	16-3567-8309
19		Jul	19	15:08	2.449	0.5875	1.351			09-9582-8534	11-8652-5624
20		Nov	25	15:40	1.578	-0.2836	-0.6519			08-4959-2605	17-3005-3660
21		Dec	2	16:15	1.966	0.1043	0.2398			12-3028-6397	06-9457-6411

96 Hour Marine Reference Toxicant Test Data

Client: **Reference Toxicant** Organism Log #: 11867

Test Material: Potassium Chloride Organism Supplier: ATS

Test ID#: 86335 Project # 31044 Species: *Neanthes arenaceodentata*

Test Date: 12/2/19 Randomization: 2.6.1 Control/Diluent: 30 ppt FSW

Treatment (g KCl /L)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	# Live Organisms A	# Live Organisms B	SIGN-OFF
Control	19.5	7.78		7.7		29.9		5	5	Date: 12/2/19
0.5	19.7	7.82		7.7		30.3		5	5	Test Solution Prep: TK
1	19.7	7.82		7.8		31.0		5	5	New WQ: TK
2	19.8	7.78		8.0		32.0		5	5	Initiation Time: 1615
3	19.8	7.74		8.1		33.1		5	5	Initiation Signoff: TK
4	19.9	7.71		8.2		34.2		5	5	RT Batch #: 61/62
Meter ID:	97A	PH26		RD13		EC13				
Control	20.3		7.73		7.3		29.9	5	5	Date: 12/3/19
0.5	20.4		7.76		7.4		30.7	5	5	Count Time: 1634
1	20.4		7.76		7.4		31.2	5	5	Count Signoff: CD
2	20.4		7.75		7.3		32.3	5	5	Old WQ: JR
3	20.4		7.74		7.3		33.3	3	2	
4	20.3		7.75		7.5		34.6	0	0	
Meter ID:	93A		PH24		RD13		EC13			
Control	20.7		7.69		7.1		29.3	5	5	Date: 12/4/19
0.5	20.6		7.72		7.1		30.5	5	5	Count Time: 1035
1	20.5		7.73		7.1		30.9	5	5	Count Signoff: TK
2	20.5		7.72		7.0		32.1	5	5	Old WQ: TA
3	20.4		7.73		7.1		33.1	0	0	
4	-		-		-		-	-	-	
Meter ID:	97A		PH26		RD10		EC10			
Control	20.5		7.60		7.2		29.4	5	5	Date: 12/5/19
0.5	20.4		7.62		7.3		30.8	5	5	Count Time: 1136
1	20.4		7.61		7.2		31.3	5	5	Count Signoff: AF
2	20.3		7.61		7.2		32.3	5	5	Old WQ: AS
3	-		-		-		-	-	-	
4	-		-		-		-	-	-	
Meter ID:	35A		PH15		RD11		EC14			
Control	20.5		7.55		7.2		30.0	5	5	Date: 12/6/19
0.5	20.4		7.59		7.2		30.8	5	5	Termination Time: 1635
1	20.4		7.60		7.2		31.2	5	5	Termination Signoff: TK
2	20.4		7.60		7.1		32.3	3	3	Old WQ: SDB
3	-		-		-		-	-	-	
4	-		-		-		-	-	-	
Meter ID:	97A		PH24		RD11		EC14			

Appendix K

Test Data and Summary of Statistics for the Ammonia Toxicity Evaluation of the Polychaete, *Neanthes arenaceodentata*

CETIS Summary Report

Acute Polychaete Survival Test — **Pacific EcoRisk**

Batch ID:	16-8717-0133	**Test Type:**	Survival	**Analyst:**	Ashleigh Findley	
Start Date:	02 Dec-19 16:05	**Protocol:**	ASTM E1611-00 (2007)	**Diluent:**	Diluted Seawater	
Ending Date:	06 Dec-19 16:06	**Species:**	Neanthes arenaceodentata	**Brine:**	Not Applicable	
Test Length:	4d 0h	**Taxon:**	Polychaeta	**Source:**	Aquatic Tox. Sup.	**Age:** N/A

Sample ID:	12-6212-8419	**Code:**	NH3	**Project:**	30963
Sample Date:	02 Dec-19 16:05	**Material:**	Ammonia	**Source:**	Reference Toxicant
Receipt Date:	02 Dec-19 16:05	**CAS (PC):**		**Station:**	In House
Sample Age:	n/a (19.6 °C)	**Client:**	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
16-9093-1197	Survival Rate	Fisher Exact Test		240	>240	n/a		n/a	1

Survival Rate Summary

Conc-mg/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
15		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
30		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
60		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
120		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
240		2	0.800	0.800	0.800	0.800	0.800	0.000	0.000	0.00%	20.00%

Survival Rate Detail

Conc-mg/L	Code	Rep 1	Rep 2
0	LW	1.000	1.000
15		1.000	1.000
30		1.000	1.000
60		1.000	1.000
120		1.000	1.000
240		0.800	0.800

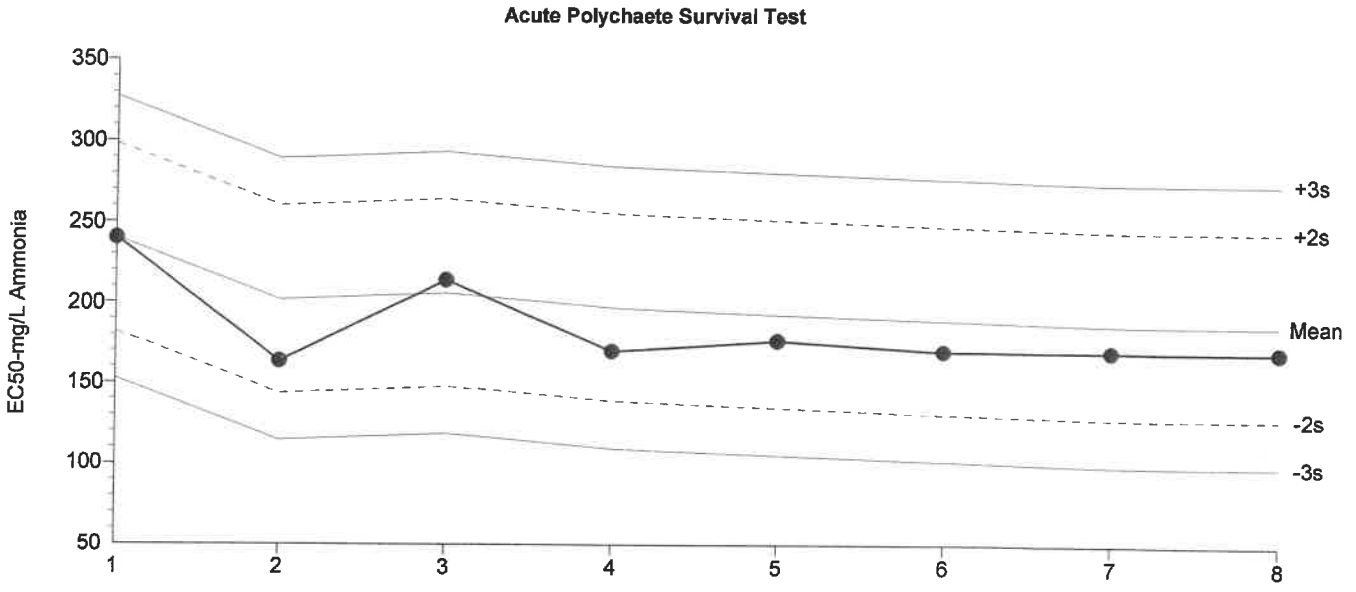
Survival Rate Binomials

Conc-mg/L	Code	Rep 1	Rep 2
0	LW	5/5	5/5
15		5/5	5/5
30		5/5	5/5
60		5/5	5/5
120		5/5	5/5
240		4/5	4/5

CETIS QC Plot

Acute Polychaete Survival Test — **Pacific EcoRisk**

Test Type:	Survival	**Organism:**	Neanthes arenaceodentata (Polycha	**Material:**	Ammonia
Protocol:	ASTM E1611-00 (2007)	**Endpoint:**	Survival Rate	**Source:**	Reference Toxicant-REF



Mean:	186.1	**Count:**	7	**-2s Warning Limit:**	127.9	**-3s Action Limit:**	98.75
Sigma:	29.12	**CV:**	15.60%	**+2s Warning Limit:**	244.3	**+3s Action Limit:**	273.5

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2015	Nov	14	14:20	240	53.9	1.851			18-8315-3887	12-8365-1218
2		Dec	6	15:01	163.4	-22.65	-0.7779			01-7959-0813	15-3904-1063
3	2017	May	6	14:50	213.8	27.72	0.9518			05-8082-5510	13-1803-2815
4	2018	Apr	13	15:53	169.7	-16.39	-0.563			08-3883-1957	02-2206-9849
5			21	16:05	176.4	-9.732	-0.3342			03-4811-5439	03-4537-7910
6		Jun	5	17:34	169.7	-16.39	-0.563			14-7073-7580	04-9078-0959
7			13	16:59	169.7	-16.39	-0.563			09-7996-7699	02-2122-9161
8	2019	Jan	19	12:55	169.7	-16.39	-0.563			07-3340-6222	15-8717-2048

96 Hour *Neanthes arenaceodentata* Marine Reference Toxicant Test Data

Client: **Reference Toxicant** Organism Log #: 11867

Test Material: Ammonia Control/Diluent: 30 ppt Seawater (+/-1 ppt)

Test ID#: 85984 Project # 30963 Test Date: 12/2/19

Randomization: 2.6.1

Treatment (mg NH3-N /L)	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms		SIGN-OFF
		new	old	new	old	new	old	A	B	
Control	19.6	7.77		8.1		29.8		5	5	Date: 12/2/19
15	19.6	7.79		8.1		29.9		5	5	Test Solution Prep: TK
30	19.5	7.76		8.2		30.0		5	5	New WQ: TK
60	19.5	7.71		8.2		30.0		5	5	Initiation Time: 1605
120	19.5	7.63		8.1		30.3		5	5	Initiation Signoff: TK
240	19.6	7.53		8.0		30.8		5	5	RT Stock Batch #: –
Meter ID:	97A	PH36		RD13		EC13				
Control	20.2		7.78		7.4		30.1	5	5	Date: 12/3/19
15	20.2		7.77		7.5		30.1	5	5	Count Time: 1645
30	20.4		7.75		7.5		30.1	5	5	Count Signoff: CD
60	20.5		7.72		7.4		30.3	5	5	Old WQ: JR
120	20.6		7.67		7.4		30.5	5	5	
240	20.6		7.60		7.3		31.0	5	5	
Meter ID:	93A		PH24		RD13		EC13			
Control	20.3		7.63		7.0		29.4	5	5	Date: 12/4/19
15	20.4		7.70		7.1		29.9	5	5	Count Time: 1025
30	20.4		7.72		7.0		29.9	5	5	Count Signoff: TK
60	20.5		7.71		7.0		30.0	5	5	Old WQ: TK
120	20.5		7.66		7.1		30.2	5	5	
240	20.6		7.60		7.1		30.8	5	5	
Meter ID:	97A		PH26		RD10		EC10			
Control	20.5		7.56		7.1		30.2	5	5	Date: 12/5/19
15	20.5		7.66		7.2		30.1	5	5	Count Time: 1235
30	20.6		7.66		7.2		30.2	5	5	Count Signoff: TK
60	20.8		7.66		7.3		30.3	5	5	Old WQ: TK
120	20.8		7.62		7.3		30.6	5	5	
240	20.7		7.58		7.3		31.0	5	5	
Meter ID:	99A		PH34		RD12		EC12			
Control	20.4		7.64		7.2		30.6	5	5	Date: 12/6/19
15	20.6		7.65		7.1		30.4	5	5	Termination Time: 1606
30	20.6		7.65		7.2		30.4	5	5	Termination Signoff:
60	20.7		7.64		7.2		30.4	5	5	Old WQ: SPB
120	20.7		7.62		7.2		30.7	5	5	
240	20.6		7.56		7.1		31.2	4	4	
Meter ID:	88A		PH24		RD11		EC14			

Appendix L

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Military Ocean Terminal Concord (MOTCO) Sediment Elutriates to Bivalve *(Mytilus galloprovincialis)* Embryos

CETIS Summary Report

Bivalve Larval Survival and Development Test — Pacific EcoRisk

Batch ID:	14-9681-0888	**Test Type:**	Development-Survival	**Analyst:**	Ashleigh Findley
Start Date:	27 Nov-19 15:17	**Protocol:**	ASTM E724-98 (Bivalve)	**Diluent:**	Diluted Seawater
Ending Date:	29 Nov-19 14:25	**Species:**	Mytilus galloprovincialis	**Brine:**	Crystal Sea
Test Length:	47h	**Taxon:**		**Source:**	M Rep **Age:** N/A

Sample ID:	12-3024-7052	**Code:**	2019-DU1-COMP	**Project:**	30945
Sample Date:	31 Oct-19 08:10	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 16:00	**CAS (PC):**		**Station:**	2019-DU1-COMP SET
Sample Age:	27d 7h (0 °C)	**Client:**	USACE		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
06-6402-9342	Development Rate	Equal Variance t Two-Sample Test	0.6745	Site Water passed development rate	1
07-2734-6562	Development Rate	Equal Variance t Two-Sample Test	0.5519	Salt Control passed development rate	1
09-2755-2246	Survival Rate	Equal Variance t Two-Sample Test	0.2818	Salt Control passed survival rate	1
16-2845-8923	Survival Rate	Equal Variance t Two-Sample Test	0.1094	Site Water passed survival rate	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
00-6228-5956	Development Rate	Dunnett Multiple Comparison Test		100	>100	n/a	1	2.72%	1
06-8513-3458	Survival Rate	Dunnett Multiple Comparison Test		100	>100	n/a	1	10.4%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
15-8624-6957	Development Rate	Linear Interpolation (ICPIN)		EC5	>100	n/a	n/a	<1	1
				EC10	>100	n/a	n/a	<1	
			✓	EC15	>100	n/a	n/a	<1	
			✓	EC20	>100	n/a	n/a	<1	
			✓	EC25	>100	n/a	n/a	<1	
			✓	EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	
12-1596-1966	Survival Rate	Linear Interpolation (ICPIN)	✓	EC5	71.9	17.2	n/a	1.392	1
			✓	EC10	98.7	53.9	n/a	1.013	
			✓	EC15	>100	n/a	n/a	<1	
			✓	EC20	>100	n/a	n/a	<1	
			✓	EC25	>100	n/a	n/a	<1	
			✓	EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	

Development Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.964	0.939	0.989	0.945	0.994	0.009	0.020	2.08%	0.00%
0	SA	5	0.967	0.943	0.990	0.944	0.987	0.008	0.019	1.96%	-0.29%
0	SW	5	0.972	0.957	0.987	0.956	0.988	0.005	0.012	1.26%	-0.79%
1		5	0.966	0.960	0.973	0.958	0.971	0.002	0.005	0.54%	-0.21%
10		5	0.968	0.962	0.975	0.963	0.975	0.002	0.005	0.53%	-0.43%
50		5	0.958	0.935	0.981	0.930	0.972	0.008	0.019	1.94%	0.67%
100		5	0.946	0.910	0.981	0.916	0.984	0.013	0.029	3.02%	1.93%

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.950	0.885	1.000	0.886	1.000	0.024	0.053	5.57%	0.00%
0	SA	5	0.904	0.786	1.000	0.792	1.000	0.043	0.095	10.53%	4.90%
0	SW	5	0.870	0.749	0.991	0.767	1.000	0.044	0.098	11.20%	8.44%
1		5	0.955	0.865	1.000	0.827	1.000	0.033	0.073	7.62%	-0.52%
10		5	0.966	0.911	1.000	0.896	1.000	0.020	0.044	4.57%	-1.67%
50		5	0.949	0.875	1.000	0.856	1.000	0.026	0.059	6.23%	0.21%
100		5	0.859	0.748	0.971	0.723	0.931	0.040	0.090	10.48%	9.58%

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Development Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.994	0.947	0.963	0.971	0.945
0	SA	0.984	0.944	0.952	0.987	0.968
0	SW	0.988	0.969	0.979	0.967	0.956
1		0.965	0.958	0.966	0.971	0.971
10		0.963	0.967	0.975	0.965	0.971
50		0.947	0.930	0.969	0.972	0.970
100		0.916	0.984	0.930	0.967	0.931

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.886	0.975	0.901	0.990	1.000
0	SA	0.896	0.832	0.792	1.000	1.000
0	SW	0.792	0.767	0.936	1.000	0.856
1		0.827	1.000	0.970	0.995	0.985
10		0.896	1.000	0.985	0.950	1.000
50		1.000	0.856	0.936	1.000	0.950
100		0.812	0.911	0.921	0.723	0.931

Development Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	179/180	197/208	182/189	200/206	207/219
0	SA	181/184	168/178	160/168	229/232	209/216
0	SW	160/162	155/160	189/193	205/212	173/181
1		167/173	206/215	196/203	201/207	199/205
10		181/188	207/214	199/204	192/199	202/208
50		213/225	173/186	189/195	212/218	192/198
100		164/179	184/187	186/200	146/151	188/202

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	179/202	197/202	182/202	200/202	202/202
0	SA	181/202	168/202	160/202	202/202	202/202
0	SW	160/202	155/202	189/202	202/202	173/202
1		167/202	202/202	196/202	201/202	199/202
10		181/202	202/202	199/202	192/202	202/202
50		202/202	173/202	189/202	202/202	192/202
100		164/202	184/202	186/202	146/202	188/202

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	00-6228-5956	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	2.72%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	0.099	2.3	0.070	8	CDF	0.7663	Non-Significant Effect
		10	-0.102	2.3	0.070	8	CDF	0.8314	Non-Significant Effect
		50	0.725	2.3	0.070	8	CDF	0.5021	Non-Significant Effect
		100	1.51	2.3	0.070	8	CDF	0.1966	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0084731	0.0021183	4	0.913	0.4755	Non-Significant Effect
Error	0.0464007	0.0023200	20			
Total	0.0548738		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	13.1	13.3	0.0110	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.942	0.888	0.1650	Normal Distribution

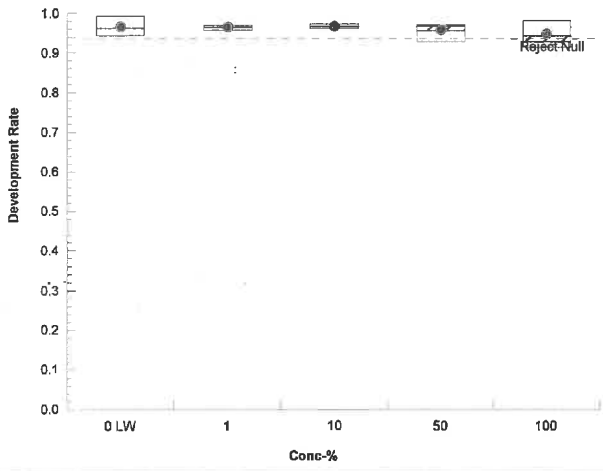
Development Rate Summary

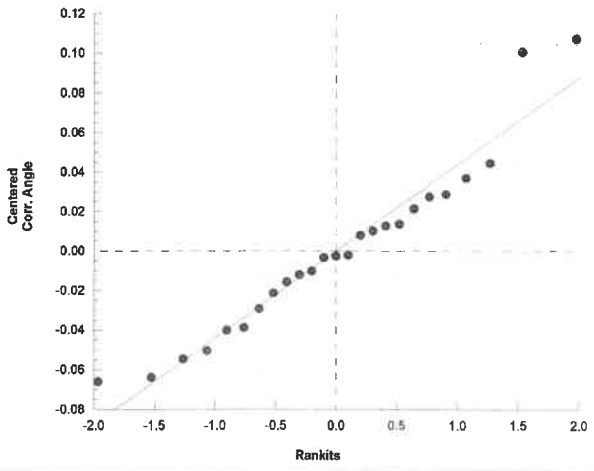
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.964	0.939	0.989	0.963	0.945	0.994	0.009	2.08%	0.00%
1		5	0.966	0.960	0.973	0.966	0.958	0.971	0.002	0.54%	-0.21%
10		5	0.968	0.962	0.975	0.967	0.963	0.975	0.002	0.53%	-0.43%
50		5	0.958	0.935	0.981	0.969	0.930	0.972	0.008	1.94%	0.67%
100		5	0.946	0.910	0.981	0.931	0.916	0.984	0.013	3.02%	1.93%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.39	1.31	1.47	1.38	1.33	1.5	0.0294	4.72%	0.00%
1		5	1.39	1.37	1.4	1.38	1.36	1.4	0.00639	1.03%	0.22%
10		5	1.39	1.37	1.41	1.39	1.38	1.41	0.00662	1.06%	-0.22%
50		5	1.37	1.31	1.42	1.39	1.3	1.4	0.0199	3.25%	1.59%
100		5	1.34	1.26	1.43	1.3	1.28	1.44	0.0313	5.21%	3.31%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	15-8624-6957	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	55136	200	Yes	Two-Point Interpolation

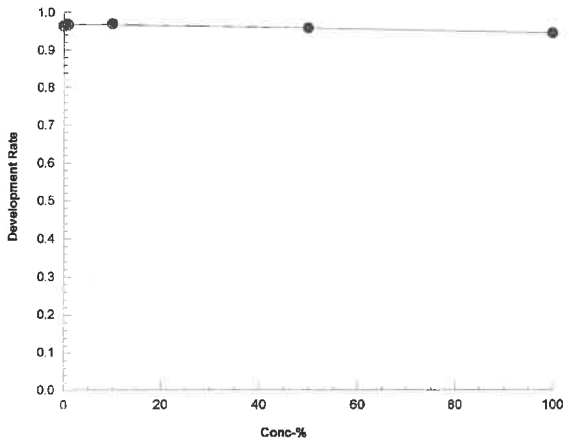
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	>100	n/a	n/a	<1	n/a	n/a
EC10	>100	n/a	n/a	<1	n/a	n/a
EC15	>100	n/a	n/a	<1	n/a	n/a
EC20	>100	n/a	n/a	<1	n/a	n/a
EC25	>100	n/a	n/a	<1	n/a	n/a
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Development Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.964	0.945	0.994	0.020	2.08%	0.0%	965/1002	0.966	0.0%
1		5	0.966	0.958	0.971	0.005	0.54%	-0.21%	969/1003	0.966	0.0%
10		5	0.968	0.963	0.975	0.005	0.53%	-0.43%	981/1013	0.966	0.0%
50		5	0.958	0.930	0.972	0.019	1.94%	0.67%	979/1022	0.958	0.89%
100		5	0.946	0.916	0.984	0.029	3.02%	1.93%	868/919	0.946	2.14%

Graphics



Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	06-8513-3458	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	10.39%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	-0.287	2.3	0.204	8	CDF	0.8797	Non-Significant Effect
		10	-0.479	2.3	0.204	8	CDF	0.9183	Non-Significant Effect
		50	-0.0391	2.3	0.204	8	CDF	0.8124	Non-Significant Effect
		100	2.04	2.3	0.204	8	CDF	0.0824	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.162685	0.0406711	4	2.08	0.1218	Non-Significant Effect
Error	0.391406	0.0195703	20			
Total	0.55409		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	0.307	13.3	0.9894	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.916	0.888	0.0420	Normal Distribution

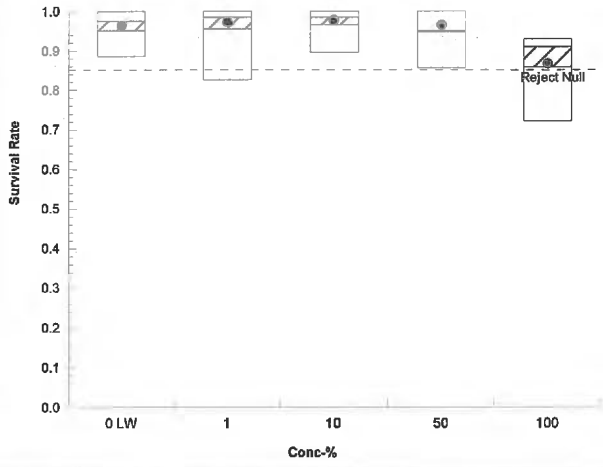
Survival Rate Summary

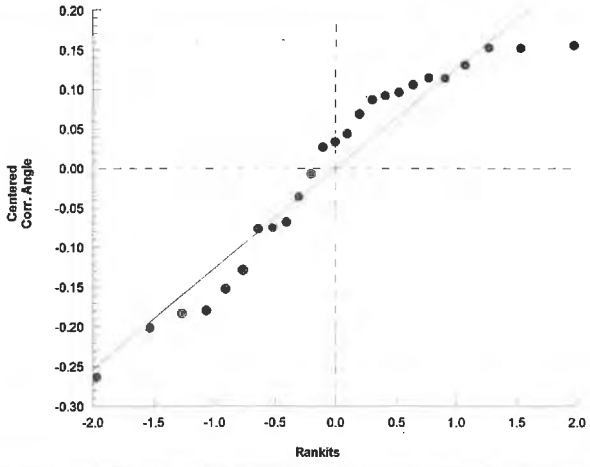
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.950	0.885	1.000	0.975	0.886	1.000	0.024	5.57%	0.00%
1		5	0.955	0.865	1.000	0.985	0.827	1.000	0.033	7.62%	-0.52%
10		5	0.966	0.911	1.000	0.985	0.896	1.000	0.020	4.57%	-1.67%
50		5	0.949	0.875	1.000	0.950	0.856	1.000	0.026	6.23%	0.21%
100		5	0.859	0.748	0.971	0.911	0.723	0.931	0.040	10.48%	9.58%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.21	1.55	1.41	1.23	1.54	0.0608	9.85%	0.00%
1		5	1.4	1.21	1.6	1.45	1.14	1.54	0.0698	11.12%	-1.84%
10		5	1.42	1.26	1.58	1.45	1.24	1.54	0.0568	8.93%	-3.07%
50		5	1.38	1.19	1.57	1.35	1.18	1.54	0.0682	11.02%	-0.25%
100		5	1.2	1.04	1.35	1.27	1.02	1.3	0.0559	10.43%	13.06%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	12-1596-1966	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1856898	200	Yes	Two-Point Interpolation

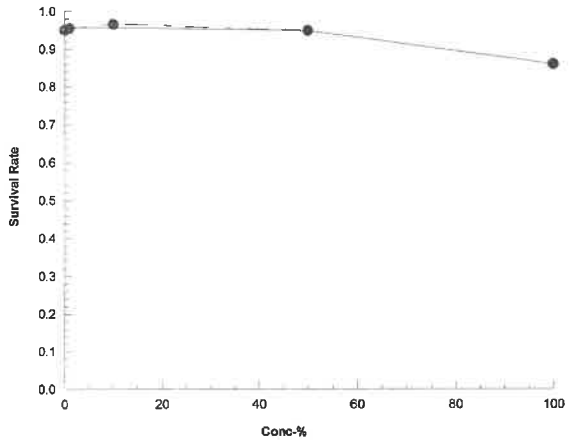
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	71.9	17.2	n/a	1.392	n/a	5.799
EC10	98.7	53.9	n/a	1.013	n/a	1.857
EC15	>100	n/a	n/a	<1	n/a	n/a
EC20	>100	n/a	n/a	<1	n/a	n/a
EC25	>100	n/a	n/a	<1	n/a	n/a
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.950	0.886	1.000	0.053	5.57%	0.0%	960/1010	0.957	0.0%
1		5	0.955	0.827	1.000	0.073	7.62%	-0.52%	965/1010	0.957	0.0%
10		5	0.966	0.896	1.000	0.044	4.57%	-1.67%	976/1010	0.957	0.0%
50		5	0.949	0.856	1.000	0.059	6.23%	0.21%	958/1010	0.949	0.93%
100		5	0.859	0.723	0.931	0.090	10.50%	9.58%	868/1010	0.859	10.2%

Graphics



Mytilus sp. Development Toxicity Test Water Test Count Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU1-Comp SET
Test ID #: 85956
Project #: 30945
Sample Salinity adjusted with: Crystal Sea®

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/11/19
Investigator: MR
Innoculation Count: 202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	179	1	180		
	B	197	11	208		
	C	182	7	189		
	D	200	6	206		
	E	207	12	219		
1.0%	A	167	6	173		
	B	206	9	205 715		
	C	196	7	203		
	D	201	6	207		
	E	199	6	205		
10%	A	181	7	188		
	B	207	7	214		
	C	199	5	204		
	D	192	7	199		
	E	202	6	208		
50%	A	213	12	225		
	B	173	13	186		
	C	189	6	195		
	D	212	6	218		
	E	192	6	198		
100%	A	164	5	179		
	B	184	3	187		
	C	186	14	200		
	D	146	5	151		
	E	188	14	202		

Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU1-Comp SET
Test ID#: 85956 Project # 30945
Test Date: 11/27/19 Randomization: —
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11839 Age: N/A
Organism Supplier: NRRP
Control/Diluent: 30 ppt

Day 0

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH_3	Signoff
Control	16.1	7.83	8.8	30.48		Test Solution Prep: KP
1.0%	15.9	7.85	8.6	30.27		New WQ: AS
10%	16.0	7.87	8.5	30.95		Innoculation Date: 11.27.19
50%	16.2	7.99	7.9	30.49		Innoculation Time: 1517
100%	16.0	8.12	6.9	29.85	2.63	Innoculation Signoff: AS KP
Meter ID	48A	PH24	RD13	EC13	DR3900	

Day 1

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.1				Date: 11/28/19
1.0%	15.0				Signoff: KP
10%	15.0				
50%	15.0				
100%	15.1				
Meter ID	112A				

Day 2

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	14.9	7.82	7.9	30.5	Termination Signoff: RB
1.0%	15.0	7.84	7.8	30.6	Termination Date: 11/29/19
10%	15.0	7.85	7.8	30.6	Termination Time: 1425
50%	15.0	7.90	7.8	30.2	Old WQ: 30B3
100%	15.0	7.98	7.7	29.6	Termination Spot Signoff: UO
Meter ID	105A	PH26	RD10	EC10	

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	06-6402-9342	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	Site Water passed development rate	2.38%

Equal Variance t Two-Sample Test

Control	vs	Control II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Site Water	-0.47	1.86	0.063	8	CDF	0.6745	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0006404	0.0006404	1	0.221	0.6509	Non-Significant Effect
Error	0.0231957	0.0028995	8			
Total	0.0238361		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.89	23.2	0.3289	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.906	0.741	0.2554	Normal Distribution

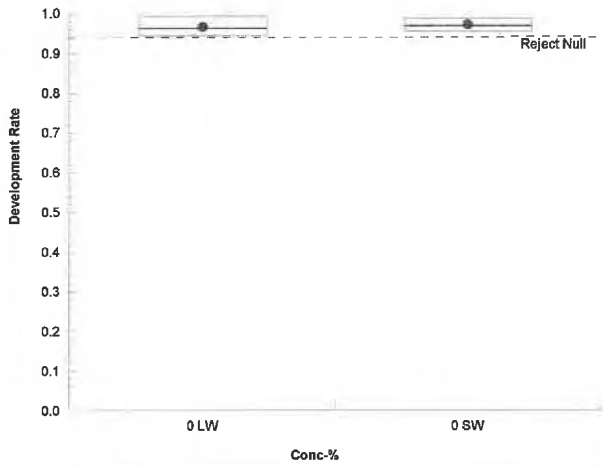
Development Rate Summary

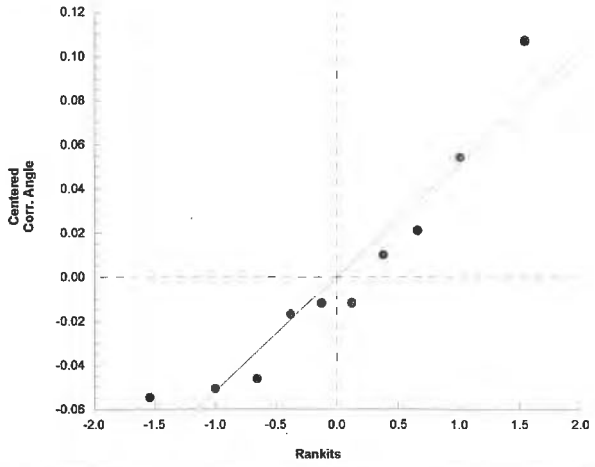
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.964	0.939	0.989	0.963	0.945	0.994	0.009	2.08%	0.00%
0	SW	5	0.972	0.957	0.987	0.969	0.956	0.988	0.005	1.26%	-0.79%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.39	1.31	1.47	1.38	1.33	1.5	0.0294	4.72%	0.00%
0	SW	5	1.41	1.36	1.45	1.39	1.36	1.46	0.0173	2.75%	-1.15%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	16-2845-8923	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	Site Water passed survival rate	9.74%

Equal Variance t Two-Sample Test

Control	vs	Control II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Site Water	1.33	1.86	0.195	8	CDF	0.1094	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0489973	0.0489973	1	1.78	0.2189	Non-Significant Effect
Error	0.22022	0.0275275	8			
Total	0.269217		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.98	23.2	0.5238	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.915	0.741	0.3204	Normal Distribution

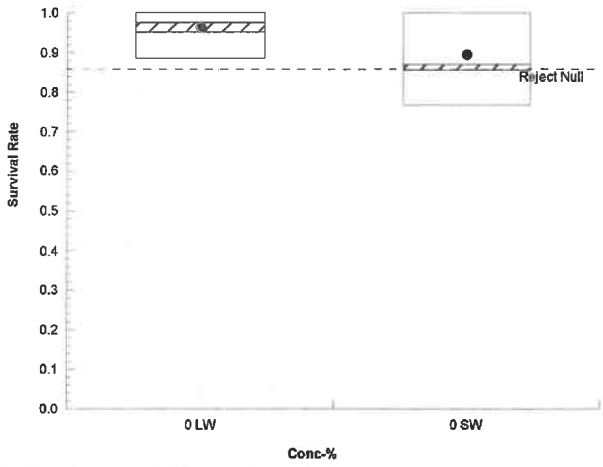
Survival Rate Summary

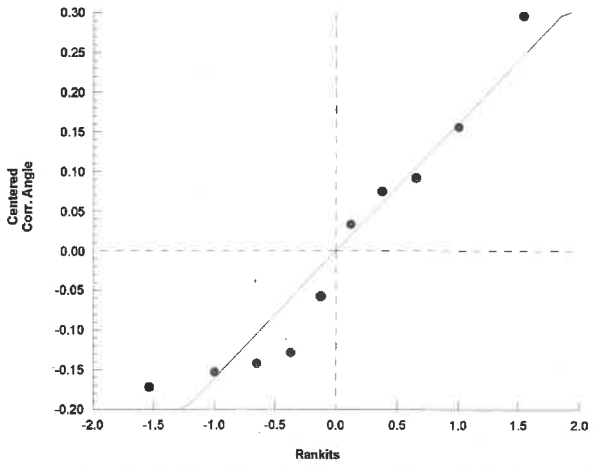
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.950	0.885	1.000	0.975	0.886	1.000	0.024	5.57%	0.00%
0	SW	5	0.870	0.749	0.991	0.856	0.767	1.000	0.044	11.20%	8.44%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.21	1.55	1.41	1.23	1.54	0.0608	9.85%	0.00%
0	SW	5	1.24	1	1.48	1.18	1.07	1.54	0.0856	15.43%	10.15%

Graphics





Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: USACE: MOTCO
Test Material: Site Water
Test ID#: - Project #: 30945
Test Date: 11/27/19 Randomization: -
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11834 Age: N/A
Organism Supplier: MRD
Control/Diluent: 30 ± 2ppt FSW

Day 0

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	16.1	7.83	8.8	30.48	Sample ID: 54267
Site Water	15.8	8.22	8.5	29.84	Date & Inoculation Time: 11/27/19 1515
					Test Solution Prep: KG
					Inoculation Signoff:
Meter ID	48A	PH 24	RD 13	EC 13	New WQ: JS

Day 1

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	15.3				Date: 11/28/19
Site Water	15.3				Old WQ: KP
Meter ID	112A				

Day 2

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	14.0	7.86	8.0	30.6	Date & Termination Time: 11/29/19 1429
Site Water	14.0	7.96	8.1	29.7	Termination Signoff: RG
					Old WQ: SDT3
Meter ID	105A	PH26	RD10	EC10	Termination Spot Signoff:

Mytilus sp. Development Toxicity Test Count Data

Client:	**USACE: MOTCO**	Test Start Date:	11.27.19
Test Material:	Site Water	Test End Date:	11/29/19
Test ID #:	-	Enumeration Date:	12/11/19
Project #:	30945	Investigator:	[illegible]
Sample Salinity adjusted with:	Crystal Sea®	Innoculation Counts:	202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Lab Control	A	179	1	180		
	B	197	11	208		
	C	182	7	189		
	D	200	6	206		
	E	207	12	219		
Site Water	A	160	2	162		
	B	155	5	160		
	C	189	4	193		
	D	205	7	212		
	E	173	8	181		

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID: 07-2734-6562 **Endpoint:** Development Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 14:28 **Analysis:** Parametric-Two Sample **Status Level:** 1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	Salt Control passed development rate	2.77%

Equal Variance t Two-Sample Test

Control	vs	Control II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Salt Control	-0.135	1.86	0.071	8	CDF	0.5519	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	6.651E-05	6.651E-05	1	0.0181	0.8962	Non-Significant Effect
Error	0.0293442	0.0036680	8			
Total	0.0294107		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.42	23.2	0.7412	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.917	0.741	0.3348	Normal Distribution

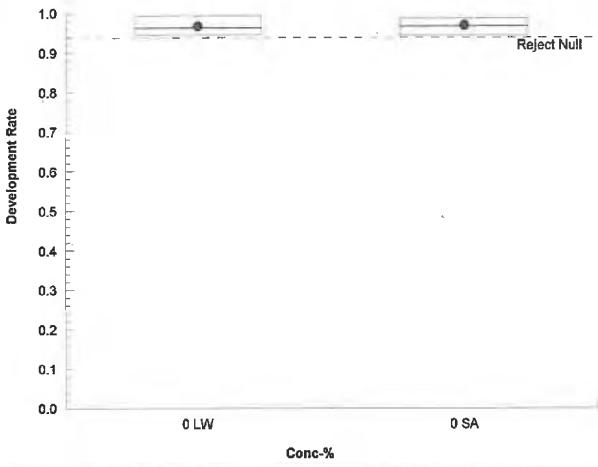
Development Rate Summary

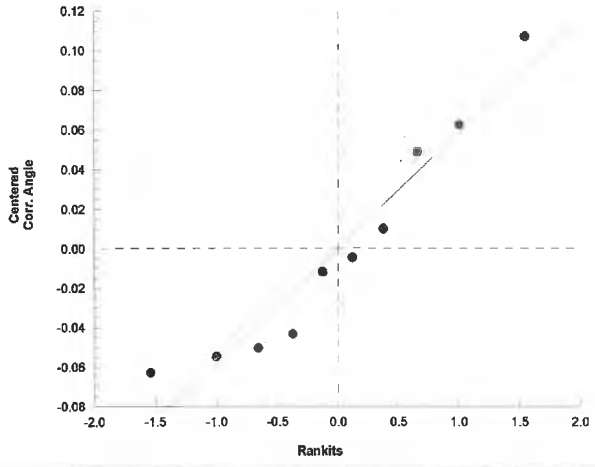
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.964	0.939	0.989	0.963	0.945	0.994	0.009	2.08%	0.00%
0	SA	5	0.967	0.943	0.990	0.968	0.944	0.987	0.008	1.96%	-0.29%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.39	1.31	1.47	1.38	1.33	1.5	0.0294	4.72%	0.00%
0	SA	5	1.39	1.33	1.46	1.39	1.33	1.46	0.0246	3.95%	-0.37%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	09-2755-2246	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:28	**Analysis:**	Parametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	Salt Control passed survival rate	10.75%

Equal Variance t Two-Sample Test

Control	vs	Control II	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Salt Control	0.602	1.86	0.209	8	CDF	0.2818	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0114083	0.0114083	1	0.363	0.5637	Non-Significant Effect
Error	0.251639	0.0314549	8			
Total	0.263048		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	2.41	23.2	0.4156	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.902	0.741	0.2292	Normal Distribution

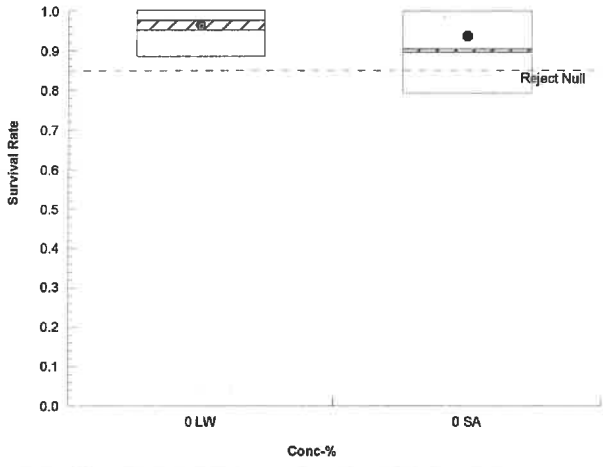
Survival Rate Summary

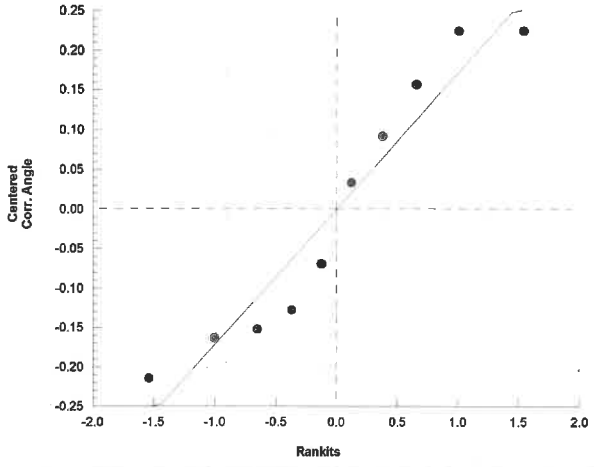
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.950	0.885	1.000	0.975	0.886	1.000	0.024	5.57%	0.00%
0	SA	5	0.904	0.786	1.000	0.896	0.792	1.000	0.043	10.53%	4.90%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.21	1.55	1.41	1.23	1.54	0.0608	9.85%	0.00%
0	SA	5	1.31	1.05	1.57	1.24	1.1	1.54	0.0943	16.07%	4.90%

Graphics





Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: USACE: MOTCO
Test Material: Salt Control
Test ID#: - Project #: 30945
Test Date: 11/27/19 Randomization: -
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11039 Age: N/A
Organism Supplier: MREP
Control/Diluent: 30 ± 2ppt FSW

Day 0					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	16.1	7.83	8.8	30.48	Date & Inoculation Time: 11.27.19 1517
Salt Control	16.3	8.36	8.0	29.13	Test Solution Prep:
					Innoculation Signoff:
Meter ID	48A	PH24	RD13	EC13	New WQ:

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	15.0				Date: 11/28/19
Salt Control	15.0				Old WQ: KP
Meter ID	112A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Control	14.8	7.81	7.8	30.6	Date & Termination Time: 11/29/19 1427
Salt Control	14.7	7.80	7.8	29.3	Termination Signoff:
					Old WQ: SGS
Meter ID	105A	PH26	RD10	EC10	Termination Spot Signoff:

Mytilus sp. Development Toxicity Test Water Test Count Data

Client: **USACE: MOTCO**
Test Material: Salt Control
Test ID #: -
Project #: 30945
Sample Salinity adjusted with: Crystal Sea®

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/11/19
Investigator: JR
Innoculation Counts: 202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Lab Control	A	179	1	180		
	B	197	11	208		
	C	182	7	189		
	D	200	6	206		
	E	207	12	219		
Salt Control	A	181	3	184		
	B	168	10	178		
	C	160	8	168		
	D	229	4	232		
	E	209	7	216		

CETIS Summary Report

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Batch ID:	07-5503-8784	**Test Type:**	Development-Survival	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 15:14	**Protocol:**	ASTM E724-98 (Bivalve)	**Diluent:**	Diluted Seawater	
Ending Date:	29 Nov-19 14:28	**Species:**	Mytilus galloprovincialis	**Brine:**	Crystal Sea	
Test Length:	47h	**Taxon:**		**Source:**	M Rep	**Age:** N/A

Sample ID:	14-7513-1412	**Code:**	2019-DU2a-COMP	**Project:**	30945
Sample Date:	28 Oct-19 13:15	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 14:30	**CAS (PC):**		**Station:**	2019-DU2a-COMP SET
Sample Age:	30d 2h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
15-8041-5773	Development Rate	Steel Many-One Rank Sum Test	✓	10	50	22.36	10	2.5%	1
15-6364-9197	Survival Rate	Dunnett Multiple Comparison Test		50	100	70.71	2	7.77%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
18-2150-6448	Development Rate	Linear Interpolation (ICPIN)	✓	EC5	54	50.4	55.8	1.852	1
			✓	EC10	61.1	57.8	62.6	1.637	
			✓	EC15	68.1	65.3	69.7	1.468	
				EC20	75.2	72.2	77	1.33	
				EC25	82.3	79	84.4	1.215	
			✓	EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	
19-8575-0177	Survival Rate	Linear Interpolation (ICPIN)		EC5	55.8	n/a	57.3	1.791	1
				EC10	62.3	54.2	64.6	1.606	
				EC15	68.7	61.3	71.8	1.455	
			✓	EC20	75.2	67.4	79	1.331	
			✓	EC25	81.6	73.8	86.3	1.226	
			✓	EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	

Development Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.973	0.963	0.983	0.962	0.980	0.004	0.008	0.84%	0.00%
1		5	0.966	0.956	0.977	0.957	0.975	0.004	0.008	0.87%	0.66%
10		5	0.952	0.917	0.986	0.918	0.995	0.013	0.028	2.93%	2.15%
50		5	0.952	0.932	0.973	0.925	0.969	0.007	0.017	1.74%	2.10%
100		5	0.607	0.579	0.636	0.568	0.621	0.010	0.023	3.73%	37.55%

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.960	0.898	1.000	0.876	1.000	0.023	0.051	5.27%	0.00%
1		5	0.954	0.894	1.000	0.891	1.000	0.022	0.048	5.06%	0.62%
10		5	0.928	0.841	1.000	0.837	1.000	0.031	0.070	7.53%	3.40%
50		5	0.985	0.944	1.000	0.926	1.000	0.015	0.033	3.37%	-2.58%
100		5	0.583	0.520	0.646	0.520	0.639	0.023	0.051	8.69%	39.28%

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Development Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.967	0.962	0.980	0.980	0.975
1		0.957	0.968	0.974	0.975	0.958
10		0.941	0.918	0.995	0.956	0.949
50		0.925	0.960	0.953	0.969	0.955
100		0.617	0.621	0.612	0.568	0.620

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	0.876	0.990	0.950	0.985
1		0.891	1.000	0.921	0.960	1.000
10		0.871	0.837	0.965	0.965	1.000
50		1.000	1.000	1.000	0.926	1.000
100		0.589	0.545	0.624	0.520	0.639

Development Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	203/210	177/184	200/204	192/196	199/204
1		180/188	214/221	186/191	194/199	204/213
10		176/187	169/184	195/196	195/204	205/216
50		209/226	215/224	205/215	187/193	211/221
100		119/193	110/177	126/206	105/185	129/208

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	202/202	177/202	200/202	192/202	199/202
1		180/202	202/202	186/202	194/202	202/202
10		176/202	169/202	195/202	195/202	202/202
50		202/202	202/202	202/202	187/202	202/202
100		119/202	110/202	126/202	105/202	129/202

Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	15-8041-5773	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 10:14	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	10	50	22.36	10	2.50%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	21	17	0	8	CDF	0.2314	Non-Significant Effect
		10	20	17	0	8	CDF	0.1653	Non-Significant Effect
		50*	17	17	0	8	CDF	0.0463	Significant Effect
		100*	15	17	0	8	CDF	0.0158	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.943924	0.235981	4	120	<1.0E-37	Significant Effect
Error	0.0393361	0.0019668	20			
Total	0.98326		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	10.4	13.3	0.0337	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.877	0.888	0.0061	Non-Normal Distribution

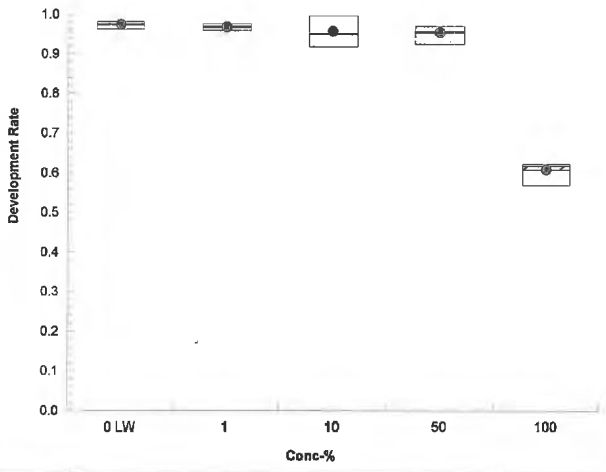
Development Rate Summary

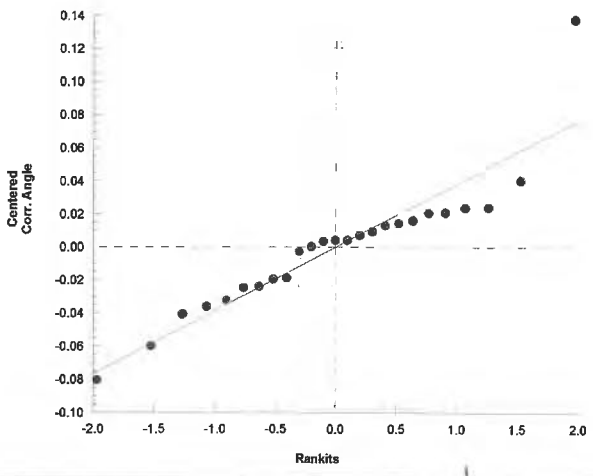
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.973	0.963	0.983	0.975	0.962	0.980	0.004	0.84%	0.00%
1		5	0.966	0.956	0.977	0.968	0.957	0.975	0.004	0.87%	0.66%
10		5	0.952	0.917	0.986	0.949	0.918	0.995	0.013	2.93%	2.15%
50		5	0.952	0.932	0.973	0.955	0.925	0.969	0.007	1.74%	2.10%
100		5	0.607	0.579	0.636	0.617	0.568	0.621	0.010	3.73%	37.55%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.38	1.44	1.41	1.37	1.43	0.0111	1.76%	0.00%
1		5	1.39	1.36	1.42	1.39	1.36	1.41	0.0105	1.69%	1.34%
10		5	1.36	1.26	1.46	1.34	1.28	1.5	0.0368	6.04%	3.19%
50		5	1.35	1.31	1.4	1.36	1.29	1.39	0.0166	2.74%	3.81%
100		5	0.894	0.865	0.922	0.903	0.853	0.908	0.0103	2.58%	36.46%

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	18-2150-6448	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 10:14	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1517351	200	Yes	Two-Point Interpolation

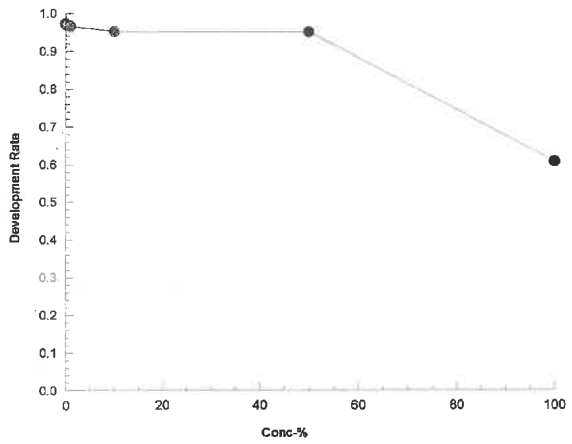
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	54	50.4	55.8	1.852	1.791	1.983
EC10	61.1	57.8	62.6	1.637	1.597	1.731
EC15	68.1	65.3	69.7	1.468	1.434	1.532
EC20	75.2	72.2	77	1.33	1.299	1.385
EC25	82.3	79	84.4	1.215	1.184	1.266
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Development Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.973	0.962	0.980	0.008	0.84%	0.0%	971/998	0.973	0.0%
1		5	0.966	0.957	0.975	0.008	0.87%	0.66%	978/1012	0.966	0.66%
10		5	0.952	0.918	0.995	0.028	2.93%	2.15%	940/987	0.952	2.13%
50		5	0.952	0.925	0.969	0.017	1.74%	2.1%	1027/1079	0.952	2.13%
100		5	0.607	0.568	0.621	0.023	3.73%	37.6%	589/969	0.607	37.6%

Graphics



Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	15-6364-9197	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:31	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	7.77%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	0.134	2.3	0.177	8	CDF	0.7536	Non-Significant Effect
		10	0.918	2.3	0.177	8	CDF	0.4160	Non-Significant Effect
		50	-1.11	2.3	0.177	8	CDF	0.9818	Non-Significant Effect
		100*	6.96	2.3	0.177	8	CDF	2.2E-06	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.2034	0.300851	4	20.5	7.6E-07	Significant Effect
Error	0.293715	0.0146857	20			
Total	1.49712		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	4.01	13.3	0.4048	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.934	0.888	0.1070	Normal Distribution

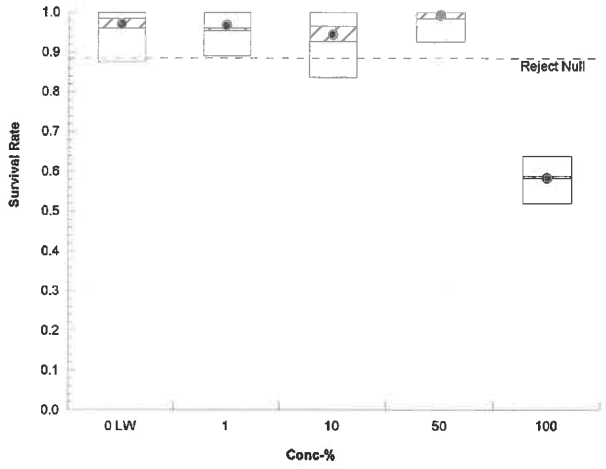
Survival Rate Summary

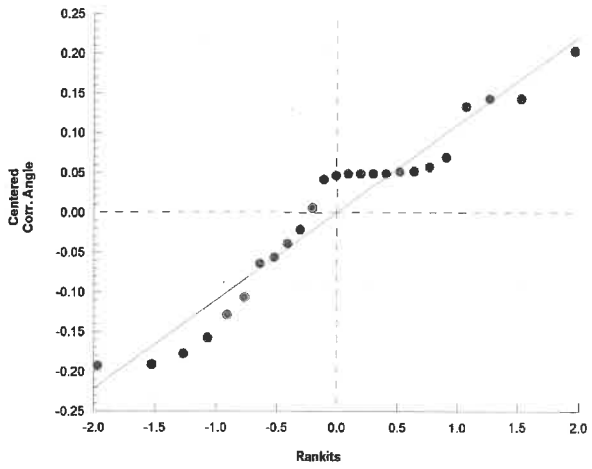
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.960	0.898	1.000	0.985	0.876	1.000	0.023	5.27%	0.00%
1		5	0.954	0.894	1.000	0.960	0.891	1.000	0.022	5.06%	0.62%
10		5	0.928	0.841	1.000	0.965	0.837	1.000	0.031	7.53%	3.40%
50		5	0.985	0.944	1.000	1.000	0.926	1.000	0.015	3.37%	-2.58%
100		5	0.583	0.520	0.646	0.589	0.520	0.639	0.023	8.69%	39.28%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.4	1.25	1.56	1.45	1.21	1.54	0.0567	9.04%	0.00%
1		5	1.39	1.22	1.57	1.37	1.23	1.54	0.0624	10.02%	0.73%
10		5	1.33	1.14	1.52	1.38	1.15	1.54	0.0688	11.54%	5.02%
50		5	1.49	1.35	1.62	1.54	1.29	1.54	0.0482	7.24%	-6.05%
100		5	0.869	0.805	0.933	0.875	0.805	0.926	0.023	5.92%	38.02%

Graphics





Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	19-8575-0177	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:31	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	201795	200	Yes	Two-Point Interpolation

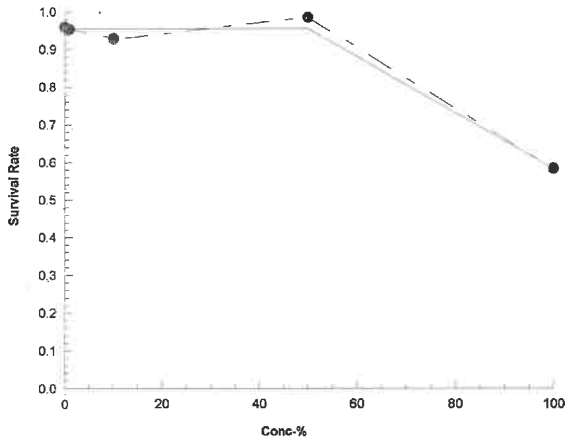
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	55.8	n/a	57.3	1.791	1.745	n/a
EC10	62.3	54.2	64.6	1.606	1.548	1.844
EC15	68.7	61.3	71.8	1.455	1.393	1.631
EC20	75.2	67.4	79	1.331	1.266	1.484
EC25	81.6	73.8	86.3	1.226	1.159	1.355
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.960	0.876	1.000	0.051	5.27%	0.0%	970/1010	0.96	0.0%
1		5	0.954	0.891	1.000	0.048	5.06%	0.62%	964/1010	0.956	0.48%
10		5	0.928	0.837	1.000	0.070	7.53%	3.4%	937/1010	0.956	0.48%
50		5	0.985	0.926	1.000	0.033	3.37%	-2.58%	995/1010	0.956	0.48%
100		5	0.583	0.520	0.639	0.051	8.69%	39.3%	589/1010	0.583	39.3%

Graphics



Mytilus sp. Development Toxicity Test Water Test Count Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU2a-Comp SET
Test ID #: 85957
Project #: 30945
Sample Salinity adjusted with: Crystal Sea®

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/11/19
Investigator: SDS
Innoculation Count: 202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	203	7	210		
	B	177	7	184		
	C	200	4	204		
	D	192	4	196		
	E	199	5	204		
1.0%	A	180	8	188		
	B	214	7	221		
	C	186	5	191		
	D	194	5	199		
	E	204	9	213		
10%	A	176	11	187		
	B	169	15	184		
	C	195	1	196		
	D	195	9	204		
	E	205	11	216		
50%	A	209	17	226		
	B	215	9	224		
	C	205	10	215		
	D	187	6	193		
	E	211	10	221		
100%	A	119	74	193		
	B	110	67	177		
	C	126	80	206		
	D	105	80	185		
	E	129	79	208		

Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU2a-Comp SET
Test ID#: 85957 Project # 30945
Test Date: 11/27/19 Randomization: —
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11839 Age: N/A
Organism Supplier: NRC
Control/Diluent: 30ppt

Day 0

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH_3	Signoff
Control	16.0	7.78	9.1	30.7		Test Solution Prep: KP
1.0%	15.7	7.80	9.0	31.0		New WQ: KP
10%	15.6	7.84	9.1	31.0		Innoculation Date: 11/27/19
50%	16.5	7.96	8.9	30.8		Innoculation Time: 1314
100%	16.1	8.07	7.6	30.4	5.10	Innoculation Signoff: AF
Meter ID	48A	pH25	RDO2	EC10	DR3800	

Day 1

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	14.9				Date: 11/28/19
1.0%	14.9				Signoff: KP
10%	14.9				
50%	14.9				
100%	14.9				
Meter ID	112A				

Day 2

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	14.9	7.88	7.9	30.8	Termination Signoff: RG
1.0%	15.0	7.85	7.9	30.8	Termination Date: 11/29/19
10%	15.1	7.87	7.8	30.7	Termination Time: 1428
50%	15.1	7.94	7.7	30.3	Old WQ: SS
100%	15.1	8.03	7.5	29.9	Termination Spot Signoff: CD
Meter ID	105A	PH26	RDO	EC10	

CETIS Summary Report

Bivalve Larval Survival and Development Test — Pacific EcoRisk

Batch ID:	16-8436-2757	**Test Type:**	Development-Survival	**Analyst:**	Ashleigh Findley
Start Date:	27 Nov-19 15:18	**Protocol:**	ASTM E724-98 (Bivalve)	**Diluent:**	Diluted Seawater
Ending Date:	29 Nov-19 14:29	**Species:**	Mytilus galloprovincialis	**Brine:**	Crystal Sea
Test Length:	47h	**Taxon:**		**Source:**	M Rep **Age:** N/A

Sample ID:	17-9579-5057	**Code:**	2019-DU2b-COMP	**Project:**	30945
Sample Date:	31 Oct-19 10:43	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 17:00	**CAS (PC):**		**Station:**	2019-DU2b-COMP SET
Sample Age:	27d 5h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
05-8803-8705	Development Rate	Steel Many-One Rank Sum Test		50	100	70.71	2	6.25%	1
15-4990-0211	Survival Rate	Dunnett Multiple Comparison Test	✓	1	10	3.162	100	7.09%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
01-2758-7674	Development Rate	GLM: Log-Normal (Probit)		EC5	58.5	2.19	75.1	1.711	1
				EC10	62.5	3.54	77.9	1.6	
				EC15	65.4	4.9	79.8	1.53	
				EC20	67.7	6.33	81.4	1.476	
				EC25	69.9	7.89	82.8	1.431	
				EC40	75.5	13.7	86.6	1.325	
				EC50	79.1	19.2	88.9	1.265	
18-1161-5328	Survival Rate	GLM: Log-Normal (Probit)	✓	EC5	54.1	34.4	65.1	1.848	1
			✓	EC10	58.3	39.3	68.7	1.714	
			✓	EC15	61.4	42.9	71.3	1.629	
			✓	EC20	63.9	46	73.4	1.565	
			✓	EC25	66.1	48.8	75.3	1.512	
			✓	EC40	72.2	56.7	80.4	1.386	
			✓	EC50	76	62	83.7	1.315	

Development Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.962	0.943	0.981	0.940	0.977	0.007	0.015	1.59%	0.00%
1		5	0.968	0.949	0.987	0.946	0.985	0.007	0.015	1.59%	-0.61%
10		5	0.927	0.799	1.000	0.745	0.995	0.046	0.103	11.10%	3.65%
50		5	0.947	0.936	0.958	0.934	0.956	0.004	0.009	0.95%	1.62%
100		5	0.098	0.056	0.140	0.071	0.151	0.015	0.034	34.64%	89.80%

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.961	0.922	1.000	0.931	1.000	0.014	0.032	3.31%	0.00%
1		5	0.945	0.874	1.000	0.861	1.000	0.025	0.057	5.99%	1.75%
10		5	0.880	0.775	0.985	0.738	0.955	0.038	0.084	9.59%	8.44%
50		5	0.909	0.845	0.973	0.851	0.975	0.023	0.052	5.69%	5.46%
100		5	0.086	0.060	0.113	0.064	0.109	0.010	0.022	24.92%	91.04%

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Development Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.940	0.954	0.965	0.976	0.977
1		0.979	0.967	0.964	0.985	0.946
10		0.954	0.975	0.995	0.745	0.967
50		0.934	0.944	0.954	0.956	0.945
100		0.071	0.151	0.114	0.074	0.080

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.936	0.931	0.950	0.990	1.000
1		0.936	1.000	0.931	0.995	0.861
10		0.926	0.955	0.901	0.738	0.881
50		0.975	0.926	0.931	0.861	0.851
100		0.064	0.109	0.109	0.069	0.079

Development Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	189/201	188/197	192/199	200/205	208/213
1		189/193	202/209	188/195	201/204	174/184
10		187/196	193/198	182/183	149/200	178/184
50		197/211	187/198	188/197	174/182	172/182
100		13/182	22/146	22/193	14/189	16/199

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	189/202	188/202	192/202	200/202	202/202
1		189/202	202/202	188/202	201/202	174/202
10		187/202	193/202	182/202	149/202	178/202
50		197/202	187/202	188/202	174/202	172/202
100		13/202	22/202	22/202	14/202	16/202

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID: 05-8803-8705 **Endpoint:** Development Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 10:29 **Analysis:** Nonparametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	6.25%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	31	17	0	8	CDF	0.9559	Non-Significant Effect
		10	27	17	0	8	CDF	0.7639	Non-Significant Effect
		50	20.5	17	1	8	CDF	0.1966	Non-Significant Effect
		100*	15	17	0	8	CDF	0.0158	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.4012	1.1003	4	148	<1.0E-37	Significant Effect
Error	0.149159	0.0074579	20			
Total	4.55036		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	19.4	13.3	6.5E-04	Unequal Variances
Distribution	Shapiro-Wilk W Normality Test	0.805	0.888	2.8E-04	Non-Normal Distribution

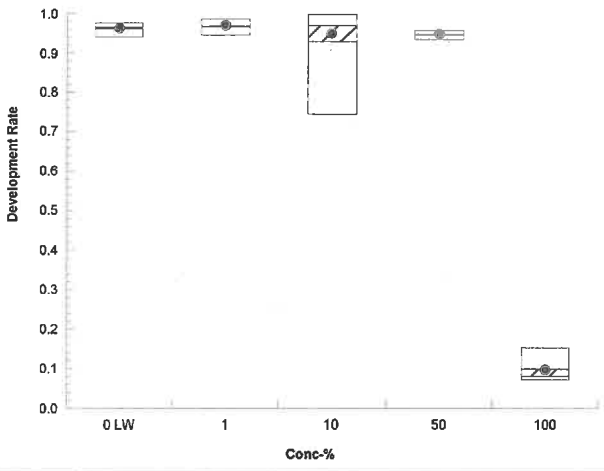
Development Rate Summary

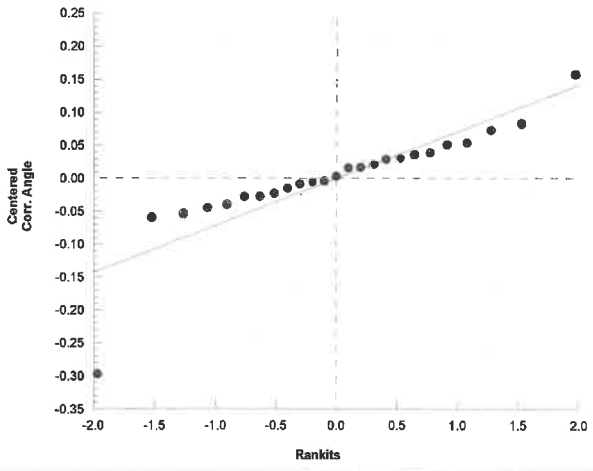
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.962	0.943	0.981	0.965	0.940	0.977	0.007	1.59%	0.00%
1		5	0.968	0.949	0.987	0.967	0.946	0.985	0.007	1.59%	-0.61%
10		5	0.927	0.799	1.000	0.967	0.745	0.995	0.046	11.10%	3.65%
50		5	0.947	0.936	0.958	0.945	0.934	0.956	0.004	0.95%	1.62%
100		5	0.098	0.056	0.140	0.080	0.071	0.151	0.015	34.64%	89.80%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.33	1.43	1.38	1.32	1.42	0.0177	2.87%	0.00%
1		5	1.4	1.34	1.45	1.39	1.34	1.45	0.0197	3.15%	-1.24%
10		5	1.34	1.12	1.56	1.39	1.04	1.5	0.0779	13.02%	2.89%
50		5	1.34	1.31	1.36	1.33	1.31	1.36	0.00888	1.48%	2.90%
100		5	0.315	0.247	0.384	0.287	0.271	0.399	0.0246	17.47%	77.12%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID: 01-2758-7674 **Endpoint:** Development Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 10:30 **Analysis:** Linear Regression (GLM) **Status Level:** 1

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Control Threshold	0.047619	Yes	No	Yes	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	PMSD	F Stat	P-Value	Decision(α:5%)
9	-121	248	251	1.9	0.0798	0.982	2.73%	1.25	0.3070	Non-Significant Lack of Fit

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	58.5	2.19	75.1	1.711	1.332	45.6
EC10	62.5	3.54	77.9	1.6	1.284	28.23
EC15	65.4	4.9	79.8	1.53	1.253	20.43
EC20	67.7	6.33	81.4	1.476	1.228	15.8
EC25	69.9	7.89	82.8	1.431	1.207	12.67
EC40	75.5	13.7	86.6	1.325	1.155	7.28
EC50	79.1	19.2	88.9	1.265	1.124	5.219

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	Test Stat	P-Value	Decision(α:5%)
Intercept	-23.8	10.4	-45.3	-2.26	-2.29	0.0319	Significant Parameter
Slope	12.5	5.21	1.74	23.3	2.41	0.0248	Significant Parameter
Threshold	0.0476	0.0125	0.0216	0.0736	3.8	9.9E-04	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	13200	6620	2	644	<1.0E-37	Significant
Lack of Fit	25.2	12.6	2	1.25	0.3073	Non-Significant
Pure Error	201	10	20			
Residual	226	10.3	22			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	142	33.9	<1.0E-37	Significant Heterogeneity
	Pearson Chi-Sq GOF Test	226	33.9	1.5E-07	Significant Heterogeneity
Variance	Mod Levene Equality of Variance	1.04	3.06	0.4177	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	3.77	2.49	<1.0E-37	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.537	0.92	8.8E-08	Non-Normal Distribution
Overdispersion	Tarone C(α) Binomial Overdispersi	37.6	1.64	<1.0E-37	Significant Overdispersion

Development Rate Summary — **Calculated Variate(A/B)**

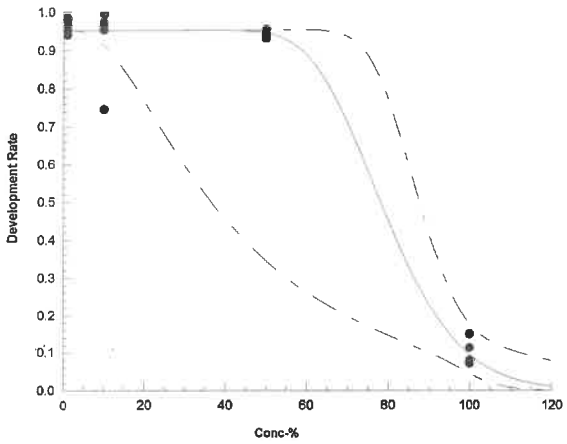
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	LW	5	0.962	0.940	0.977	0.007	0.015	1.59%	0.0%	977	1015
1		5	0.968	0.946	0.985	0.007	0.015	1.59%	-0.61%	954	985
10		5	0.927	0.745	0.995	0.046	0.103	11.10%	3.65%	889	961
50		5	0.947	0.934	0.956	0.004	0.009	0.95%	1.62%	918	970
100		5	0.098	0.071	0.151	0.015	0.034	34.60%	89.8%	87	909

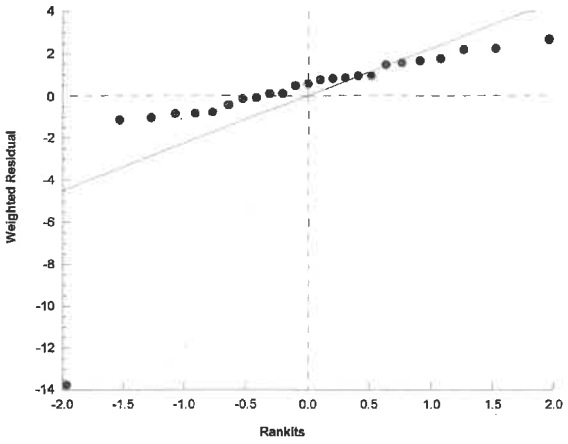
Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

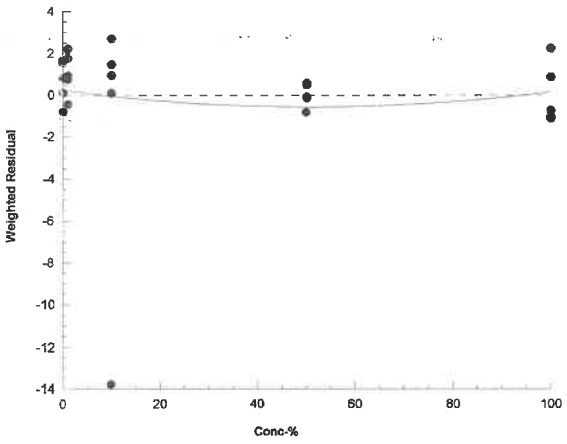
Analysis ID:	01-2758-7674	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 10:30	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

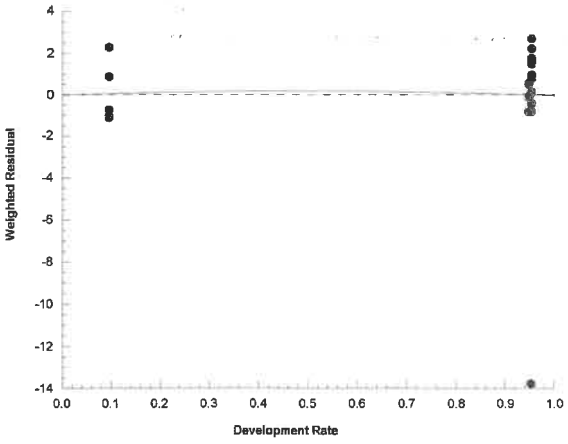
Graphics

Log-Normal: inv Φ[π]=α+β·log[x]









Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	15-4990-0211	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:33	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	1	10	3.162	100	7.09%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	0.377	2.3	0.156	8	CDF	0.6572	Non-Significant Effect
		10*	2.4	2.3	0.156	8	CDF	0.0411	Significant Effect
		50	1.75	2.3	0.156	8	CDF	0.1340	Non-Significant Effect
		100*	16.2	2.3	0.156	8	CDF	4.5E-07	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	4.26056	1.06514	4	92.4	<1.0E-37	Significant Effect
Error	0.23044	0.011522	20			
Total	4.491		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	5.4	13.3	0.2485	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.969	0.888	0.6238	Normal Distribution

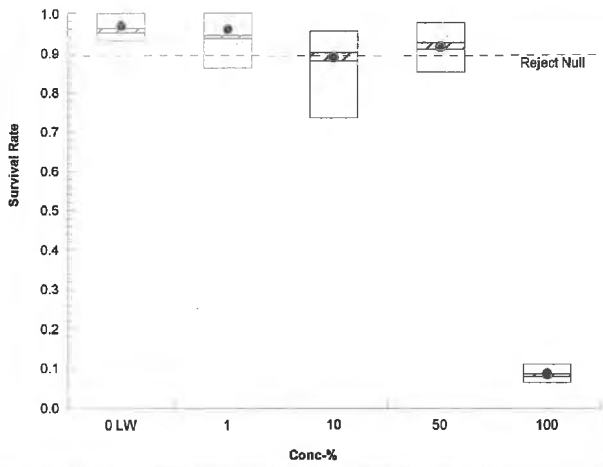
Survival Rate Summary

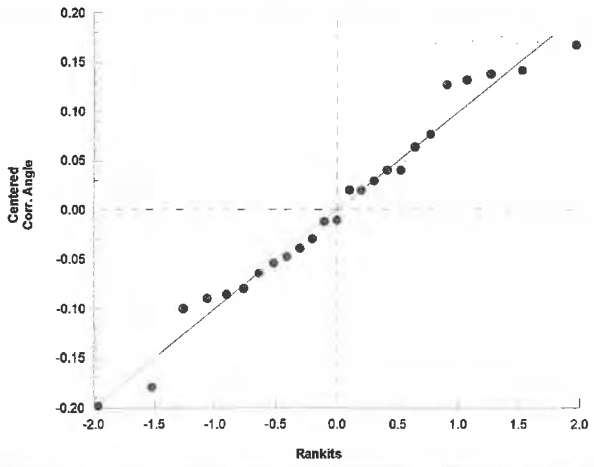
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.961	0.922	1.000	0.950	0.931	1.000	0.014	3.31%	0.00%
1		5	0.945	0.874	1.000	0.936	0.861	1.000	0.025	5.99%	1.75%
10		5	0.880	0.775	0.985	0.901	0.738	0.955	0.038	9.59%	8.44%
50		5	0.909	0.845	0.973	0.926	0.851	0.975	0.023	5.69%	5.46%
100		5	0.086	0.060	0.113	0.079	0.064	0.109	0.010	24.92%	91.04%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.39	1.27	1.52	1.35	1.3	1.54	0.0462	7.40%	0.00%
1		5	1.37	1.19	1.55	1.31	1.19	1.54	0.065	10.62%	1.83%
10		5	1.23	1.08	1.38	1.25	1.03	1.36	0.0548	9.95%	11.71%
50		5	1.28	1.15	1.4	1.29	1.18	1.41	0.0433	7.60%	8.54%
100		5	0.296	0.249	0.343	0.285	0.256	0.336	0.017	12.86%	78.76%

Graphics





Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	18-1161-5328	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:33	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

Linear Regression Options

Model Name	Link Function	Threshold Option	Thresh	Optimize	Pooled	Het Corr	Weighted
Log-Normal (Probit)	η=inv Φ[π]	Control Threshold	0.071286	Yes	No	Yes	Yes

Regression Summary

Iters	LL	AICc	BIC	Mu	Sigma	Adj R2	PMSD	F Stat	P-Value	Decision(α:5%)
9	-163	333	336	1.88	0.0898	0.971	3.34%	3.31	0.0573	Non-Significant Lack of Fit

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	54.1	34.4	65.1	1.848	1.536	2.905
EC10	58.3	39.3	68.7	1.714	1.455	2.547
EC15	61.4	42.9	71.3	1.629	1.403	2.331
EC20	63.9	46	73.4	1.565	1.362	2.174
EC25	66.1	48.8	75.3	1.512	1.328	2.047
EC40	72.2	56.7	80.4	1.386	1.244	1.763
EC50	76	62	83.7	1.315	1.194	1.613

Regression Parameters

Parameter	Estimate	Std Error	95% LCL	95% UCL	Test Stat	P-Value	Decision(α:5%)
Intercept	-20.9	4.62	-30.5	-11.4	-4.53	1.7E-04	Significant Parameter
Slope	11.1	2.34	6.28	16	4.76	9.4E-05	Significant Parameter
Threshold	0.0713	0.015	0.0403	0.102	4.77	9.3E-05	Significant Parameter

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Model	8370	4190	2	409	<1.0E-37	Significant
Lack of Fit	56	28	2	3.31	0.0573	Non-Significant
Pure Error	169	8.46	20			
Residual	225	10.2	22			

Residual Analysis

Attribute	Method	Test Stat	Critical	P-Value	Decision(α:5%)
Model Fit	Likelihood Ratio GOF Test	226	33.9	1.5E-07	Significant Heterogeneity
	Pearson Chi-Sq GOF Test	225	33.9	1.2E-07	Significant Heterogeneity
Variance	Mod Levene Equality of Variance	0.97	3.06	0.4526	Equal Variances
Distribution	Anderson-Darling A2 Normality Te	0.877	2.49	0.0246	Non-Normal Distribution
	Shapiro-Wilk W Normality Test	0.866	0.92	0.0035	Non-Normal Distribution
Overdispersion	Tarone C(α) Binomial Overdispersi	15.7	1.64	<1.0E-37	Significant Overdispersion

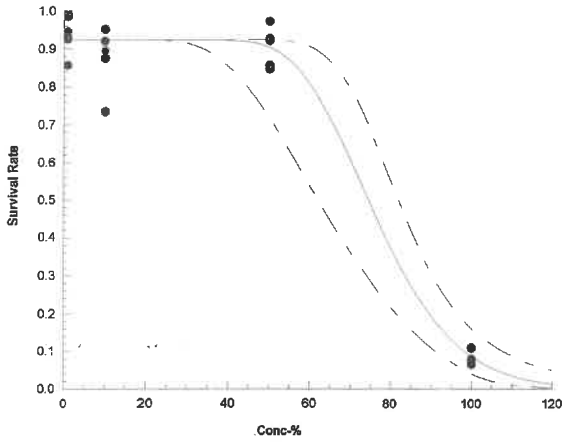
Survival Rate Summary

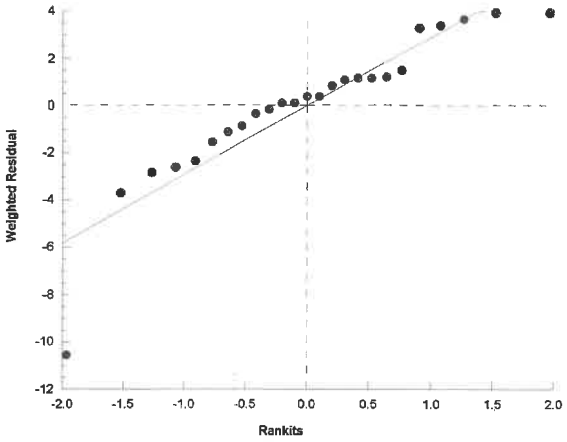
			Calculated Variate(A/B)								
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	LW	5	0.961	0.931	1.000	0.014	0.032	3.31%	0.0%	971	1010
1		5	0.945	0.861	1.000	0.025	0.057	5.99%	1.75%	954	1010
10		5	0.880	0.738	0.955	0.038	0.084	9.59%	8.44%	889	1010
50		5	0.909	0.851	0.975	0.023	0.052	5.69%	5.46%	918	1010
100		5	0.086	0.064	0.109	0.010	0.022	24.90%	91.0%	87	1010

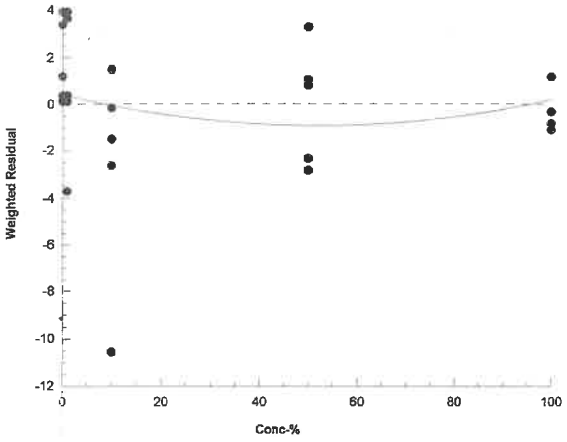
Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

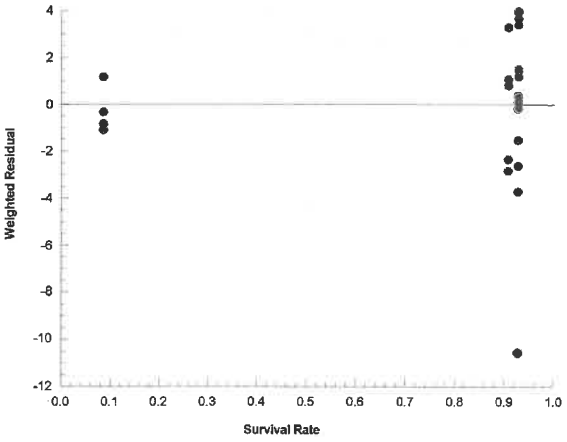
Analysis ID:	18-1161-5328	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:33	**Analysis:**	Linear Regression (GLM)	**Status Level:**	1

Graphics — Log-Normal: inv Φ[π]=α+β·log[x]









Mytilus sp. Development Toxicity Test Water Test Count Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU2b-Comp SET
Test ID #: 85958
Project #: 30945
Sample Salinity adjusted with: Crystal Sea®

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/12/19
Investigator: HR
Innoculation Count: 202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	189	12	201		
	B	188	9	197		
	C	192	7	199		
	D	200	5	205		
	E	208	5	213		
1.0%	A	189	4	193		
	B	202	7	209		
	C	188	7	195		
	D	201	3	204		
	E	174	10	184		
10%	A	187	9	196		
	B	193	5	198		
	C	182	1	183		
	D	194	6	200		
	E	178	6	184		
50%	A	197	14	211		
	B	187	11	198		
	C	188	9	197		
	D	174	8	182		
	E	172	10	182		
100%	A	13	169	182		
	B	22	144	146		
	C	22	171	193		
	D	14	175	189		
	E	16	183	199		

Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU2b-Comp SET
Test ID#: 85958 Project # 30945
Test Date: 11/27/19 Randomization: —
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11939 Age: N/A
Organism Supplier: MRD
Control/Diluent: 30ppt

Day 0

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH_3	Signoff
Control	16.3	7.80	8.5	30.74		Test Solution Prep: KD
1.0%	16.1	7.84	8.7	30.88		New WQ: KS
10%	16.1	7.88	8.6	30.86		Innoculation Date: 11.27.19
50%	15.8	8.00	8.3	30.53		Innoculation Time: 1518
100%	16.1	8.09	7.1	30.01	8.28	Innoculation Signoff: KPF
Meter ID	48A	PH 24	RD13	EC13	DR3000	

Day 1

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.3				Date: 11/28/19
1.0%	15.2				Signoff: KF
10%	15.1				
50%	15.0				
100%	15.0				
Meter ID	112A				

Day 2

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	11/29/19 Signoff
Control	14.0	7.86	8.0	30.6	Termination Signoff: KF RG
1.0%	14.1	7.85	8.0	30.7	Termination Date: 11/29/19
10%	14.2	7.86	7.9	30.6	Termination Time: 1429
50%	14.2	7.94	7.8	30.2	Old WQ: SJB
100%	14.3	8.04	7.8	29.7	Termination Spot Signoff: RD
Meter ID	105A	PH26	RD10	EC10	

CETIS Summary Report

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Batch ID:	12-7610-8340	**Test Type:**	Development-Survival	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 15:20	**Protocol:**	ASTM E724-98 (Bivalve)	**Diluent:**	Diluted Seawater	
Ending Date:	29 Nov-19 14:27	**Species:**	Mytilus galloprovincialis	**Brine:**	Crystal Sea	
Test Length:	47h	**Taxon:**		**Source:**	M Rep	**Age:** N/A

Sample ID:	08-6630-7810	**Code:**	2019-DU3-COMP	**Project:**	30945	
Sample Date:	30 Oct-19 09:20	**Material:**	Elutriate	**Source:**	Concord MOTCO	
Receipt Date:	05 Nov-19 12:45	**CAS (PC):**		**Station:**	2019-DU3-COMP SET	
Sample Age:	28d 6h (0 °C)	**Client:**	USACE			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
03-3805-3377	Development Rate	Dunnett Multiple Comparison Test	✓	50	100	70.71	2	2.18%	1
18-2510-0046	Survival Rate	Dunnett Multiple Comparison Test	✓	50	100	70.71	2	11.1%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
10-4928-8016	Development Rate	Linear Interpolation (ICPIN)	✓	EC5	55.2	53.2	56.3	1.811	1
				EC10	60.8	58.4	62.5	1.645	
				EC15	66.4	63.4	69	1.506	
				EC20	72	68.2	75.3	1.389	
				EC25	77.6	72.9	81.7	1.289	
				EC40	94.4	87	101	1.059	
			✓	EC50	>100	n/a	n/a	<1	
13-7617-9809	Survival Rate	Linear Interpolation (ICPIN)		EC5	55.3	47.8	56.5	1.808	1
			✓	EC10	60.6	53.7	62.9	1.65	
			✓	EC15	65.9	59.5	69.4	1.517	
			✓	EC20	71.2	65	76.1	1.404	
			✓	EC25	76.5	70.2	82.6	1.307	
			✓	EC40	92.4	84.9	102	1.082	
			✓	EC50	>100	n/a	n/a	<1	

Development Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.973	0.956	0.990	0.957	0.988	0.006	0.013	1.38%	0.00%
1		5	0.953	0.936	0.969	0.932	0.969	0.006	0.014	1.42%	2.09%
10		5	0.980	0.971	0.988	0.974	0.991	0.003	0.007	0.67%	-0.70%
50		5	0.973	0.958	0.988	0.957	0.990	0.005	0.012	1.25%	-0.04%
100		5	0.534	0.461	0.607	0.447	0.612	0.026	0.059	11.00%	45.08%

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.922	0.819	1.000	0.832	1.000	0.037	0.083	8.98%	0.00%
1		5	0.948	0.871	1.000	0.876	1.000	0.028	0.062	6.49%	-2.79%
10		5	0.951	0.892	1.000	0.896	1.000	0.021	0.048	5.01%	-3.22%
50		5	0.957	0.909	1.000	0.896	1.000	0.018	0.039	4.10%	-3.87%
100		5	0.499	0.406	0.592	0.431	0.609	0.033	0.075	14.94%	45.86%

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Development Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.988	0.971	0.963	0.957	0.985
1		0.932	0.957	0.969	0.952	0.953
10		0.976	0.978	0.991	0.979	0.974
50		0.990	0.970	0.972	0.957	0.978
100		0.544	0.535	0.447	0.612	0.534

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.837	0.832	1.000	0.995	0.946
1		0.876	0.886	1.000	0.975	1.000
10		1.000	0.896	1.000	0.946	0.916
50		0.960	0.950	1.000	0.980	0.896
100		0.485	0.535	0.436	0.609	0.431

Development Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	169/171	168/173	208/216	201/210	191/194
1		177/190	179/187	219/226	197/207	203/213
10		203/208	181/185	213/215	191/195	185/190
50		194/196	192/198	206/212	198/207	181/185
100		98/180	108/202	88/197	123/201	87/163

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	169/202	168/202	202/202	201/202	191/202
1		177/202	179/202	202/202	197/202	202/202
10		202/202	181/202	202/202	191/202	185/202
50		194/202	192/202	202/202	198/202	181/202
100		98/202	108/202	88/202	123/202	87/202

CETIS Analytical Report

Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	03-3805-3377	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 10:48	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	2.18%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	2.16	2.3	0.061	8	CDF	0.0660	Non-Significant Effect
		10	-0.757	2.3	0.061	8	CDF	0.9562	Non-Significant Effect
		50	-0.0246	2.3	0.061	8	CDF	0.8079	Non-Significant Effect
		100*	22.4	2.3	0.061	8	CDF	4.5E-07	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.36505	0.341261	4	197	<1.0E-37	Significant Effect
Error	0.0345979	0.0017299	20			
Total	1.39964		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	2.83	13.3	0.5861	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.971	0.888	0.6827	Normal Distribution

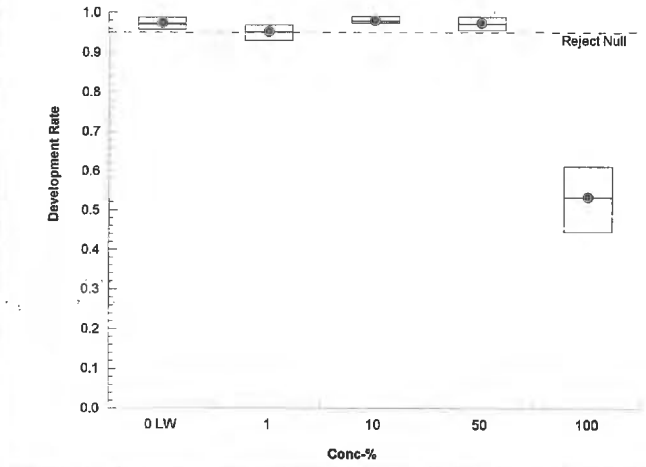
Development Rate Summary

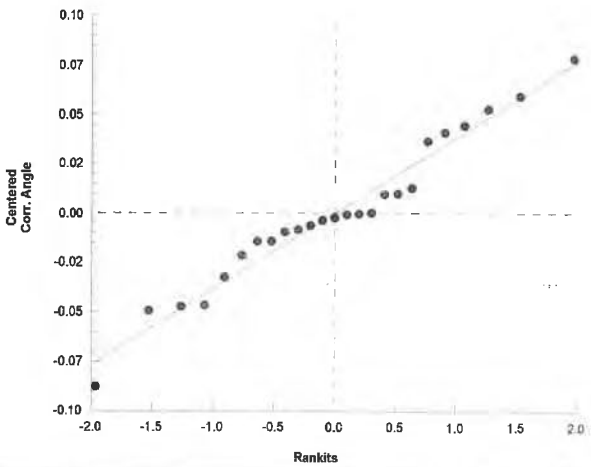
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.973	0.956	0.990	0.971	0.957	0.988	0.006	1.38%	0.00%
1		5	0.953	0.936	0.969	0.953	0.932	0.969	0.006	1.42%	2.09%
10		5	0.980	0.971	0.988	0.978	0.974	0.991	0.003	0.67%	-0.70%
50		5	0.973	0.958	0.988	0.972	0.957	0.990	0.005	1.25%	-0.04%
100		5	0.534	0.461	0.607	0.535	0.447	0.612	0.026	11.00%	45.08%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.36	1.46	1.4	1.36	1.46	0.0194	3.07%	0.00%
1		5	1.35	1.31	1.39	1.35	1.31	1.39	0.0141	2.33%	4.03%
10		5	1.43	1.4	1.46	1.42	1.41	1.47	0.0117	1.82%	-1.41%
50		5	1.41	1.36	1.46	1.4	1.36	1.47	0.0179	2.84%	-0.05%
100		5	0.82	0.746	0.893	0.82	0.732	0.898	0.0264	7.21%	41.83%

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	10-4928-8016	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 10:49	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2027783	200	Yes	Two-Point Interpolation

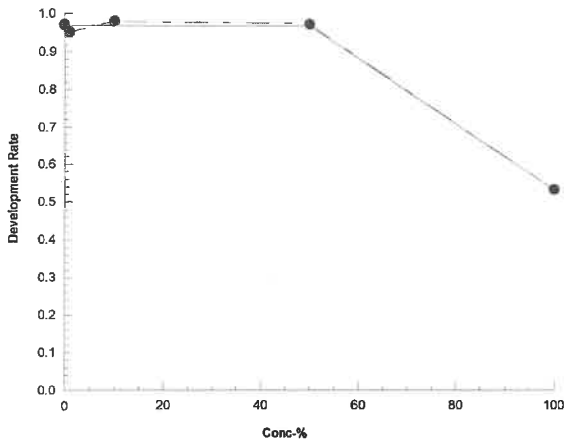
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	55.2	53.2	56.3	1.811	1.777	1.881
EC10	60.8	58.4	62.5	1.645	1.599	1.713
EC15	66.4	63.4	69	1.506	1.45	1.578
EC20	72	68.2	75.3	1.389	1.328	1.465
EC25	77.6	72.9	81.7	1.289	1.225	1.372
EC40	94.4	87	101	1.059	0.9925	1.149
EC50	>100	n/a	n/a	<1	n/a	n/a

Development Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.973	0.957	0.988	0.013	1.38%	0.0%	937/964	0.973	0.0%
1		5	0.953	0.932	0.969	0.014	1.42%	2.09%	975/1023	0.968	0.45%
10		5	0.980	0.974	0.991	0.007	0.67%	-0.7%	973/993	0.968	0.45%
50		5	0.973	0.957	0.990	0.012	1.25%	-0.04%	971/998	0.968	0.45%
100		5	0.534	0.447	0.612	0.059	11.00%	45.1%	504/943	0.534	45.1%

Graphics



Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	18-2510-0046	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:35	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	11.06%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	-0.565	2.3	0.202	8	CDF	0.9321	Non-Significant Effect
		10	-0.573	2.3	0.202	8	CDF	0.9333	Non-Significant Effect
		50	-0.571	2.3	0.202	8	CDF	0.9330	Non-Significant Effect
		100*	6.27	2.3	0.202	8	CDF	8.1E-06	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.39137	0.347842	4	18	2.0E-06	Significant Effect
Error	0.385522	0.0192761	20			
Total	1.77689		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	3.14	13.3	0.5341	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.92	0.888	0.0518	Normal Distribution

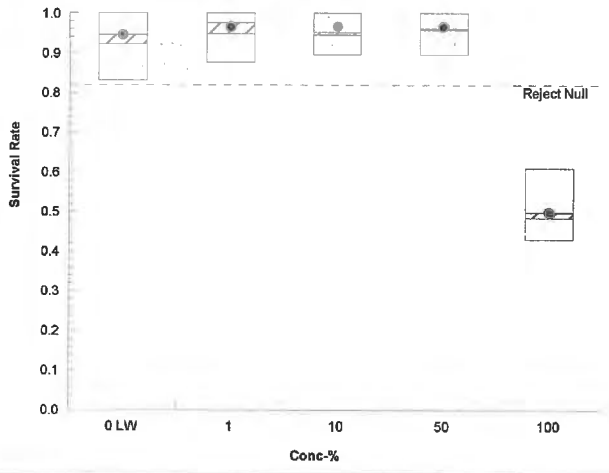
Survival Rate Summary

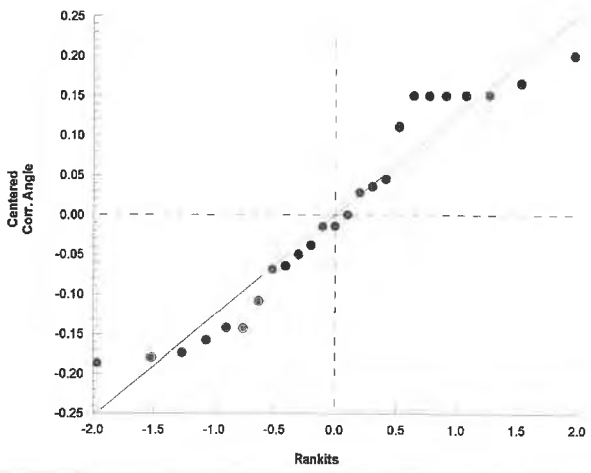
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.922	0.819	1.000	0.946	0.832	1.000	0.037	8.98%	0.00%
1		5	0.948	0.871	1.000	0.975	0.876	1.000	0.028	6.49%	-2.79%
10		5	0.951	0.892	1.000	0.946	0.896	1.000	0.021	5.01%	-3.22%
50		5	0.957	0.909	1.000	0.960	0.896	1.000	0.018	4.10%	-3.87%
100		5	0.499	0.406	0.592	0.485	0.431	0.609	0.033	14.94%	45.86%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.33	1.11	1.56	1.34	1.15	1.54	0.0822	13.77%	0.00%
1		5	1.38	1.19	1.58	1.41	1.21	1.54	0.0712	11.50%	-3.71%
10		5	1.39	1.21	1.56	1.34	1.24	1.54	0.0632	10.21%	-3.77%
50		5	1.38	1.25	1.52	1.37	1.24	1.54	0.0483	7.80%	-3.75%
100		5	0.785	0.691	0.878	0.771	0.716	0.895	0.0335	9.55%	41.23%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	13-7617-9809	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:36	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	689881	200	Yes	Two-Point Interpolation

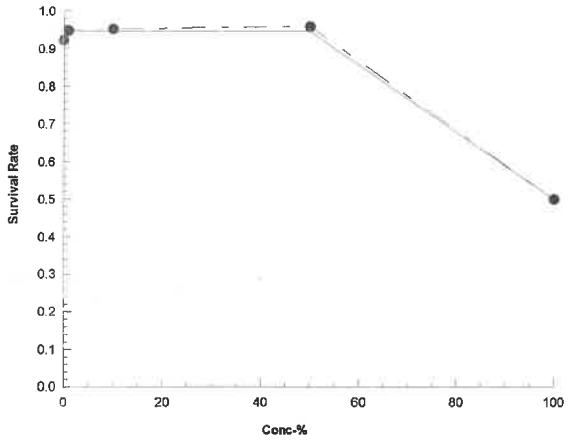
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	55.3	47.8	56.5	1.808	1.771	2.091
EC10	60.6	53.7	62.9	1.65	1.589	1.861
EC15	65.9	59.5	69.4	1.517	1.441	1.682
EC20	71.2	65	76.1	1.404	1.314	1.538
EC25	76.5	70.2	82.6	1.307	1.21	1.425
EC40	92.4	84.9	102	1.082	0.9785	1.178
EC50	>100	n/a	n/a	<1	n/a	n/a

Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.922	0.832	1.000	0.083	8.98%	0.0%	931/1010	0.945	0.0%
1		5	0.948	0.876	1.000	0.062	6.49%	-2.79%	957/1010	0.945	0.0%
10		5	0.951	0.896	1.000	0.048	5.01%	-3.22%	961/1010	0.945	0.0%
50		5	0.957	0.896	1.000	0.039	4.10%	-3.87%	967/1010	0.945	0.0%
100		5	0.499	0.431	0.609	0.075	14.90%	45.9%	504/1010	0.499	47.2%

Graphics



Mytilus sp. Development Toxicity Test Water Test Count Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU3-Comp SET
Test ID #: 85959
Project #: 30945
Sample Salinity adjusted with: Crystal Sea®

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/17/19
Investigator: MF
Innoculation Count: 202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	169	2	171		
	B	168	5	173		
	C	208	8	216		
	D	201	9	210		
	E	191	3	194		
1.0%	A	177	13	190		
	B	179	8	187		
	C	219	7	226		
	D	197	10	207		
	E	203	10	213 ~~225~~ 12/04/19		
10%	A	203	5	208		
	B	181	4	185		
	C	213	2	215		
	D	191	4	195		
	E	185	5	190		
50%	A	194	2	196		
	B	192	6	198		
	C	206	6	212		
	D	198	9	207		
	E	181	4	185		
100%	A	98	82	180		
	B	108	94	202		
	C	88	109	197		
	D	123	78	201		
	E	87	76	163		

Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU3-Comp SET
Test ID#: 85959 Project # 30945
Test Date: 11/27/19 Randomization: —
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11839 Age: N/A
Organism Supplier: MPer
Control/Diluent: 30 ppt

Day 0						
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH_3	Signoff
Control	16.1	7.83	7.9	30.9		Test Solution Prep: KB
1.0%	16.0	7.83	8.8	30.9		New WQ: KB
10%	16.1	7.84	8.9	30.9		Innoculation Date: 11.27.19
50%	15.7	7.90	8.7	30.5		Innoculation Time: 1520
100%	15.4	7.96	6.3	29.7	5.20	Innoculation Signoff:
Meter ID	48A	pH25	RDO2	EC10	DR3800	

Day 1					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.0				Date: 11/28/19
1.0%	14.8				Signoff: 11/28/19
10%	14.8				
50%	14.8				
100%	14.8				
Meter ID	112A				

Day 2					
Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	11/29/19 Signoff
Control	14.8	7.81	7.8	30.6	Termination Signoff: ~~11/29/19~~ 26
1.0%	14.5	7.83	7.8	30.6	Termination Date: 11/29/19
10%	14.5	7.86	7.9	30.5	Termination Time: 1427
50%	14.5	7.97	7.9	30.0	Old WQ: 5083
100%	14.5	8.09	7.9	29.3	Termination Spot Signoff: CD
Meter ID	105A	PH26	RDO	EC10	

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Batch ID:	10-7434-3349	**Test Type:**	Development-Survival	**Analyst:**	Ashleigh Findley		
Start Date:	27 Nov-19 15:16	**Protocol:**	ASTM E724-98 (Bivalve)	**Diluent:**	Diluted Seawater		
Ending Date:	29 Nov-19 14:26	**Species:**	Mytilus galloprovincialis	**Brine:**	Crystal Sea		
Test Length:	47h	**Taxon:**		**Source:**	M Rep	**Age:**	N/A

Sample ID:	15-7317-5948	**Code:**	2019-DU4-COMP	**Project:**	30945		
Sample Date:	30 Oct-19 14:27	**Material:**	Elutriate	**Source:**	Concord MOTCO		
Receipt Date:	05 Nov-19 15:00	**CAS (PC):**		**Station:**	2019-DU4-COMP SET		
Sample Age:	28d 1h (0 °C)	**Client:**	USACE				

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
20-0414-2985	Development Rate	Dunnett Multiple Comparison Test	✓	50	100	70.71	2	2.57%	1
12-3852-4578	Survival Rate	Dunnett Multiple Comparison Test	✓	50	100	70.71	2	8.85%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	%	95% LCL	95% UCL	TU	S
18-7495-0925	Development Rate	Linear Interpolation (ICPIN)		EC5	56.3	54.4	56.5	1.777	1
				EC10	62.6	60.8	63	1.599	
				EC15	68.8	67	69.6	1.453	
				EC20	75.1	73.3	76.1	1.331	
				EC25	81.4	79.3	82.7	1.229	
				EC40	>100	n/a	n/a	<1	
			✓	EC50	>100	n/a	n/a	<1	
19-6499-9033	Survival Rate	Linear Interpolation (ICPIN)	✓	EC5	56.1	47.5	56.7	1.781	1
			✓	EC10	62.3	54.3	63.5	1.606	
			✓	EC15	68.4	60.7	70.2	1.462	
			✓	EC20	74.6	67	77	1.341	
			✓	EC25	80.7	73.9	83.7	1.239	
			✓	EC40	99.1	91.4	n/a	1.009	
			✓	EC50	>100	n/a	n/a	<1	

Development Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.955	0.943	0.967	0.944	0.967	0.004	0.010	1.04%	0.00%
1		5	0.966	0.951	0.982	0.952	0.981	0.006	0.012	1.28%	-1.18%
10		5	0.962	0.932	0.993	0.926	0.985	0.011	0.025	2.54%	-0.74%
50		5	0.965	0.952	0.978	0.954	0.976	0.005	0.011	1.09%	-1.01%
100		5	0.579	0.555	0.603	0.545	0.594	0.009	0.019	3.30%	39.40%

Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.950	0.863	1.000	0.832	1.000	0.031	0.070	7.37%	0.00%
1		5	0.958	0.897	1.000	0.891	1.000	0.022	0.050	5.19%	-0.83%
10		5	0.944	0.842	1.000	0.802	1.000	0.037	0.082	8.70%	0.73%
50		5	0.983	0.936	1.000	0.916	1.000	0.017	0.038	3.83%	-3.44%
100		5	0.568	0.521	0.616	0.505	0.604	0.017	0.038	6.73%	40.21%

Bivalve Larval Survival and Development Test — Pacific EcoRisk

Development Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.952	0.949	0.967	0.944	0.965
1		0.981	0.969	0.955	0.975	0.952
10		0.977	0.985	0.949	0.926	0.975
50		0.961	0.958	0.976	0.954	0.976
100		0.582	0.586	0.545	0.594	0.587

Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.975	0.832	1.000	1.000	0.946
1		1.000	0.921	1.000	0.980	0.891
10		1.000	0.950	1.000	0.802	0.965
50		1.000	1.000	1.000	0.916	1.000
100		0.579	0.589	0.505	0.564	0.604

Development Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	197/207	168/177	202/209	202/214	191/198
1		204/208	186/192	213/223	198/203	180/189
10		212/217	192/195	204/215	162/175	195/200
50		219/228	205/214	204/209	185/194	204/209
100		117/201	119/203	102/187	114/192	122/208

Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	197/202	168/202	202/202	202/202	191/202
1		202/202	186/202	202/202	198/202	180/202
10		202/202	192/202	202/202	162/202	195/202
50		202/202	202/202	202/202	185/202	202/202
100		117/202	119/202	102/202	114/202	122/202

CETIS Analytical Report

Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	20-0414-2985	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 11:08	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	2.57%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	-1.3	2.3	0.054	8	CDF	0.9893	Non-Significant Effect
		10	-1.03	2.3	0.054	8	CDF	0.9779	Non-Significant Effect
		50	-1.08	2.3	0.054	8	CDF	0.9804	Non-Significant Effect
		100*	21	2.3	0.054	8	CDF	4.5E-07	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.05986	0.264964	4	191	<1.0E-37	Significant Effect
Error	0.0277405	0.0013870	20			
Total	1.0876		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.31	13.3	0.1770	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.965	0.888	0.5202	Normal Distribution

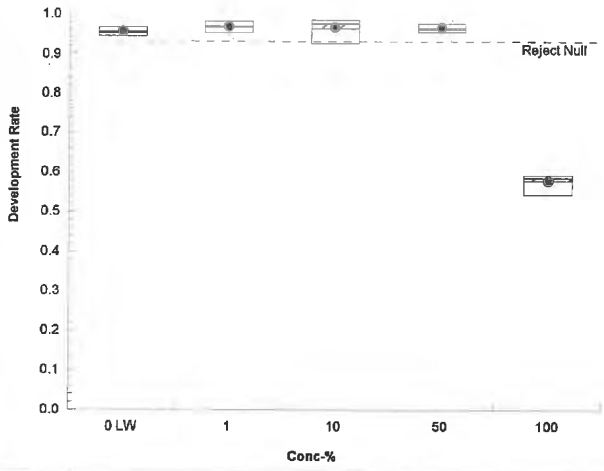
Development Rate Summary

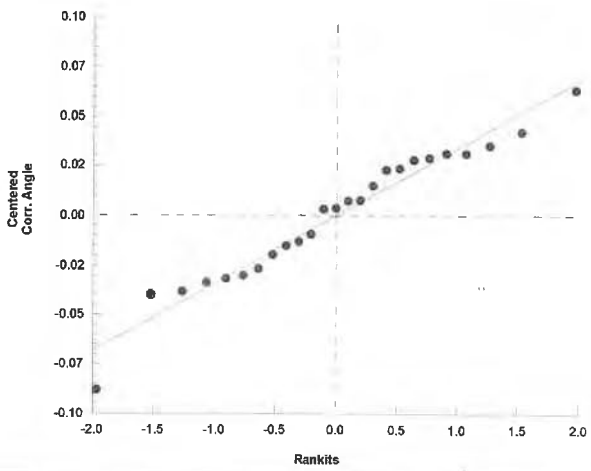
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.955	0.943	0.967	0.952	0.944	0.967	0.004	1.04%	0.00%
1		5	0.966	0.951	0.982	0.969	0.952	0.981	0.006	1.28%	-1.18%
10		5	0.962	0.932	0.993	0.975	0.926	0.985	0.011	2.54%	-0.74%
50		5	0.965	0.952	0.978	0.961	0.954	0.976	0.005	1.09%	-1.01%
100		5	0.579	0.555	0.603	0.586	0.545	0.594	0.009	3.30%	39.40%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.36	1.33	1.39	1.35	1.33	1.39	0.0109	1.79%	0.00%
1		5	1.39	1.35	1.43	1.39	1.35	1.43	0.0156	2.51%	-2.26%
10		5	1.38	1.31	1.46	1.41	1.29	1.45	0.0279	4.51%	-1.79%
50		5	1.38	1.35	1.42	1.37	1.35	1.42	0.0132	2.13%	-1.87%
100		5	0.865	0.841	0.889	0.872	0.831	0.88	0.00863	2.23%	36.36%

Graphics





Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	12-3852-4578	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:38	**Analysis:**	Parametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	50	100	70.71	2	8.85%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	-0.125	2.3	0.197	8	CDF	0.8381	Non-Significant Effect
		10	0.132	2.3	0.197	8	CDF	0.7543	Non-Significant Effect
		50	-1.06	2.3	0.197	8	CDF	0.9793	Non-Significant Effect
		100*	6.32	2.3	0.197	8	CDF	7.4E-06	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.29453	0.323633	4	17.7	2.3E-06	Significant Effect
Error	0.36478	0.018239	20			
Total	1.65931		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Bartlett Equality of Variance Test	6.8	13.3	0.1469	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.91	0.888	0.0301	Normal Distribution

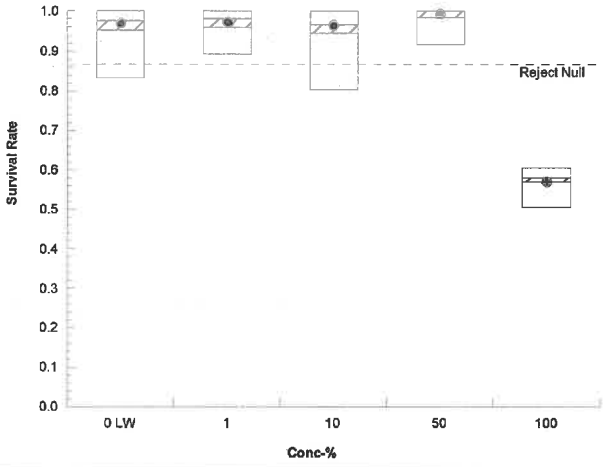
Survival Rate Summary

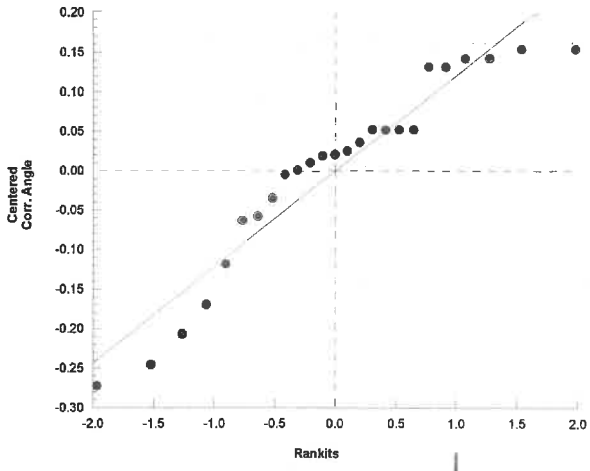
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.950	0.863	1.000	0.975	0.832	1.000	0.031	7.37%	0.00%
1		5	0.958	0.897	1.000	0.980	0.891	1.000	0.022	5.19%	-0.83%
10		5	0.944	0.842	1.000	0.965	0.802	1.000	0.037	8.70%	0.73%
50		5	0.983	0.936	1.000	1.000	0.916	1.000	0.017	3.83%	-3.44%
100		5	0.568	0.521	0.616	0.579	0.505	0.604	0.017	6.73%	40.21%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.39	1.19	1.59	1.41	1.15	1.54	0.0722	11.59%	0.00%
1		5	1.4	1.23	1.58	1.43	1.23	1.54	0.0625	9.95%	-0.77%
10		5	1.38	1.16	1.6	1.38	1.11	1.54	0.0783	12.67%	0.81%
50		5	1.48	1.34	1.63	1.54	1.28	1.54	0.0518	7.81%	-6.48%
100		5	0.854	0.806	0.902	0.865	0.79	0.89	0.0172	4.51%	38.71%

Graphics





CETIS Analytical Report

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Analysis ID:	18-7495-0925	**Endpoint:**	Development Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 11:08	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1866352	200	Yes	Two-Point Interpolation

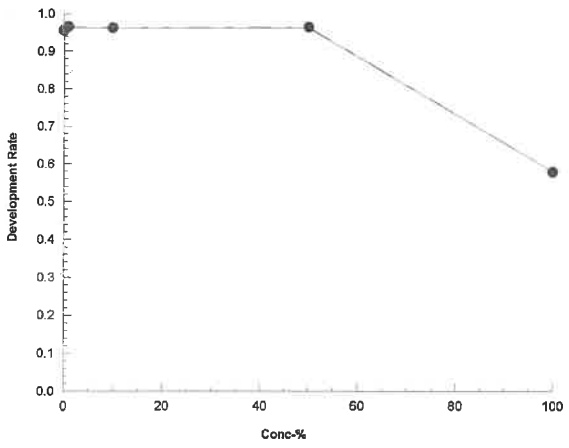
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	56.3	54.4	56.5	1.777	1.769	1.839
EC10	62.6	60.8	63	1.599	1.586	1.646
EC15	68.8	67	69.6	1.453	1.437	1.494
EC20	75.1	73.3	76.1	1.331	1.314	1.365
EC25	81.4	79.3	82.7	1.229	1.21	1.262
EC40	>100	n/a	n/a	<1	n/a	n/a
EC50	>100	n/a	n/a	<1	n/a	n/a

Development Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.955	0.944	0.967	0.010	1.04%	0.0%	960/1005	0.962	0.0%
1		5	0.966	0.952	0.981	0.012	1.28%	-1.18%	981/1015	0.962	0.0%
10		5	0.962	0.926	0.985	0.025	2.54%	-0.74%	965/1002	0.962	0.0%
50		5	0.965	0.954	0.976	0.011	1.09%	-1.01%	1017/1054	0.962	0.0%
100		5	0.579	0.545	0.594	0.019	3.30%	39.4%	574/991	0.579	39.8%

Graphics



Bivalve Larval Survival and Development Test — Pacific EcoRisk

Analysis ID:	19-6499-9033	**Endpoint:**	Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:38	**Analysis:**	Linear Interpolation (ICPIN)	**Status Level:**	1

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	1904921	200	Yes	Two-Point Interpolation

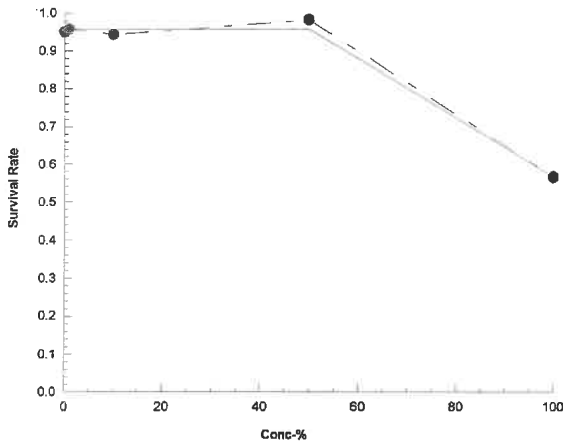
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC5	56.1	47.5	56.7	1.781	1.762	2.106
EC10	62.3	54.3	63.5	1.606	1.575	1.841
EC15	68.4	60.7	70.2	1.462	1.424	1.648
EC20	74.6	67	77	1.341	1.299	1.492
EC25	80.7	73.9	83.7	1.239	1.195	1.354
EC40	99.1	91.4	n/a	1.009	n/a	1.094
EC50	>100	n/a	n/a	<1	n/a	n/a

Survival Rate Summary

			Calculated Variate(A/B)							Isotonic Variate	
Conc-%	Code	Count	Mean	Min	Max	Std Dev	CV%	%Effect	A/B	Mean	%Effect
0	LW	5	0.950	0.832	1.000	0.070	7.37%	0.0%	960/1010	0.959	0.0%
1		5	0.958	0.891	1.000	0.050	5.19%	-0.83%	968/1010	0.959	0.0%
10		5	0.944	0.802	1.000	0.082	8.70%	0.73%	953/1010	0.959	0.0%
50		5	0.983	0.916	1.000	0.038	3.83%	-3.44%	993/1010	0.959	0.0%
100		5	0.568	0.505	0.604	0.038	6.73%	40.2%	574/1010	0.568	40.7%

Graphics



Mytilus sp. Development Toxicity Test Water Test Count Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU4-Comp SET
Test ID #: 85960
Project #: 30945
Sample Salinity adjusted with: Crystal Sea®

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/1/19 SB
Investigator: SB
Innoculation Count: 202

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development	Percent Survival
Control	A	197	10	207		
	B	168	9	177		
	C	202	7	209		
	D	202	12	214		
	E	191	7	198		
1.0%	A	204	4	208		
	B	186	6	192		
	C	213	10	223		
	D	198	5	203		
	E	180	9	189		
10%	A	212	5	217		
	B	192	3	195		
	C	204	11	215		
	D	162	13	175		
	E	195	5	200		
50%	A	219	9	228		
	B	205	9	214		
	C	204	5	209		
	D	185	9	194		
	E	204	5	209		
100%	A	~~187~~ 117	84	201		
	B	119	84	203		
	C	102	85	187		
	D	114	78	192		
	E	122	86	208		

Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU4-Comp SET
Test ID#: 85960 Project # 30945
Test Date: 11/27/19 Randomization: ✓
Sample Salinity adjusted with: Crystal Sea®

Organism Log#: 11839 Age: N/A
Organism Supplier: MPRP
Control/Diluent: 30 ppt

Day 0

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	NH_3	Signoff
Control	16.2	7.83	9.1	30.5		Test Solution Prep: KP
1.0%	16.2	7.83	9.1	30.9		New WQ: KP
10%	16.2	7.86	9.1	31.0		Innoculation Date: 11/27/19
50%	16.2	7.98	8.2	30.8		Innoculation Time: 1516
100%	16.4	8.05	7.9	30.4	3.87	Innoculation Signoff:
Meter ID	48A	pH25	RDO	EC10	DR3800	

Day 1

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.2				Date: 11/28/19
1.0%	15.1				Signoff: KP
10%	15.0				
50%	15.0				
100%	15.0				
Meter ID	112A				

Day 2

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Control	15.0	7.87	8.0	30.7	Termination Signoff: KP
1.0%	14.9	7.84	7.9	30.6	Termination Date: 11/29/19
10%	15.0	7.87	7.9	30.6	Termination Time: 1426
50%	15.0	8.00	7.9	30.3	Old WQ: SOB3
100%	14.9	8.12	7.8	29.8	Termination Spot Signoff: CO
Meter ID	105A	pH26	RDO	EC10	

Appendix M

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the *Mytilus galloprovincialis* Embryos

CETIS Summary Report

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Batch ID:	09-0300-3233	**Test Type:**	Development-Survival	**Analyst:**	Ashleigh Findley		
Start Date:	27 Nov-19 15:23	**Protocol:**	EPA/600/R-95/136 (1995)	**Diluent:**	Diluted Seawater		
Ending Date:	29 Nov-19 14:31	**Species:**	Mytilus galloprovincialis	**Brine:**	Not Applicable		
Test Length:	47h	**Taxon:**		**Source:**	M-REP	**Age:**	N/A

Sample ID:	07-8403-1359	**Code:**	KCl	**Project:**	30959
Sample Date:	27 Nov-19 15:23	**Material:**	Potassium chloride	**Source:**	Reference Toxicant
Receipt Date:	27 Nov-19 15:23	**CAS (PC):**		**Station:**	In House
Sample Age:	n/a (17.5 °C)	**Client:**	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
16-4110-1321	Development Rate	Dunnett Multiple Comparison Test		1	2	1.414		3.43%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	g/L	95% LCL	95% UCL	TU	S
15-9455-8074	Development Rate	Linear Interpolation (ICPIN)		EC5	1.06	1.04	1.08		1
				EC10	1.13	1.11	1.15		
				EC15	1.2	1.17	1.22		
				EC20	1.27	1.24	1.29		
				EC25	1.34	1.3	1.37		
				EC40	1.54	1.49	1.59		
				EC50	1.68	1.61	1.73		

Development Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	4	0.960	0.951	0.970	0.956	0.969	0.003	0.006	0.62%	0.00%
0.5		4	0.970	0.947	0.993	0.953	0.988	0.007	0.014	1.48%	-1.04%
1		4	0.959	0.945	0.972	0.952	0.970	0.004	0.009	0.89%	0.15%
2		4	0.258	0.178	0.338	0.185	0.296	0.025	0.050	19.40%	73.12%
3		4	0.007	0.000	0.029	0.000	0.027	0.007	0.014	200.00%	99.29%
4		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

Development Rate Detail

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	0.959	0.956	0.969	0.957
0.5		0.953	0.988	0.971	0.968
1		0.952	0.970	0.960	0.952
2		0.185	0.296	0.265	0.286
3		0.000	0.027	0.000	0.000
4		0.000	0.000	0.000	0.000

Development Rate Binomials

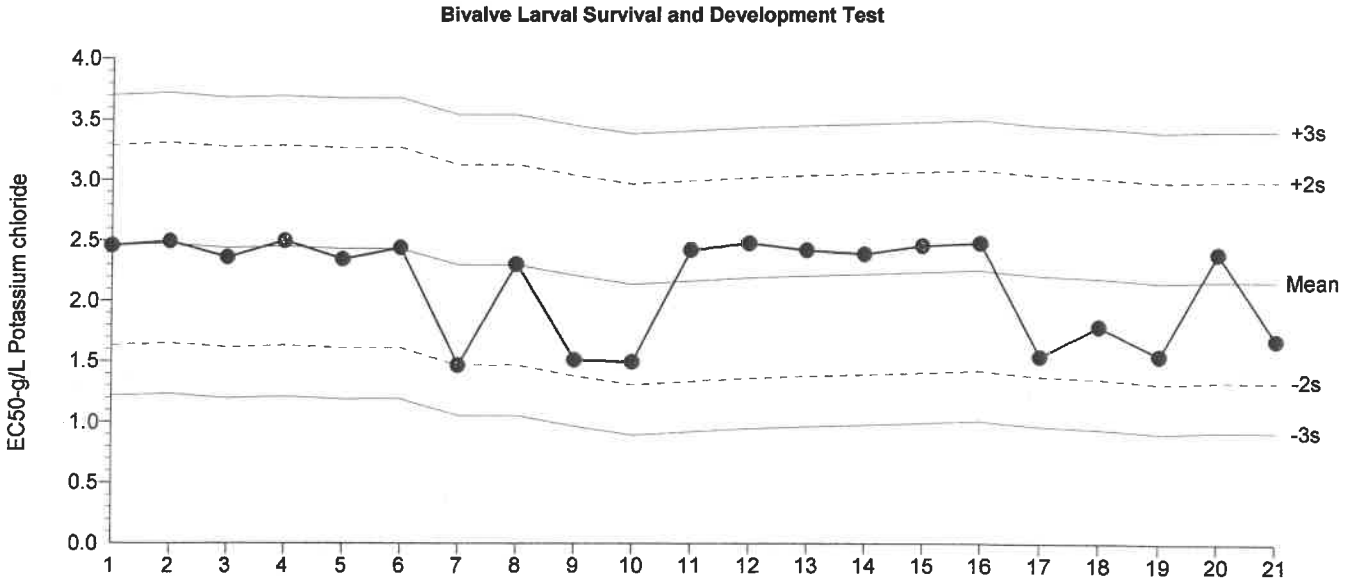
Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	188/196	172/180	186/192	200/209
0.5		204/214	168/170	166/171	183/189
1		140/147	164/169	166/173	160/168
2		23/124	37/125	31/117	32/112
3		0/81	2/73	0/72	0/114
4		0/1	0/1	0/1	0/1

CETIS QC Plot

Report Date: 19 Dec-19 15:31 (1 of 1)

Bivalve Larval Survival and Development Test — **Pacific EcoRisk**

Test Type:	Development-Survival	**Organism:**	Mytilus galloprovincialis (Bay Mussel)	**Material:**	Potassium chloride
Protocol:	EPA/600/R-95/136 (1995)	**Endpoint:**	Development Rate	**Source:**	Reference Toxicant-REF



Mean:	2.165	**Count:**	20	**-2s Warning Limit:**	1.336	**-3s Action Limit:**	0.9215
Sigma:	0.4144	**CV:**	19.10%	**+2s Warning Limit:**	2.993	**+3s Action Limit:**	3.408

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Nov	29	15:30	2.46	0.2948	0.7113			10-2673-6020	10-6341-3442
2		Dec	5	15:51	2.496	0.3309	0.7986			08-3436-5786	11-0472-1432
3			19	15:02	2.361	0.1955	0.4719			14-7191-4872	03-2805-4793
4	2019	Jan	9	15:07	2.497	0.3321	0.8015			21-0802-6296	18-8834-5014
5			15	14:59	2.343	0.1783	0.4304			16-8762-1306	03-2212-0536
6		Feb	7	15:48	2.441	0.276	0.666			05-6307-6164	06-6460-8481
7		Mar	27	16:05	1.466	-0.6987	-1.686			01-6888-8798	13-7366-6280
8		Apr	4	16:31	2.302	0.1373	0.3314			06-4806-0689	10-2375-4314
9			11	14:50	1.511	-0.6538	-1.578			05-0918-5751	02-0226-0769
10		May	15	16:32	1.495	-0.67	-1.617			18-3773-2919	12-6543-4379
11			22	15:50	2.421	0.2559	0.6175			19-6379-7139	05-2656-0148
12		Jun	13	14:45	2.478	0.3131	0.7556			11-5390-2367	18-2123-6656
13		Jul	11	15:37	2.421	0.2558	0.6174			05-4619-0363	06-9948-5758
14			18	16:00	2.389	0.2238	0.5401			13-7591-7844	13-0350-4179
15		Aug	2	14:03	2.459	0.2939	0.7092			06-3648-7209	10-3103-3089
16			7	13:59	2.48	0.3145	0.759			12-4629-9348	00-0140-7324
17		Sep	24	15:51	1.542	-0.6232	-1.504			11-8356-0044	01-4801-9816
18		Oct	17	15:13	1.789	-0.3761	-0.9076			13-1748-9765	18-8520-9159
19			23	14:35	1.549	-0.6162	-1.487			16-8272-4259	12-2098-4296
20		Nov	7	15:59	2.394	0.2293	0.5534			06-7207-2389	02-3809-4605
21			27	15:23	1.679	-0.4857	-1.172			09-9524-8866	15-9455-8074

Analyst: QA:

Mytilus sp. Development Toxicity Test Count Data

Client: **Reference Toxicant**
Test Material: Potassium Chloride
Test ID #: 85980
Project #: 30959

Test Start Date: 11.27.19
Test End Date: 11/29/19
Enumeration Date: 12/5/19
Investigator: MB

Concentration	Replicate	Number of Normal Larvae	Number of Abnormal Larvae	Total Number Larvae	Percent Normal Development
Lab Water Control	A	188	8	196	
	B	172	8	180	
	C	186	6	192	
	D	200	9	209	
0.5	A	204	10	214	
	B	168	4	170	
	C	166	5	171	
	D	183	6	189	
1	A	140	7	147	
	B	164	5	169	
	C	166	7	173	
	D	160	8	168	
2	A	23	101	124	
	B	37	88	125	
	C	31	86	117	
	D	32	80	112	
3	A	0	81	81	
	B	2	71	73	
	C	0	72	72	
	D	0	114	114	
4	A	0	0	0	
	B	0	0	0	
	C	0	0	0	
	D	0	0	0	

Mytilus sp. Development Toxicity Test Water Chemistry Data

Client: **Reference Toxicant**
Test Material: Potassium Chloride
Test ID#: 85980 Project #: 30959
Test Date: 11.27.19

Organism Log#: 11839 Age: N/A
Organism Supplier: MBP
Control/Diluent: FSW @ 30±2 ppt

Day 0

Treatment (g/L)	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	17.5	7.82	8.7	29.64	Ref Tox Stock #: –
0.5	17.7	7.87	9.2	30.96	Test Solution Prep:
1	17.5	7.88	8.7	30.52	New WQ:
2	17.2	7.87	8.6	32.10	Innoculation Date: 11.27.19
3	17.1	7.86	8.3	33.18	Innoculation Time: 1523
4	17.1	7.85	8.4	34.27	Innoculation Signoff:
Meter ID	99A	PH 24	RD 13	EC 13	

Day 1

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	17.5				Date: 11/28/19
0.5	17.5				Old WQ:
1	17.4				
2	17.2				
3	17.2				
4	17.4				
Meter ID	112A				

Day 2

Treatment	Temperature (°C)	pH	D.O. (mg/L)	Salinity (ppt)	Signoff
Lab Water Control	17.9	7.82	7.4	29.8	Termination Date: 11/29/19
0.5	18.0	7.82	7.2	30.5	Termination Time: 1431
1	17.9	7.83	7.2	31.6	Termination Signoff: RG
2	17.9	7.84	7.2	33.6	Old WQ: SDB
3	17.9	7.84	7.1	33.5	Termination Spot Signoff:
4	17.9	7.84	7.0	34.6	
Meter ID	105A	PH26	DO10	EC10	

Appendix N

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Military Ocean Terminal Concord (MOTCO) Sediment Elutriates to Mysids *(Americamysis bahia)*

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	07-9064-9522	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 15:58	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 14:17	**Species:**	Americamysis bahia	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:** 5

Sample ID:	05-2650-2607	**Code:**	2019-DU1-COMP	**Project:**	30945	
Sample Date:	31 Oct-19 08:10	**Material:**	Elutriate	**Source:**	Concord MOTCO	
Receipt Date:	05 Nov-19 16:00	**CAS (PC):**		**Station:**	2019-DU1-Comp	
Sample Age:	27d 8h (0 °C)	**Client:**	USACE			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
01-8184-6900	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	6.46%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	0.00%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
50		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	0.900	0.900	1.000
1		1.000	0.900	1.000	1.000	1.000
10		1.000	1.000	1.000	1.000	1.000
50		1.000	0.900	1.000	1.000	1.000
100		0.900	1.000	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	9/10	9/10	10/10
1		11/11	9/10	10/10	10/10	10/10
10		10/10	10/10	10/10	10/10	10/10
50		10/10	9/10	10/10	10/10	10/10
100		9/10	10/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID: 01-8184-6900 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 11:25 **Analysis:** Nonparametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	6.46%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	30	17	2	8	CDF	0.9275	Non-Significant Effect
		10	32.5	17	1	8	CDF	0.9812	Non-Significant Effect
		50	30	17	2	8	CDF	0.9275	Non-Significant Effect
		100	30	17	2	8	CDF	0.9275	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0106326	0.0026582	4	0.553	0.6992	Non-Significant Effect
Error	0.0961435	0.0048072	20			
Total	0.106776		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	3.35	4.43	0.0299	Equal Variances
	Mod Levene Equality of Variance Test	0.581	4.89	0.6809	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.748	0.888	3.4E-05	Non-Normal Distribution

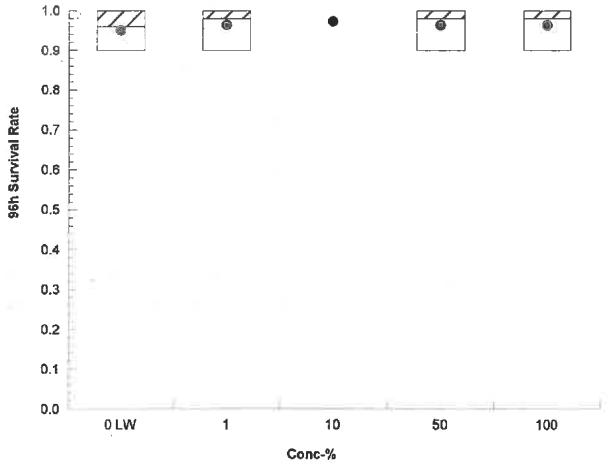
96h Survival Rate Summary

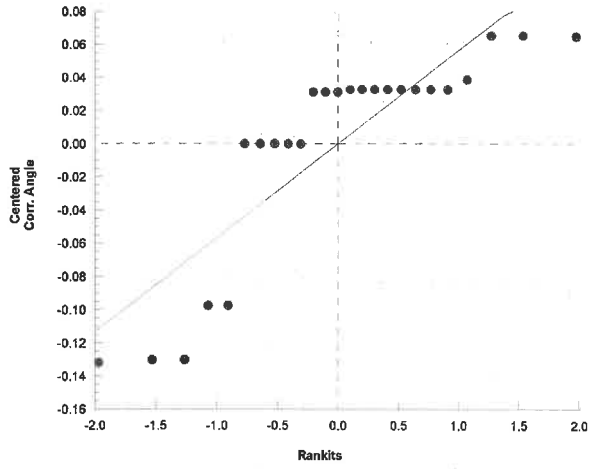
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
1		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
10		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
50		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
100		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	0.00%
1		5	1.38	1.29	1.47	1.41	1.25	1.42	0.033	5.34%	-2.53%
10		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-4.84%
50		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	-2.42%
100		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	-2.42%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU1-Comp
Test ID#: 85946 Project # 30945
Test Date: 11/27/19 Randomization: 5.5.1

Organism Log #: 11861 Age: 5d.
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. old	Salinity (ppt) new	Salinity old	NH_3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	20.2	7.89		7.9		24.5			10	10	10	10	10	Test Solution Prep: MB
1	20.3	7.88		7.9		24.5			11 10	10	10	10	10	New WQ: KP
10	20.3	7.89		7.9		24.5			10	10	10	10	10	Initiation Date: 11/27/19
50	20.2	7.95		7.6		24.5			10	10	10	10	10	Initiation Time: 1558
100	20.2	8.03		6.4		24.5		2.63	10	10	10	10	10	Initiation Signoff: JK
Meter ID	93A	pH25		RD12		EC10		DR3800						a.m. Feeding RG
														p.m. Feeding KG
Control	19.5		7.57		7.8		24.5		10	10	10	9	10	Count Date: 11.28.19
1	19.6		7.64		7.6		24.5		11	9	10	10	10	Count Time: 0936
10	19.6		7.70		7.6		24.6		10	10	10	10	10	Count Signoff: ARF
50	19.6		7.73		7.5		24.5		10	9	10	10	10	Old WQ:
100	19.6		7.84		7.4		24.6		10	10	10	10	10	a.m. Feeding KL
Meter ID	93A		pH24		RD12		EC10							p.m. Feeding TK
Control	19.8		7.59		6.6		25.2		10	10	10	9	10	Count Date: 11/29/19
1	19.8		7.57		7.0		25.5		11	9	10	10	10	Count Time: 1135
10	19.7		7.66		6.9		25.6		10	10	10	10	10	Count Signoff: JL
50	19.7		7.66		6.9		25.6		10	9	10	10	10	Old WQ: SAT
100	19.7		7.78		6.7		26.0		10	10	10	10	10	a.m. Feeding TF
Meter ID	93A		pH25		RD13		EC13							p.m. Feeding TF
Control	19.7		7.67		7.0		26.1		10	10	10	9	10	Count Date: 11/30/19
1	19.8		7.60		6.7		26.2		11	9	10	10	10	Count Time: 1051
10	19.8		7.57		6.6		26.3		10	10	10	10	10	Count Signoff: TF
50	19.8		7.66		6.4		26.5		10	9	10	10	10	Old WQ: MB
100	19.7		7.64		6.6		26.0		10	10	10	10	10	a.m. Feeding JL
Meter ID	35A		pH24		RD12		EC12							p.m. Feeding RG
Control	20.2		7.61		6.5		26.9		10	10	9	9	10	Termination Date: 12/1/19
1	19.9		7.78		7.3		27.0		11	9	10	10	10	Termination Time: 1417
10	19.8		7.74		6.9		27.4		10	10	10	10	10	Termination Signoff: JK
50	20.0		7.71		6.9		27.2		10	9	10	10	10	Old WQ: KS
100	19.8		7.81		6.4		27.8		9	10	10	10	10	a.m. Feeding KD
Meter ID	112A		pH15		RD10		EC10							

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	04-9760-5057	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 15:15	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 13:22	**Species:**	Americamysis bahia	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:** 5

Sample ID:	12-9247-3554	**Code:**	2019-DU2a-COMP	**Project:**	30945
Sample Date:	28 Oct-19 13:15	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 14:30	**CAS (PC):**		**Station:**	2019-DU2a-COMP
Sample Age:	30d 2h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
11-5284-2719	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	n/a	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	1.000	1.000	1.000
1		1.000	1.000	1.000	1.000	1.000
10		1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	10/10	10/10	10/10
1		10/10	10/10	10/10	10/10	10/10
10		10/10	10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	11-5284-2719	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 11:31	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Angular (Corrected)	C > T	100	>100	n/a	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		10	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		50	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		100	27.5	17	1	8	CDF	0.8000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1.421E-14	3.553E-15	4	65500	<1.0E-37	Significant Effect
Error	0	0	20			
Total	1.421E-14		24			

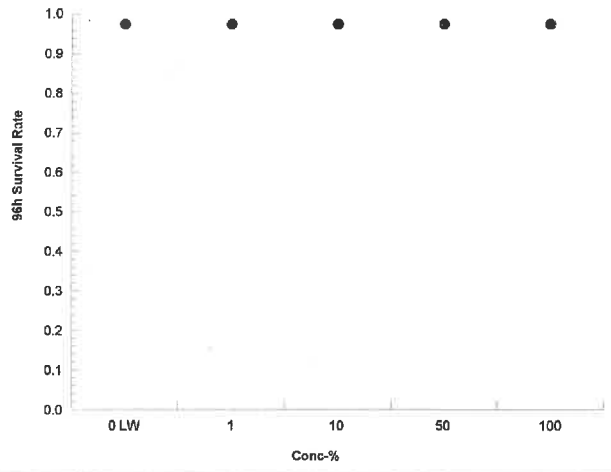
96h Survival Rate Summary

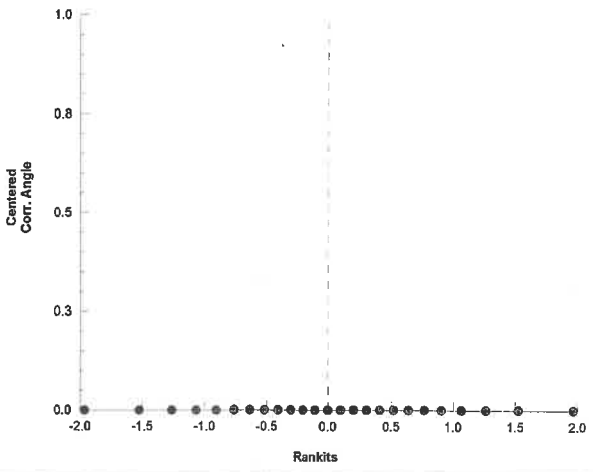
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
50		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
100		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
1		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
10		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
50		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
100		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU2a-Comp
Test ID#: 85947 Project # 30945
Test Date: 11/27/19 Randomization: 5.5.3

Organism Log #: 11861 Age: 5d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.8	7.83		7.7		24.4			10	10	10	10	10	Test Solution Prep: MB
1	19.7	7.82		7.8		24.4			10	10	10	10	10	New WQ: MB
10	19.7	7.85		7.9		24.4			10	10	10	10	10	Initiation Date: 11/27/19
50	19.9	7.94		7.9		24.7			10	10	10	10	10	Initiation Time: 1515
100	20.1	8.03		7.8		25.3		5.10	10	10	10	10	10	Initiation Signoff: KC
Meter ID	59A	pH25		RO1		EC10		DR3800						a.m. Feeding RO
														p.m. Feeding KC
Control	19.5		7.66		6.8		24.5		10	10	10	10	10	Count Date: 11/28/19
1	19.4		7.66		6.9		24.9		10	10	10	10	10	Count Time: 0901
10	19.3		7.68		7.0		24.9		10	10	10	10	10	Count Signoff: RO
50	19.4		7.69		6.6		25.3		10	10	10	10	10	Old WQ: SDB
100	19.4		7.79		6.5		25.7		10	10	10	10	10	a.m. Feeding KC
Meter ID	105A		pH25		RO13		EC13							p.m. Feeding TK
Control	19.7		7.55		6.2		25.6		10	10	10	10	10	Count Date: 11/29/19
1	19.6		7.58		6.2		25.7		10	10	10	10	10	Count Time: 1215
10	19.8		7.62		6.2		25.6		10	10	10	10	10	Count Signoff: TF
50	19.6		7.77		6.4		26.0		10	10	10	10	10	Old WQ: BV
100	19.6		7.95		6.6		26.8		10	10	10	10	10	a.m. Feeding TF
Meter ID	99A		pH25		RO13		EC13							p.m. Feeding
Control	19.7		7.69		7.2		26.5		10	10	10	10	10	Count Date: 11/30/19
1	19.8		7.66		7.0		26.3		10	10	10	10	10	Count Time: 1031
10	19.9		7.65		6.6		26.5		10	10	10	10	10	Count Signoff: TF
50	19.9		7.75		6.5		26.8		10	10	10	10	10	Old WQ: MB
100	20.0		7.84		6.5		27.5		10	10	10	10	10	a.m. Feeding JL
Meter ID	35A		pH24		RO12		EC12							p.m. Feeding RO
Control	20.1		7.66		6.6		26.6		10	10	10	10	10	Termination Date: 12-1-19
1	20.1		7.68		6.8		26.7		10	10	10	10	10	Termination Time: 1322
10	20.1		7.80		7.1		27.2		10	10	10	10	10	Termination Signoff: JL
50	20.0		7.72		6.6		27.4		10	10	10	10	10	Old WQ: AS
100	20.1		7.86		6.1		28.3		10	10	10	10	10	a.m. Feeding KC
Meter ID	93A		pH25		RO10		EC10							

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	14-1797-3152	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 14:15	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 12:39	**Species:**	Americamysis bahia	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:** 5

Sample ID:	04-7534-1241	**Code:**	20119-DU2b-COMP	**Project:**	30945
Sample Date:	31 Oct-19 10:43	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 17:00	**CAS (PC):**		**Station:**	2019-DU2b-COMP
Sample Age:	27d 4h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
14-6358-9154	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	3.7%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.900	1.000	1.000	1.000	1.000
1		1.000	1.000	1.000	1.000	1.000
10		1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	9/10	10/10	10/10	10/10	10/10
1		10/10	10/10	11/11	10/10	10/10
10		8/8	10/10	10/10	10/10	10/10
50		10/10	10/10	9/9	8/8	10/10
100		10/10	10/10	10/10	10/10	10/10

Analyst: QA:

CETIS Analytical Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	14-6358-9154	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:43	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	3.70%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	30	17	1	8	CDF	0.9275	Non-Significant Effect
		10	30	17	1	8	CDF	0.9275	Non-Significant Effect
		50	30	17	1	8	CDF	0.9275	Non-Significant Effect
		100	30	17	1	8	CDF	0.9275	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.003914	0.0009785	4	0.895	0.4851	Non-Significant Effect
Error	0.0218597	0.001093	20			
Total	0.0257737		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	6.07	4.43	0.0023	Unequal Variances
	Mod Levene Equality of Variance Test	0.839	4.89	0.5216	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.564	0.888	1.7E-07	Non-Normal Distribution

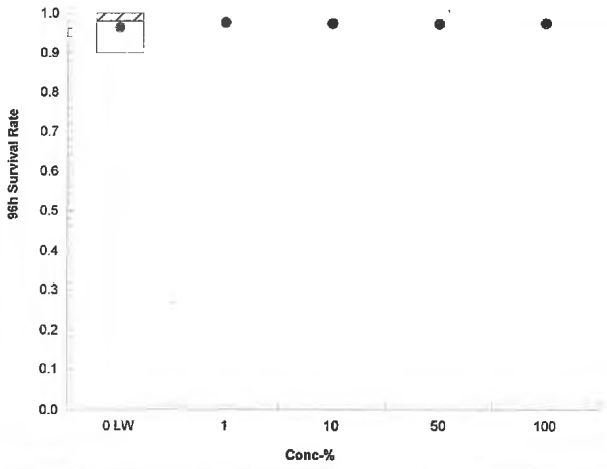
96h Survival Rate Summary

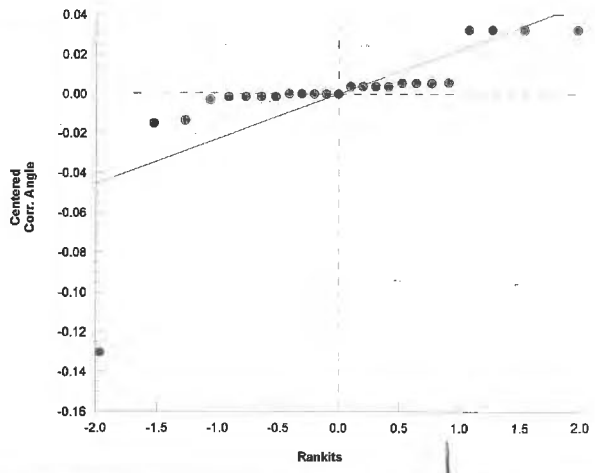
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%
10		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%
50		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%
100		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
1		5	1.41	1.41	1.42	1.41	1.41	1.42	0.00149	0.24%	-2.47%
10		5	1.41	1.4	1.42	1.41	1.39	1.41	0.00379	0.60%	-2.09%
50		5	1.41	1.4	1.42	1.41	1.39	1.41	0.00375	0.60%	-1.96%
100		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU2b-Comp
Test ID#: 85948 Project # 30945
Test Date: 11/27/19 Randomization: 5.5.5

Organism Log #: 11861 Age: 5d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.1	7.82		7.9		24.2			10	10	10	10	10	Test Solution Prep: KG
1	19.1	7.82		7.9		24.4			10	10	~~10~~ 11 KZ 11/29/19	10	10	New WQ: KP
10	19.2	7.82		7.9		24.4			10	10	10	10	10	Initiation Date: 11/27/19
50	19.1	7.89		7.9		24.3			10	10	10	10	10	Initiation Time: 1415
100	19.1	7.99		7.5		24.3		8.28	10	10	10	10	10	Initiation Signoff: KZ
Meter ID	59A	pH25		RD12		EC10		DR3800						a.m. Feeding RG
														p.m. Feeding KG
Control	18.7		7.64		6.3		25.4		10	10	10	10	10	Count Date: 11/28/19
1	18.6		7.74		6.8		25.1		10	10	11	10	10	Count Time: 0753
10	18.9		7.77		7.0		25.6		10	10	10	10	10	Count Signoff: RG
50	18.7		7.79		6.9		25.2		10	10	10	10	10	Old WQ: RG
100	18.7		7.87		6.5		25.2		10	10	10	10	10	a.m. Feeding KZ
Meter ID	105A		pH26		RD10		EC12							p.m. Feeding TK
Control	19.2		7.74		7.3		25.2		10	10	10	10	10	Count Date: 11/29/19
1	19.3		7.70		6.9		25.4		10	10	~~10~~ 11 11/29/19	10	10	Count Time: 1100
10	19.3		7.71		6.8		25.8		9*	10	10	10	10	Count Signoff: JL
50	19.3		7.85		6.9		26.0		10	10	10	8*	10	Old WQ: SAT
100	19.3		7.93		6.9		25.9		10	10	10	10	10	a.m. Feeding TF
Meter ID	93A		pH25		RD13		EC13							p.m. Feeding TF
Control	19.4		7.74		7.6		26.7		10	10	10	10	10	Count Date: 11/30/19
1	19.3		7.76		7.5		27.0		10	10	11	10	10	Count Time: 0909
10	19.3		7.81		7.3		27.0		9	10	10	10	10	Count Signoff: TF
50	19.3		7.84		7.2		27.1		10	10	10	8	10	Old WQ: MB
100	19.2		7.91		7.2		26.8		10	10	10	10	10	a.m. Feeding JL
Meter ID	35A		pH24		RD12		EC12							p.m. Feeding RG
Control	19.6		7.71		7.1		~~28.8~~		9	10	10	10	10	Termination Date: 12-1-19
1	19.6		7.80		7.2		29.0		10	10	11	10	10	Termination Time: 1239
10	19.5		7.84		7.3		28.9		8*	10	10	10	10	Termination Signoff: JL
50	19.5		7.78		7.1		28.5		10	10	9*	8	10	Old WQ: AS
100	19.5		7.86		7.1		28.2		10	10	10	10	10	a.m. Feeding KG
Meter ID	93A		pH15		RD10		EC10							

*missing organisms were dried to side of beaker above waterline. Remove from stats analysis.

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	12-0144-3336	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 13:45	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 11:45	**Species:**	Americamysis bahia	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:** 5

Sample ID:	08-1771-5390	**Code:**	2019-DU3-COMP	**Project:**	30945	
Sample Date:	30 Oct-19 09:20	**Material:**	Elutriate	**Source:**	Concord MOTCO	
Receipt Date:	05 Nov-19 12:45	**CAS (PC):**		**Station:**	2019-DU3-COMP	
Sample Age:	28d 4h (0 °C)	**Client:**	USACE			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
10-9130-3151	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	5.39%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	0.900	1.000	1.000
1		0.900	1.000	1.000	1.000	1.000
10		1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	0.900

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	9/10	10/10	10/10
1		9/10	10/10	10/10	10/10	10/10
10		10/10	10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	9/9	9/10

CETIS Analytical Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID: 10-9130-3151 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 11:42 **Analysis:** Nonparametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	5.39%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	27.5	17	2	8	CDF	0.8000	Non-Significant Effect
		10	30	17	1	8	CDF	0.9275	Non-Significant Effect
		50	30	17	1	8	CDF	0.9275	Non-Significant Effect
		100	27.5	17	2	8	CDF	0.8000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0066123	0.0016531	4	0.523	0.7201	Non-Significant Effect
Error	0.0632375	0.0031619	20			
Total	0.0698497		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	3.55	4.43	0.0242	Equal Variances
	Mod Levene Equality of Variance Test	0.524	4.89	0.7195	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.617	0.888	6.7E-07	Non-Normal Distribution

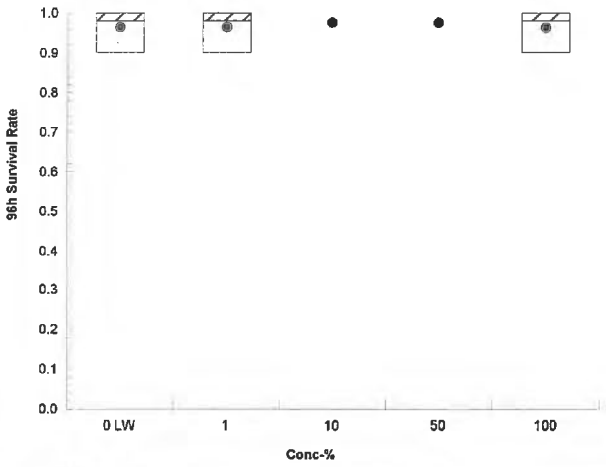
96h Survival Rate Summary

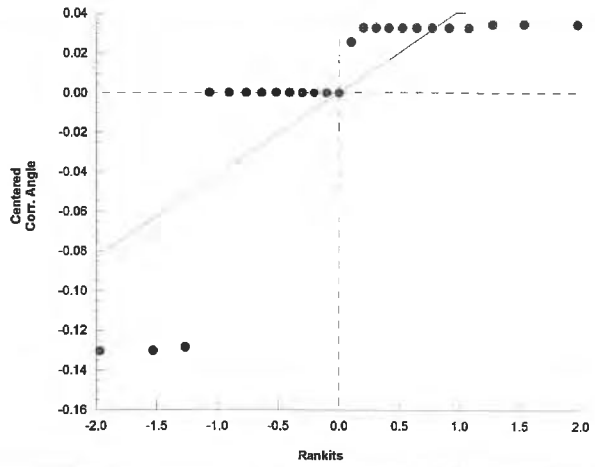
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
1		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
10		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%
50		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%
100		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
1		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
10		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%
50		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%
100		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0322	5.23%	0.13%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU3-Comp
Test ID#: 85949 Project # 30945
Test Date: 11/27/19 Randomization: 5.5.2

Organism Log #: 1861 Age: 5d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.4	7.91		7.6		24.0			10	10	10	10	10	Test Solution Prep: KO
1	19.4	7.91		7.8		24.6 ~~23.7~~			10	10	10	10	10	New WQ: KB
10	19.3	7.93		7.7		24.3			10	10	10	10	10	Initiation Date: 11/27/19
50	19.2	7.96		7.3		24.4			10	10	10	10	10	Initiation Time: 1345
100	19.6	7.99		6.4		24.4		5.20	10	10	10	10	10	Initiation Signoff: TK
Meter ID	97A	PH 24		RD13		EC13		DR3900						a.m. Feeding RO
														p.m. Feeding KO
Control	18.7		7.66		7.1		24.9		10	10	10	10	10	Count Date: 11/28/19
1	18.7		7.72		7.2		24.7		10	10	10	10	10	Count Time: 0829
10	18.6		7.72		7.1		25.2		10	10	10	10	10	Count Signoff: RO
50	18.6		7.76		6.8		25.1		10	10	10	10	10	Old WQ: ID
100	18.6		7.84		6.7		24.9		10	10	10	9*	10	a.m. Feeding KL
Meter ID	105A		PH26		RD10		EC12							p.m. Feeding TK
Control	19.2		7.76		6.4		25.1		10	10	~~9~~ 10	10	10	Count Date: 11/29/19
1	19.1		7.68		6.3		24.9		9	10	10	10	10	Count Time: 0941
10	18.9		7.72		6.4		25.0		10	10	10	10	10	Count Signoff: RO
50	18.9		7.82		6.5		24.9		10	10	10	10	10	Old WQ: SJTS
100	19.0		7.91		6.2		25.0		10	10	10	9	9	a.m. Feeding TF
Meter ID	105A		PH26		RD10		EC10							p.m. Feeding TF
Control	19.4		7.65		7.3		25.9		10	10	9	10	10	Count Date: 11/30/19
1	19.4		7.65		7.1		26.0		9	10	10	10	10	Count Time: 0956
10	19.4		7.71		6.8		26.1		10	10	10	10	10	Count Signoff: TF
50	19.4		7.80		6.9		26.2		10	10	10	10	10	Old WQ: NLB
100	19.5		7.88		6.8		26.4		10	10	10	9	9	a.m. Feeding JL
Meter ID	35A		PH24		RD12		EC12							p.m. Feeding RO
Control	19.4		7.69		6.8		27.1		10	10	9	10	10	Termination Date: 12/1/19
1	19.3		7.53		6.2		27.2		9	10	10	10	10	Termination Time: 1145
10	19.4		7.72		7.0		27.6		10	10	10	10	10	Termination Signoff: TK
50	19.5		7.65		6.3		27.1		10	10	10	10	10	Old WQ: KB
100	19.2		7.87		7.0		27.2		10	10	10	9	9	a.m. Feeding KO
Meter ID	105A		PH15		RD10		EC10							

* mysid dried to side of beaker above waterline. Remove from statistical analysis

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	14-5993-1994	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 15:15	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 13:32	**Species:**	Americamysis bahia	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:** 5

Sample ID:	15-6493-0799	**Code:**	2019-DU4-COMP	**Project:**	30945
Sample Date:	30 Oct-19 14:27	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 15:00	**CAS (PC):**		**Station:**	2019-DU4-COMP
Sample Age:	28d 1h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
05-0355-7150	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	4.14%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	1.000	1.000	1.000
1		1.000	1.000	0.900	1.000	1.000
10		1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	11/11	10/10	10/10
1		10/10	10/10	9/10	10/10	10/10
10		10/10	10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	05-0355-7150	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 11:47	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	4.14%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	25	17	1	8	CDF	0.5912	Non-Significant Effect
		10	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		50	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		100	27.5	17	1	8	CDF	0.8000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0043555	0.0010889	4	1.02	0.4196	Non-Significant Effect
Error	0.0212918	0.0010646	20			
Total	0.0256473		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	6.95	4.43	0.0011	Unequal Variances
	Mod Levene Equality of Variance Test	0.977	4.89	0.4491	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.469	0.888	1.9E-08	Non-Normal Distribution

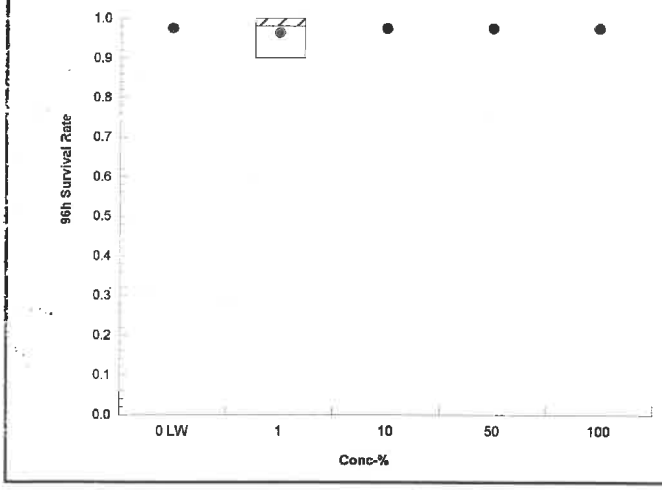
96h Survival Rate Summary

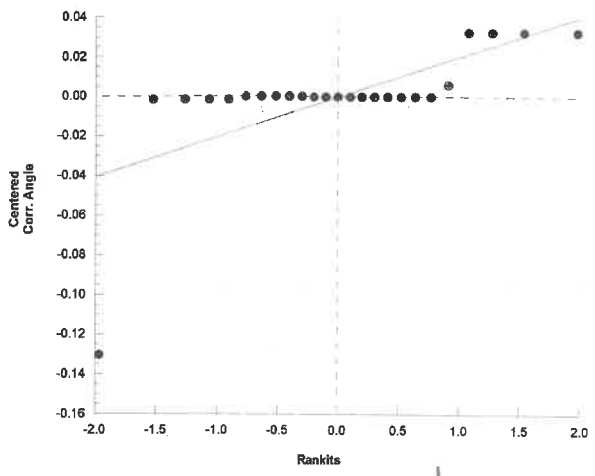
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
1		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
10		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
50		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
100		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.42	1.41	1.41	1.42	0.00149	0.24%	0.00%
1		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	2.41%
10		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.11%
50		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.11%
100		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.11%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU4-Comp
Test ID#: 85950 Project # 30945
Test Date: 11/27/19 Randomization: 5.5.1

Organism Log #: 11861 Age: 5 days
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. old	Salinity (ppt) new	Salinity old	NH_3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.2	7.85		7.6		24.1			10	10	10	10	10	Test Solution Prep: MB
1	19.1	7.91		7.6		24.4			10	10	10	10	10	New WQ: CD
10	19.1	7.94		7.6		24.4			10	10	10	10	10	Initiation Date: 11/27/19
50	19.4	8.02		7.6		24.4			10	10	10	10	10	Initiation Time: 1515
100	19.3	8.12		7.5		24.5		3.87	10	10	10	10	10	Initiation Signoff:
Meter ID	97A	PH24		RD13		EC13		DR3800						a.m. Feeding RG
														p.m. Feeding KG
Control	19.2		7.72		7.3		25.1		10	10	10	10	10	Count Date: 11/28/19
1	19.2		7.72		7.2		25.1		10	10	10	10	10	Count Time: 0834
10	19.2		7.74		7.2		25.1		10	10	10	10	10	Count Signoff: KG
50	19.2		7.79		7.1		25.2		10	10	10	10	10	Old WQ: RG
100	19.3		7.86		7.2		25.2		10	10	10	10	10	a.m. Feeding KC
Meter ID	48A		PH26		RD10		EC12							p.m. Feeding TK
Control	19.5		7.66		7.0		24.8		10	10	11	10	10	Count Date: 11/29/19
1	19.4		7.58		6.6		25.1		10	10	10	10	10	Count Time: 1010
10	19.4		7.69		6.9		24.9		10	10	10	10	10	Count Signoff: RG
50	19.3		7.79		7.0		24.8		10	10	10	10	10	Old WQ: SSS
100	19.4		7.92		7.1		25.1		10	10	10	10	10	a.m. Feeding TF
Meter ID	105A		PH26		RD10		EC10							p.m. Feeding TF
Control	19.5		7.67		7.4		26.4		10	10	11	10	10	Count Date: 11/30/19
1	19.5		7.67		7.3		25.8		10	10	10	10	10	Count Time: 0934
10	19.5		7.80		7.4		25.9		10	10	10	10	10	Count Signoff: TF
50	19.5		7.81		7.4		25.9		10	10	10	10	10	Old WQ: MB
100	19.6		7.88		7.2		25.8		10	10	10	10	10	a.m. Feeding JL
Meter ID	35A		PH24		RD12		EC12							p.m. Feeding RG
Control	19.6		7.57		6.5		26.3		10	10	11	10	10	Termination Date: 12-1-19
1	19.6		7.64		6.8		26.5		10	10	9	10	10	Termination Time: 1332
10	19.6		7.61		6.6		26.4		10	10	10	10	10	Termination Signoff: JL
50	19.6		7.81		6.7		26.6		10	10	10	10	10	Old WQ: KG
100	19.7		7.81		6.4		26.8		10	10	10	10	10	a.m. Feeding KG
Meter ID	93A		PH 15		RD10		EC10							

Appendix O

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Mysid, *Americamysis bahia*

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	17-9269-7031	**Test Type:**	Survival (96h)	**Analyst:**	Jessica Okutsu	
Start Date:	27 Nov-19 17:30	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 15:59	**Species:**	Americamysis bahia	**Brine:**	Crystal Sea	
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:** 5

Sample ID:	17-9159-3087	**Code:**	KCl	**Project:**	31065	
Sample Date:	27 Nov-19 17:30	**Material:**	Potassium chloride	**Source:**	Reference Toxicant	
Receipt Date:	27 Nov-19 17:30	**CAS (PC):**		**Station:**	In House	
Sample Age:	n/a (20 °C)	**Client:**	Reference Toxicant			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
16-7368-1105	96h Survival Rate	Steel Many-One Rank Sum Test		0.5	>0.5	n/a		4.96%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	g/L	95% LCL	95% UCL	TU	S
05-9350-7259	96h Survival Rate	Spearman-Kärber		EC50	0.695	0.672	0.719		1

96h Survival Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.125		4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.25		4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.5		4	0.975	0.895	1.000	0.900	1.000	0.025	0.050	5.13%	2.50%
1		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
2		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

96h Survival Rate Detail

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	1.000	1.000	1.000	1.000
0.125		1.000	1.000	1.000	1.000
0.25		1.000	1.000	1.000	1.000
0.5		1.000	1.000	1.000	0.900
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000

96h Survival Rate Binomials

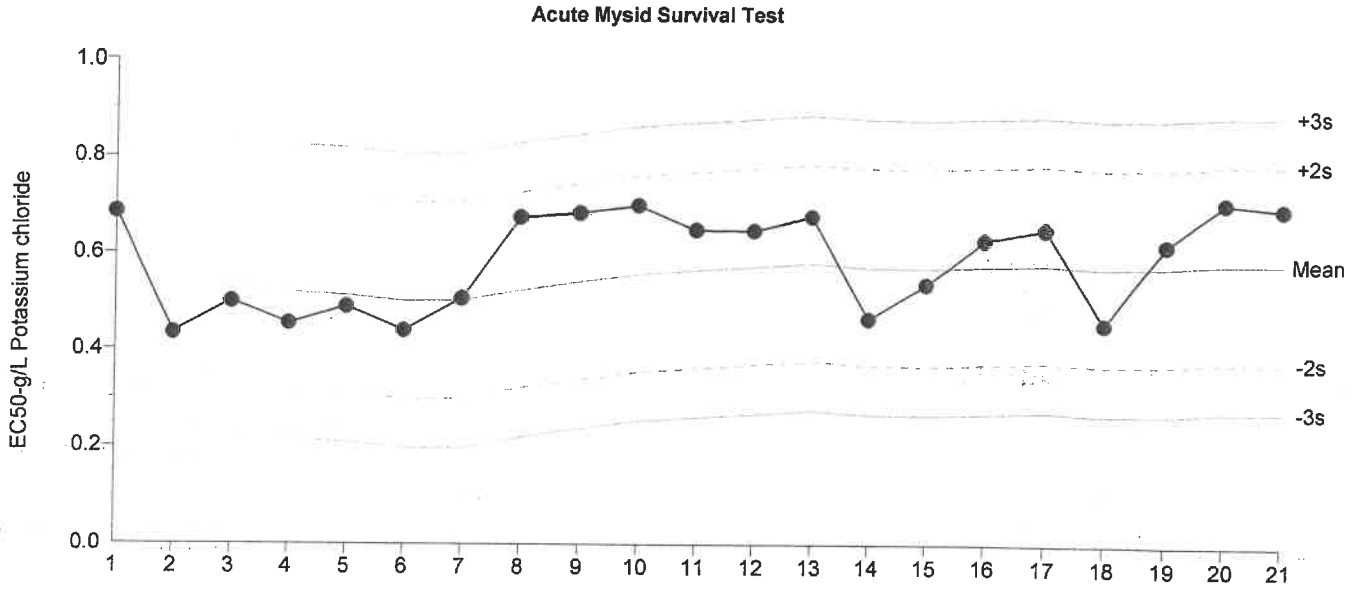
Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	10/10	10/10	10/10	10/10
0.125		10/10	10/10	10/10	10/10
0.25		10/10	10/10	10/10	10/10
0.5		10/10	10/10	10/10	9/10
1		0/10	0/10	0/10	0/10
2		0/10	0/10	0/10	0/10

CETIS QC Plot

Report Date: 03 Dec-19 16:55 (1 of 1)

Acute Mysid Survival Test — **Pacific EcoRisk**

Test Type:	Survival (96h)	**Organism:**	Americamysis bahia (Mysid)	**Material:**	Potassium chloride
Protocol:	EPA-821-R-02-012 (2002)	**Endpoint:**	96h Survival Rate	**Source:**	Reference Toxicant-REF



Mean:	0.5798	**Count:**	20	**-2s Warning Limit:**	0.377	**-3s Action Limit:**	0.2756
Sigma:	0.1014	**CV:**	17.50%	**+2s Warning Limit:**	0.7826	**+3s Action Limit:**	0.884

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Jun	7	16:10	0.6852	0.1054	1.039			15-6360-9527	07-5918-4208
2			14	15:49	0.4344	-0.1454	-1.434			11-3799-9499	00-1229-9201
3			21	14:15	0.5	-0.0798	-0.787			17-0121-0040	10-7020-7683
4			28	15:43	0.4545	-0.1253	-1.236			20-7509-4266	21-3077-9710
5		Jul	19	15:50	0.4892	-0.09065	-0.894			19-5821-7617	08-8249-4611
6			26	14:30	0.4396	-0.1402	-1.382			09-7942-2191	00-6565-0616
7		Aug	2	16:20	0.506	-0.07379	-0.7277			12-9522-7258	02-5099-1901
8			23	15:30	0.6741	0.0943	0.93			07-6556-8425	13-6413-7538
9		Sep	27	16:15	0.683	0.1032	1.018			03-7544-6042	18-5737-3846
10		Oct	11	16:30	0.6989	0.1191	1.175			16-5205-7884	09-9908-9747
11		Nov	1	14:03	0.6484	0.06862	0.6767			07-2563-8011	09-6674-1373
12			9	15:39	0.647	0.06718	0.6625			07-1945-7433	13-1140-8532
13			14	14:47	0.6758	0.09595	0.9463			08-9266-3168	10-7839-8379
14	2019	Feb	12	15:35	0.4648	-0.115	-1.134			13-7320-9678	20-3578-7781
15		Apr	4	13:25	0.5363	-0.04354	-0.4294			18-3591-7234	03-9059-4419
16			11	11:24	0.6263	0.04653	0.4589			01-0028-0845	06-6529-7297
17		May	2	12:34	0.6499	0.0701	0.6914			06-5631-1884	00-2864-5404
18		Jun	13	14:15	0.4549	-0.1249	-1.232			11-7168-6657	20-5864-9408
19		Jul	3	15:40	0.6198	0.04003	0.3947			19-2938-8622	21-1963-3362
20		Nov	21	16:15	0.7071	0.1273	1.255			14-8046-3601	17-1219-2534
21			27	17:30	0.695	0.1152	1.136			12-4980-9996	05-9350-7259

96 Hour Acute *Americamysis bahia* Reference Toxicant Test

Client: **Reference Toxicant** Organism Log #: 11861 Age: 5 days

Test Material: Potassium Chloride Organism Supplier: Aquatic Indicators

Test ID#: ~~85978~~ EC414 Project # ~~309571~~ 310645

Test Date: 11/27/19 Randomization: 4.6.2 Control/Diluent: DI + Crystal Sea @ 25 ppt

Control Water Batch: 1378

Treatment (g/L KCl)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	# Live Organisms Rep A	Rep B	Rep C	Rep D	SIGN-OFF
Control	20.0	7.78		7.7		24.2		10	10	10	10	Test Solution Prep: CD
0.125	20.1	7.86		7.7		24.6		10	10	10	10	New WQ: NL
0.25	19.9	7.87		7.8		24.8		10	10	10	10	Initiation Date: 11/27/19
0.5	20.0	7.88		8.0		25.1		10	10	10	10	Initiation Time: 1736
1	19.9	7.88		8.1		25.6		10	10	10	10	Initiation Signoff: CD
2	20.0	7.89		8.1		26.8		10	10	10	10	RT Batch #: 4
Meter ID	112A	PH26		RD11		EC14						a.m. Feeding Signoff: RD
												p.m. Feeding Signoff: NL
Control	18.8		7.73		7.8		24.7	10	10	10	10	Count Date: 11/28/19
0.125	18.9		7.81		7.8		24.9	10	10	10	10	Count Time: 0837
0.25	19.1		7.81		7.8		24.9	10	10	10	10	Count Signoff: KY
0.5	19.0		7.83		7.9		25.3	10	10	10	10	Old WQ: YU
1	19.3		7.83		7.9		26.0	0	0	0	0	a.m. Feeding Signoff: KL
2	19.0		7.80		7.9		27.0	0	0	0	0	p.m. Feeding Signoff: TK
Meter ID	93A		PH24		RD12		EC10					
Control	19.0	7.97	7.72	8.0	7.0	24.0	27.3	10	10	10	10	Test Solution Prep: SL
0.125	19.1	7.97	7.70	8.1	7.2	24.2	27.9	10	10	10	10	New WQ: SDS
0.25	19.4	7.98	7.69	8.1	6.9	24.4	27.8	10	10	10	10	Renewal Date: 11/29/19
0.5	19.0	7.97	7.70	8.1	6.9	24.6	27.7	10	10	10	~~10~~ 9	Renewal Time: 1103
1	—	—	—	—	—	—	—	—	—	—	—	Renewal Signoff: TF
2	—	—	—	—	—	—	—	—	—	—	—	Old WQ: SAT
Meter ID	35A	PH26	PH25	RD10	RD13	EC10	EC13					a.m. Feeding Signoff: TF
												p.m. Feeding Signoff: TF
												RT Batch #: 4
Control	19.2		7.64		7.0		26.2	10	10	10	10	Count Date: 11/29/19
0.125	19.1		7.67		7.0		26.4	10	10	10	10	Count Time: 1117
0.25	19.3		7.69		7.1		26.5	10	10	10	10	Count Signoff: TF
0.5	19.3		7.71		7.2		26.8	10	10	10	9	Old WQ: MB
1	—				—		—	—	—	—	—	a.m. Feeding Signoff: SL
2	—		—		—		—	—	—	—	—	p.m. Feeding Signoff: TF
Meter ID	35A		PH24		RD12		EC12					
Control	19.0		7.93		7.4		28.5	10	10	10	10	Termination Date: 12/1/19
0.125	19.0		7.87		7.1		28.8	10	10	10	10	Termination Time: 1559
0.25	19.1		7.93		7.1		28.5	10	10	10	10	Termination Signoff: JL
0.5	19.1		7.98		7.3		29.0	10	10	10	9	Old WQ: BY
1	—		—		—		—	—	—	—	—	a.m. Feeding Signoff: KD
2	—		—		—		—	—	—	—	—	
Meter ID	93A		PH25		RD11		EC14					

Appendix P

Test Data and Summary of Statistics for the Toxicity Evaluation of the Military Ocean Terminal Concord (MOTCO) Sediment Elutriates with the Inland Silverside *(Menidia beryllina)*

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Batch ID:	10-9133-6236	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley		
Start Date:	27 Nov-19 14:15	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water		
Ending Date:	01 Dec-19 12:50	**Species:**	Menidia beryllina	**Brine:**	Not Applicable		
Test Length:	95h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Indicators, FL	**Age:**	13

Sample ID:	02-7618-8216	**Code:**	2019-DU1-Comp	**Project:**	30945
Sample Date:	30 Oct-19 08:10	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 16:00	**CAS (PC):**		**Station:**	2019-DU1-Comp
Sample Age:	28d 6h (0 °C)	**Client:**	USACE		

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
19-9934-6133	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	Site Water passed 96h survival rate	1

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
17-0886-8185	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	6.59%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	SW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
10		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	4.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	1.000	1.000	1.000
0	SW	1.000	1.000	1.000	1.000	1.000
1		1.000	1.000	0.900	1.000	1.000
10		1.000	1.000	1.000	1.000	1.000
50		1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	0.800

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	10/10	10/10	10/10
0	SW	10/10	10/10	10/10	10/10	10/10
1		10/10	10/10	9/10	10/10	10/10
10		10/10	10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	8/10

Acute Fish Survival Test — **Pacific EcoRisk**

Analysis ID: 17-0886-8185 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 13:14 **Analysis:** Nonparametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	6.59%

Steel Many-One Rank Sum Test

Control vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr	1	25	17	1	8	CDF	0.5912	Non-Significant Effect
	10	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
	50	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
	100	25	17	1	8	CDF	0.5912	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0151458	0.0037865	4	0.792	0.5440	Non-Significant Effect
Error	0.0956028	0.0047801	20			
Total	0.110749		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	5.63	4.43	0.0033	Unequal Variances
	Mod Levene Equality of Variance Test	0.792	4.89	0.5483	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.609	0.888	5.5E-07	Non-Normal Distribution

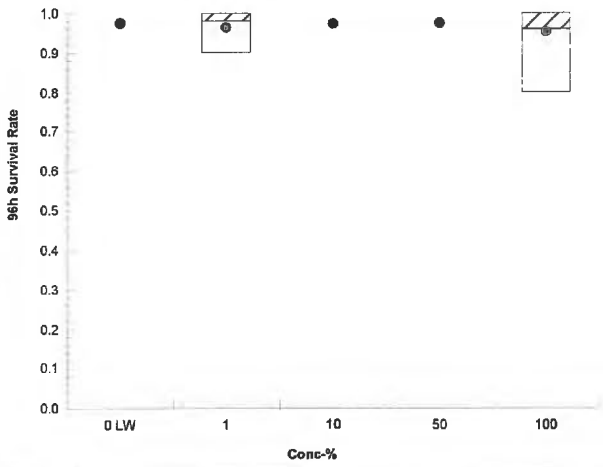
96h Survival Rate Summary

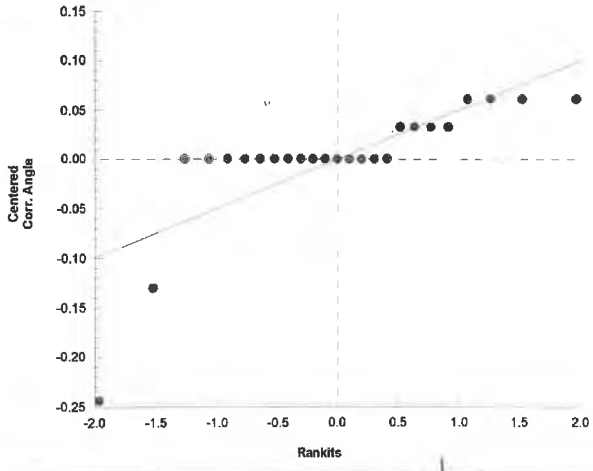
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
1		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
10		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
50		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
100		5	0.960	0.849	1.000	1.000	0.800	1.000	0.040	9.32%	4.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
1		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	2.31%
10		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
50		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
100		5	1.35	1.18	1.52	1.41	1.11	1.41	0.061	10.09%	4.32%

Graphics





Acute Fish Survival Test — **Pacific EcoRisk**

Analysis ID:	19-9934-6133	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 13:15	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result
Angular (Corrected)	C > T	Site Water passed 96h survival rate

Wilcoxon Rank Sum Two-Sample Test

Control	vs	Control II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		Site Water	27.5	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	65500	<1.0E-37	Significant Effect
Error	0	0	8			
Total	0		9			

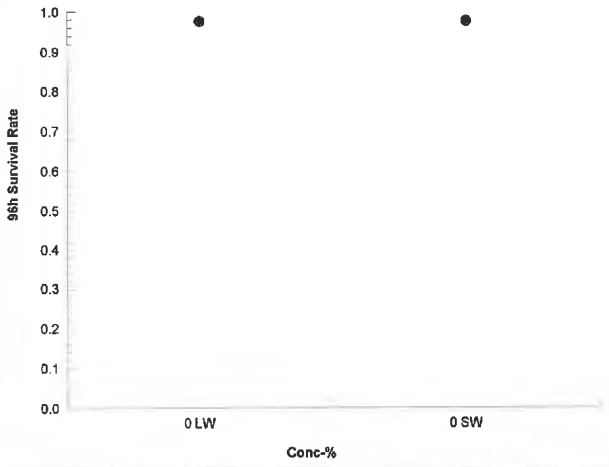
96h Survival Rate Summary

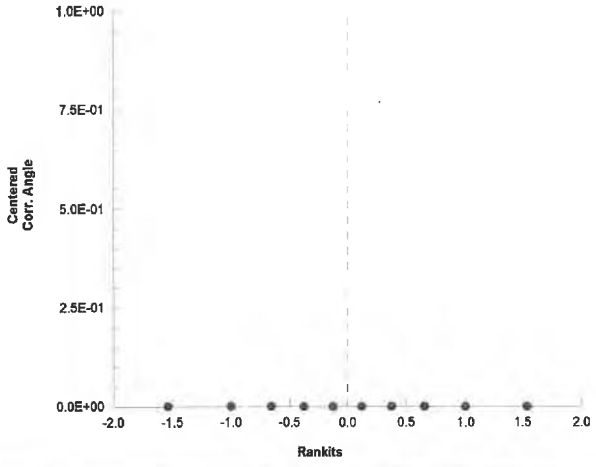
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
0	SW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
0	SW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





96 Hour Acute Inland Silverside (*M. beryllina*) Toxicity Test

Client: USACE: MOTCO
Test Material: Site Water
Test ID#: - Project # 30945
Test Date: 11/27/19 Randomization: 5.7.1

Organism Log #: 11858 Age: 13 days
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®
Sample ID: 54267

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Lab Control	19.9	7.89		7.9		24.5		10	10	10	10	10	Test Solution Prep: MB
Site Water	19.8	8.07		9.4		24.9		10	10	10	10	10	New WQ: KP
													Initiation Date: 11/27/19
													Initiation Time: 1413
													Initiation Signoff: TK
													a.m. Feeding Signoff: RG
Meter ID	88A	pH25		RD12		EC10							p.m. Feeding Signoff: KG
Lab Control	19.0		7.69		6.3		25.4	10	10	10	10	10	Count Date: 11/28/19
Site Water	19.1		7.65		6.1		25.8	10	10	10	10	10	Count Time: 0809
													Count Signoff: KG
													Old WQ: RG
													a.m. Feeding Signoff: KL
Meter ID	48A		pH26		RD10		EC12						p.m. Feeding Signoff: TK
Lab Control	19.4		7.66		6.9		26.1	10	10	10	10	10	Count Date: 11/29/19
Site Water	19.4		7.90		7.3		26.5	10	10	10	10	10	Count Time: 1006
													Count Signoff:
													Old WQ: SAT
													a.m. Feeding Signoff: TF
Meter ID	99A		pH25		RD13		EC13						p.m. Feeding Signoff: TF
Lab Control	19.5		7.61		7.4		26.2	10	10	10	10	10	Count Date: 11/30/19
Site Water	19.5		7.68		7.3		27.3	10	10	10	10	10	Count Time: 1153
													Count Signoff: JL
													Old WQ: KB
													a.m. Feeding Signoff: JL
Meter ID	93A		pH24		RD12		EC12						p.m. Feeding Signoff: RG
Lab Control	19.5		7.96		7.8		28.5	10	10	10	10	10	Termination Date: 12/1/19
Site Water	19.5		7.91		7.3		28.9	10	10	10	10	10	Termination Time: 1250
													Termination Signoff: JL
													Old WQ: BV
Meter ID	93A		pH25		RD11		EC14						a.m. Feeding Signoff: KG

96 Hour Acute Inland Silverside (*M. beryllina*) Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU1-Comp
Test ID#: 85951 Project # 30945
Test Date: 11/27/19 Randomization: 5.7.1

Organism Log #: 11858 Age: 13 d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea® at 25ppt
Control Water Batch: 1378

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.9	7.89		7.9		24.5			10	10	10	10	10	Test Solution Prep: MB
1	19.9	7.88		7.9		24.5			10	10	10	10	10	New WQ: RP
10	19.9	7.89		7.9		24.5			10	10	10	10	10	Initiation Date: 11/27/19
50	19.9	7.95		7.6		24.5			10	10	10	10	10	Initiation Time: 1415
100	19.9	8.03		6.4		24.5		2.63	10	10	10	10	10	Initiation Signoff: TK
														a.m. Feeding Signoff: RB
Meter ID	98A	PH25		RD12		EC10		DR380U						p.m. Feeding Signoff RB
Control	19.0		7.64		6.3		25.4		10	10	10	10	10	Count Date: 11/28/19
1	19.0		7.64		6.3		25.6		10	10	10	10	10	Count Time: 0809
10	18.9		7.62		6.2		25.5		10	10	10	10	10	Count Signoff: KG
50	18.9		7.60		5.3		25.5		10	10	10	10	10	Old WQ: RB
100	19.0		7.77		5.8		25.6		10	10	10	10	10	a.m. Feeding Signoff: KG
Meter ID	48A		PH26		RD10		EC12							p.m. Feeding Signoff TK
Control	19.4		7.66		6.9		26.1		10	10	10	10	10	Count Date: 11.29.19
1	19.2		7.69		7.0		26.0		10	10	10	10	10	Count Time: 1000
10	19.2		7.77		7.1		26.3		10	10	10	10	10	Count Signoff: TF
50	19.2		7.78		7.1		26.1		10	10	10	10	10	Old WQ: SAT
100	19.2		7.79		7.0		26.1		10	10	10	10	9	a.m. Feeding Signoff: TF
Meter ID	99A		PH25		RD13		EC13							p.m. Feeding Signoff TF
Control	19.5		7.61		7.4		26.2		10	10	10	10	10	Count Date: 11/30/19
1	19.4		7.69		7.5		26.7		10	10	9	10	10	Count Time: 1153
10	19.3		7.70		7.5		27.3		10	10	10	10	10	Count Signoff: JL
50	19.3		7.76		7.5		27.3		10	10	10	10	10	Old WQ: MB
100	19.3		7.85		7.5		28.5		10	10	10	10	9	a.m. Feeding Signoff: JL
Meter ID	93A		PH24		RD12		EC12							p.m. Feeding Signoff RB
Control	19.5		7.96		7.8		28.5		10	10	10	10	10	Termination Date: 12/1/19
1	19.5		7.96		7.4		29.8		10	10	9	10	10	Termination Time: 1250
10	19.4		7.97		7.5		29.0		10	10	10	10	10	Termination Signoff: JL
50	19.4		7.96		7.5		29.0		10	10	10	10	10	Old WQ: RV
100	19.4		7.99		7.5		28.5		10	10	10	10	8	a.m. Feeding Signoff: RB
Meter ID	93A		PH25		RD11		EC14							

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Batch ID:	18-1804-5604	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley		
Start Date:	27 Nov-19 13:25	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water		
Ending Date:	01 Dec-19 11:34	**Species:**	Menidia beryllina	**Brine:**	Not Applicable		
Test Length:	94h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Indicators, FL	**Age:**	13

Sample ID:	15-4202-3195	**Code:**	2019-DU2a-COMP	**Project:**	30945
Sample Date:	28 Oct-19 13:15	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 14:30	**CAS (PC):**		**Station:**	2019-DU2a-COMP
Sample Age:	30d 0h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
18-8373-0543	96h Survival Rate	Dunnett Multiple Comparison Test		100	>100	n/a	1	6.78%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-4.17%
10		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%
50		5	0.940	0.872	1.000	0.900	1.000	0.025	0.055	5.83%	2.08%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	-2.08%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	0.900	1.000	0.900	1.000
1		1.000	1.000	1.000	1.000	1.000
10		1.000	0.900	1.000	1.000	1.000
50		0.900	1.000	0.900	0.900	1.000
100		1.000	0.900	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	9/10	10/10	9/10	10/10
1		10/10	10/10	10/10	10/10	10/10
10		10/10	9/10	10/10	10/10	10/10
50		9/10	10/10	9/10	9/10	10/10
100		10/10	9/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Fish Survival Test — **Pacific EcoRisk**

Analysis ID: 18-8373-0543 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 13:19 **Analysis:** Parametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	6.78%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	-1.41	2.3	0.106	8	CDF	0.9922	Non-Significant Effect
		10	-0.707	2.3	0.106	8	CDF	0.9508	Non-Significant Effect
		50	0.707	2.3	0.106	8	CDF	0.5104	Non-Significant Effect
		100	-0.707	2.3	0.106	8	CDF	0.9508	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0276217	0.0069054	4	1.3	0.3037	Non-Significant Effect
Error	0.106237	0.0053119	20			
Total	0.133859		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	5.71	4.43	0.0031	Unequal Variances
	Mod Levene Equality of Variance Test	0.75	4.89	0.5732	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.903	0.888	0.0215	Normal Distribution

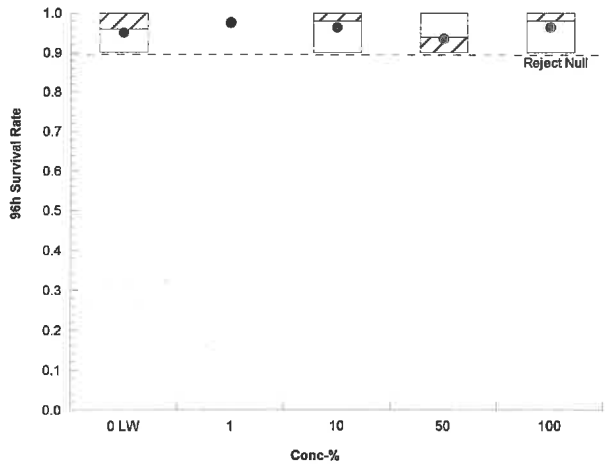
96h Survival Rate Summary

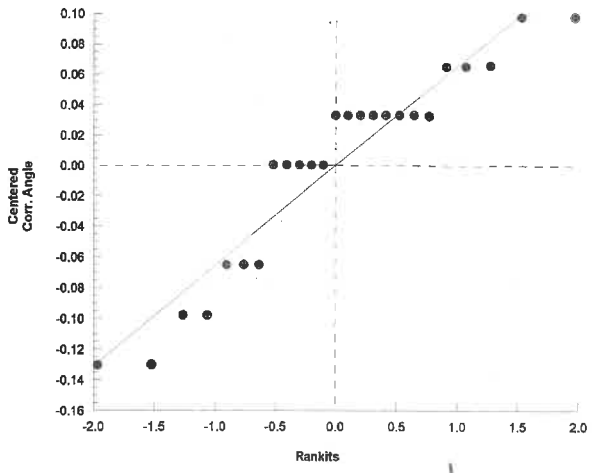
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-4.17%
10		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%
50		5	0.940	0.872	1.000	0.900	0.900	1.000	0.025	5.83%	2.08%
100		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	-2.08%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	0.00%
1		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-4.84%
10		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	-2.42%
50		5	1.31	1.2	1.43	1.25	1.25	1.41	0.0399	6.79%	2.42%
100		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	-2.42%

Graphics





96 Hour Acute Inland Silverside (*M. beryllina*) Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU2a-Comp
Test ID#: 85952 Project # 30945
Test Date: 11/27/19 Randomization: 5·2·3

Organism Log #: 11859 Age: 13 d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea® at 25ppt
Control Water Batch: 1578

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.1	7.83		7.7		24.4			10	10	10	10	10	Test Solution Prep: MB
1	19.2	7.82		7.8		24.4			10	10	10	10	10	New WQ: KP
10	19.3	7.85		7.9		24.4			10	10	10	10	10	Initiation Date: 11/27/19
50	19.2	7.94		7.9		24.7			10	10	10	10	10	Initiation Time: 1325
100	19.1	8.03		7.8		25.3		5.10	10	10	10	10	10	Initiation Signoff: MB
														a.m. Feeding Signoff: RL
Meter ID		PH25		RD12		EC10		DR350						p.m. Feeding Signoff
Control	19.2		7.58		7.3		24.5		10	10	10	10	10	Count Date: 11.28.19
1	19.1		7.66		7.2		24.9		10	10	10	10	10	Count Time: 0945
10	19.0		7.69		7.2		25.2		10	10	10	10	10	Count Signoff: ARF
50	19.0		7.69		6.9		25.3		10	10	10	10	10	Old WQ: KL
100	19.0		7.87		6.9		25.5		10	10	10	10	10	a.m. Feeding Signoff: RL
Meter ID	99A		PH24		RD12		EC10							p.m. Feeding Signoff TK
Control	19.2		7.77		6.8		26.9		10	9	10	9	10	Count Date: 11.29.19
1	19.5		7.76		6.8		26.6		10	10	10	10	10	Count Time: 0924
10	19.4		7.76		6.7		26.3		10	10	10	10	10	Count Signoff: ARF
50	19.5		7.89		6.8		26.5		9	10	10	10	10	Old WQ: RA
100	19.4		8.00		6.9		27.3		10	10	10	10	10	a.m. Feeding Signoff: TK
Meter ID	99A		PH25		RD13		EC13							p.m. Feeding Signoff TK
Control	19.3		7.78		7.4		26.9		10	9	10	9	10	Count Date: 11/30/19
1	19.3		7.83		7.2		26.8		10	10	10	10	10	Count Time: 1000
10	19.3		7.83		7.2		27.5		10	9	10	10	10	Count Signoff: SL
50	19.3		7.82		7.2		27.2		9	10	10	10	10	Old WQ: MB
100	19.4		7.95		7.1		27.8		10	10	10	10	10	a.m. Feeding Signoff: JL
Meter ID	93A		PH24		RD12		EC12							p.m. Feeding Signoff RA
Control	19.4		8.01		7.7		28.4		10	9	10	9	10	Termination Date: 12/1/19
1	19.6		7.91		7.7		29.0		10	10	10	10	10	Termination Time: 1134
10	19.6		7.95		7.5		29.2		10	9	10	10	10	Termination Signoff: SL
50	19.5		8.05		7.6		29.3		9	10	9	9	10	Old WQ: BV
100	19.4		8.09		7.5		31.6		10	9	10	10	10	a.m. Feeding Signoff: RL
Meter ID	93A		PH25		RD11		EC14							

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Batch ID:	06-3789-7876	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 14:05	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 12:26	**Species:**	Menidia beryllina	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Indicators, FL	**Age:** 13

Sample ID:	17-3287-9987	**Code:**	2019-DU2b-COMP	**Project:**	30945
Sample Date:	31 Oct-19 10:43	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 17:00	**CAS (PC):**		**Station:**	2019-DU2b-COMP
Sample Age:	27d 3h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
01-4413-5319	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	4.63%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
10		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	4.00%
50		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	1.000	1.000	1.000
1		1.000	1.000	1.000	1.000	1.000
10		1.000	0.900	1.000	0.900	1.000
50		1.000	1.000	1.000	1.000	1.000
100		1.000	1.000	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	10/10	10/10	10/10
1		10/10	10/10	10/10	10/10	10/10
10		10/10	9/10	10/10	9/10	10/10
50		10/10	10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Fish Survival Test — **Pacific EcoRisk**

Analysis ID:	01-4413-5319	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 13:24	**Analysis:**	Nonparametric-Control vs Treatments	**Status Level:**	1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	4.63%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		10	22.5	17	1	8	CDF	0.3541	Non-Significant Effect
		50	27.5	17	1	8	CDF	0.8000	Non-Significant Effect
		100	27.5	17	1	8	CDF	0.8000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.016998	0.0042495	4	2.67	0.0623	Non-Significant Effect
Error	0.0318712	0.0015936	20			
Total	0.0488692		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	96	4.43	<1.0E-37	Unequal Variances
	Mod Levene Equality of Variance Test	3	4.89	0.0528	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.608	0.888	5.3E-07	Non-Normal Distribution

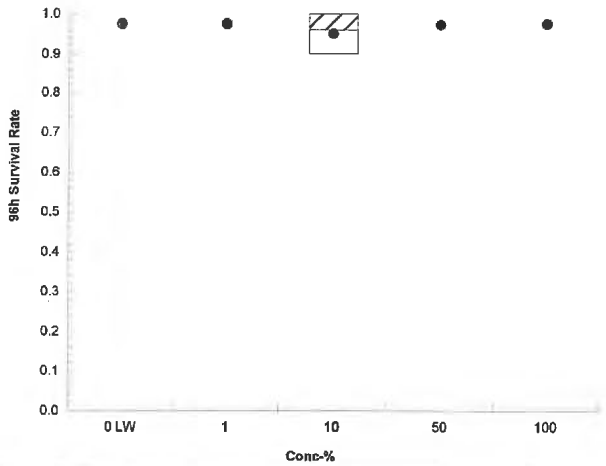
96h Survival Rate Summary

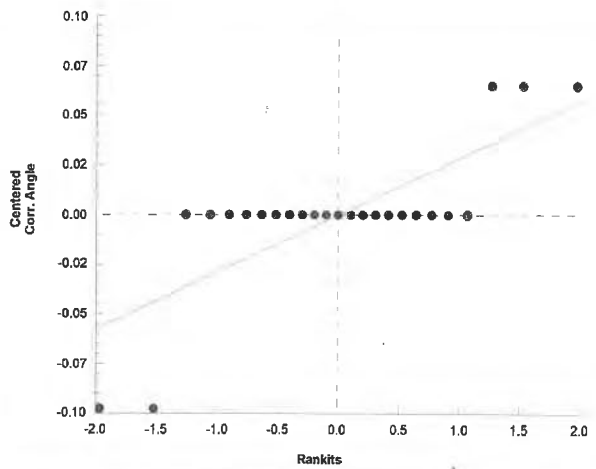
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
10		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	4.00%
50		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
100		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
1		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
10		5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	4.62%
50		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
100		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%

Graphics





96 Hour Acute Inland Silverside (*M. beryllina*) Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU2b-Comp
Test ID#: 85953 Project #: 30945
Test Date: 11/27/19 Randomization: 5.5.3

Organism Log #: 11858 Age: 13 days
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea® at 25ppt
Control Water Batch: 1378

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.5	7.82		7.9		24.2			10	10	10	10	10	Test Solution Prep: KD
1	19.2	7.82		7.9		24.4			10	10	10	10	10	New WQ: KP
10	19.2	7.82		7.9		24.4			10	10	10	10	10	Initiation Date: 11/27/19
50	19.4	7.89		7.9		24.3			10	10	10	10	10	Initiation Time: 1405
100	19.1	7.99		7.5		24.3		8.28	10	10	10	10	10	Initiation Signoff:
														a.m. Feeding Signoff: RG
Meter ID	93A	PH25		RD12		EC10		DR300						p.m. Feeding Signoff KD
Control	18.8		7.73		6.3		25.1		10	10	10	10	10	Count Date: 11/28/19
1	18.7		7.66		6.3		26.8		10	10	10	10	10	Count Time: 0815
10	18.7		7.68		6.4		25.7		10	10	10	10	10	Count Signoff: XG
50	18.9		7.69		6.2		25.7		10	10	10	10	10	Old WQ: RG
100	18.9		7.81		6.2		25.6		10	10	10	10	10	a.m. Feeding Signoff: KC
Meter ID	93A		PH26		RD10		EC12							p.m. Feeding Signoff TK
Control	19.1		7.79		6.7		27.2		10	10	10	10	10	Count Date: 11.29.19
1	19.0		7.68		6.4		27.6		10	10	10	10	10	Count Time: 0910
10	19.0		7.78		6.5		27.7		10	10	10	9	10	Count Signoff: ARF
50	18.9		7.79		6.5		28.0		10	10	10	10	10	Old WQ: RG
100	18.8		7.99		6.6		27.2		10	10	10	10	10	a.m. Feeding Signoff: TF
Meter ID	93A		PH25		RD13		EC13							p.m. Feeding Signoff TF
Control	19.1		7.70		7.0		28.6		10	10	10	10	10	Count Date: 11.30.19
1	19.0		7.77		7.1		30.3		10	10	10	10	10	Count Time: 1044
10	19.0		7.71		7.0		29.5		10	9	10	9	10	Count Signoff: JL
50	19.1		7.81		7.1		29.6		10	10	10	10	10	Old WQ: MB
100	19.0		7.84		7.0		30.6		10	10	10	10	10	a.m. Feeding Signoff: JL
Meter ID	93A		PH24		RD12		EC12							p.m. Feeding Signoff KD
Control	19.2		7.85		7.4		31.4		10	10	10	10	10	Termination Date: 12/1/19
1	19.2		7.89		7.4		32.2		10	10	10	10	10	Termination Time: 1326
10	19.1		7.89		7.4		33.7		10	9	10	9	10	Termination Signoff: JL
50	19.1		7.93		7.4		33.8		10	10	10	10	10	Old WQ: BV
100	19.1		8.01		7.5		34.4		10	10	10	10	10	a.m. Feeding Signoff: KD
Meter ID	93A		PH24		RD13		EC13							

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Batch ID:	10-8389-3648	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 14:35	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 13:02	**Species:**	Menidia beryllina	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Indicators, FL	**Age:** 13

Sample ID:	00-2253-4394	**Code:**	2019-DU3-COMP	**Project:**	30945
Sample Date:	30 Oct-19 09:20	**Material:**	Elutriate	**Source:**	Concord MOTCO
Receipt Date:	05 Nov-19 12:45	**CAS (PC):**		**Station:**	2019-DU3-COMP
Sample Age:	28d 5h (0 °C)	**Client:**	USACE		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
10-0111-7001	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	6.3%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
10		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
50		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%
100		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	2.00%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	1.000	1.000	1.000	1.000	1.000
1		1.000	1.000	1.000	1.000	0.900
10		1.000	1.000	1.000	1.000	0.900
50		1.000	0.900	1.000	1.000	1.000
100		1.000	0.900	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	10/10	10/10	10/10	10/10	10/10
1		10/10	10/10	10/10	10/10	9/10
10		10/10	10/10	10/10	10/10	9/10
50		10/10	9/10	10/10	10/10	10/10
100		10/10	9/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Fish Survival Test — **Pacific EcoRisk**

Analysis ID: 10-0111-7001 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 13:28 **Analysis:** Nonparametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	6.30%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	25	17	1	8	CDF	0.5912	Non-Significant Effect
		10	25	17	1	8	CDF	0.5912	Non-Significant Effect
		50	25	17	1	8	CDF	0.5912	Non-Significant Effect
		100	25	17	1	8	CDF	0.5912	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0042495	0.0010624	4	0.25	0.9063	Non-Significant Effect
Error	0.0849899	0.0042495	20			
Total	0.0892394		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	1.78	4.43	0.1729	Equal Variances
	Mod Levene Equality of Variance Test	0.25	4.89	0.9052	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.572	0.888	2.1E-07	Non-Normal Distribution

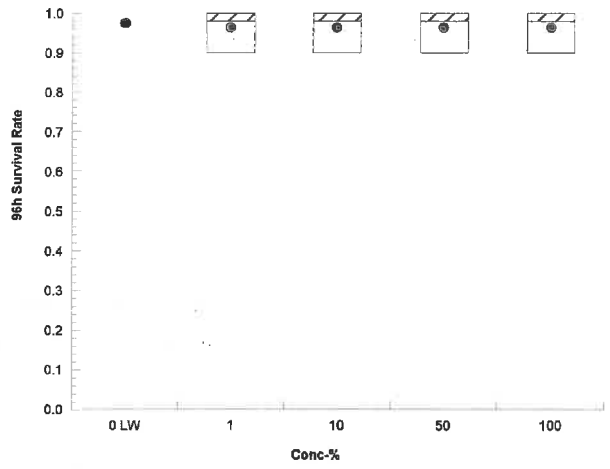
96h Survival Rate Summary

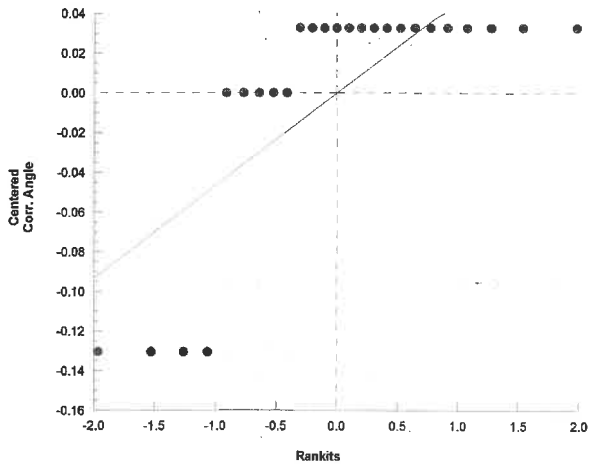
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	0.00%
1		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
10		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
50		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%
100		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	2.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	0.00%
1		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	2.31%
10		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	2.31%
50		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	2.31%
100		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	2.31%

Graphics





96 Hour Acute Inland Silverside (*M. beryllina*) Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU3-Comp
Test ID#: 85954 Project # 30945
Test Date: 11/27/19 Randomization: 5.5.1

Organism Log #: 11858 Age: 13d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea® at 25ppt
Control Water Batch: 1378

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.4	7.91		7.6		24.0			10	10	10	10	10	Test Solution Prep: KB
1	19.4	7.91		7.8		23.9			10	10	10	10	10	New WQ: AS
10	19.5	7.93		7.7		24.3			10	10	10	10	10	Initiation Date: 11/27/19
50	19.4	7.96		7.3		24.4			10	10	10	10	10	Initiation Time: 1435
100	19.5	7.99		6.4		24.4		5.20	10	10	10	10	10	Initiation Signoff: JK
														a.m. Feeding Signoff: RB
Meter ID	88A	PH24		RD13		EC13		DR3800						p.m. Feeding Signoff: KB
Control	19.0		7.60		6.5		26.1		10	10	10	10	10	Count Date: 11.28.19
1	19.0		7.67		6.7		25.9		10	10	10	10	10	Count Time: 0824
10	19.1		7.72		6.7		25.8		10	10	10	10	10	Count Signoff: JF
50	19.0		7.82		6.8		25.9		10	10	10	10	10	Old WQ: KB
100	19.0		7.82		6.5		25.4		10	10	10	10	10	a.m. Feeding Signoff: JK
Meter ID	90A		PH26		RD10		EC12							p.m. Feeding Signoff: JK
Control	18.6		7.74		6.8		26.1		10	10	10	10	10	Count Date: 11.29.19
1	18.5		7.77		7.0		27.5		10	10	10	10	10	Count Time: 0951
10	19.1		7.81		7.0		27.3		10	10	10	10	10	Count Signoff: JF
50	19.2		7.88		7.0		26.9		10	10	10	10	10	Old WQ: KB
100	19.3		7.95		7.0		27.9		10	9	10	10	10	a.m. Feeding Signoff: JK
Meter ID	90A		PH25		RD13		EC13							p.m. Feeding Signoff: JF
Control	19.1		7.69		7.9		28.8		10	10	10	10	10	Count Date: 11/30/19
1	19.1		7.71		7.7		28.6		10	10	10	10	10	Count Time: 1325
10	19.1		7.69		7.7		29.2		10	10	10	10	9	Count Signoff: JL
50	19.1		7.76		7.6		28.9		10	9	10	10	10	Old WQ: MB
100	19.1		7.77		7.5		28.8		10	9	10	10	10	a.m. Feeding Signoff: JL
Meter ID	93A		PH24		RD12		EC12							p.m. Feeding Signoff: KB
Control	19.1		7.69		7.2		31.8		10	10	10	10	10	Termination Date: 12/1/19
1	19.2		7.76		7.4		31.4		10	10	10	10	9	Termination Time: 1302
10	19.2		7.77		7.4		30.38		10	10	10	10	9	Termination Signoff: JL
50	19.3		7.83		7.4		29.9		10	9	10	10	10	Old WQ: AS
100	19.3		7.86		7.5		29.9		10	9	10	10	10	a.m. Feeding Signoff: KB
Meter ID	93A		PH25		RD10		EC10							

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Batch ID:	07-2321-3832	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley	
Start Date:	27 Nov-19 15:36	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 13:45	**Species:**	Menidia beryllina	**Brine:**	Not Applicable	
Test Length:	94h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Indicators, FL	**Age:** 13

Sample ID:	03-2405-8830	**Code:**	2019-DU4-COMP	**Project:**	30945	
Sample Date:	30 Oct-19 14:27	**Material:**	Elutriate	**Source:**	Concord MOTCO	
Receipt Date:	05 Nov-19 15:00	**CAS (PC):**		**Station:**	2019-DU4-COMP	
Sample Age:	28d 1h (0 °C)	**Client:**	USACE			

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
21-3868-6742	96h Survival Rate	Steel Many-One Rank Sum Test		100	>100	n/a	1	6.1%	1

96h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
10		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
50		5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
100		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%

96h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	0.900	1.000	1.000	1.000	1.000
1		1.000	1.000	1.000	1.000	1.000
10		1.000	0.900	1.000	0.900	1.000
50		1.000	1.000	0.900	0.900	1.000
100		1.000	1.000	1.000	1.000	1.000

96h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
0	LW	9/10	10/10	10/10	10/10	10/10
1		10/10	10/10	10/10	10/10	10/10
10		10/10	9/10	10/10	9/10	10/10
50		10/10	10/10	9/10	9/10	10/10
100		10/10	10/10	10/10	10/10	10/10

CETIS Analytical Report

Acute Fish Survival Test — **Pacific EcoRisk**

Analysis ID: 21-3868-6742 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 13:33 **Analysis:** Nonparametric-Control vs Treatments **Status Level:** 1

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	>100	n/a	1	6.10%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Contr		1	30	17	1	8	CDF	0.9275	Non-Significant Effect
		10	25	17	2	8	CDF	0.5912	Non-Significant Effect
		50	25	17	2	8	CDF	0.5912	Non-Significant Effect
		100	30	17	1	8	CDF	0.9275	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0212475	0.0053119	4	1.25	0.3221	Non-Significant Effect
Error	0.0849899	0.0042495	20			
Total	0.106237		24			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	15.3	4.43	6.9E-06	Unequal Variances
	Mod Levene Equality of Variance Test	1.36	4.89	0.2930	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.83	0.888	7.7E-04	Non-Normal Distribution

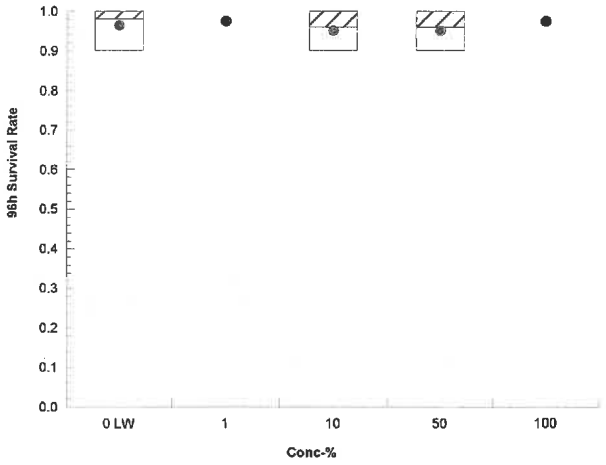
96h Survival Rate Summary

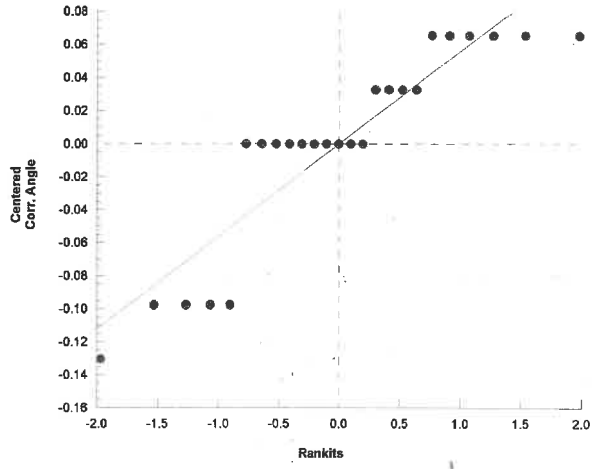
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
1		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%
10		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	2.04%
50		5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	2.04%
100		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
1		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%
10		5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	2.36%
50		5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	2.36%
100		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%

Graphics





96 Hour Acute Inland Silverside (*M. beryllina*) Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU4-Comp
Test ID#: 85955 Project #: 30945
Test Date: 11/27/19 Randomization: 5:2:5

Organism Log #: 11858 Age: 13 d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea® at 25ppt
Control Water Batch: 13780

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH_3 new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Control	19.1	7.85		7.6		24.1			10	10	10	10	10	Test Solution Prep: MB
1	19.1	7.91		7.6		24.4			10	10	10	10	10	New WQ: CO
10	19.1	7.94		7.6		24.4			10	10	10	10	10	Initiation Date: 11/27/19
50	19.0	8.02		7.6		24.4			10	10	10	10	10	Initiation Time: 1325 15 36
100	19.4	8.12		7.5		24.5		3.87	10	10	10	10	10	Initiation Signoff: MB 11/27/19
														a.m. Feeding Signoff: RO
Meter ID	112A	pH24		RD13		EC13		DR3900						p.m. Feeding Signoff: RO
Control	19.2		7.69		7.0		25.2		10	10	10	10	10	Count Date: 11.28.19
1	19.2		7.83 (7.70)		6.9		25.20		10	10	10	10	10	Count Time: 0900
10	19.1		7.67		6.8		25.3		10	10	10	10	10	Count Signoff:
50	19.2		7.74		6.6		25.4		10	10	10	9	10	Old WQ: JO
100	19.5		7.83		6.9		25.2		10	10	10	10	10	a.m. Feeding Signoff: KC
Meter ID	99A		PH26		RD10		EC12							p.m. Feeding Signoff: TK
Control	19.2		7.83		7.2		26.7 (25.9)		10	10	10	10	10	Count Date: 11.29.19
1	19.3		7.84		7.2		26.2		10	10	10	10	10	Count Time: 0936
10	19.3		7.71		6.6		27.0		10	10	10	10	10	Count Signoff: AEF
50	19.2		7.92		6.9		26.4		10	10	10	9	10	Old WQ: RO
100	19.2		7.96		7.0		26.1		10	10	10	10	10	a.m. Feeding Signoff: TF
Meter ID	93A		PH25		RD13		EC13							p.m. Feeding Signoff: TF
Control	19.4		7.65		7.1		27.2		10	10	10	10	10	Count Date: 11/30/19
1	19.4		7.76		7.2		27.7		10	10	10	10	10	Count Time: 1117
10	19.4		7.74		7.1		27.4		10	9	10	9	10	Count Signoff: JL
50	19.4		7.77		7.1		27.3		10	10	9 10	9	10	Old WQ: MB
100	19.4		7.80		7.1		27.5		10	10	10 11/30/19	10	10	a.m. Feeding Signoff: JL
Meter ID	93A		PH24		RD12		EC12							p.m. Feeding Signoff: RO
Control	19.6		7.86		7.5		28.3		9	10	10	10	10	Termination Date: 12/1/19
1	19.6		7.90		7.5		28.8		10	10	10	10	10	Termination Time: 1345
10	19.6		7.94		7.6		28.9		10	9	10	9	10	Termination Signoff: JL
50	19.5		7.96		7.5		29.1		10	10	9	9	10	Old WQ: BV
100	19.5		8.09		7.5		30.2		10	10	10	10	10	a.m. Feeding Signoff: RO
Meter ID	93A		PH25		RD11		EC14							

Appendix Q

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Inland Silverside, *Menidia beryllina*

CETIS Summary Report

Acute Fish Survival Test — **Pacific EcoRisk**

Batch ID:	02-7597-7908	**Test Type:**	Survival (96h)	**Analyst:**	Stevi Vasquez	
Start Date:	27 Nov-19 11:30	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water	
Ending Date:	01 Dec-19 11:25	**Species:**	Menidia beryllina	**Brine:**	Crystal Sea	
Test Length:	96h	**Taxon:**	Actinopterygii	**Source:**	Aquatic Indicators, FL	**Age:** 13

Sample ID:	07-2277-5930	**Code:**	KCl	**Project:**	30958
Sample Date:	27 Nov-19 11:30	**Material:**	Potassium chloride	**Source:**	Reference Toxicant
Receipt Date:	27 Nov-19 11:30	**CAS (PC):**		**Station:**	In House
Sample Age:	n/a (19.7 °C)	**Client:**	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
08-0730-0223	96h Survival Rate	Dunnett Multiple Comparison Test		1	>1	n/a		14.5%	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	g/L	95% LCL	95% UCL	TU	S
15-9173-8759	96h Survival Rate	Spearman-Kärber		EC50	1.4	1.34	1.46		1

96h Survival Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	2	0.950	0.315	1.000	0.900	1.000	0.050	0.071	7.44%	0.00%
0.125		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
0.25		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
0.5		2	0.950	0.315	1.000	0.900	1.000	0.050	0.071	7.44%	0.00%
1		2	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-5.26%
2		2	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

96h Survival Rate Detail

Conc-g/L	Code	Rep 1	Rep 2
0	LW	0.900	1.000
0.125		1.000	1.000
0.25		1.000	1.000
0.5		1.000	0.900
1		1.000	1.000
2		0.000	0.000

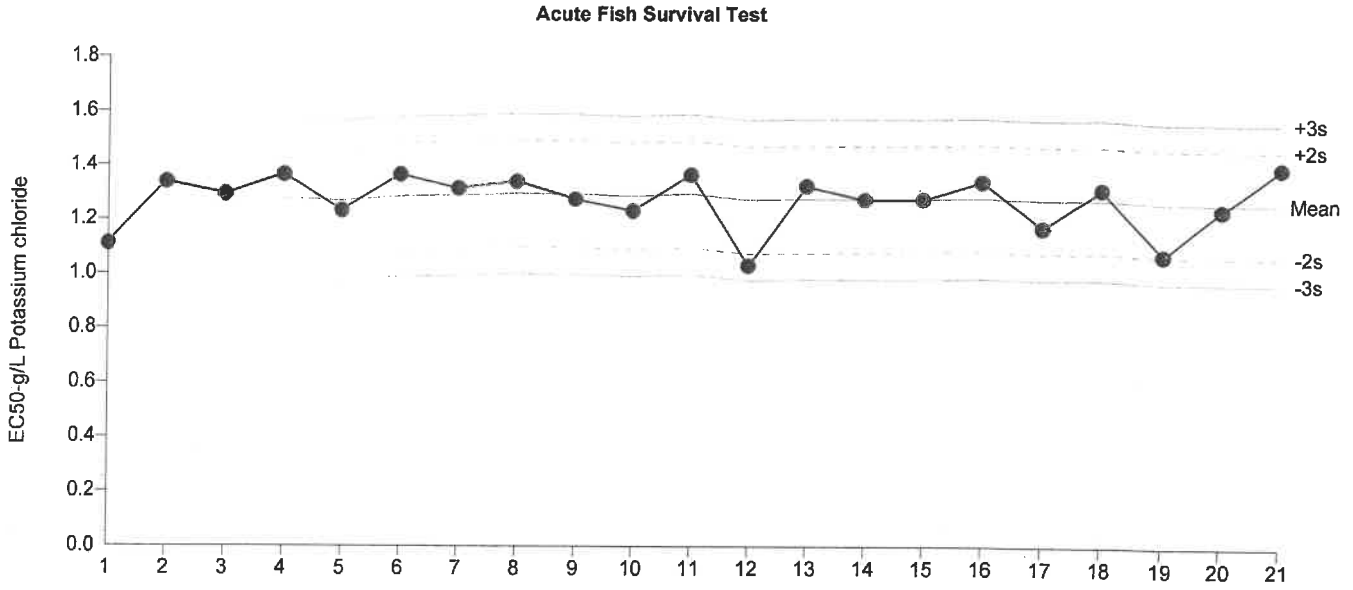
96h Survival Rate Binomials

Conc-g/L	Code	Rep 1	Rep 2
0	LW	9/10	10/10
0.125		10/10	10/10
0.25		10/10	10/10
0.5		10/10	9/10
1		10/10	10/10
2		0/10	0/10

CETIS QC Plot

Acute Fish Survival Test — **Pacific EcoRisk**

Test Type:	Survival (96h)	**Organism:**	Menidia beryllina (Inland Silverside)	**Material:**	Potassium chloride
Protocol:	EPA-821-R-02-012 (2002)	**Endpoint:**	96h Survival Rate	**Source:**	Reference Toxicant-REF



Mean:	1.264	**Count:**	20	**-2s Warning Limit:**	1.066	**-3s Action Limit:**	0.9672
Sigma:	0.09885	**CV:**	7.82%	**+2s Warning Limit:**	1.461	**+3s Action Limit:**	1.56

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	Jul	18	16:27	1.11	-0.1544	-1.562			20-1872-7432	20-8901-6446
2			25	16:00	1.34	0.07623	0.7712			10-9658-6005	17-3433-1917
3		Aug	1	11:00	1.294	0.02996	0.3031			09-3017-7198	08-2658-6105
4			22	15:15	1.366	0.102	1.032			08-5971-6070	05-9030-6968
5			23	13:30	1.231	-0.03286	-0.3324			13-8077-8936	07-0924-2020
6			29	16:00	1.366	0.102	1.032			05-6294-8760	21-4078-0987
7		Sep	19	16:00	1.315	0.0507	0.5129			16-8533-8848	12-9015-8106
8			26	15:30	1.341	0.07678	0.7768			10-6565-5598	01-5260-5837
9		Oct	5	16:35	1.275	0.01056	0.1068			18-4836-1501	16-0609-1118
10		Nov	9	14:00	1.231	-0.03286	-0.3324			21-4466-4169	09-1406-2130
11			14	11:45	1.366	0.102	1.032			08-7022-6125	15-7041-0787
12	2019	Jan	23	13:27	1.031	-0.2335	-2.362	(-)		01-8010-3190	12-7736-7876
13		Feb	12	15:32	1.324	0.06039	0.611			18-2005-1352	00-2568-7131
14		Mar	13	16:30	1.275	0.01056	0.1068			08-5155-0998	16-0366-4946
15			14	15:06	1.275	0.01056	0.1068			05-1318-1553	13-4375-3399
16		Apr	3	15:27	1.341	0.07678	0.7768			02-7185-5491	11-8353-4532
17		May	16	13:34	1.171	-0.09338	-0.9447			05-4854-7993	14-5335-7442
18		Jun	12	17:08	1.315	0.0507	0.5129			01-8455-6187	06-1518-5247
19		Aug	21	17:23	1.072	-0.1922	-1.945			12-5474-5459	08-4198-2769
20		Sep	18	15:02	1.24	-0.02418	-0.2447			04-0038-2455	00-1376-3318
21		Nov	27	11:30	1.398	0.1337	1.353			09-3555-7942	15-9173-8759

96 Hour Acute Inland Silverside Reference Toxicant Test

Client: **Reference Toxicant** | Organism Log #: 11858 | Age: 13 d.

Test Material: Potassium Chloride | Organism Supplier: Aquatic Indicators

Test ID#: 85979 | Project #: 30958 | Control/Diluent: DI + Crystal Sea at 25ppt

Test Date: 11/27/19 | Randomization: 2.6.1 | Control Water Batch: 1378

Treatment (g KCl/L)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	# Live Organisms Rep A	# Live Organisms Rep B	SIGN-OFF
Control	19.7	7.90		7.7		24.5		10	10	Test Solution Prep: KG
0.125	19.7	7.90		7.7		24.7		10	10	New WQ: AS
0.25	19.7	7.91		7.8		24.8		10	10	Initiation Date: 11/27/19
0.5	19.6	7.91		7.8		25.0		10	10	Initiation Time: 1130
1	19.6	7.90		8.0		25.6		10	10	Initiation Signoff: TK
2	19.6	7.91		8.4		26.8		10	10	RT Batch #: 4
										a.m. Feeding Signoff: RG
Meter ID:	88A	PH24		RD13		EC13				p.m. Feeding Signoff: KG
Control	20.7		7.41		5.6		24.5	10	10	Count Date: 11.29.19
0.125	20.7		7.40		5.6		24.5	10	10	Count Time: 0917
0.25	20.6		7.38		5.6		24.7	10	10	Count Signoff:
0.5	20.7		7.38		5.6		25.0	10	10	Old WQ: SJ
1	20.5		7.36		5.4		25.5	10	10	a.m. Feeding Signoff: KG
2	20.3		7.37		5.5		26.4	0	0	p.m. Feeding Signoff:
Meter ID:	99A		PH25		RD13		EC13			
Control	20.4	7.96	7.45	8.0	5.5	24.0	24.3	9	10	Test Solution Prep: SJ 11/29/19
0.125	20.6	7.96	7.46	8.0	5.4	24.2	24.9	10	10	New WQ: SJ
0.25	20.4	7.96	7.44	8.0	5.3	24.5	25.4	10	10	Renewal Date: 11/29/19
0.5	20.4	7.96	7.42	8.1	5.1	24.7	25.3	10	9	Renewal Time: 1255
1	20.5	7.95	7.46	8.2	5.2	25.3	25.8	10	10	Renewal Signoff:
2	—	—	—	—	—	—	—	—	—	Old WQ: BV
										RT Batch #: 4
										a.m. Feeding Signoff: TF
Meter ID:	99A	PH26	PH25	RD10	RD13	EC10	EC13			p.m. Feeding Signoff: TF
Control	20.9		7.58		6.4		24.6	9	10	Count Date: 11.30.19
0.125	20.7		7.55		6.2		25.0	10	10	Count Time: 0946
0.25	20.6		7.56		6.1		25.4	10	10	Count Signoff:
0.5	20.5		7.53		6.1		25.4	10	9	Old WQ: MB
1	20.7		7.52		5.9		26.1	10	10	a.m. Feeding Signoff: JL
2	—		—		—		—	—	—	p.m. Feeding Signoff: RG
Meter ID:	99A		PH24		RD12		EC12			
Control	20.6		7.70		7.0		24.6	9	10	Termination Date: 12/1/19
0.125	20.7		7.70		6.3		25.2	10	10	Termination Time: 1125
0.25	20.5		7.72		6.5		26.1	10	10	Termination Signoff: SJ
0.5	20.4		7.71		6.6		26.2	10	9	Old WQ: BV
1	20.4		7.71		6.6		26.2	10	10	a.m. Feeding Signoff: KG
2	—		—		—		—	—	—	
Meter ID:	93A		PH25		RD11		EC14			

Appendix R

Disposal Site Mixing Model Calculations

Table R-1. Mixing Model Calculation

Site: **MOTCO-2019-DU2b-Comp**
Species: ***Mytilus sp.***
Disposal Site: **SF-10**

Mixing Zone Estimation	**MOTCO-2019-DU2b-Comp**
Depth of disposal site (m)=	15
Pi=	3.14159
Width of vessel (m)=	16.2
Length of vessel(m)=	90.2
Speed of vessel (m/sec)=	0.5
Time of discharge (sec)=	30
Depth of vessel (m)=	4.1
Mixing Zone Volume(cu.m)=	861002

Volume of Liquid Phase	
Bulk density (constant) =	1.3
Particle density (constant) =	2.6
Density of liquid phase (constant) =	1.025
Vol of disposal vessel (cu.m)=	6000
Liquid phase volume (cu.m)=	4952

Concentration of suspended phase	
Percent Silt=	66.28
Percent Clay=	27.2
Volume of Suspended Phase (cu.m)=	979

Projected Concentration (percent SP) =	0.1137
Lowest LC50 or EC50 from bioassay=	76
Factor LC50 or EC 50 X 0.01=	0.76

The factored LC50 or EC50 is higher than the projected suspended phase concentration; therefore the allowable suspended phase concentration is not exceeded for dredged material from this site for the disposal site specified (SF-10). This assumes that sediment will be disposed of by barge at the disposal site, using a barge meeting the listed parameters.

Table R-2. Mixing Model Calculation

Site: **MOTCO-2019-DU2b-Comp**
Species: ***Mytilus sp.***
Disposal Site: **SF-DODS**

Mixing Zone Estimation	**MOTCO-2019-DU2b-Comp**
Depth of disposal site (m)=	2500
Pi=	3.14159
Width of vessel (m)=	16.2
Length of vessel(m)=	90.2
Speed of vessel (m/sec)=	0.5
Time of discharge (sec)=	30
Depth of vessel (m)=	4.1
Mixing Zone Volume(cu.m)=	143500416

Volume of Liquid Phase	
Bulk density (constant) =	1.3
Particle density (constant) =	2.6
Density of liquid phase (constant) =	1.025
Vol of disposal vessel (cu.m)=	6000
Liquid phase volume (cu.m)=	4952

Concentration of suspended phase	
Percent Silt=	66.28
Percent Clay=	27.2
Volume of Suspended Phase (cu.m)=	979

Projected Concentration (percent SP) =	0.0007
Lowest LC50 or EC50 from bioassay=	76
Factor LC50 or EC 50 X 0.01=	0.76

The factored LC50 or EC50 is higher than the projected suspended phase concentration; therefore the Limiting Permissible Concentration is not exceeded for dredged material from this site for the disposal site specified (SF-DODS). This assumes that sediment will be disposed of by barge at the disposal site, using a barge meeting the listed parameters.

Appendix S

Test Data and Summary of Statistics for the Evaluation of the Toxicity of the Military Ocean Terminal Concord (MOTCO) Modified Elutriate Test Sediment Elutriates to *Americamysis bahia*

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	08-3743-3433	**Test Type:**	Survival (96h)	**Analyst:**	Ashleigh Findley		
Start Date:	21 Nov-19 16:15	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water		
Ending Date:	25 Nov-19 15:00	**Species:**	Americamysis bahia	**Brine:**	Not Applicable		
Test Length:	95h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:**	5

Sample Code	Sample ID	Sample Date	Receipt Date	Sample Age	Client Name	Project
CMOT_1219_AB	09-8977-4780	21 Nov-19 16:15	21 Nov-19 16:15	n/a (20.3 °C)	USACE	30945
Site Water	04-6390-0209	31 Oct-19 14:00	31 Oct-19 15:45	21d 2h (4.1 °C)		
2019-DU1-COMP	05-2650-2607	31 Oct-19 08:10	05 Nov-19 16:00	21d 8h (0 °C)		
2019-DU2a-COMP	12-9247-3554	28 Oct-19 13:15	05 Nov-19 14:30	24d 3h (0 °C)		
2019-DU2b-COMP	17-3287-9987	31 Oct-19 10:43	05 Nov-19 17:00	21d 6h (0 °C)		
2019-DU3-COMP	00-2253-4394	30 Oct-19 09:20	05 Nov-19 12:45	22d 7h (0 °C)		
2019-DU4-COMP	03-2405-8830	30 Oct-19 14:27	05 Nov-19 15:00	22d 2h (0 °C)		

Sample Code	Material Type	Sample Source	Station Location	Lat/Long
CMOT_1219_AB	Elutriate	Concord MOTCO	LABQA	
Site Water	Elutriate	Concord MOTCO	Site Water	
2019-DU1-COMP	Elutriate	Concord MOTCO	2019-DU1-Comp	
2019-DU2a-COMP	Elutriate	Concord MOTCO	2019-DU2a-COMP	
2019-DU2b-COMP	Elutriate	Concord MOTCO	2019-DU2b-COMP	
2019-DU3-COMP	Elutriate	Concord MOTCO	2019-DU3-COMP	
2019-DU4-COMP	Elutriate	Concord MOTCO	2019-DU4-COMP	

Single Comparison Summary

Analysis ID	Endpoint	Comparison Method	P-Value	Comparison Result	S
01-2177-8945	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.5000	Site Water passed 96h survival rate	1
04-5513-4751	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU1-COMP passed 96h survival rate	1
08-7313-0552	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.7778	2019-DU2a-COMP passed 96h survival rat	1
12-3308-5931	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.5000	2019-DU2b-COMP passed 96h survival rat	1
04-8564-9862	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	0.7778	2019-DU3-COMP passed 96h survival rate	1
02-5538-8776	96h Survival Rate	Wilcoxon Rank Sum Two-Sample Test	1.0000	2019-DU4-COMP passed 96h survival rate	1

96h Survival Rate Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
Site Water	SW	5	0.960	0.892	1.000	0.900	1.000	0.025	0.055	5.71%	2.04%
2019-DU1-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%
2019-DU2a-COMP		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
2019-DU2b-COMP		5	0.960	0.849	1.000	0.800	1.000	0.040	0.089	9.32%	2.04%
2019-DU3-COMP		5	0.980	0.924	1.000	0.900	1.000	0.020	0.045	4.56%	0.00%
2019-DU4-COMP		5	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	-2.04%

96h Survival Rate Detail

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
CMOT_1219_AB	LW	1.000	1.000	0.900	1.000	1.000
Site Water	SW	1.000	0.900	1.000	1.000	0.900
2019-DU1-COMP		1.000	1.000	1.000	1.000	1.000
2019-DU2a-COMP		1.000	1.000	1.000	1.000	0.900
2019-DU2b-COMP		1.000	0.800	1.000	1.000	1.000
2019-DU3-COMP		1.000	0.900	1.000	1.000	1.000
2019-DU4-COMP		1.000	1.000	1.000	1.000	1.000

Acute Mysid Survival Test — **Pacific EcoRisk**

96h Survival Rate Binomials

Sample	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5
CMOT_1219_AB	LW	10/10	10/10	9/10	10/10	10/10
Site Water	SW	10/10	9/10	10/10	10/10	9/10
2019-DU1-COMP		10/10	10/10	10/10	10/10	10/10
2019-DU2a-COMP		10/10	10/10	10/10	10/10	9/10
2019-DU2b-COMP		10/10	8/10	10/10	10/10	10/10
2019-DU3-COMP		10/10	9/10	10/10	10/10	10/10
2019-DU4-COMP		10/10	10/10	10/10	10/10	10/10

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	01-2177-8945	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:10	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	Site Water passed 96h survival rate	6.15%

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Control		Site Water	25	n/a	2	8	Exact	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0026559	0.0026559	1	0.4	0.5447	Non-Significant Effect
Error	0.0531187	0.0066398	8			
Total	0.0557746		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1.5	23.2	0.7040	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.759	0.741	0.0045	Non-Normal Distribution

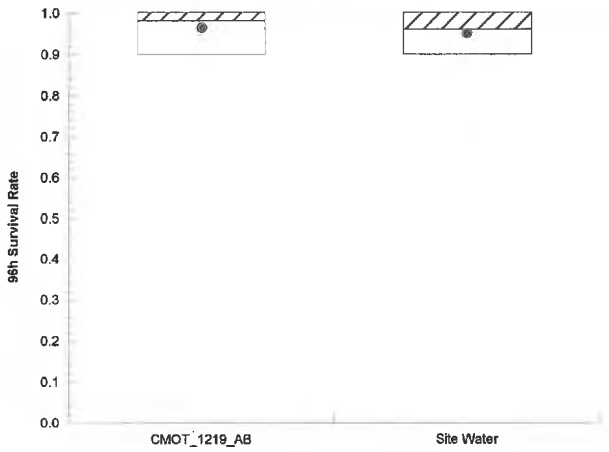
96h Survival Rate Summary

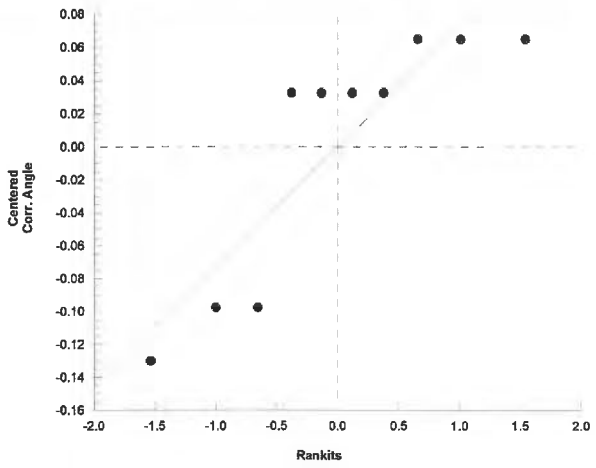
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
Site Water	SW	5	0.960	0.892	1.000	1.000	0.900	1.000	0.025	5.71%	2.04%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
Site Water	SW	5	1.35	1.24	1.46	1.41	1.25	1.41	0.0399	6.63%	2.36%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: Site Water
Test ID#: - Project # 30945
Test Date: 11/21/19 Randomization: 5.7.5

Organism Log #: 11855 Age: 5d
Organism Supplier: Aquatic Indicators
Control/Diluent: DI + Crystal Sea at 25 ppt
Sample Salinity adjusted with: Crystal Sea®
Sample ID#: —

Treatment	Temp (°C)	pH		D.O. (mg/L)		Salinity (ppt)		# Live Organisms					SIGN-OFF
		new	old	new	old	new	old	Rep A	Rep B	Rep C	Rep D	Rep E	
Lab Control	20.3	8.22		7.4		25 24.5		10	10	10	10	10	Test Solution Prep:
Site Water	20.4	8.13		9.1		24.4		10	10	10	10	10	New WQ: KP 11/21/19
													Initiation Date: 11/21/19
													Initiation Time: 1615
													Initiation Signoff: KL
													a.m. Feeding Signoff: KL
Meter ID	59A	pH25		RD11		EC14							p.m. Feeding Signoff: KL
Lab Control	19.4		7.60		7.5		24.7	10	10	10	10	10	Count Date: 11/22/19
Site Water	19.4		7.67		7.3		24.6	10	10	10	10	10	Count Time: 1008
													Count Signoff: CD
													Old WQ: KP
													a.m. Feeding Signoff: KP
													p.m. Feeding Signoff: KP
Meter ID	35A		pH26		RD12		EC12						
Lab Control	19.5		7.57		7.1		24.9	10	10	10	10	10	Count Date: 11/23/19
Site Water	19.5		7.67		6.7		25.2	10	9	10	10	9	Count Time: 1024
													Count Signoff: SVV
													Old WQ: TA
													a.m. Feeding Signoff: TP
Meter ID	48A		pH26		RD13		EC13						p.m. Feeding Signoff: SVV
Lab Control	19.4		7.51		5.4		25.9	10	10	10	10	10	Count Date: 11/24/19
Site Water	19.5		7.64		5.5		25.5	10	9	10	10	9	Count Time: 0910
													Count Signoff: TK
													Old WQ: KP
													a.m. Feeding Signoff: KL
Meter ID	105A		pH24		RD14		EC14						p.m. Feeding Signoff: KL
Lab Control	19.3		7.76		7.6		26.9	10	10	9	10	10	Termination Date: 11/25/19
Site Water	19.1		7.90		7.4		26.5	10	9	10	10	9	Termination Time: 1500
													Termination Signoff: TK
													Old WQ: KP
Meter ID	105A		pH26		RD10		EC10						a.m. Feeding Signoff: KL

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	04-5513-4751	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:10	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU1-COMP passed 96h survival rate	4.30%

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Control		2019-DU1-COMP	30	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0026559	0.0026559	1	1	0.3466	Non-Significant Effect
Error	0.0212475	0.0026559	8			
Total	0.0239034		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	7.11	11.3	0.0285	Equal Variances
	Mod Levene Equality of Variance Test	1	13.7	0.3559	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.625	0.741	1.1E-04	Non-Normal Distribution

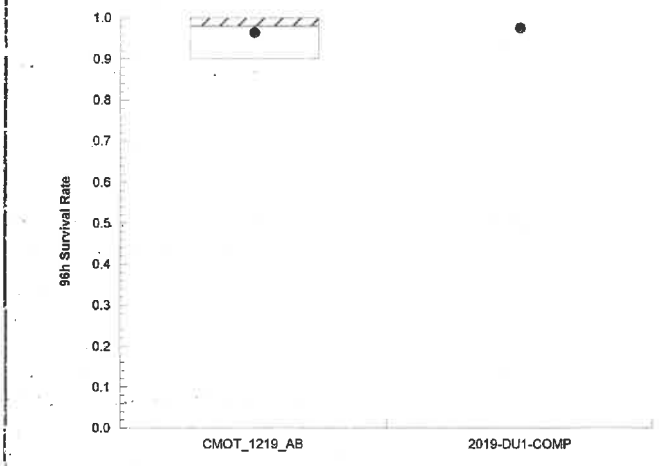
96h Survival Rate Summary

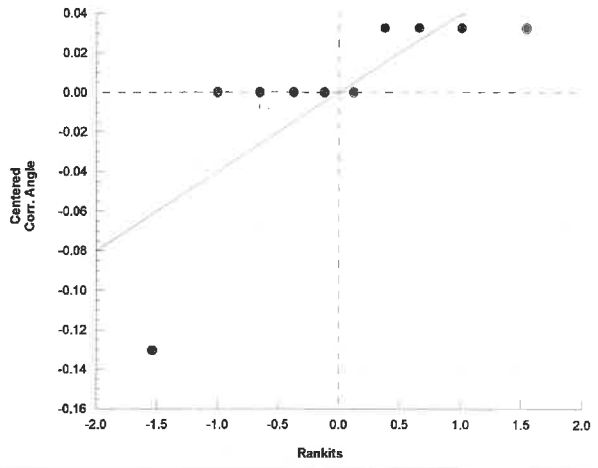
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
2019-DU1-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
2019-DU1-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU1-Comp
Test ID#: 8596 Project#: 30945
Test Date: 11/21/19 Randomization: 5.7.5

Organism Log #: 11855 Age: 5d
Organism Supplier: Aquatic Indicators
Control: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Lab Control	20.3	8.22		7.4		24.5			10	10	10	10	10	Test Solution Prep:
100%	20.4	8.08		7.1		24.9		2.48	10	10	10	10	10	New WQs: DP
														Initiation Date: 11/21/19
														Initiation Time: 1615
														Initiation Signoff: KL
														a.m. Feeding: KL
Meter ID	59A	pH25		RD11		EC14		DR3800						p.m. Feeding: KL
Lab Control	19.4		7.60		7.5		24.7		10	10	10	10	10	Count Date: 11/22/19
100%	19.4		7.70		7.2		24.9		10	10	10	10	10	Count Time: 1008
														Count Signoff: CO
														Old WQ: SDT3
														a.m. Feeding: BV
Meter ID	35A		pH26		RD12		EC12							p.m. Feeding: KL
Lab Control	19.5		7.57		7.1		24.9		10	10	10	10	10	Count Date: 11/23/19
100%	19.4		7.72		7.0		25.0		10	10	10	10	10	Count Time: 1024
														Count Signoff: SVV
														Old WQ: TA
														a.m. Feeding: TF
Meter ID	35A		pH26		RD13		EC13							p.m. Feeding: SVV
Lab Control	19.4		7.51		5.4		25.9		10	10	10	10	10	Count Date: 11/24/19
100%	19.6		7.71		5.7		25.7		10	10	10	10	10	Count Time: 0910
														Count Signoff: TK
														Old WQ: KP
														a.m. Feeding: KC
Meter ID	105A		pH24		RD11		EC14							p.m. Feeding: KC
Lab Control	19.3		7.76		7.6		26.9		10	10	9	10	10	Termination Date: 11/25/19
100%	19.1		7.90		7.4		26.6		10	10	10	10	10	Termination Time: 1500
														Termination Signoff: TK
														Old WQ: KC
Meter ID	105A		pH26		RD10		EC10							a.m. Feeding: TK

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	08-7313-0552	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:10	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU2a-COMP passed 96h survival rate	5.60%

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Control		2019-DU2a-COMP	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0424949	0.0053119	8			
Total	0.0424949		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1	23.2	1.0000	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.509	0.741	4.7E-06	Non-Normal Distribution

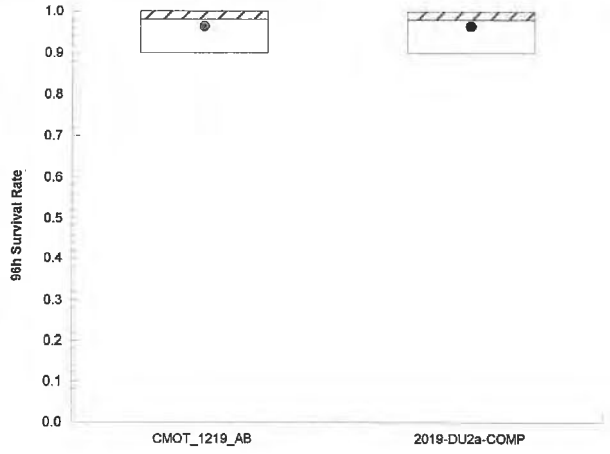
96h Survival Rate Summary

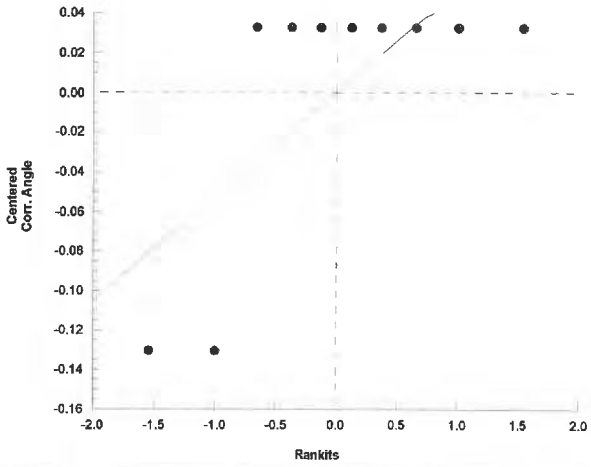
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
2019-DU2a-COMP		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
2019-DU2a-COMP		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU2a-Comp
Test ID#: 85962 Project#: 30945
Test Date: 11/21/19 Randomization: 5.7.5

Organism Log #: 11655 Age: 5d
Organism Supplier: Aquatic Indicators
Control: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Lab Control	20.3	8.22		7.4		24.5			10	10	10	10	10	Test Solution Prep:
100%	20.4	8.08		7.6		25.1		4.35	10	10	10	10	10	New WQ: KP
														Initiation Date: 11/21/19
														Initiation Time: 1615
														Initiation Signoff: KL
														a.m. Feeding: KL
Meter ID	59A	pH25		RD11		EC14		DR3800						p.m. Feeding
Lab Control	19.4		7.60		7.5		24.7		10	10	10	10	10	Count Date: 11/22/19
100%	19.3		7.70		6.8		25.2		10	10	10	10	10	Count Time: 1008
														Count Signoff: CO
														Old WQ: 5573
														a.m. Feeding
Meter ID	35A		pH26		RD12		EC12							p.m. Feeding
Lab Control	19.5		7.57		7.1		24.9		10	10	10	10	10	Count Date: 11/23/19
100%	19.4		7.78		7.0		25.2		10	10	10	10	10	Count Time: SVV
														Count Signoff: 1024
														Old WQ: TA
														a.m. Feeding TF
Meter ID	48A		pH26		RD13		EC13							p.m. Feeding SVV
Lab Control	19.4		7.51		5.4		25.9		10	10	10	10	10	Count Date: 11/24/19
100%	19.3		7.77		5.7		26.1		10	10	10	10	10	Count Time: 0910
														Count Signoff TK
														Old WQ KP
														a.m. Feeding KL
Meter ID	105A		pH24		RD11		EC14							p.m. Feeding KL
Lab Control	19.3		7.76		7.6		26.9		10	10	9	10	10	Termination Date: 11/25/19
100%	19.0		7.94		7.3		26.7		10	10	10	10	9	Termination Time: 1500
														Termination Signoff: TK
														Old WQ: Fc
Meter ID	105A		pH26		RD10		EC10							a.m. Feeding

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID:	12-3308-5931	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:10	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU2b-COMP passed 96h survival rate	8.05%

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Control		2019-DU2b-COMP	27	n/a	1	8	Exact	0.5000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0020135	0.0020135	1	0.168	0.6922	Non-Significant Effect
Error	0.0956028	0.0119503	8			
Total	0.0976162		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	3.5	23.2	0.2525	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.64	0.741	1.7E-04	Non-Normal Distribution

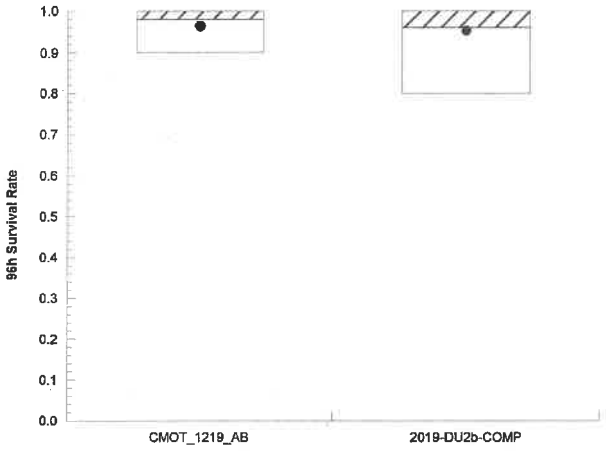
96h Survival Rate Summary

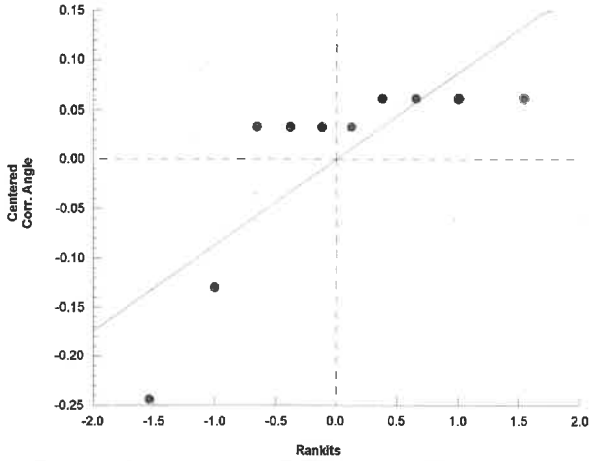
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
2019-DU2b-COMP		5	0.960	0.849	1.000	1.000	0.800	1.000	0.040	9.32%	2.04%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
2019-DU2b-COMP		5	1.35	1.18	1.52	1.41	1.11	1.41	0.061	10.09%	2.06%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU2b-Comp
Test ID#: 85963 Project#: 30945
Test Date: 11/21/19 Randomization: 5.7.5

Organism Log #: 11855 Age: 5d
Organism Supplier: Aquatic Indicators
Control: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Lab Control	20.3	8.22		7.4		24.5			10	10	10	10	10	Test Solution Prep: KK
100%	20.4	8.06		7.7		24.5		~~7.57~~	10	10	10	10	10	New WQ: KP
														Initiation Date: 11/21/19
														Initiation Time: 1615
														Initiation Signoff: KC
														a.m. Feeding: KC
Meter ID	59A	PH25		RD11		EC14		DR3800						p.m. Feeding: KC
Lab Control	19.4		7.60		7.5		24.7		10	10	10	10	10	Count Date: 11/22/19
100%	19.3		7.75		7.0		24.6		10	10	10	10	10	Count Time: 1008
														Count Signoff: CO
														Old WQ: SDTS
														a.m. Feeding: BV
Meter ID	35A		PH26		RD12		EC12							p.m. Feeding: RO
Lab Control	19.5		7.57		7.1		24.9		10	10	10	10	10	Count Date: 11/23/19
100%	19.4		7.75		6.8		24.7		10	9	10	10	10	Count Time: 1024
														Count Signoff: SVV
														Old WQ: TA
														a.m. Feeding: TF
Meter ID	48A		PH26		RD13		EC13							p.m. Feeding: SVV
Lab Control	19.4		7.51		5.4		25.9		10	10	10	10	10	Count Date: 11/24/19
100%	19.4		7.79		5.9		25.7		10	9	10	10	10	Count Time: 0910
														Count Signoff: TK
														Old WQ: KP
														a.m. Feeding: KC
Meter ID	105A		PH24		RD11		EC14							p.m. Feeding: KC
Lab Control	19.3		7.76		7.6		26.9		10	10	9	10	10	Termination Date: 11/25/19
100%	19.0		7.88		7.5		26.2		10	8	10	10	10	Termination Time: 1500
														Termination Signoff: TK
														Old WQ: KC
Meter ID	105A		pH26		RD10		EC10							a.m. Feeding: KJ

Acute Mysid Survival Test — Pacific EcoRisk

Analysis ID:	04-8564-9862	**Endpoint:**	96h Survival Rate	**CETIS Version:**	CETISv1.9.6
Analyzed:	19 Dec-19 14:10	**Analysis:**	Nonparametric-Two Sample	**Status Level:**	1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU3-COMP passed 96h survival rate	5.60%

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Control		2019-DU3-COMP	27.5	n/a	2	8	Exact	0.7778	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	1	0	1.0000	Non-Significant Effect
Error	0.0424949	0.0053119	8			
Total	0.0424949		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Variance Ratio F Test	1	23.2	1.0000	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.509	0.741	4.7E-06	Non-Normal Distribution

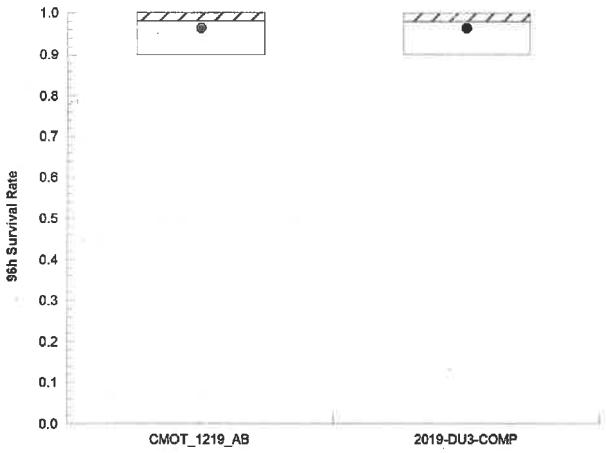
96h Survival Rate Summary

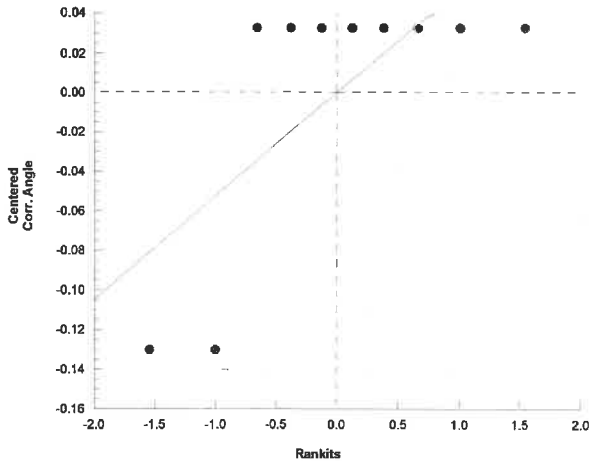
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
2019-DU3-COMP		5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
2019-DU3-COMP		5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: **USACE: MOTCO**
Test Material: MOTCO-2019-DU3-Comp
Test ID#: 85964 Project#: 30945
Test Date: 11/21/19 Randomization: 5.7.5

Organism Log #: 11855 Age: 5d
Organism Supplier: Aquatic Indicators
Control: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Lab Control	20.3	8.22		7.4		24.5			10	10	10	10	10	Test Solution Prep:
100%	20.3	7.86		5.0		25.0		8.46	10	10	10	10	10	New WQ:
														Initiation Date: 11/21/19
														Initiation Time: 1615
														Initiation Signoff:
														a.m. Feeding:
Meter ID	59A	PH25		RD11		EC14		DR3800						p.m. Feeding
Lab Control	19.4		7.60		7.5		24.7		10	10	10	10	10	Count Date: 11/22/19
100%	19.2		7.88		7.1		25.2		10	10	10	10	10	Count Time: 1008
														Count Signoff: CO
														Old WQ:
														a.m. Feeding
Meter ID	35A		PH26		RD12		EC12							p.m. Feeding
Lab Control	19.5		7.57		7.1		24.9		10	10	10	10	10	Count Date: 11/23/19
100%	19.3		7.88		6.3		25.2		10	10	10	10	10	Count Time: 1024
														Count Signoff: SVV
														Old WQ: TA
														a.m. Feeding: TF
Meter ID	48A		PH26		RD13		EC13							p.m. Feeding: SVV
Lab Control	19.4		7.51		5.4		25.9		10	10	10	10	10	Count Date: 11/24/19
100%	19.3		7.87		6.0		26.0		10	9	10	10	10	Count Time: 0910
														Count Signoff: TK
														Old WQ: KD
														a.m. Feeding: KL
Meter ID	105A		PH24		RD11		EC14							p.m. Feeding: KL
Lab Control	19.3		7.76		7.6		26.9		10	10	9	10	10	Termination Date: 11/25/19
100%	19.0		7.93		7.2		26.7		10	9	10	10	10	Termination Time: 1500
														Termination Signoff: TK
														Old WQ: KL
Meter ID	105A		PH26		RD10		EC10							a.m. Feeding

Acute Mysid Survival Test — **Pacific EcoRisk**

Analysis ID: 02-5538-8776 **Endpoint:** 96h Survival Rate **CETIS Version:** CETISv1.9.6
Analyzed: 19 Dec-19 14:10 **Analysis:** Nonparametric-Two Sample **Status Level:** 1

Data Transform	Alt Hyp	Comparison Result	PMSD
Angular (Corrected)	C > T	2019-DU4-COMP passed 96h survival rate	4.30%

Wilcoxon Rank Sum Two-Sample Test

Sample I	vs	Sample II	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Lab Water Control		2019-DU4-COMP	30	n/a	1	8	Exact	1.0000	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0026559	0.0026559	1	1	0.3466	Non-Significant Effect
Error	0.0212475	0.0026559	8			
Total	0.0239034		9			

ANOVA Assumptions Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variance	Levene Equality of Variance Test	7.11	11.3	0.0285	Equal Variances
	Mod Levene Equality of Variance Test	1	13.7	0.3559	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.625	0.741	1.1E-04	Non-Normal Distribution

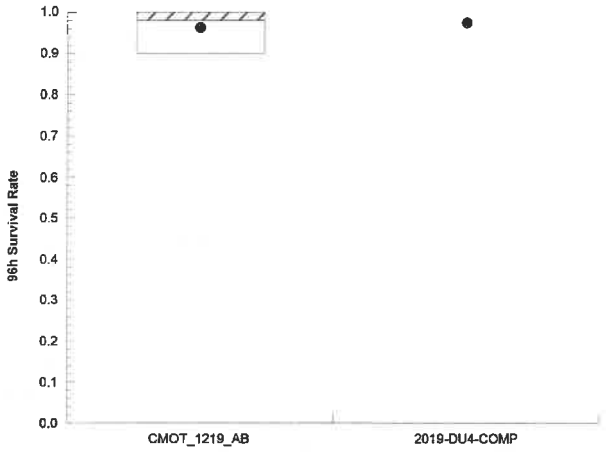
96h Survival Rate Summary

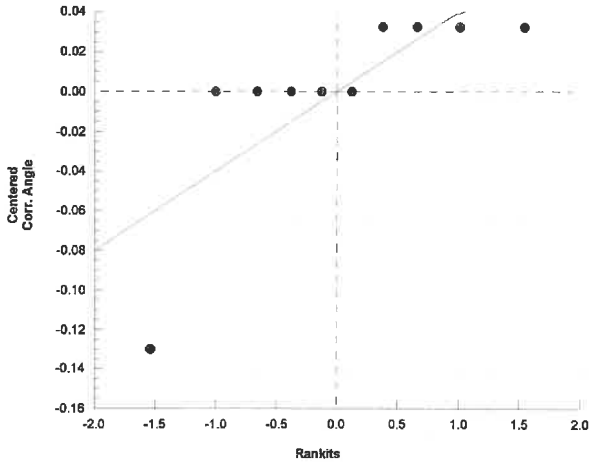
Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	0.980	0.924	1.000	1.000	0.900	1.000	0.020	4.56%	0.00%
2019-DU4-COMP		5	1.000	1.000	1.000	1.000	1.000	1.000	0.000	0.00%	-2.04%

Angular (Corrected) Transformed Summary

Sample	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
CMOT_1219_AB	LW	5	1.38	1.29	1.47	1.41	1.25	1.41	0.0326	5.28%	0.00%
2019-DU4-COMP		5	1.41	1.41	1.41	1.41	1.41	1.41	0	0.00%	-2.36%

Graphics





96 Hour Acute *Americamysis bahia* Water Column Toxicity Test

Client: USACE: MOTCO
Test Material: MOTCO-2019-DU4-Comp
Test ID#: 85965 Project#: 30945
Test Date: 11/21/19 Randomization: 5.7.5

Organism Log #: 11855 Age: 5d
Organism Supplier: Aquatic Indicators
Control: DI + Crystal Sea at 25ppt
Sample Salinity adjusted with: Crystal Sea®

Treatment (% Elutriate)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	NH3 (mg/L) new	# Live Organisms Rep A	Rep B	Rep C	Rep D	Rep E	SIGN-OFF
Lab Control	20.3	8.22		7.4		24.3			10	10	10	10	10	Test Solution Prep: KP
100%	20.4	8.07		6.6		23.2		4.67	10	10	10	10	10	New WQ: KP
														Initiation Date: 11/21/19
														Initiation Time: 1615
														Initiation Signoff: KL
														a.m. Feeding: KL
Meter ID	59A	pH25		RD11		EC14		DR3800						p.m. Feeding KL
Lab Control	19.4		7.60		7.5		24.7		10	10	10	10	10	Count Date: 11/22/19
100%	19.4		7.82		7.2		25.3		10	10	10	10	10	Count Time: 1008
														Count Signoff: CD
														Old WQ: 8573
														a.m. Feeding BV
Meter ID	35A		PH26		RD12		EC12							p.m. Feeding KL
Lab Control	19.5		7.57		7.1		24.9		10	10	10	10	10	Count Date: 11/23/19
100%	19.4		7.75		6.4		25.4		10	10	10	10	10	Count Time: 1024
														Count Signoff: SVV
														Old WQ: TA
														a.m. Feeding TF
Meter ID	48A		PH26		RD13		EC13							p.m. Feeding SVV
Lab Control	19.4		7.51		5.4		25.9		10	10	10	10	10	Count Date: 11/24/19
100%	19.3		7.81		6.1		26.1		10	10	10	10	10	Count Time: 0910
														Count Signoff: TK
														Old WQ: KD
														a.m. Feeding KL
Meter ID	105A		pH24		RD11		EC14							p.m. Feeding KL
Lab Control	19.3		7.76		7.6		26.9		10	10	9	10	10	Termination Date: 11/25/19
100%	19.1		7.85		7.0		26.8		10	10	10	10	10	Termination Time: 1500
														Termination Signoff: TK
														Old WQ: Fe
Meter ID	105A		pH26		RD10		EC10							a.m. Feeding KL

Appendix T

Test Data and Summary of Statistics for the Reference Toxicant Evaluation of the Mysid, *Americamysis bahia*

CETIS Summary Report

Acute Mysid Survival Test — **Pacific EcoRisk**

Batch ID:	18-2518-0383	**Test Type:**	Survival (96h)	**Analyst:**	Trevor Kelly		
Start Date:	21 Nov-19 16:15	**Protocol:**	EPA-821-R-02-012 (2002)	**Diluent:**	Laboratory Water		
Ending Date:	25 Nov-19 14:30	**Species:**	Americamysis bahia	**Brine:**	Crystal Sea		
Test Length:	94h	**Taxon:**		**Source:**	Aquatic Indicators, FL	**Age:**	5

Sample ID:	12-5744-4102	**Code:**	KCl	**Project:**	30957
Sample Date:	21 Nov-19 16:15	**Material:**	Potassium chloride	**Source:**	Reference Toxicant
Receipt Date:	21 Nov-19 16:15	**CAS (PC):**		**Station:**	In House
Sample Age:	n/a (20.3 °C)	**Client:**	Reference Toxicant		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	✓	NOEL	LOEL	TOEL	TU	PMSD	S
00-8423-3113	96h Survival Rate	Steel Many-One Rank Sum Test		0.5	>0.5	n/a		n/a	1

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	✓	Level	g/L	95% LCL	95% UCL	TU	S
17-1219-2534	96h Survival Rate	Binomial/Graphical		EC50	0.707	0.5	1		1

96h Survival Rate Summary

Conc-g/L	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	LW	4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.125		4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.25		4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0.5		4	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
1		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%
2		4	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

96h Survival Rate Detail

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	1.000	1.000	1.000	1.000
0.125		1.000	1.000	1.000	1.000
0.25		1.000	1.000	1.000	1.000
0.5		1.000	1.000	1.000	1.000
1		0.000	0.000	0.000	0.000
2		0.000	0.000	0.000	0.000

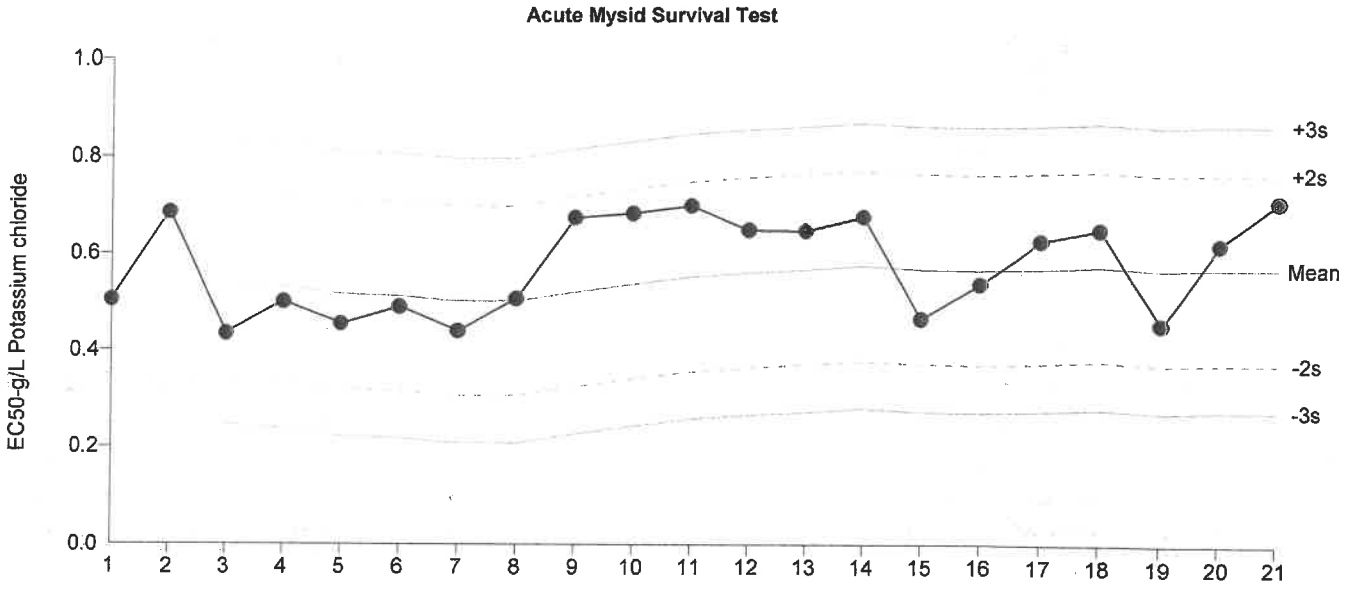
96h Survival Rate Binomials

Conc-g/L	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	LW	10/10	10/10	10/10	10/10
0.125		10/10	10/10	10/10	10/10
0.25		10/10	10/10	10/10	10/10
0.5		10/10	10/10	10/10	10/10
1		0/10	0/10	0/10	0/10
2		0/10	0/10	0/10	0/10

CETIS QC Plot

Acute Mysid Survival Test — **Pacific EcoRisk**

Test Type:	Survival (96h)	**Organism:**	Americamysis bahia (Mysid)	**Material:**	Potassium chloride
Protocol:	EPA-821-R-02-012 (2002)	**Endpoint:**	96h Survival Rate	**Source:**	Reference Toxicant-REF



Mean:	0.5696	**Count:**	20	**-2s Warning Limit:**	0.3734	**-3s Action Limit:**	0.2754
Sigma:	0.09809	**CV:**	17.20%	**+2s Warning Limit:**	0.7658	**+3s Action Limit:**	0.8639

Quality Control Data

Point	Year	Month	Day	Time	QC Data	Delta	Sigma	Warning	Action	Test ID	Analysis ID
1	2018	May	17	17:10	0.5045	-0.06514	-0.6641			15-7276-5712	19-5831-7847
2		Jun	7	16:10	0.6852	0.1156	1.178			15-6360-9527	07-5918-4208
3			14	15:49	0.4344	-0.1352	-1.378			11-3799-9499	00-1229-9201
4			21	14:15	0.5	-0.0696	-0.7096			17-0121-0040	10-7020-7683
5			28	15:43	0.4545	-0.1151	-1.174			20-7509-4266	21-3077-9710
6		Jul	19	15:50	0.4892	-0.08045	-0.8201			19-5821-7617	08-8249-4611
7			26	14:30	0.4396	-0.13	-1.325			09-7942-2191	00-6565-0616
8		Aug	2	16:20	0.506	-0.06359	-0.6483			12-9522-7258	02-5099-1901
9			23	15:30	0.6741	0.1045	1.065			07-6556-8425	13-6413-7538
10		Sep	27	16:15	0.683	0.1134	1.156			03-7544-6042	18-5737-3846
11		Oct	11	16:30	0.6989	0.1293	1.318			16-5205-7884	09-9908-9747
12		Nov	1	14:03	0.6484	0.07882	0.8035			07-2563-8011	09-6674-1373
13			9	15:39	0.647	0.07738	0.7889			07-1945-7433	13-1140-8532
14			14	14:47	0.6758	0.1062	1.082			08-9266-3168	10-7839-8379
15	2019	Feb	12	15:35	0.4648	-0.1048	-1.068			13-7320-9678	20-3578-7781
16		Apr	4	13:25	0.5363	-0.03334	-0.3399			18-3591-7234	03-9059-4419
17			11	11:24	0.6263	0.05673	0.5784			01-0028-0845	06-6529-7297
18		May	2	12:34	0.6499	0.0803	0.8187			06-5631-1884	00-2864-5404
19		Jun	13	14:15	0.4549	-0.1147	-1.17			11-7168-6657	20-5864-9408
20		Jul	3	15:40	0.6198	0.05023	0.512			19-2938-8622	21-1963-3362
21		Nov	21	16:15	0.7071	0.1375	1.402			14-8046-3601	17-1219-2534

96 Hour Acute *Americamysis bahia* Reference Toxicant Test

Client: **Reference Toxicant** Organism Log #: 11855 Age: 5d

Test Material: Potassium Chloride Organism Supplier: Aquatic Indicators

Test ID#: 85978 Project # 30957 Control/Diluent: DI + Crystal Sea @ 25 ppt

Test Date: 11/21/19 Randomization: 6,4,1 Control Water Batch: 1377

Treatment (g/L KCl)	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Salinity (ppt) new	Salinity (ppt) old	# Live Organisms Rep A	Rep B	Rep C	Rep D	SIGN-OFF
Control	20.3	7.88		7.6		24.6		10	10	10	10	Test Solution Prep: SVV
0.125	20.4	7.91		7.6		24.9		10	10	10	10	New WQ: KP
0.25	20.4	7.90		7.7		25.1		10	10	10	10	Initiation Date: 11/21/19
0.5	20.4	7.90		7.7		25.3		10	10	10	10	Initiation Time: 1615
1	20.4	7.89		7.8		25.9		10	10	10	10	Initiation Signoff: TK
2	20.4	7.89		8.0		27.0		10	10	10	10	RT Batch #: 4
Meter ID	93A	PH25		RD11		EC14						a.m. Feeding Signoff: KL
												p.m. Feeding Signoff: KL
Control	19.1		7.61		8.0		24.4	10	10	10	10	Count Date: 11/22/19
0.125	19.0		7.64		8.0		25.1	10	10	10	10	Count Time: 1041
0.25	19.0		7.66		8.0		25.1	10	10	10	10	Count Signoff: CO
0.5	19.0		7.65		7.9		25.4	10	10	10	10	Old WQ: SVV
1	19.0		7.65		7.9		25.9	1	0	0	0	a.m. Feeding Signoff: BV
2	19.0		7.68		7.9		27.2	0	0	0	0	p.m. Feeding Signoff: KL
Meter ID	35A		PH26		RD12		EC12					
Control	19.4	8.01	7.54	7.7	6.2	24.2	25.6	10	10	10	10	Test Solution Prep: SAF
0.125	19.4	8.02	7.49	7.7	6.1	24.6	25.8	10	10	10	10	New WQ: KP
0.25	19.4	8.02	7.52	7.7	6.3	24.8	25.8	10	10	10	10	Renewal Date: 11.23.19
0.5	19.4	8.01	7.57	7.7	6.5	25.1	26.3	10	10	10	10	Renewal Time: 1415
1	19.3	8.00	7.62	7.8	6.8	25.6	27.2	0	-	-	-	Renewal Signoff: SVV
2	-	-	-	-	-	-	-	-	-	-	-	Old WQ: KP
Meter ID	48A	PH24	PH24	RD11	RD11	EC14	EC14					a.m. Feeding Signoff: TF
												p.m. Feeding Signoff: SVV
												RT Batch #: 4
Control	19.0		7.77		7.5		25.0	10	10	10	10	Count Date: 11/24/19
0.125	19.0		7.78		7.5		25.3	10	10	10	10	Count Time: 0818
0.25	19.0		7.79		7.6		25.4	10	10	10	10	Count Signoff: TK
0.5	19.0		7.81		7.7		25.7	10	10	10	10	Old WQ: BV
1	-		-		-		-	-	-	-	-	a.m. Feeding Signoff: KL
2	-		-		-		-	-	-	-	-	p.m. Feeding Signoff: KL
Meter ID	105A		PH26		RD10		EC10					
Control	19.2		7.79		7.4		25.5	10	10	10	10	Termination Date: 11/25/19
0.125	19.1		7.79		7.4		26.2	10	10	10	10	Termination Time: 1430
0.25	19.1		7.69		7.1		26.4	10	10	10	10	Termination Signoff: TK
0.5	19.0		7.68		7.0		26.7	10	10	10	10	Old WQ: Le
1	-		-		-		-	-	-	-	-	a.m. Feeding Signoff: TK
2	-		-		-		-	-	-	-	-	
Meter ID	105A		pH26		RD10		EC10					

Appendix U

Test Data for the Military Ocean Terminal Concord (MOTCO) Sediment Bioaccumulation Tests with the Bivalve, *Macoma nasuta*

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** Lab Control **Test ID:** - **Project #:** 30945

Organism Log#: 11837 **Age:** Adult **Organism Supplier:** J&G Gunstone **Sample ID:** 54319

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							20	20	20	20	20	Initials: TF Confirmation: CO
Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E	
0	11/8/19	15.0	<1.00	7.85	8.0	33.9	0	0	0	0	0	Time: 0850 Initials: SAT
1	11/9/19	14.5			7.9	34.3	0	0	0	0	0	Time: 1300 Initials: JR
2	11/10/19	14.9			8.1	34.2	0	0	0	0	0	Time: 1024 Initials: MN
3	11/11/19	14.6			8.1	34.2	0	0	0	0	0	Time: 1257 Initials: SAT
4	11/12/19	14.5			7.7	34.5	0	0	0	0	0	Time: 0915 Initials: RQ
5	11/13/19	15.3			8.1	34.8	0	0	0	0	0	Time: 1054 Initials: ID
6	11/14/19	15.3			8.0	34.4	0	0	0	0	0	Time: 1407 Initials: TA
7	11/15/19	14.4	<1.00	7.75	7.9	34.4	0	0	0	0	0	Time: 0950 Initials: MN
8	11/16/19	15.5			8.1	34.4	0	0	1	0	0	Time: 1315 Initials: SAT
9	11/17/19	14.9			8.0	34.5	0	0	0	0	0	Time: 1052 Initials: MN
10	11/18/19	14.8			7.6	34.3	0	0	0	0	0	Time: 1530 Initials: MN/SAT
11	11/19/19	14.5			8.0	34.8	0	0	0	1	0	Time: 1045 Initials: RQ
12	11/20/19	14.9			7.9	34.5	0	0	0	0	0	Time: 1142 Initials: TA
13	11/21/19	14.5			8.0	34.7	0	0	0	0	0	Time: 1453 Initials: TA
14	11/22/19	14.3	<1.00	7.76	8.1	33.8	0	0	0	0	0	Time: 1400 Initials: RQ
15	11/23/19	14.8			8.0	34.2	0	0	0	0	0	Time: 1345 Initials: RQ
16	11/24/19	14.5			8.0	34.4	0	0	0	0	0	Time: 0935 Initials: ID
17	11/25/19	14.7			7.9	34.2	0	0	0	0	0	Time: 0922 Initials: ID
18	11/26/19	14.5			8.0	34.2	0	0	0	0	0	Time: 1130 Initials: TA
19	11/27/19	14.6			7.8	34.3	0	0	0	0	0	Time: 1305 Initials: ID
20	11/28/19	14.4			7.8	33.9	0	0	0	0	0	Time: 0825 Initials: RQ
21	11/29/19	15.0	<1.00	7.92	8.0	33.1	0	0	0	+2 SAT	0	Time: 0955 Initials: SAT
22	11/30/19	14.4			8.0	34.4	0	0	0	0	0	Time: 1149 Initials: TA
23	12/1/19	14.7			8.1	34.3	0	0	0	0	0	Time: 1100 Initials: MN
24	12/2/19	14.7			7.6	34.2	0	0	2 SAT 12/3	0	0	Time: 0900 Initials: ID
25	12/3/19	14.3			8.0	34.2	0	0	0	0	0	Time: 1021 Initials: AS
26	12/4/19	14.7			8.1	33.9	0	0	0	0	0	Time: 0920 Initials: RQ
27	12/5/19	14.4			8.0	34.18	0	0	0	0	0	Time: 1409 Initials: AS
28	12-6-19	15.3	<1.00	7.77	8.4	32.7	0	1	0	0	0	Time: 0710 Initials: MN
					Day 28 # Live Organisms		20	19	18	18	20	Initials: TL

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO | Test Material: SF-10 | Test ID: 85939 | Project #: 30945

Organism Log#: 11837 | Age: Adult | Organism Supplier: J&G Gunstone | Sample ID: 54261

					Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
						20	20	20	20	20	Initials: JF Confirmation: CO
Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E	
0	11/8/19	15.3	4.00	7.88	8.3	33.7	0	0	0	0	0	Time: 1008 Initials: SAT
1	11/9/19	14.7			7.6	34.0	0	0	0	0	0	Time: 1312 Initials: JR
2	11/10/19	15.9			6-8	33.0	0	0	0	0	0	Time: 1027 Initials: NN
3	11/11/19	14.9			8.1	33.9	0	0	0	0	0	Time: 1259 Initials: SAT
4	11/12/19	14.7			7.8	34.4	0	0	0	0	0	Time: 0915 Initials: RQ
5	11/13/19	15.4			7.7	34.3	0	0	0	0	0	Time: 1054 Initials: ID
6	11/14/19	15.8			7.7	34.3	0	0	0	0	0	Time: 1405 Initials: TA
7	11/15/19	14.9	<1.00	7.77	7.9	24.3	0	0	0	0	0	Time: 0951 Initials: NN
8	11/16/19	15.7			7.9	34.2	0	0	0	0	0	Time: 1305 Initials: SAT
9	11/17/19	14.9			8.0	34.3	0	0	0	0	0	Time: 1054 Initials: MH
10	11-18-19	14.6			7.7	34.3	0	0	0	0	0	Time: 1530 Initials: MH/SAT
11	11/19/19	15.0			8.0	34.1	0	0	0	0	0	Time: 1045 Initials: RQ
12	11/20/19	15.8			7.8	34.7	0	0	0	0	0	Time: 1143 Initials: TA
13	11/21/19	14.9			8.1	34.6	0	0	0	0	0	Time: 1452 Initials: TA
14	11/22/19	14.9	1.58	7.77	8.1	34.0	0	0	0	0	0	Time: 1400 Initials: RQ
15	11/23/19	15.0			8.1	34.5	0	0	0	0	0	Time: 1345 Initials: RQ
16	11/24/19	15.4			8.2	34.4	1	0	1	0	0	Time: 0935 Initials: ID
17	11/25/19	15.4			7.7	34.4	0	0	0	0	0	Time: 0922 Initials: ID
18	11/26/19	15.1			7.9	34.2	0	0	0	0	0	Time: 1129 Initials: TA
19	11/27/19	14.6			7.9	34.3	0	0	0	0	0	Time: 1305 Initials: ID
20	11/28/19	14.5			7.9	34.5	0	0	0	0	0	Time: 0825 Initials: RQ
21	11/29/19	15.2	<1.00	7.90	8.2	33.3	0	0	0	0	0	Time: 0952 Initials: SAT
22	11/30/19	14.4			8.1	34.5	0	0	0	0	0	Time: 1148 Initials: TA
23	12/1/19	14.8			8.0	34.5	0	0	0	0	0	Time: 1102 Initials: MH
24	12/2/19	15.1			7.8	34.4	0	0	0	0	[illegible]	Time: 0900 Initials: ID
25	12/3/19	14.9			8.4	34.6	0	0	0	0	0	Time: 1021 Initials: AS
26	12/4/19	14.7			8.2	34.2	0	0	0	0	0	Time: 0920 Initials: RQ
27	12/5/19	14.8			8.1	34.3	0	0	0	0	0	Time: 1409 Initials: AS
28	12/6/19	15.1	<1.00	7.80	8.7	33.5	0	0	0	0	0	Time: 0710 Initials: MH
					Day 28 # Live Organisms	19	20	19	20	19	Initials: SL

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU1-COMP **Test ID:** 85934 **Project #:** 30945

Organism Log#: 11837 **Age:** Adult **Organism Supplier:** J&G Gunstone **Sample ID:** 54277

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							20	20	20	20	20	Initials: TT Confirmation: CD
Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E	
0	11/8/19	15.3	1.16	7.92	8.4	33.9	0	0	0	0	0	Time: 1000 Initials: SAT
1	11/9/19	14.9			7.8	33.3	0	0	0	0	0	Time: 1302 Initials: JR
2	11/10/19	15.4			7.7	33.2	0	0	0	0	0	Time: 1028 Initials: NN
3	11/11/19	15.0			8.0	32.9	1	1	0	0	1	Time: 1259 Initials: SAT
4	11/12/19	15.0			7.8	33.9	0	0	0	0	0	Time: 0915 Initials: RQ
5	11/13/19	15.2			8.1	33.6	0	0	0	0	0	Time: 1054 Initials: ID
6	11/14/19	15.9			7.9	33.9	0	0	0	0	0	Time: 1403 Initials: TA
7	11/15/19	14.9	1.88	7.74	7.9	33.2	0	0	0	0	0	Time: 1052 Initials: NN
8	11/16/19	15.3			7.9	33.8	0	0	0	0	0	Time: 1302 Initials: SAT
9	11/17/19	15.0			7.9	33.9	0	0	0	0	0	Time: 1055 Initials: MM
10	11/18/19	15.9			7.7	34.0	0	0	0	0	0	Time: 1510 Initials: SAT
11	11/19/19	14.6			8.0	34.3	0	0	0	0	0	Time: 1045 Initials: RQ
12	11/20/19	15.9			7.7	34.5	0	0	0	0	0	Time: 1446 Initials: TA
13	11/21/19	14.8			8.0	34.6	0	0	0	0	0	Time: 1452 Initials: TA
14	11/22/19	15.0	2.39	7.73	8.1	34.0	0	0	0	0	0	Time: 1400 Initials: RQ
15	11/23/19	15.0			8.0	34.2	0	0	0	0	0	Time: 1345 Initials: RQ
16	11/24/19	15.1			8.1	34.3	0	0	0	0	0	Time: 0935 Initials: ID
17	11/25/19	14.6			7.8	34.4	0	0	0	0	0	Time: 0922 Initials: ID
18	11/26/19	15.2			7.7	34.3	0	0	0	0	0	Time: 1128 Initials: TA
19	11/27/19	14.7			7.9	34.3	0	0	0	0	0	Time: 1305 Initials: ID
20	11/28/19	14.3			7.8	34.5	0	0	0	0	0	Time: 0825 Initials: RQ
21	11/29/19	~~15.2~~ 14.9	41.00	~~7.92~~ 7.92	~~8.0~~ 8.2	~~33.6~~ 33.6	0	0	2	0	0	Time: 0955 Initials: SAT
22	11/30/19	15.1			8.0	34.7	0	0	0	0	0	Time: 1147 Initials: TA
23	12/1/19	14.9			7.9	34.4	0	0	0	0	0	Time: 1104 Initials: MM
24	12/2/19	15.0			7.8	34.4	0	0	0	0	0	Time: 0900 Initials: ID
25	12/3/19	14.3			8.4	34.5	0	0	0	0	0	Time: 1021 Initials: AS
26	12/4/19	14.7			8.2	34.1	0	0	0	0	0	Time: 0930 Initials: RQ
27	12/5/19	14.5			8.0	34.3	0	0	0	0	0	Time: 1409 Initials: AS
28	12/6/19	15.0	1.47	7.76	8.5	33.8	0	0	1	3	0	Time: 0710 Initials: MM
					Day 28 # Live Organisms		19	19	17	17	19	Initials: JL

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU2a-COMP **Test ID:** 85935 **Project #:** 30945

Organism Log#: 11837 **Age:** Adult **Organism Supplier:** J&G Gunstone **Sample ID:** 54282

Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
	20	20	20	20	20	Initials: TF Confirmation: CD

Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E	
0	11/8/19	15.4	5.69	7.92	8.4	33.3	0	0	0	0	0	Time: 1000 Initials: SAT
1	11/9/19	14.2			8.0	33.1	0	0	0	0	0	Time: 1304 Initials: JR
2	11/10/19	15.5			8.1	33.0	0	0	0	0	0	Time: 1029 Initials: NN
3	11/11/19	14.6			8.0	32.4	0	0	0	0	0	Time: 1300 Initials: SAT
4	11/12/19	15.3			7.7	33.7	0	0	0	0	0	Time: 0915 Initials: RQ
5	11/13/19	15.0			8.1	33.5	0	0	0	0	0	Time: 1054 Initials: JD
6	11/14/19	15.9			7.8	33.8	0	0	0	0	0	Time: 1400 Initials: TA
7	11/15/19	15.0	3.30	7.69	7.7	33.2	0	1	0	0	0	Time: 0952 Initials: NN
8	11/16/19	15.4			7.9	33.8	0	0	0	0	0	Time: 1301 Initials: SAT
9	11/17/19	14.8			7.9	33.8	0	0	0	0	0	Time: 1057 Initials: MH
10	11/18/19	15.5			7.7	33.6	0	0	0	0	0	Time: 1530 Initials: MH SAT
11	11/19/19	14.3			8.1	34.1	0	0	0	0	0	Time: 1045 Initials: RQ
12	11/20/19	15.8			7.7	34.2	0	0	1	0	0	Time: 1149 Initials: TA
13	11/21/19	14.4			8.0	34.3	0	0	0	0	0	Time: 1449 Initials: TA
14	11/22/19	15.0	5.50	7.75	8.4	33.9	0	0	0	0	0	Time: 1400 Initials: RQ
15	11/23/19	14.6			8.1	34.0	0	0	0	0	0	Time: 1345 Initials: RQ
16	11/24/19	15.1			8.0	33.8	0	0	0	1	0	Time: 0935 Initials: JD
17	11/25/19	14.6			7.9	33.8	0	1	0	0	0	Time: 0922 Initials: JD
18	11/26/19	15.1			7.7	34.1	0	1	1	0	0	Time: 1127 Initials: TA
19	11/27/19	16.6			7.8	34.2	0	0	0	0	0	Time: 1305 Initials: JD
20	11/28/19	14.3			7.7	34.8	0	0	0	0	0	Time: 0825 Initials: RQ
21	11/29/19	14.7	4.27	7.87	8.1	33.6	0	0	0	0	0	Time: 0957 Initials: SAT
22	11/30/19	14.4			8.0	34.3	0	0	0	0	0	Time: 1146 Initials: TA
23	12/1/19	14.8			7.8	34.3	0	0	0	0	0	Time: 1107 Initials: MH
24	12/2/19	15.0			7.8	34.2	0	0	0 SAT	0	0	Time: 0900 Initials: JD
25	12/3/19	14.3			8.1	34.4	0	0	0	0	0	Time: 1021 Initials: AS
26	12/4/19	14.6			7.6	34.0	0	0	0	0	0	Time: 0920 Initials: RQ
27	12/5/19	14.3			7.7	34.1	0	0	0	0	0	Time: 1409 Initials: AS
28	12/6/19	14.8	3.96	7.68	8.4	33.8	0	0	4	2	0	Time: 0710 Initials: MH
					Day 28 # Live Organisms		20	17	12	17	20	Initials: JL

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU2b-COMP **Test ID:** 85936 **Project #:** 30945

Organism Log#: 11837 **Age:** Adult **Organism Supplier:** J&G Gunstone **Sample ID:** 54287

Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
	20	20	20	20	20	Initials: TL Confirmation: CO

Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E	
0	11/8/19	15.3	2.83	7.90	8.4	33.3	0	0	0	0	0	Time: 1005 Initials: SAT
1	11/9/19	14.4			7.6	32.5	0	0	0	0	0	Time: 1306 Initials: JR
2	11/10/19	15.2			8.0	32.3	0	0	0	0	0	Time: 1030 Initials: NN
3	11/11/19	14.5			8.1	32.5	0	0	0	0	0	Time: 1301 Initials: SAT
4	11/12/19	15.0			7.7	33.2	0	0	0	0	0	Time: 0915 Initials: RO
5	11/13/19	15.2			7.8	33.0	0	0	0	2	0	Time: 1054 Initials: JD
6	11/14/19	15.8			7.2	33.7	0	0	0	0	0	Time: 1358 Initials: TA
7	11/15/19	14.8	2.39	7.67	7.8	33.2	0	0	0	0	0	Time: 0953 Initials: NN
8	11/16/19	15.6			7.2	33.8	0	0	0	2	0	Time: 1320 Initials: SAT
9	11/17/19	15.1			7.8	33.8	0	0	0	0	0	Time: 1058 Initials: MYL
10	11/18/19	15.3			7.8	33.8	0	0	0	0	0	Time: 1530 Initials: MYL/SAT
11	11/19/19	14.1			8.1	34.3	1	0	0	0	1 Floating 0	Time: 1045 Initials: RO
12	11/20/19	15.3			7.5	34.4	1	0	0	0	0	Time: 1153 Initials: TA
13	11/21/19	14.7			8.1	34.4	0	0	0	0	0	Time: 1449 Initials: TA
14	11/22/19	15.0	6.53	7.76	8.5	34.2	0	0	0	0	0	Time: 1400 Initials: RO
15	11/23/19	14.3			8.3	34.1	0	0	0	0	0	Time: 1345 Initials: RO
16	11/24/19	15.2			8.1	34.2	0	0	0	0	0	Time: 0935 Initials: JD
17	11/25/19	14.7			8.1	34.3	0	0	0	0	0	Time: 0922 Initials: JD
18	11/26/19	15.0			7.6	34.2	0	0	0	0	0	Time: 1126 Initials: TA
19	11/27/19	14.5			8.0	34.4	0	0	0	1	0	Time: 1305 Initials: JD
20	11/28/19	14.4			7.8	34.5	0	0	0	0	0	Time: 0825 Initials: RO
21	11/29/19	14.9	2.48	7.83	8.3	33.5	0	0	0	0	0	Time: 1001 Initials: SAT
22	11/30/19	15.0			8.2	34.5	0	0	0	0	0	Time: 1145 Initials: TA
23	12/1/19	14.6			7.8	34.3	0	0	1	0	0	Time: 1104 Initials: MYL
24	12/2/19	15.0			8.0	34.5	0	0	0	0	0	Time: 0900 Initials: JD
25	12/3/19	14.2			8.2	34.5	0	0	0	0	0	Time: 1021 Initials: AS
26	12/4/19	14.8			7.9	34.0	0	0	0	0	0	Time: 0920 Initials: RO
27	12/5/19	14.2			8.1	34.2	0	0	0	0	0	Time: 1459 Initials: AS
28	12/6/19	14.1	2.44	7.71	8.6	34.0	0	1	1	0	0	Time: 0710 Initials: YL
					Day 28 # Live Organisms		19	19	18	15	20	Initials: JL

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU3-COMP **Test ID:** 85937 **Project #:** 30945

Organism Log#: 11837 **Age:** Adult **Organism Supplier:** J&G Gunstone **Sample ID:** 54292

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							20	20	20	20	20	Initials: TF Confirmation: CD
Day	Date	Water Quality Measurements					Observed Mortality					
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E	
0	11/8/19	15.5	2.92	7.96	8.4	33.2	0	0	0	0	0	Time: 1007 Initials: SAT
1	11/9/19	14.3			7.8	32.5	0	0	0	0	0	Time: 1308 Initials: JR
2	11/10/19	15.2			8.2	32.0	0	0	0	0	0	Time: 1031 Initials: NN
3	11/11/19	14.3			8.0	31.5	0	0	0	0	0	Time: 1302 Initials: SAT
4	11/12/19	15.1			7.6	33.1	0	0	0	0	0	Time: 0915 Initials: RC
5	11/13/19	14.4			8.1	33.0	0	0	0	2	0	Time: 1054 Initials: JD
6	11/14/19	16.0			7.7	33.3	0	0	0	0	0	Time: 1358 Initials: TA
7	11/15/19	14.4	3.03	7.74	7.8	33.2	0	0	0	0	0	Time: 0955 Initials: NN
8	11/16/19	15.7			7.4	33.4	1	0	0	0	0	Time: 1259 Initials: SAT
9	11/17/19	14.7			7.8	33.2	0	0	0	1	0	Time: 1100 Initials: MM
10	11/18/19	16.0			7.6	32.9	0	0	0	0	0	Time: 1530 Initials: MM SAT
11	11/19/19	14.0			8.1	33.9	0	0	0	0	0	Time: 1045 Initials: RC
12	11/20/19	16.0			7.7	33.6	0	0	0	0	0	Time: 1156 Initials: TA
13	11/21/19	14.2			8.0	34.0	0	0	0	0	0	Time: 1448 Initials: TA
14	11/22/19	14.8	3.59	7.73	8.4	33.7	0	0	0	0	0	Time: 1400 Initials: RC
15	11/23/19	14.4			8.0	33.6	0	0	0	0	0	Time: 1345 Initials: RC
16	11/24/19	15.4			8.0	34.0	0	0	0	0	0	Time: 0935 Initials: JD
17	11/25/19	14.5			7.8	33.9	0	0	0	0	0	Time: 0922 Initials: JD
18	11/26/19	15.1			7.9	33.9	0	0	0	0	0	Time: 1125 Initials: TA
19	11/27/19	14.0			8.0	34.1	0	0	0	0	0	Time: 1305 Initials: JD
20	11/28/19	14.3			7.8	34.5	0	0	0	0	0	Time: 0825 Initials: RC
21	11/29/19	14.6	3.00	7.83	8.1	33.7	0	1	0	2	1	Time: 1005 Initials: SAT
22	11/30/19	14.9			7.9	34.4	0	0	0	0	0	Time: 1144 Initials: TA
23	12/1/19	14.2			8.0	34.1	0	1	0	0	0	Time: 1111 Initials: MM
24	12/2/19	15.1			7.8	34.2	0	0	0	1	0	Time: 0900 Initials: JD
25	12/3/19	14.0			8.1	34.4	0	0	0	0	0	Time: 1021 Initials: AS
26	12/4/19	14.6			8.0	34.0	0	0	0	0	0	Time: 0920 Initials: RC
27	12/5/19	14.2			8.1	34.1	0	0	0	0	0	Time: 1409 Initials: AS
28	12/6/19	14.7	1.93	7.77	8.6	33.8	0	0	0	0	0	Time: 0710 Initials: MM
					Day 28 # Live Organisms		19	18	20	16	19	Initials: JL

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU4-COMP **Test ID:** 85938 **Project #:** 30945

Organism Log#: 11837 **Age:** Adult **Organism Supplier:** J&G Gunstone **Sample ID:** 54297

							Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
								20	20	20	20	20	Initials: TF Confirmation: CD
Day	Date	Water Quality Measurements					Observed Mortality						
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Reep E		
0	11/8/19	15.4	3.41	7.96	8.3	33.5	0	0	0	0	0	Time: 1009	Initials: SAT
1	11/9/19	14.0			7.7	33.0	0	0	0	0	0	Time: 1310	Initials: JR
2	11/10/19	15.2			8.1	32.7	0	0	0	0	0	Time: 1032	Initials: NN
3	11/11/19	14.3			8.1	32.4 34.4 11/11/19	0	0	0	0	0	Time: 1303	Initials: JDB
4	11/12/19	15.2			6.9	33.6	0	0	1	0	0	Time: 0915	Initials: RA
5	11/13/19	14.0			8.0	33.7	1	0	2	0	0	Time: 1054	Initials: ID
6	11/14/19	15.9			7.8	33.8	0	0	0	0	0	Time: 1357	Initials: TA
7	11/15/19	14.6	3.03	7.80	8.1	33.9	0	0	0	0	0	Time: 0956	Initials: NN
8	11/16/19	15.9			7.7	33.7	0	0	0	0	0	Time: 1257	Initials: SAT
9	11/17/19	14.5			7.9	33.6	0	0	0	0	0	Time: 1102	Initials: MJL
10	11/18/19	15.3			7.5	33.0	0	0	0	0	0	Time: 1530	Initials: MJL/SAT
11	11/19/19	14.0			8.1	34.2	0	0	0	0	0	Time: 1045	Initials: RA
12	11/20/19	15.5			7.6	34.1	0	0	0	0	0	Time: 1158	Initials: TA
13	11/21/19	14.1			8.1	34.2	0	0	0	0	0	Time: 1447	Initials: TA
14	11/22/19	14.8	7.40	7.77	8.3	33.9	0	0	0	0	0	Time: 1400	Initials: RA
15	11/23/19	14.1			8.1	34.1	0	0	0	0	0	Time: 1345	Initials: RA
16	11/24/19	15.4			8.0	34.1	0	0	0	0	0	Time: 0935	Initials: ID
17	11/25/19	14.1			7.9	34.1	0	0	0	0	0	Time: 0922	Initials: ID
18	11/26/19	14.7			7.8	34.2	0	0	0	0	0	Time: 1124	Initials: TA
19	11/27/19	14.1			8.0	34.0	0	0	0	0	0	Time: 1305	Initials: ID
20	11/28/19	14.1			7.7	34.1	0	0	0	0	0	Time: 0825	Initials: RA
21	11/29/19	14.6	2.49	7.84	8.1	33.9	0	0	0	0	0	Time: 0917	Initials: SAT
22	11/30/19	14.6			8.0	34.4	0	0	0	0	0	Time: 1143	Initials: TA
23	12/1/19	14.3			8.0	34.2	0	0	0	0	0	Time: 1113	Initials: MJL
24	12/2/19	14.8			7.8	34.4	0	0	0	0	0	Time: 0900	Initials: ID
25	12/3/19	13.8			8.3	34.5	0	0	0	0	0	Time: 1021	Initials: [illegible]
26	12/4/19	14.4			8.0	33.9	0	0	0	0	0	Time: 0920	Initials: RA
27	12/5/19 12/5/19	14.0			8.1	34.2	0	0	0	0	0	Time: 1404	Initials: AS
28	12/6/19	14.7	2.12	7.76	8.6	33.7	0	0	0	1	0	Time: 0710	Initials: MJL
							Day 28 # Live Organisms	19	20	18	19	19	Initials: TF

28-day *Macoma nasuta* Sediment Bioaccumulation Initial Water Quality Data

Client: USACE Project: MOTCO Project #: 30945 Date (Day 0): 11/08/19

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	15.0	7.85	8.0	33.9	11/08/19	0840	SAT
	B	15.0	7.87	8.2	34.1			
	C	15.1	7.89	8.1	34.2			
	D	15.2	7.88	8.1	34.1			
	E	15.2	7.86	8.1	33.9			
SF-10	A	15.3	7.88	8.3	33.7	11/08/19	0855	SAT
	B	15.4	7.89	8.3	34.2			
	C	15.4	7.89	8.3	34.1			
	D	15.4	7.90	8.4	34.2			
	E	15.2	7.89	8.4	34.2			
MOTCO-2019-DU1-Comp	A	15.4	7.95	8.4	33.9	11/08/19	0910	SAT
	B	15.3	7.93	8.4	33.9			
	C	15.5	~~7.98~~ 7.94	8.4	33.9			
	D	15.5	7.95	8.4	33.9			
	E	15.6	7.95	8.4	33.9			
MOTCO-2019-DU2a-Comp	A	14.9	7.92	8.4	33.3	11/08/19	0915	SAT
	B	15.5	7.92	8.4	33.5			
	C	15.5	7.92	8.4	33.5			
	D	15.6	7.92	8.4	33.5			
	E	15.4	7.93	8.3	33.5			
MOTCO-2019-DU2b-Comp	A	15.3	7.82	8.4	33.1	11/08/19	0920	SAT
	B	15.3	7.90	8.4	33.3			
	C	15.5	7.85	8.3	33.0			
	D	15.6	7.88	8.3	33.2			
	E	15.3	7.89	8.4	33.1			
MOTCO-2019-DU3-Comp	A	15.5	7.96	8.4	~~37.5~~ 33.5	11/08/19	0905	SAT
	B	15.6	7.98	8.4	33.0			
	C	15.4	7.98	8.4	33.1			
	D	15.3	7.97	8.3	33.1			
	E	14.6	7.96	8.4	33.1			
MOTCO-2019-DU4-Comp	A	15.4	7.96	8.3	33.5	11/08/19	0925	SAT
	B	15.1	7.95	8.2	33.3			
	C	15.1	7.94	8.2	33.4			
	D	15.0	7.89	8.1	33.3			
	E	14.5	7.96	8.1	33.5			

28-day *Macoma nasuta* Sediment Bioaccumulation Final Water Quality Data

Client: USACE Project: MOTCO Project #: 30945 Date (Day 28): 12/6/19

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	15.3	7.77	8.4	32.7	12-6-19	0710	MM
	B	14.9	7.77	8.7	34.1			
	C	14.9	7.80	8.6	34.0			
	D	15.1	7.82	8.8	34.0			
	E	15.3	7.81	8.8	34.0			
SF-10	A	15.1	7.80	8.7	33.5	12-6-19	0710	MM
	B	14.8	7.80	8.7	34.1			
	C	15.0	7.82	8.7	34.1			
	D	15.4	7.83	8.8	34.0			
	E	15.2	7.82	8.8	34.0			
MOTCO-2019-DU1-Comp	A	15.0	7.76	8.5	33.8	12-6-19	0710	MM
	B	15.1	7.78	8.6	33.8			
	C	15.1	7.77	8.5	33.9			
	D	15.2	7.79	8.6	33.9			
	E	15.3	7.79	8.7	34.1			
MOTCO-2019-DU2a-Comp	A	14.8	7.68	8.4	33.8	12-6-19	0710	MM
	B	14.8	7.73	8.4	33.9			
	C	14.9	7.59	7.7	33.9			
	D	14.9	7.70	8.1	34.0			
	E	14.9	7.72	8.3	34.1			
MOTCO-2019-DU2b-Comp	A	14.1	7.71	8.6	34.0	12-6-19	0710	MM
	B	14.1	7.71	8.6	34.9			
	C	14.6	7.64	8.6	34.0			
	D	14.1	7.68	8.6	33.9			
	E	14.9	7.74	8.6	34.0			
MOTCO-2019-DU3-Comp	A	14.7	7.77	8.6	33.8	12-6-19	0710	MM
	B	14.7	7.76	8.6	33.9			
	C	14.6	7.76	8.6	33.8			
	D	14.5	7.74	8.7	33.9			
	E	14.7	7.76	8.7	34.0			
MOTCO-2019-DU4-Comp	A	14.7	7.76	8.6	33.7	12-6-19	0710	MM
	B	14.6	7.76	8.6	34.0			
	C	14.4	7.76	8.7	33.8			
	D	14.4	7.74	8.5	34.3			
	E	14.6	7.76	8.6	34.0			

28-day *Macoma nasuta* Sediment Bioaccumulation Test Data

Client: USACE Project: MOTCO Test ID #: -- Project #: 30945

Organism Log#: 11837 Age: Adult Organism Supplier: J&G Gunstone

Day	Date	Replicate	Temp. (°C)	NH_3 (mg/L)	pH	DO (mg/L)	Salinity (ppt)	Sign-Off
0	11/08/19	Meter ID:	102A	DR3800	pH 25	RD10	EC10	Time: 0830 Initials: SAT
1	11/9/19	Meter ID:	102A			RD11	EC14	Time: 1300 Initials: SR
2	11/10/19	Meter ID:	102A			RD10	EC10	Time: 1033 Initials: NN
3	11/11/19	Meter ID:	102A			RD10	EC10	Time: 1303 Initials: SR
4	11/12/19	Meter ID:	102A			RD11	EC14	Time: 0915 Initials: RC
5	11/13/19	Meter ID:	102A			RD10	EC12	Time: 1054 Initials: JD
6	11/14/19	Meter ID:	102A			RD10	EC10	Time: 1409 Initials: TA
7	11/15/19	Meter ID:	102A	DR3800	PH 25	RD10	EC10	Time: 1020 Initials: NN
8	11-16-19	Meter ID:	102A			RD10	EC10	Time: 1315 Initials: SAT
9	11/17/19	Meter ID:	102A			RD12	EC14	Time: 1102 Initials:
10	11-18-19	Meter ID:	102A			RD12	EC14	Time: 1530 Initials:
11	11/19/19	Meter ID:	102A			RD10	EC13	Time: 1045 Initials: RC
12	11/20/19	Meter ID:	102A			RD10	EC12	Time: 1205 Initials: TA
13	11/21/19	Meter ID:	102A			RD13	EC13	Time: 1530 Initials: TA
14	11/22/19	Meter ID:	102A	DR3800	PH 25	RD11	EC14	Time: 1400 Initials: RC
15	11/23/19	Meter ID:	102A			RD12	EC12	Time: 1345 Initials: RC
16	11/24/19	Meter ID:	111A			RD12	EC12	Time: 0935 Initials: JD
17	11/25/19	Meter ID:	111A			RD11	EC14	Time: 0922 Initials: JD
18	11/26/19	Meter ID:	111A			RD10	EC10	Time: 1155 Initials: TA
19	11/27/19	Meter ID:	111A			RD10	EC12	Time: 1305 Initials: JD
20	11/28/19	Meter ID:	111A			RD11	EC14	Time: 0825 Initials: RC
21	11-29-19	Meter ID:	111A	DR3800	PH 24	RD11	EC14	Time: 1009 Initials: SAT
22	11/30/19	Meter ID:	111A			RD11	EC14	Time: 1159 Initials: TA
23	12/1/19	Meter ID:	111A			RD13	EC13	Time: 1113 Initials:
24	12/02/19	Meter ID:	111A			RD13	EC13	Time: 0900 Initials: JD
25	12/3/19	Meter ID:	111A			RD11	EC14	Time: Initials: AS
26	12/4/19	Meter ID:	111A			RD10	EC10	Time: 0920 Initials: RC
27	12/5/19	Meter ID:	111A			RD11	EC14	Time: 1109 Initials: AS
28	12/6/19	Meter ID:	111A	DR3800	PH 26	RD10	EC10	Time: 0710 Initials: AA

Appendix V

Test Data for the Military Ocean Terminal Concord (MOTCO) Sediment Bioaccumulation Tests with the Polychaete, *Nereis virens*

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** Lab Control **Test ID:** - **Project #:** 30945

Organism Log#: 11540 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 529216

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							10	10	10	10	10	Initials: KO Confirmation CD
Day	Date	Water Quality Measurements					Observed Mortality					Initiation Date: 11/7/19 Initiation Time: 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	14.3	<1.00	7.94	8.3	34.2	0	0	0	0	0	Time: 0900 Initials: RQ
1	11/8/19	15.3			7.7	33.9	0	0	0	0	0	Time: 0945 Initials: SAT
2	11/9/19	14.0			7.9	33.9	0	0	0	0	0	Time: 1246 Initials: JR
3	11/10/19	15.3			8.0	34.3	0	0	0	0	0	Time: 1018 Initials: NN
4	11/11/19	15.8			7.7	33.8	0	0	0	0	0	Time: 1249 Initials: SB
5	11/12/19	14.9			7.7	33.7	0	0	0	0	0	Time: 0900 Initials: RQ
6	11/13/19	15.0			7.9	34.4	0	0	0	0	0	Time: 1104 Initials: ID
7	11/14/19	15.0	<1.00	7.75	7.8	34.4	0	0	0	0	0	Time: 1338 Initials: TA
8	11/15/19	14.9			8.0	34.0	0	0	0	0	0	Time: 1010 Initials: NN
9	11/16/19	14.8			8.0	34.2	0	0	0	0	0	Time: 1235 Initials: SAT
10	11/17/19	14.8			7.8	34.3	0	0	0	0	0	Time: 1041 Initials: MYC
11	11/18/19	14.9			7.6	34.0	0	0	0	0	1	Time: 1545 Initials: MC
12	11/19/19	14.5			7.7	34.8	0	0	0	0	0	Time: 1025 Initials: RQ
13	11/20/19	15.3			7.6	34.7	0	0	0	0	0	Time: 1122 Initials: TA
14	11/21/19	14.9	<1.00	7.65	7.9	34.8	0	0	0	0	0	Time: 1433 Initials: TA
15	11/22/19	14.3			8.3	34.4	0	0	0	0	0	Time: 1430 Initials: RQ
16	11/23/19	14.3			8.1	34.3	0	0	0	0	0	Time: 1340 Initials: RQ
17	11/24/19	15.1			8.4	34.2	0	0	0	0	0	Time: 0952 Initials: ID
18	11/25/19	14.9			7.9	34.2	0	0	0	0	0	Time: 1010 Initials: ID
19	11/26/19	14.7			8.0	34.3	0	0	0	0	0	Time: 1113 Initials: TA
20	11/27/19	15.0			8.0	34.4	0	0	0	0	0	Time: 1351 Initials: ID
21	11/28/19	14.5	<1.00	7.75	7.8	34.0	0	0	0	0	0	Time: 0825 Initials: RQ
22	11-29-19	14.8			8.1	34.3	0	0	0	0	0	Time: 0900 Initials: SAT
23	11/30/19	14.7			8.0	34.7	0	0	0	0	0	Time: 1136 Initials: TA
24	12/1/19	14.8			8.4	34.5	0	0	0	0	0	Time: 1115 Initials: MYC
25	12/2/19	14.9			7.9	34.4	0	0	0	0	0	Time: 0912 Initials: ID
26	12/3/19	14.6			8.1	34.5	0	0	0	0	0	Time: 1044 Initials: AS
27	12/4/19	14.3			8.1	34.0	0	0	0	0	0	Time: 0915 Initials: RQ
28	12/5/19	14.4	<1.00	7.73	7.7	34.3	10	0	0	0	0	Time: 1050 Initials: TA
					Day 28 # Live Organisms		10	10	10	10	9	Initials: SL

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** SF-10 **Test ID:** 85945 **Project #:** 30945

Organism Log#: 11840 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 54761

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							10	10	10	10	10	Initials: KG Confirmation: CD
Day	Date	Water Quality Measurements					Observed Mortality					Initiation Date: 11/7/19 Initiation Time: 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	14.3	<1.00	7.94	8.2	34.2	0	0	0	0	0	Time: 0915 Initials: RCQ
1	11/8/19	15.3			8.1	34.2	0	0	0	0	0	Time: 0947 Initials: SAT
2	11/9/19	14.6			8.0	34.2	0	0	0	0	0	Time: 1248 Initials: JR
3	11/10/19	15.0			8.2	34.4	0	0	0	0	0	Time: 1019 Initials: NN
4	11/11/19	15.1			8.0	34.4	0	0	0	0	0	Time: 1250 Initials: JR
5	11/12/19	15.1			7.8	34.2	0	0	0	0	0	Time: 0910 Initials: RCQ
6	11/13/19	15.1			8.1	34.6	0	0	0	0	0	Time: 1204 Initials: ID
7	11/14/19	15.5	<1.00	7.79	8.0	34.4	0	0	0	0	0	Time: 1340 Initials: TA
8	11/15/19	15.0			7.9	33.8	0	0	0	0	0	Time: 1011 Initials: NN
9	11/16/19	15.3			8.0	34.4	1	0	0	0	0	Time: 1240 Initials: SAT
10	11/17/19	14.9			8.0	34.3	1	0	0	0	0	Time: 1042 Initials: MM
11	11/18/19	14.9			7.7	34.2	0	0	0	0	0	Time: 1545 Initials: MM
12	11/19/19	14.3			7.8	34.7	0	0	0	0	0	Time: 1025 Initials: RCQ
13	11/20/19	15.3			7.9 (8.0)	34.7 (34.7)	0	0	0	0	0	Time: 1125 Initials: TA
14	11/21/19	14.8	<1.00	7.71	8.0	34.8	0	0	0	0	0	Time: 1437 Initials: TA
15	11/22/19	14.5			8.3	34.4	0	0	0	0	0	Time: 1430 Initials: RCQ
16	11/23/19	14.5			8.1	34.5	0	0	0	0	0	Time: 1340 Initials: RCQ
17	11/24/19	14.7			8.2	34.5	0	0	0	0	0	Time: 0952 Initials: ID
18	11/25/19	14.7			8.1	34.4	0	0	0	0	0	Time: 1010 Initials: ID
19	11/26/19	14.5			8.0	34.4	0	0	0	0	0	Time: 1115 Initials: TA
20	11/27/19	14.6			8.1	34.5	0	0	0	0	0	Time: 1351 Initials: ID
21	11/28/19	14.4	<1.00	7.82	7.9	34.6	0	0	0	0	0	Time: 0825 Initials: RCQ
22	11/29/19	14.8			8.3	34.4	0	0	0	0	0	Time: 0910 Initials: SAT
23	11/30/19	14.6			8.1	34.6	0	0	0	0	0	Time: 1137 Initials: TA
24	12/1/19	14.3			8.3	34.5	0	0	0	0	0	Time: 1117 Initials: MM
25	12/2/19	15.0			8.0	34.4	0	0	0	0	0	Time: 0912 Initials: ID
26	12/3/19	14.4			8.0	34.6	0	0	0	0	0	Time: 1044 Initials: AS
27	12/4/19	14.4			8.4	34.1	0	0	0	0	0	Time: 0915 Initials: RCQ
28	12/5/19	14.6	<1.00	7.78	7.6	34.4	0	0	0	0	1	Time: 1100 Initials: TA
					Day 28 # Live Organisms		8	10	10	10	9	Initials: JL

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU1-Comp **Test ID:** 85940 **Project #:** 30945

Organism Log#: 11840 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 54277

							Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
								10	10	10	10	10	Initials: JR Confirmation:
Day	Date	Water Quality Measurements						Observed Mortality					Initiation Date: 11/7/19 Initiation Time: 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)		Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	14.0	1.12	7.90	8.3	33.6		0	0	0	0	0	Time: 0920 Initials: RO
1	11/8/19	15.4			7.8	33.1		0	0	0	0	0	Time: 0950 Initials: SAT
2	11/9/19	15.1			7.3	32.7		0	0	0	0	0	Time: 1250 Initials: JR
3	11/10/19	15.1			8.1	33.7		0	0	0	0	0	Time: 1019 Initials: NN
4	11/11/19	14.9			8.0	33.5		0	0	0	0	0	Time: 1251 Initials: SAT
5	11/12/19	15.1			7.7	33.8		0	0	0	0	0	Time: 0910 Initials: RO
6	11/13/19	15.3			8.1	34.1		0	0	0	0	0	Time: 1204 Initials: ID
7	11/14/19	15.5	4.11	7.71	7.7	340		0	0	0	0	0	Time: 1342 Initials: TA
8	11/15/19	15.4			7.8	33.8		0	0	0	0	0	Time: 1013 Initials: NN
9	11/16/19	15.5			7.7	34.0		0	2	0	0	0	Time: 1245 Initials: SAT
10	11/17/19	15.0			7.9	34.2		0	0	0	0	0	Time: 1043 Initials: MH
11	11/18/19	14.9			7.7	34.1		0	0	0	0	0	Time: 1545 Initials: MH
12	11/19/19	15.0			8.0	34.7		0	0	0	0	0	Time: 1225 Initials: RO
13	11/20/19	15.3			7.9	34.6		0	0	0	0	0	Time: 1128 Initials: TA
14	11/21/19	14.8	1.95	7.68	8.1	34.8		0	0	0	0	0	Time: 1438 Initials: TA
15	11/22/19	14.9			8.5	34.9		0	0	0	0	0	Time: 1430 Initials: RO
16	11/23/19	14.3			8.2	34.5		0	0	0	0	0	Time: 1340 Initials: RO
17	11/24/19	15.2			8.0	34.4		0	0	0	0	0	Time: 0952 Initials: ID
18	11/25/19	14.9			8.1	34.5		0	0	0	0	0	Time: 1010 Initials: ID
19	11/26/19	14.4			7.8	34.3		0	0	0	0	0	Time: 1116 Initials: TA
20	11/27/19	14.4			8.0	34.4		0	0	0	0	0	Time: 1351 Initials: ID
21	11/28/19	14.5	1.19	7.83	7.9	34.7		0	0	0	0	0	Time: 0825 Initials: RO
22	11/29/19	14.6			8.2	34.5		0	0	0	0	0	Time: 0905 Initials: SAT
23	11/30/19	14.5			8.0	34.7		0	0	0	0	0	Time: 1138 Initials: TA
24	12/1/19	14.6			8.3	34.5		0	0	0	0	0	Time: 1118 Initials: MH
25	12/02/19	14.9			7.8	34.4		0	0	0	0	0	Time: 0912 Initials: ID
26	12/3/19	14.4			8.2	34.9		0	0	0	0	0	Time: 1044 Initials: AS
27	12/4/19	14.4			8.2	34.0		0	0	0	0	0	Time: 0915 Initials: RO
28	12/5/19	14.6	<1.00	7.69	7.5	34.3		0	0	0	0	0	Time: 1108 Initials: TA
							Day 28 # Live Organisms	10	9	10	10	10	Initials: JR

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU2a-Comp **Test ID:** 85941 **Project #:** 30945

Organism Log#: 11840 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 54282

							Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
								10	10	10	10	10	Initials: KJ Confirmation: JD
Day	Date	Water Quality Measurements						Observed Mortality					Initiation Date: 11/7/19 Initiation Time: 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)		Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	13.8	5.42	7.94	8.3	33.5		0	0	0	0	0	Time: 1030 Initials: RQ
1	11/8/19	15.3			8.1	33.1		0	0	0	0	0	Time: 1000 Initials: SAT
2	11/9/19	14.6			7.8	32.7		0	0	0	0	0	Time: 1252 Initials: JR
3	11/10/19	15.1			8.2	32.6		0	0	0	0	0	Time: 1020 Initials: NN
4	11/11/19	15.0			8.2	33.2		0	0	0	0	0	Time: 1252 Initials: SAT
5	11/12/19	14.7			7.6	32.6		0	0	0	0	0	Time: 0910 Initials: RQ
6	11/13/19	15.1			8.1	33.7		0	0	0	0	0	Time: 1204 Initials: JD
7	11/14/19	15.3	11.2	7.81	7.9	33.6		0	0	0	0	0	Time: 1347 Initials: TA
8	11/15/19	15.1			7.8	33.6		0	0	0	0	0	Time: 1015 Initials: NN
9	11/16/19	15.3			8.1	34.1		0	0	0	0	0	Time: 1247 Initials: SAT
10	11/17/19	14.9			7.9	34.1		0	0	0	0	0	Time: 1045 Initials: MJL
11	11/18/19	15.7			7.7	34.1		0	0	0	0	0	Time: 1545 Initials: ZLL
12	11/19/19	14.7			8.0	34.6		0	0	0	0	0	Time: 1025 Initials: RQ
13	11/20/19	15.0			7.8	34.7		0	0	0	0	0	Time: 1130 Initials: TA
14	11/21/19	14.4	5.36	7.63	8.0	34.8		0	0	0	0	0	Time: 1440 Initials: TA
15	11/22/19	14.5			8.5	34.3		0	0	0	0	0	Time: 1430 Initials: RQ
16	11/23/19	14.8			8.2	34.6		0	0	0	0	0	Time: 1370 Initials: NN
17	11/24/19	15.0			8.0	34.7		0	0	0	0	0	Time: 0952 Initials: JD
18	11/25/19	14.5			7.9	34.5		0	0	0	0	0	Time: 1010 Initials: JD
19	11/26/19	14.5			7.9	34.6		0	0	0	0	0	Time: 1117 Initials: TA
20	11/27/19	14.4			7.9	34.7		0	0	0	0	0	Time: 1351 Initials: JD
21	11/28/19	14.4	2.74	7.83	7.9	34.9		0	0	0	0	0	Time: 0825 Initials: RQ
22	11-29-19	~~14.5~~ 14.0 SAT 11-29-19			8.2	34.5		0	0	0	0	0	Time: 0907 Initials: SAT
23	11/30/19	14.6			7.9	35.0		0	0	0	0	0	Time: 1139 Initials: TA
24	12/1/19	14.2			8.5	34.3		0	0	0	0	0	Time: 1120 Initials: MJL
25	12/02/19	14.9			7.8	34.5		0	0	0	0	0	Time: 0912 Initials: JD
26	12/3/19	14.1			8.3	34.9		0	0	0	0	0	Time: 1044 Initials: AJ
27	12/4/19	14.6			8.3	34.2		0	0	0	0	0	Time: 0915 Initials: RQ
28	12/5/19	14.4	41.00	7.65	7.4	33.8		0	0	0	0	0	Time: 1115 Initials: TA
							Day 28 # Live Organisms	10	10	10	10	10	Initials: JL

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU2b-Comp **Test ID:** 85942 **Project #:** 30945

Organism Log#: 11840 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 54287

					Day 0 # Live Organisms	Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
						10	10	10	10	10	Initials: Z Confirmation: S
Day	Date	Water Quality Measurements					Observed Mortality					Initiation Date: 11/7/19 Initiation Time: 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	14.0	8.52	7.92	8.3	32.9	0	0	0	0	0	Time: 1020 Initials: JCQ
1	11/08/19	15.2			8.2	32.8	0	0	0	0	0	Time: 1000 Initials: SAT
2	11/9/19	14.2			8.0	32.6	0	0	0	0	0	Time: 1254 Initials: JR
3	11/10/19	14.9			8.0	33.1	0	0	0	0	0	Time: 1021 Initials: NW
4	11/11/19	14.6			7.9	32.7	0	0	0	0	0	Time: 1253 Initials: SAT
5	11/12/19	15.1			7.7	32.9	0	0	0	0	0	Time: 0910 Initials: RQ
6	11/13/19	14.7			8.0	33.5	0	0	0	0	0	Time: 1204 Initials: JD
7	11/14/19	15.3	18.3	7.66	7.7	33.3	0	0	0	0	0	Time: 1346 Initials: TA
8	11/15/19	15.0			7.9	34.0	0	0	0	0	0	Time: 1016 Initials: NW
9	11/16/19	15.5			7.9	33.9	0	0	0	0	0	Time: 1250 Initials: SAT
10	11/17/19	14.7			8.0	34.0	0	0	0	0	0	Time: 1046 Initials: MH
11	11/18/19	15.6			7.7	34.0	0	0	0	0	0	Time: 1545 Initials: MH
12	11/19/19	14.3			8.0	34.5	0	0	0	0	0	Time: 1025 Initials: RQ
13	11/20/19	15.1			7.9	34.8	0	0	0	0	0	Time: 1132 Initials: TA
14	11/21/19	14.3	4.26	7.62	7.9	34.4	0	0	0	0	0	Time: 1441 Initials: TA
15	11/22/19	14.5			8.5	34.2	0	0	0	0	0	Time: 1430 Initials: RQ
16	11/23/19	14.4			8.1	34.2	0	0	0	0	0	Time: 1340 Initials: JCQ
17	11/26/19	15.1			8.1	34.4	0	0	0	0	0	Time: 0952 Initials: JD
18	11/25/19	14.3			7.9	34.3	0	0	0	0	0	Time: 1010 Initials: JD
19	11/26/19	14.5			7.9	34.5	0	0	0	0	0	Time: 1118 Initials: TA
20	11/27/19	14.0			8.0	34.3	0	0	0	0	0	Time: 1351 Initials: JD
21	11/28/19	14.1	1.91	7.82	8.0	35.0	0	0	0	0	0	Time: 0825 Initials: RQ
22	11/29/19	14.0			8.1	34.3	0	0	0	0	0	Time: 0905 Initials: SAT
23	11/30/19	14.5			8.0	34.6	0	0	0	0	0	Time: 1140 Initials: TA
24	12/1/19	14.1			8.2	34.4	0	0	0	0	0	Time: 1121 Initials: MH
25	12/02/19	14.8			8.0	34.6	0	0	0	0	0	Time: 0912 Initials: JD
26	12/3/19	14.0			8.1	34.5	0	0	0	0	0	Time: 1044 Initials: AS
27	12/4/19	14.3			8.1	33.9	0	0	0	0	0	Time: 0915 Initials: RQ
28	12/5/19	14.0	<1.00	7.62	7.4	34.2	0	0	0	0	0	Time: 1122 Initials: TA
					Day 28 # Live Organisms	10	10	10	10	10	Initials: JL

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU3-Comp **Test ID:** 85943 **Project #:** 30945

Organism Log#: 11840 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 54292

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							10	10	10	10	10	Initials: JL Confirmation: KG
Day	Date	Water Quality Measurements					Observed Mortality					Initiation Date: 11/7/19 Initiation Time: 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	14.0	2.43	7.99	8.3	33.3	0	0	0	0	0	Time: 0910 Initials: RCQ
1	11/08/19	15.9			8.1	33.0	0	0	0	0	0	Time: 1010 Initials: SAT
2	11/9/19	14.5			7.9	32.2	0	0	0	0	0	Time: 1250 Initials: JR
3	11/10/19	15.1			8.0	33.1	0	0	0	0	0	Time: 1022 Initials: NN
4	11/11/19	14.7			8.1	32.6	0	0	0	0	0	Time: 1254 Initials: SAT
5	11/12/19	15.5			7.7	32.7	0	0	0	0	0	Time: 0910 Initials: RCQ
6	11/13/19	14.3			8.1	33.4	0	0	0	0	0	Time: 1204 Initials: IO
7	11/14/19	15.9	7.15	7.77	7.9	33.3	0	0	0	0	0	Time: 1349 Initials: TA
8	11/15/19	14.6			7.8	33.7	0	0	0	0	0	Time: 1017 Initials: NN
9	11/16/19	15.6			8.0	33.9	0	0	0	0	0	Time: 1253 Initials: SAT
10	11/17/19	14.8			8.0	34.1	0	0	0	0	0	Time: 1048 Initials: MM
11	11/18/19	14.4			7.7	34.2	0	0	0	0	0	Time: 1545 Initials: MM
12	11/19/19	14.2			8.1	34.6	0	0	0	0	0	Time: 1025 Initials: RCQ
13	11/20/19	15.7			7.8	34.5	0	0	0	0	0	Time: 1134 Initials: TA
14	11/21/19	14.2	2.64	7.66	8.1	34.7	0	0	0	0	0	Time: 1442 Initials: TA
15	11/22/19	15.1			8.5	34.9	0	0	0	0	0	Time: 1430 Initials: RCQ
16	11/23/19	14.5			8.2	34.4	0	0	0	0	0	Time: 1340 Initials: RCQ
17	11/24/19	15.0			8.2	34.3	0	0	0	0	0	Time: 0952 Initials: JD
18	11/25/19	14.4			8.0	34.5	0	0	0	0	0	Time: 1010 Initials: JD
19	11/26/19	15.3			7.9	34.5	0	0	0	0	0	Time: 1119 Initials: TA
20	11/27/19	14.4			8.0	34.4	0	0	0	0	0	Time: 1351 Initials: JD
21	11/28/19	14.3	2.19	7.71	7.9	34.6	0	0	0	0	0	Time: 0825 Initials: RCQ
22	11/29/19	14.2			8.2	34.5	0	0	0	0	0	Time: 0912 Initials: SAT
23	11/30/19	14.7			8.0	34.8	0	0	0	0	0	Time: 1141 Initials: TA
24	12/1/19	14.0			8.2	34.4	0	0	0	0	0	Time: 1123 Initials: MM
25	12/02/19	14.8			8.0	34.7	0	0	0	0	0	Time: 0912 Initials: JD
26	12/3/19	14.2			8.2	34.9	0	0	0	0	0	Time: 1444 Initials: AS
27	12/4/19	14.5			8.3	34.3	0	0	0	0	0	Time: 0915 Initials: RCQ
28	12/5/19	14.2	<1.00	7.77	7.4	34.3	0	0	0	0	0	Time: 1129 Initials: TA
					Day 28 # Live Organisms		10	10	10	10	10	Initials: KG

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE: MOTCO **Test Material:** MOTCO-2019-DU4-Comp **Test ID:** 85944 **Project #:** 30945

Organism Log#: 11840 **Age:** Adult **Organism Supplier:** ARO **Sample ID:** 54297

					Day 0 # Live Organisms		Rep A	Rep B	Rep C	Rep D	Rep E	Sign-Off
							10	10	10	10	10	Initials: ZY Confirmation:
Day	Date	Water Quality Measurements					Observed Mortality					Initiation Date: 11/7/19 Initiation Time: ZY 11/8/19 1505
		Temp. (°C)	NH_3 (mg/L)	pH	D.O. (mg/L)	Salinity (ppt)	Rep A	Rep B	Rep C	Rep D	Rep E	
0	11/7/19	14.0	3.54	7.98	8.3	33.5	0	0	0	0	0	Time: 1035 Initials: KCQ
1	11/8/19	15.7			8.1	32.6	0	0	0	0	0	Time: 1000 Initials: SAT
2	11/9/19	14.4			7.9	31.9	0	0	0	0	0	Time: 1258 Initials: JR
3	11/10/19	15.1			8.0	33.1	0	0	0	0	0	Time: 1023 Initials: MN
4	11/11/19	14.2			8.0	32.7	0	0	0	0	0	Time: 1255 Initials: SAT
5	11/12/19	14.9			7.7	33.1	0	0	0	0	0	Time: 0910 Initials: KQ
6	11/13/19	14.7			8.0	33.4	0	0	0	0	0	Time: 1204 Initials: ID
7	11/14/19	15.5	15.1	7.73	7.6	33.1	0	0	0	0	0	Time: 1354 Initials: TA
8	11/15/19	14.5			7.8	33.6	0	0	0	0	0	Time: 1018 Initials: MN
9	11/16/19	15.4			7.7	33.9	0	0	0	0	0	Time: 1252 Initials: SAT
10	11/17/19	14.7			8.0	34.0	0	0	0	0	0	Time: 1049 Initials: MYC
11	11/18/19	15.2			7.7	33.9	0	0	0	0	0	Time: 1545 Initials: ZY
12	11/19/19	14.3			8.0	34.4	0	0	0	0	0	Time: 1025 Initials: KQ
13	11/20/19	15.8			7.7	34.4	0	0	0	0	0	Time: 1137 Initials: TA
14	11/21/19	14.4	4.19	7.69	7.9	34.4	0	0	0	0	0	Time: 1444 Initials: TA
15	11/22/19	15.1			8.4	34.7	0	0	0	0	0	Time: 1450 Initials: KQ
16	11/23/19	14.2			8.2	34.3	0	0	0	0	0	Time: 1340 Initials: KQ
17	11/24/19	14.9			8.1	34.3	0	0	0	0	0	Time: 0952 Initials: ID
18	11/25/19	14.6			7.9	34.3	0	0	0	0	0	Time: 1010 Initials: ID
19	11/26/19	14.7			7.8	34.2	0	0	0	0	0	Time: 1120 Initials: TA
20	11/27/19	14.0			8.1	34.4	0	0	0	0	0	Time: 1351 Initials: ID
21	11/28/19	14.2	2.10	7.82	7.9	34.6	0	0	0	0	0	Time: 0825 Initials: KQ
22	11/29/19	14.0			8.2	34.2	0	0	0	0	0	Time: 0917 Initials: SAT
23	11/30/19	14.3			8.0	34.5	0	0	0	0	0	Time: 1142 Initials: TA
24	12/1/19	14.0			8.4	34.2	0	0	0	0	0	Time: 1125 Initials: MYC
25	12/2/19	15.0			8.1	34.4	0	0	0	0	0	Time: 0912 Initials: ID
26	12/3/19	14.2			8.3	34.6	0	0	0	0	0	Time: 1044 Initials: AS
27	12/4/19	14.4			7.9	34.0	0	0	0	0	0	Time: 0915 Initials: KQ
28	12/5/19	14.1	<1.00	7.78	7.4	34.2	1	0	0	0	0	Time: 1135 Initials: TA
					Day 28 # Live Organisms		9	10	10	10	10	Initials: ZY

28-day *Nereis virens* Sediment Bioaccumulation Initial Water Quality Data

Client: USACE Project: MOTCO Project #: 30945 Date (Day 0): 11/7/19

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	14.3	7.94	8.3	34.2	11/7/19	0900	RA
	B	14.3	7.92	8.4	34.3			
	C	14.2	7.96	8.4	34.2			
	D	14.2	7.93	8.4	34.0			
	E	14.2	7.96	8.4	34.1			
SF-10	A	14.3	7.94	8.2	34.2	11/7/19	0915	RA
	B	14.3	7.96	8.3	34.2			
	C	14.0	7.92	8.4	34.3			
	D	13.9	7.90	8.4	34.2			
	E	13.9	7.97	8.4	34.2			
MOTCO-2019-DU1-Comp	A	14.0	7.90	8.3	33.6	11/7/19	0920	RA
	B	14.1	7.90	8.3	33.7			
	C	14.1	7.97	8.4	33.7			
	D	14.1	7.96	8.4	33.8			
	E	14.1	7.95	8.4	33.9			
MOTCO-2019-DU2a-Comp	A	~~7.94~~ 13.8	7.94	8.3	33.5	11/7/19	1030	RA
	B	13.8	7.89	8.3	33.5			
	C	13.9	7.94	8.4	33.5			
	D	13.9	7.96	8.4	33.3			
	E	14.0	7.91	8.4	33.4			
MOTCO-2019-DU2b-Comp	A	14.0	7.92	8.3	32.9	11/7/19	1020	RA
	B	14.2	7.98	8.3	33.2			
	C	14.2	7.93	8.4	33.5			
	D	14.1	7.89	8.4	33.3			
	E	14.1	7.89	8.4	33.0			
MOTCO-2019-DU3-Comp	A	14.0	7.99	8.3	33.3	11/7/19	0910	RA
	B	14.0	8.00	8.4	33.5			
	C	14.1	8.00	8.4	33.3			
	D	14.1	7.99	8.4	33.4			
	E	14.0	7.99	8.5	34.6			
MOTCO-2019-DU4-Comp	A	14.0	7.98	8.3	33.5	11/7/19	1035	RA
	B	14.1	7.97	8.4	33.3			
	C	14.1	7.94	8.4	33.6			
	D	14.1	7.98	8.4	33.5			
	E	14.1	7.98	8.4	33.6			

28-day *Nereis virens* Sediment Bioaccumulation Final Water Quality Data

Client: USACE Project: MOTCO Project #: 30945 Date (Day 28): 12/5/19

Treatment	Replicate	Temp. (°C)	pH	DO (mg/L)	Salinity (ppt)	Date	Time	Initials
Lab Control	A	14.1	7.65	7.4	33.8	12/5/19	1050	TA
	B	14.3	7.76	7.5	34.2			
	C	14.4	7.78	7.6	34.2			
	D	14.5	7.75	7.9	34.2			
	E	14.4	7.73	7.7	34.3			
SF-10	A	14.0	7.76	7.5	34.1	12/5/19	1100	TA
	B	14.3	7.78	7.6	34.1			
	C	14.5	7.80	7.6	34.3			
	D	14.6	7.78	7.6	34.4			
	E	14.5	7.77	7.7	34.3			
MOTCO-2019-DU1-Comp	A	14.4	7.64	7.3	33.8	12/5/19	1108	TA
	B	14.5	7.71	7.4	34.3			
	C	14.4	7.73	7.5	34.4			
	D	14.6	7.70	7.5	34.1			
	E	14.6	7.69	7.5	34.3			
MOTCO-2019-DU2a-Comp	A	14.4	7.65	7.4	33.8	12/5/19	1115	TA
	B	14.3	7.71	7.4	34.5			
	C	14.5	7.75	7.5	34.4			
	D	14.5	7.77	7.6	34.4			
	E	13.9	7.66	7.6	34.8			
MOTCO-2019-DU2b-Comp	A	14.0	7.65	7.3	34.2	12/5/19	1122	TA
	B	14.0	7.62	7.4	34.2			
	C	13.8	7.64	7.4	34.4			
	D	14.0	7.65	7.4	34.3			
	E	13.9	7.67	7.5	34.4			
MOTCO-2019-DU3-Comp	A	14.2	7.71	7.3	34.0	12/5/19	1129	TA
	B	14.3	7.78	7.3	34.5			
	C	14.2	7.77	7.4	34.3			
	D	13.9	7.76	7.5	34.4			
	E	13.7	7.72	7.5	34.5			
MOTCO-2019-DU4-Comp	A	14.0	7.70	7.3	34.0	12/5/19	1135	TA
	B	14.1	7.78	7.4	34.2			
	C	14.0	7.79	7.5	34.4			
	D	13.8	7.78	7.5	34.3			
	E	13.6	7.71	7.6	34.5			

28-day *Nereis virens* Sediment Bioaccumulation Test Data

Client: USACE **Project:** MOTCO **Test ID #:** -- **Project #:** 30945

Organism Log#: _____ **Age:** Adult **Organism Supplier:** ARO

Day	Date	Replicate	Temp. (°C)	NH_3 (mg/L)	pH	DO (mg/L)	Salinity (ppt)	Sign-Off
0	11/7/19	Meter ID:	102A	DR3800	PH25	RD13	EC13	Time: 0900 Initials: RB
1	11/08/19	Meter ID:	102A			RD10	EC10	Time: 1000 Initials: SAT
2	11/9/19	Meter ID:	102A			RD11	EC14	Time: 1246 Initials: JR
3	11/10/19	Meter ID:	102A			RD10	EC10	Time: 1023 Initials: NN
4	11/11/19	Meter ID:	102A			RD10	EC10	Time: 1255 Initials: SAT
5	11/12/19	Meter ID:	102A			RD11	EC14	Time: 0900 Initials: RB
6	11/13/19	Meter ID:	102A			RD10	EC12	Time: 1204 Initials: JD
7	11/14/19	Meter ID:	102A	DR3800	PH24	RD10	EC10	Time: 1355 Initials: TA
8	11/15/19	Meter ID:	102A			RD10	EC10	Time: 1019 Initials: NN
9	11-16-19	Meter ID:	102A			RD10	EC10	Time: 1330 Initials: SAT
10	11/17/19	Meter ID:	102A			RD12	EC14	Time: 1049 Initials: MH
11	11/18/19	Meter ID:	102A			RD12	EC14	Time: 1545 Initials: RB
12	11/19/19	Meter ID:	102A			RD10	EC13	Time: 1025 Initials: RB
13	11/20/19	Meter ID:	102A			RD10	EC12	Time: 1139 Initials: TA
14	11/21/19	Meter ID:	102A	DR3800	PH25	RD13	EC13	Time: 1530 Initials: TA
15	11/22/19	Meter ID:	102A			RD11	EC11	Time: 1430 Initials: RB
16	11/23/19	Meter ID:	111A			RD12	EC12	Time: 1340 Initials: RB
17	11/24/19	Meter ID:	111A			RD12	EC12	Time: 0952 Initials: JD
18	11/25/19	Meter ID:	111A			RD11	EC14	Time: 1010 Initials: JD
19	11/26/19	Meter ID:	111A			RD10	EC10	Time: 1121 Initials: TA
20	11/27/19	Meter ID:	111A			RD10	EC12 JD 11/27/19	Time: 1351 Initials: JD
21	11/28/19	Meter ID:	111A	DR3800	PH24	RD11	EC14	Time: 0925 Initials: RB
22	11-29-19	Meter ID:	111A			RD11	EC14	Time: 0910 Initials: SAT
23	11/30/19	Meter ID:	111A			RD11	EC14	Time: 1142 Initials: TA
24	12/1/19	Meter ID:	111A			RD13	EC13	Time: 1125 Initials: MH
25	12/02/19	Meter ID:	111A			RD13	EC13	Time: 0912 Initials: JD
26	12/3/19	Meter ID:	111A			RD11	EC14	Time: 1044 Initials: AS
27	12/4/19	Meter ID:	111A			RD10	EC10	Time: 0915 Initials: RB
28	12/5/19	Meter ID:	111A	DR3800	PH25	RD13	EC13	Time: 1152 Initials: TA

Appendix W

Bioassay Standard Test Conditions

Summary of Test Conditions and Acceptability Criteria for the Amphipod (*Leptocheirus plumulosus)* 10-Day Sediment Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	10 d
3. Temperature	25 ± 1°C
4. Salinity	20 ± 2 ppt
5. Light quality	Ambient Laboratory
6. Light intensity	50 – 100 ft c.
7. Photoperiod	Continuous
8. Test chamber size	1 L
9. Seawater volume	800 mL
10. Sediment depth	25 mm (~200 mL)
11. Renewal of seawater	None
12. Age of test organisms	Wild population, immature juveniles
13. # of organisms per test chamber	20
14. # of replicate chambers/concentration	5
15. # of organisms per sediment type	100
16. Feeding regime	None
17. Test chamber cleaning	Lab washing prior to test
18. Test solution aeration	Low bubble (~100/minute)
19. Overlying water	1 µm-filtered seawater (at test salinity)
20. Test materials	Test sites, reference and control
21. Dilution series	None
22. Endpoint	% Survival
23. Sample holding requirements	< 8 weeks
24. Sample volume required	4 L
25. Test acceptability criteria	≥ 90% survival in the Control treatment
26. Reference toxicant results	Within 2 SD of laboratory mean

Summary of Test Conditions and Acceptability Criteria for the Marine Polychaete (*Neanthes arenaceodentata)* 10-Day Sediment Toxicity Test		
1.	Test type	Static-renewal
2.	Test duration	10 d
3.	Temperature	20 ± 1°C
4.	Salinity	20 – 35 ppt
5.	Light quality	Ambient Laboratory
6.	Light intensity	50 – 100 ft c.
7.	Photoperiod	12L/12D
8.	Test chamber size	1 L glass beakers
9.	Test solution volume	800 L
10.	Sediment depth	25 mm (~200 mL)
11.	Renewal of seawater	None, unless needed. If needed, renew 80% of overlying water at 48-hour intervals
12.	Age of test organisms	2-3 weeks
13.	# of organisms per test chamber	10
14.	# of replicate chambers/concentration	5
15.	# of organisms per sediment type	50
16.	Feeding regime	None
17.	Test chamber cleaning	Lab washing prior to test
18.	Test solution aeration	Low bubble (~100/minute)
19.	Overlying water	1 µm-filtered seawater, at test salinity
20.	Test concentrations	Test sites, reference and Control
21.	Dilution series	None
22.	Endpoint	Survival
23.	Sample holding requirements	< 8 weeks
24.	Sample volume required	4 L
25.	Test acceptability criteria	≥ 90% survival in the Control treatment
26.	Reference toxicant results	Within 2 SD of laboratory mean

Summary of Test Conditions and Acceptability Criteria for the Mussel (*Mytilus sp.*) Water Column Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	48 hours
3. Salinity	28 – 32 ppt
4. Temperature	16 ± 1°C (mussels)
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	20 mL vials
9. Test solution volume	10 mL
10. Renewal of seawater	None
11. Age of test organisms	Embryo ≤ 4h old
12. # of organisms per test chamber	150 – 300
13. # of replicate chambers per concentration	5
14. # of organisms per concentration	750 – 1,500
15. Feeding regime	None
16. Test chamber cleaning	Lab washing prior to test
17. Test chamber aeration	None
18. Elutriate preparation water	Site water
19. Test concentrations	Test sites, and Lab Control
20. Dilution series	Four concentrations (1, 10, 50, 100%) and a Lab Control.
21. Dilution water	Natural seawater
22. Endpoints	%Survival and %normal development
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	2L
25. Test acceptability criteria	≥70% survival and normal development in the Lab Controls, <10% abnormal in Lab Control

Summary of Test Conditions and Acceptability Criteria for the Mysid (*Americamysis bahia*) Water Column Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	96 hours
3. Salinity	25-30 ppt ± 10 ppt
4. Temperature	20 ± 1°C
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	400 mL beaker
9. Test solution volume	200 mL
10. Renewal of seawater	None
11. Age of test organisms	1-5 days; 24-hour range in age
12. # of organisms per test chamber	10
13. # of replicate chambers per concentration	5
14. # of organisms per concentration	50
15. Feeding regime	Daily
16. Test chamber cleaning	Lab washing prior to test
17. Test chamber aeration	If needed to maintain >40% saturation
18. Elutriate preparation water	Site water or Clean sea water
19. Test concentrations	Test sites, and Lab Control
20. Dilution series	Four concentrations (1, 10, 50, 100%) and a Lab Control.
21. Dilution water	Natural seawater/artificial seawater
22. Endpoints	% Survival
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	2L
25. Test acceptability criteria	≥90% survival in the Lab Controls

Summary of Test Conditions and Acceptability Criteria for the Inland Silverside (*Menidia beryllina*) Water Column Toxicity Test	
1. Test type	Static non-renewal
2. Test duration	96 hours
3. Salinity	5 – 32 ppt ± 10 ppt
4. Temperature	20 ± 1°C
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	400 mL beaker
9. Test solution volume	200 mL
10. Renewal of seawater	None
11. Age of test organisms	9-14 days; 24-hour range in age
12. # of organisms per test chamber	10
13. # of replicate chambers per concentration	5
14. # of organisms per concentration	50
15. Feeding regime	At 48 hrs
16. Test chamber cleaning	Lab washing prior to test
17. Test chamber aeration	If needed to maintain >40% saturation
18. Elutriate preparation water	Site water or Clean sea water
19. Test concentrations	Test sites, and Lab Control
20. Dilution series	Four concentrations (1, 10, 50, 100%) and a Lab Control.
21. Dilution water	Natural seawater/artificial seawater
22. Endpoints	%Survival
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	2L
25. Test acceptability criteria	≥90% survival in the Lab Controls

Summary of Test Conditions and Acceptability Criteria for the Bioaccumulation Testing Using *Macoma nasuta* and *Nereis virens*	
1. Test type	Static-renewal
2. Test duration	28-days
3. Salinity	>25 ppt
4. Temperature	12-16 ± 1°C
5. Light quality	Ambient Laboratory
6. Light intensity	50 –100 ft c.
7. Photoperiod	16L/8D
8. Test chamber size	19-L tank
9. Test sediment/test solution volume	4-L sediment/12-L water
10. Renewal of seawater	3x per week
11. Age of test organisms	*Macoma* 2-4 years, 28-45 mm shell length; *Nereis* large adults
12. # of organisms per test chamber	20 *Macoma*/10 *Nereis* (or as needed)
13. # of replicate chambers per concentration	5
14. # of organisms per concentration	100 *Macoma*/50 *Nereis* (or as needed)
15. Feeding regime	None
16. Test chamber cleaning	As needed
17. Test chamber aeration	Moderate as needed
18. Elutriate preparation water	Site water or Clean sea water
19. Test concentrations	Test sediment, reference sediment, and a Lab Control sediment
20. Dilution series	N/A
21. Dilution water	Natural seawater/artificial seawater
22. Endpoints	Bioaccumulation
23. Sampling holding requirements	< 8 weeks
24. Sample volume required	≥25-L
25. Test acceptability criteria	Adequate mass of organisms at test completion for detection of target analytes

Appendix X

Results of *Macoma nasuta* and *Nereis virens* Tissue Analyses: Laboratory Data Report Submitted by Eurofins

ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-18658-1
Client Project/Site: USACE: MOTCO Tissues
Revision: 2

For:
Pacific EcoRisk Inc
2250 Cordelia Rd
Fairfield, California 94534

[redacted]

Authorized for release by:
2/17/2020 2:23:43 PM

[redacted]
(714)895-5494
carlahollowell@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Job ID: 570-18658-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-18658-1

Comments
The samples were frozen after collection (prior to holding time expiration) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissues and / or sediment samples, which states holding times may be extended up to six months to one year (two years for metals) if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times.
No additional comments.

Receipt
The samples were received on 1/15/2020 10:52 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was -3.5º C.

Receipt Exceptions

The samples were frozen after collection (prior to holding time expiration) at -18C, and remained frozen until the laboratory was ready to prepare the samples for analysis. Eurofins Calscience, Inc. follows SWAMP criteria and the Puget Sound Protocol (USEPA/PSWQAT, 1997, Table 2) for holding times in marine tissue samples, which states holding times may be extended up to six months to one year if stored frozen at -18C after collection. Therefore, the sample results have not been flagged as exceeding the EPA Method recommended holding times.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
Method 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-47266 and 570-48400 and analytical batch 570-48841 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Lab Admin
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: Nereis-T0
Date Collected: 11/17/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-1
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Acenaphthene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Pyrene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 15:40	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 15:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*79*		*10 - 160*	*01/30/20 12:10*	*02/04/20 15:40*	*1*
Nitrobenzene-d5 (Surr)	*36*		*10 - 160*	*01/30/20 12:10*	*02/04/20 15:40*	*1*
p-Terphenyl-d14 (Surr)	*71*		*10 - 160*	*01/30/20 12:10*	*02/04/20 15:40*	*1*

Client Sample ID: Composite (Control-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-7
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Acenaphthene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:00	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Composite (Control-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-7
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Pyrene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:00	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*84*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:00*	*1*
Nitrobenzene-d5 (Surr)	*57*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:00*	*1*
p-Terphenyl-d14 (Surr)	*82*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:00*	*1*

Client Sample ID: Composite (SF-10 Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-13
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Fluoranthene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Pyrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:20	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*73*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:20*	*1*
Nitrobenzene-d5 (Surr)	*51*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:20*	*1*
p-Terphenyl-d14 (Surr)	*72*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:20*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Da 28)
Lab Sample ID: 570-18658-19
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Acenaphthene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Pyrene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:40	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*95*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:40*	*1*
Nitrobenzene-d5 (Surr)	*75*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:40*	*1*
p-Terphenyl-d14 (Surr)	*93*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:40*	*1*

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28)
Lab Sample ID: 570-18658-25
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 17:00	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-25
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Fluoranthene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Pyrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:00	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*80*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:00*	*1*
Nitrobenzene-d5 (Surr)	*56*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:00*	*1*
p-Terphenyl-d14 (Surr)	*82*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:00*	*1*

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-31
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Acenaphthene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Pyrene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:20	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:20	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	73		10 - 160	01/30/20 12:10	02/04/20 17:20	1
Nitrobenzene-d5 (Surr)	52		10 - 160	01/30/20 12:10	02/04/20 17:20	1
p-Terphenyl-d14 (Surr)	74		10 - 160	01/30/20 12:10	02/04/20 17:20	1

Client Sample ID: MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28) **Lab Sample ID: 570-18658-37**
Date Collected: 12/05/19 12:05 **Matrix: Tissue**
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Fluoranthene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Pyrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:40	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	72		10 - 160	01/30/20 12:10	02/04/20 17:40	1
Nitrobenzene-d5 (Surr)	51		10 - 160	01/30/20 12:10	02/04/20 17:40	1
p-Terphenyl-d14 (Surr)	69		10 - 160	01/30/20 12:10	02/04/20 17:40	1

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Da 28) **Lab Sample ID: 570-18658-43**
Date Collected: 12/05/19 12:06 **Matrix: Tissue**
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Acenaphthene	**31**		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:00	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Da 28)
Lab Sample ID: 570-18658-43
Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Fluoranthene	**37**		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Phenanthrene	**15**		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Pyrene	**26**		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:00	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*90*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:00*	*1*
Nitrobenzene-d5 (Surr)	*69*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:00*	*1*
p-Terphenyl-d14 (Surr)	*89*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:00*	*1*

Client Sample ID: Macoma-T0
Lab Sample ID: 570-18658-44
Date Collected: 11/08/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
1-Methylphenanthrene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Benzo[k]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Fluoranthene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Perylene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:20	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Macoma-T0
Date Collected: 11/08/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-44
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:20	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*77*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:20*	*1*
Nitrobenzene-d5 (Surr)	*53*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:20*	*1*
p-Terphenyl-d14 (Surr)	*77*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:20*	*1*

Client Sample ID: Composite (Control-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-50
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Acenaphthene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Benzo[a]anthracene	ND		10	2.1	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Dibenz(a,h)anthracene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Pyrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:51	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*58*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:51*	*1*
Nitrobenzene-d5 (Surr)	*50*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:51*	*1*
p-Terphenyl-d14 (Surr)	*63*		*10 - 160*	*01/30/20 12:10*	*02/04/20 16:51*	*1*

Client Sample ID: Composite (SF-10 Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-56
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 17:11	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Composite (SF-10 Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-56
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Fluoranthene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Pyrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:11	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*69*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:11*	*1*
Nitrobenzene-d5 (Surr)	*67*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:11*	*1*
p-Terphenyl-d14 (Surr)	*71*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:11*	*1*

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-62
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 17:31	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-62
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	**24**		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Pyrene	**28**		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:31	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*64*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:31*	*1*
Nitrobenzene-d5 (Surr)	*53*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:31*	*1*
p-Terphenyl-d14 (Surr)	*67*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:31*	*1*

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-68
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Acenaphthene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Pyrene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 17:50	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 17:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*71*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:50*	*1*
Nitrobenzene-d5 (Surr)	*61*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:50*	*1*
p-Terphenyl-d14 (Surr)	*75*		*10 - 160*	*01/30/20 12:10*	*02/04/20 17:50*	*1*

Method: 8270C SIM - PAHs (GC/MS SIM)

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-74
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
1-Methylphenanthrene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Benzo[k]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Fluoranthene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Perylene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Phenanthrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Pyrene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:10	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*61*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:10*	*1*
Nitrobenzene-d5 (Surr)	*57*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:10*	*1*
p-Terphenyl-d14 (Surr)	*58*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:10*	*1*

Client Sample ID: Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-80
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Anthracene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Benzo[a]anthracene	ND		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 18:29	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Client Sample ID: Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-80
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Chrysene	ND		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Fluoranthene	**39**		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Phenanthrene	**10**		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Pyrene	**32**		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 18:29	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 18:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*68*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:29*	*1*
Nitrobenzene-d5 (Surr)	*59*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:29*	*1*
p-Terphenyl-d14 (Surr)	*70*		*10 - 160*	*01/30/20 12:10*	*02/04/20 18:29*	*1*

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-86
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
1-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
1-Methylphenanthrene	ND		9.9	2.5	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
2,6-Dimethylnaphthalene	ND		9.9	1.7	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
2-Methylnaphthalene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Acenaphthene	ND		9.9	2.3	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Acenaphthylene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Anthracene	**13**		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Benzo[a]anthracene	**21**		9.9	2.1	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Benzo[a]pyrene	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Benzo[b]fluoranthene	ND		9.9	2.7	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Benzo[e]pyrene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Benzo[g,h,i]perylene	ND		9.9	1.5	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Benzo[k]fluoranthene	ND		9.9	2.8	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Chrysene	**18**		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Dibenz(a,h)anthracene	ND		9.9	1.9	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Dibenzothiophene	ND		9.9	1.3	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Fluoranthene	**230**		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Fluorene	ND		9.9	3.1	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Indeno[1,2,3-cd]pyrene	ND		9.9	1.6	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Naphthalene	ND		9.9	3.4	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Perylene	ND		9.9	2.4	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Phenanthrene	**83**		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Pyrene	**160**		9.9	2.2	ug/Kg		01/30/20 12:10	02/04/20 16:32	1
Biphenyl	ND		9.9	1.8	ug/Kg		01/30/20 12:10	02/04/20 16:32	1

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl (Surr)	72		10 - 160	01/30/20 12:10	02/04/20 16:32	1
Nitrobenzene-d5 (Surr)	56		10 - 160	01/30/20 12:10	02/04/20 16:32	1
p-Terphenyl-d14 (Surr)	69		10 - 160	01/30/20 12:10	02/04/20 16:32	1

Method: 6020 - Metals (ICP/MS)

Client Sample ID: Nereis-T0
Date Collected: 11/17/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-1
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.31**		0.148	0.0696	mg/Kg		02/03/20 17:00	02/05/20 05:53	20
Silver	ND	F1	0.148	0.0231	mg/Kg		02/03/20 17:00	02/05/20 05:53	20

Client Sample ID: Composite (Control-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-7
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.15**		0.150	0.0703	mg/Kg		02/03/20 17:00	02/05/20 06:04	20
Silver	ND		0.150	0.0233	mg/Kg		02/03/20 17:00	02/05/20 06:04	20

Client Sample ID: Composite (SF-10 Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-13
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.73**		0.147	0.0693	mg/Kg		02/03/20 17:00	02/05/20 06:07	20
Silver	ND		0.147	0.0230	mg/Kg		02/03/20 17:00	02/05/20 06:07	20

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Da 28)
Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-19
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.97**		0.150	0.0705	mg/Kg		02/03/20 17:00	02/05/20 06:10	20
Silver	ND		0.150	0.0234	mg/Kg		02/03/20 17:00	02/05/20 06:10	20

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-25
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.59**		0.149	0.0700	mg/Kg		02/03/20 17:00	02/05/20 06:13	20
Silver	ND		0.149	0.0232	mg/Kg		02/03/20 17:00	02/05/20 06:13	20

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-31
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.36**		0.146	0.0688	mg/Kg		02/03/20 17:00	02/05/20 06:16	20
Silver	ND		0.146	0.0228	mg/Kg		02/03/20 17:00	02/05/20 06:16	20

Client Sample ID: MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28)
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-37
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.59**		0.149	0.0698	mg/Kg		02/03/20 17:00	02/05/20 06:24	20
Silver	ND		0.149	0.0232	mg/Kg		02/03/20 17:00	02/05/20 06:24	20

Method: 6020 - Metals (ICP/MS)

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Da 28)
Lab Sample ID: 570-18658-43
Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**1.68**		0.150	0.0703	mg/Kg		02/03/20 17:00	02/05/20 06:27	20
Silver	ND		0.150	0.0233	mg/Kg		02/03/20 17:00	02/05/20 06:27	20

Client Sample ID: Macoma-T0
Lab Sample ID: 570-18658-44
Date Collected: 11/08/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.19**		0.148	0.0696	mg/Kg		02/03/20 17:00	02/05/20 06:49	20
Silver	ND		0.148	0.0231	mg/Kg		02/03/20 17:00	02/05/20 06:49	20

Client Sample ID: Composite (Control-ABCDE-Macoma-Day 28)
Lab Sample ID: 570-18658-50
Date Collected: 12/06/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.07**		0.150	0.0703	mg/Kg		02/03/20 17:00	02/05/20 06:29	20
Silver	ND		0.150	0.0233	mg/Kg		02/03/20 17:00	02/05/20 06:29	20

Client Sample ID: Composite (SF-10 Comp-ABCDE-Macoma-Day 28)
Lab Sample ID: 570-18658-56
Date Collected: 12/06/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.18**		0.149	0.0698	mg/Kg		02/03/20 17:00	02/05/20 06:32	20
Silver	ND		0.149	0.0232	mg/Kg		02/03/20 17:00	02/05/20 06:32	20

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)
Lab Sample ID: 570-18658-62
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.30**		0.149	0.0698	mg/Kg		02/03/20 17:00	02/05/20 06:35	20
Silver	ND		0.149	0.0232	mg/Kg		02/03/20 17:00	02/05/20 06:35	20

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28)
Lab Sample ID: 570-18658-68
Date Collected: 12/06/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.05**		0.146	0.0688	mg/Kg		02/03/20 17:00	02/05/20 06:38	20
Silver	ND		0.146	0.0228	mg/Kg		02/03/20 17:00	02/05/20 06:38	20

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28)
Lab Sample ID: 570-18658-74
Date Collected: 12/06/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.12**		0.147	0.0693	mg/Kg		02/03/20 17:00	02/05/20 06:40	20
Silver	ND		0.147	0.0230	mg/Kg		02/03/20 17:00	02/05/20 06:40	20

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Method: 6020 - Metals (ICP/MS)

Client Sample ID: Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-80
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.15**		0.149	0.0698	mg/Kg		02/03/20 17:00	02/05/20 06:43	20
Silver	ND		0.149	0.0232	mg/Kg		02/03/20 17:00	02/05/20 06:43	20

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-86
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**2.11**		0.149	0.0698	mg/Kg		02/03/20 17:00	02/05/20 06:46	20
Silver	ND		0.149	0.0232	mg/Kg		02/03/20 17:00	02/05/20 06:46	20

General Chemistry

Client Sample ID: Nereis-T0
Date Collected: 11/17/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-1
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids	1.54		0.100	0.100	%		01/30/20 18:35	01/30/20 16:56	1

Client Sample ID: Control-A-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-2
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: Control-B-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-3
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: Control-C-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-4
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: Control-D-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-5
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: Control-E-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-6
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: SF-10 Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-8
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: SF-10 Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-9
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: SF-10 Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-10
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

General Chemistry

Client Sample ID: SF-10 Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-11
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: SF-10 Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-12
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU1-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-14
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU1-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-15
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU1-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-16
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU1-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-17
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU1-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-18
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2a-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-20
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2a-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-21
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

General Chemistry

Client Sample ID: MOTCO-2019-DU2a-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-22
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2a-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-23
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2a-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-24
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2b-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-26
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2b-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-27
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:30	1

Client Sample ID: MOTCO-2019-DU2b-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-28
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU2b-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-29
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU2b-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-30
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU3-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-32
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

General Chemistry

Client Sample ID: MOTCO-2019-DU3-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-33
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU3-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-34
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU3-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-35
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU3-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-36
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU4-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-38
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU4-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-39
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU4-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-40
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU4-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-41
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: MOTCO-2019-DU4-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-42
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

General Chemistry

Client Sample ID: Macoma-T0
Date Collected: 11/08/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-44
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids	0.545		0.0990	0.0990	%		01/30/20 18:35	01/30/20 16:56	1

Client Sample ID: Control-A-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-45
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: Control-B-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-46
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: Control-C-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-47
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: Control-D-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-48
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: Control-E-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-49
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: SF-10 Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-51
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: SF-10 Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-52
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: SF-10 Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-53
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

General Chemistry

Client Sample ID: SF-10 Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-54
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:31	1

Client Sample ID: SF-10 Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-55
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU1-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-57
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU1-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-58
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU1-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-59
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU1-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-60
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU1-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-61
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2a-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-63
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2a-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-64
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

General Chemistry

Client Sample ID: MOTCO-2019-DU2a-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-65
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2a-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-66
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2a-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-67
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2b-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-69
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2b-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-70
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2b-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-71
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2b-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-72
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU2b-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-73
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU3-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-75
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

General Chemistry

Client Sample ID: MOTCO-2019-DU3-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-76
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU3-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-77
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU3-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-78
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:32	1

Client Sample ID: MOTCO-2019-DU3-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-79
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: MOTCO-2019-DU4-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-81
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: MOTCO-2019-DU4-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-82
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: MOTCO-2019-DU4-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-83
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: MOTCO-2019-DU4-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-84
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Client Sample ID: MOTCO-2019-DU4-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-85
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Prep Complete	yes				NONE			01/30/20 17:33	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: Control-A-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-2
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-B-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-3
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-C-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-4
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-D-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-5
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-E-Nereis-Day 28
Date Collected: 12/05/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-6
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-8
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-9
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-10
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:01
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-11
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: SF-10 Comp-E-Nereis-Day 28
Lab Sample ID: 570-18658-12
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-A-Nereis-Day 28
Lab Sample ID: 570-18658-14
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-B-Nereis-Day 28
Lab Sample ID: 570-18658-15
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-C-Nereis-Day 28
Lab Sample ID: 570-18658-16
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-D-Nereis-Day 28
Lab Sample ID: 570-18658-17
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-E-Nereis-Day 28
Lab Sample ID: 570-18658-18
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-A-Nereis-Day 28
Lab Sample ID: 570-18658-20
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-B-Nereis-Day 28
Lab Sample ID: 570-18658-21
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-C-Nereis-Day 28
Lab Sample ID: 570-18658-22
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: MOTCO-2019-DU2a-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-23
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-24
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-26
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-27
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-28
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-29
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-30
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU3-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-32
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU3-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-33
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: MOTCO-2019-DU3-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-34
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU3-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-35
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU3-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-36
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU4-Comp-A-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-38
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU4-Comp-B-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-39
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU4-Comp-C-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-40
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU4-Comp-D-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-41
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU4-Comp-E-Nereis-Day 28
Date Collected: 12/05/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-42
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-A-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-45
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: Control-B-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-46
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-C-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-47
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-D-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-48
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: Control-E-Macoma-Day 28
Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-49
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-51
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-52
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-53
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-54
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: SF-10 Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Lab Sample ID: 570-18658-55
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: MOTCO-2019-DU1-Comp-A-Macoma-Day 28
Lab Sample ID: 570-18658-57
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-B-Macoma-Day 28
Lab Sample ID: 570-18658-58
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-C-Macoma-Day 28
Lab Sample ID: 570-18658-59
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-D-Macoma-Day 28
Lab Sample ID: 570-18658-60
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU1-Comp-E-Macoma-Day 28
Lab Sample ID: 570-18658-61
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-A-Macoma-Day 28
Lab Sample ID: 570-18658-63
Date Collected: 12/06/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-B-Macoma-Day 28
Lab Sample ID: 570-18658-64
Date Collected: 12/06/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-C-Macoma-Day 28
Lab Sample ID: 570-18658-65
Date Collected: 12/06/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2a-Comp-D-Macoma-Day 28
Lab Sample ID: 570-18658-66
Date Collected: 12/06/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: MOTCO-2019-DU2a-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-67
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-69
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-70
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:38	1

Client Sample ID: MOTCO-2019-DU2b-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-71
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU2b-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-72
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU2b-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-73
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU3-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-75
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU3-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-76
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU3-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-77
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Method: Composite - Sample Composite for Organic Extraction

Client Sample ID: MOTCO-2019-DU3-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-78
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU3-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-79
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:43	1

Client Sample ID: MOTCO-2019-DU4-Comp-A-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-81
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:44	1

Client Sample ID: MOTCO-2019-DU4-Comp-B-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-82
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:44	1

Client Sample ID: MOTCO-2019-DU4-Comp-C-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-83
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:44	1

Client Sample ID: MOTCO-2019-DU4-Comp-D-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-84
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:44	1

Client Sample ID: MOTCO-2019-DU4-Comp-E-Macoma-Day 28
Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52
Lab Sample ID: 570-18658-85
Matrix: Tissue

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Composited	YES				NONE			01/30/20 17:44	1

Surrogate Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Method: 8270C SIM - PAHs (GC/MS SIM)

Matrix: Tissue

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	FBP (10-160)	NBZ (10-160)	TPHd14 (10-160)						
570-18658-1	Nereis-T0	79	36	71						
570-18658-7	Composite (Control-ABCDE-Nereis-Day 28)	84	57	82						
570-18658-13	Composite (SF-10 Comp-ABCDE-Nereis-Day 28)	73	51	72						
570-18658-19	Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28)	95	75	93						
570-18658-25	Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28)	80	56	82						
570-18658-31	Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28)	73	52	74						
570-18658-37	MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28)	72	51	69						
570-18658-43	Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Day 28)	90	69	89						
570-18658-44	Macoma-T0	77	53	77						
570-18658-50	Composite (Control-ABCDE-Macoma-Day 28)	58	50	63						
570-18658-56	Composite (SF-10 Comp-ABCDE-Macoma-Day 28)	69	67	71						
570-18658-62	Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)	64	53	67						
570-18658-68	Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28)	71	61	75						
570-18658-74	Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28)	61	57	58						
570-18658-80	Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)	68	59	70						
570-18658-86	Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)	72	56	69						
570-18658-86 MS	Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)	81	67	84						
570-18658-86 MSD	Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)	93	80	92						
LCS 570-47606/2-A	Lab Control Sample	79	73	76						
LCSD 570-47606/3-A	Lab Control Sample Dup	82	73	76						
MB 570-47606/1-A	Method Blank	87	71	82						

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
NBZ = Nitrobenzene-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

Method: 8270C SIM - PAHs (GC/MS SIM)

Lab Sample ID: MB 570-47606/1-A
Matrix: Tissue
Analysis Batch: 48536

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47606

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,6,7-Trimethylnaphthalene	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
1-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
1-Methylphenanthrene	ND		10	2.5	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
2,6-Dimethylnaphthalene	ND		10	1.7	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
2-Methylnaphthalene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Acenaphthene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Acenaphthylene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Anthracene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Benzo[a]anthracene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Benzo[a]pyrene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Benzo[b]fluoranthene	ND		10	2.7	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Benzo[e]pyrene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Benzo[g,h,i]perylene	ND		10	1.5	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Benzo[k]fluoranthene	ND		10	2.8	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Chrysene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Dibenz(a,h)anthracene	ND		10	2.0	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Dibenzothiophene	ND		10	1.3	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Fluoranthene	ND		10	1.8	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Fluorene	ND		10	3.1	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Indeno[1,2,3-cd]pyrene	ND		10	1.6	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Naphthalene	ND		10	3.5	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Perylene	ND		10	2.4	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Phenanthrene	ND		10	2.2	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Pyrene	ND		10	2.3	ug/Kg		01/30/20 12:10	02/04/20 15:13	1
Biphenyl	ND		10	1.9	ug/Kg		01/30/20 12:10	02/04/20 15:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*87*		*10 - 160*	*01/30/20 12:10*	*02/04/20 15:13*	*1*
Nitrobenzene-d5 (Surr)	*71*		*10 - 160*	*01/30/20 12:10*	*02/04/20 15:13*	*1*
p-Terphenyl-d14 (Surr)	*82*		*10 - 160*	*01/30/20 12:10*	*02/04/20 15:13*	*1*

Lab Sample ID: LCS 570-47606/2-A
Matrix: Tissue
Analysis Batch: 48536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47606

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1-Methylnaphthalene	100	74.78		ug/Kg		75	10 - 160
2-Methylnaphthalene	100	73.29		ug/Kg		73	10 - 160
Acenaphthene	100	71.19		ug/Kg		71	10 - 160
Acenaphthylene	100	78.85		ug/Kg		79	10 - 160
Anthracene	100	69.25		ug/Kg		69	10 - 160
Benzo[a]anthracene	100	71.52		ug/Kg		72	10 - 160
Benzo[a]pyrene	100	70.95		ug/Kg		71	10 - 160
Benzo[b]fluoranthene	100	74.78		ug/Kg		75	10 - 160
Benzo[g,h,i]perylene	100	73.92		ug/Kg		74	10 - 160
Benzo[k]fluoranthene	100	71.72		ug/Kg		72	10 - 160
Chrysene	100	65.66		ug/Kg		66	10 - 160
Dibenz(a,h)anthracene	100	75.93		ug/Kg		76	10 - 160

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-47606/2-A
Matrix: Tissue
Analysis Batch: 48536

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 47606

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoranthene			100	71.55		ug/Kg		72	10 - 160		
Fluorene			100	75.53		ug/Kg		76	10 - 160		
Indeno[1,2,3-cd]pyrene			100	72.79		ug/Kg		73	10 - 160		
Naphthalene			100	71.22		ug/Kg		71	10 - 160		
Phenanthrene			100	68.49		ug/Kg		68	10 - 160		
Pyrene			100	69.92		ug/Kg		70	10 - 160		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*79*		*10 - 160*
Nitrobenzene-d5 (Surr)	*73*		*10 - 160*
p-Terphenyl-d14 (Surr)	*76*		*10 - 160*

Lab Sample ID: LCSD 570-47606/3-A
Matrix: Tissue
Analysis Batch: 48536

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 47606

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene			100	77.65		ug/Kg		78	10 - 160	4	30
2-Methylnaphthalene			100	77.51		ug/Kg		78	10 - 160	6	30
Acenaphthene			100	73.30		ug/Kg		73	10 - 160	3	30
Acenaphthylene			100	91.69		ug/Kg		92	10 - 160	15	30
Anthracene			100	75.32		ug/Kg		75	10 - 160	8	30
Benzo[a]anthracene			100	78.23		ug/Kg		78	10 - 160	9	30
Benzo[a]pyrene			100	77.54		ug/Kg		78	10 - 160	9	30
Benzo[b]fluoranthene			100	80.42		ug/Kg		80	10 - 160	7	30
Benzo[g,h,i]perylene			100	82.56		ug/Kg		83	10 - 160	11	30
Benzo[k]fluoranthene			100	79.75		ug/Kg		80	10 - 160	11	30
Chrysene			100	71.67		ug/Kg		72	10 - 160	9	30
Dibenz(a,h)anthracene			100	83.54		ug/Kg		84	10 - 160	10	30
Fluoranthene			100	79.51		ug/Kg		80	10 - 160	11	30
Fluorene			100	78.49		ug/Kg		78	10 - 160	4	30
Indeno[1,2,3-cd]pyrene			100	80.18		ug/Kg		80	10 - 160	10	30
Naphthalene			100	78.00		ug/Kg		78	10 - 160	9	30
Phenanthrene			100	75.59		ug/Kg		76	10 - 160	10	30
Pyrene			100	73.33		ug/Kg		73	10 - 160	5	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*82*		*10 - 160*
Nitrobenzene-d5 (Surr)	*73*		*10 - 160*
p-Terphenyl-d14 (Surr)	*76*		*10 - 160*

Lab Sample ID: 570-18658-86 MS
Matrix: Tissue
Analysis Batch: 48536

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)
Prep Type: Total/NA
Prep Batch: 47606

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1-Methylnaphthalene	ND		100	80.80		ug/Kg		81	10 - 160		

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-18658-86 MS

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)

Matrix: Tissue

Prep Type: Total/NA

Analysis Batch: 48536

Prep Batch: 47606

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylnaphthalene	ND		100	76.05		ug/Kg		76	10 - 160
Acenaphthene	ND		100	85.39		ug/Kg		78	10 - 160
Acenaphthylene	ND		100	88.89		ug/Kg		87	10 - 160
Anthracene	13		100	93.22		ug/Kg		80	10 - 160
Benzo[a]anthracene	21		100	110.9		ug/Kg		90	10 - 160
Benzo[a]pyrene	ND		100	103.7		ug/Kg		99	10 - 160
Benzo[b]fluoranthene	ND		100	108.9		ug/Kg		104	10 - 160
Benzo[g,h,i]perylene	ND		100	87.95		ug/Kg		88	10 - 160
Benzo[k]fluoranthene	ND		100	93.59		ug/Kg		87	10 - 160
Chrysene	18		100	98.79		ug/Kg		81	10 - 160
Dibenz(a,h)anthracene	ND		100	95.18		ug/Kg		95	10 - 160
Fluoranthene	230		100	333.3		ug/Kg		101	10 - 160
Fluorene	ND		100	85.49		ug/Kg		81	10 - 160
Indeno[1,2,3-cd]pyrene	ND		100	89.65		ug/Kg		90	10 - 160
Naphthalene	ND		100	79.48		ug/Kg		79	10 - 160
Phenanthrene	83		100	180.9		ug/Kg		98	10 - 160
Pyrene	160		100	270.9		ug/Kg		106	10 - 160

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*81*		*10 - 160*
Nitrobenzene-d5 (Surr)	*67*		*10 - 160*
p-Terphenyl-d14 (Surr)	*84*		*10 - 160*

Lab Sample ID: 570-18658-86 MSD

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)

Matrix: Tissue

Prep Type: Total/NA

Analysis Batch: 48536

Prep Batch: 47606

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1-Methylnaphthalene	ND		99.5	94.99		ug/Kg		95	10 - 160	16	30
2-Methylnaphthalene	ND		99.5	92.95		ug/Kg		93	10 - 160	20	30
Acenaphthene	ND		99.5	98.61		ug/Kg		92	10 - 160	14	30
Acenaphthylene	ND		99.5	104.7		ug/Kg		103	10 - 160	16	30
Anthracene	13		99.5	102.0		ug/Kg		89	10 - 160	9	30
Benzo[a]anthracene	21		99.5	123.3		ug/Kg		103	10 - 160	11	30
Benzo[a]pyrene	ND		99.5	112.1		ug/Kg		108	10 - 160	8	30
Benzo[b]fluoranthene	ND		99.5	125.5		ug/Kg		121	10 - 160	14	30
Benzo[g,h,i]perylene	ND		99.5	92.58		ug/Kg		93	10 - 160	5	30
Benzo[k]fluoranthene	ND		99.5	98.53		ug/Kg		92	10 - 160	5	30
Chrysene	18		99.5	110.6		ug/Kg		93	10 - 160	11	30
Dibenz(a,h)anthracene	ND		99.5	99.33		ug/Kg		100	10 - 160	4	30
Fluoranthene	230		99.5	388.6		ug/Kg		157	10 - 160	15	30
Fluorene	ND		99.5	94.02		ug/Kg		90	10 - 160	10	30
Indeno[1,2,3-cd]pyrene	ND		99.5	95.68		ug/Kg		96	10 - 160	7	30
Naphthalene	ND		99.5	96.02		ug/Kg		96	10 - 160	19	30
Phenanthrene	83		99.5	209.1		ug/Kg		127	10 - 160	14	30
Pyrene	160		99.5	311.8		ug/Kg		148	10 - 160	14	30

Method: 8270C SIM - PAHs (GC/MS SIM) (Continued)

Lab Sample ID: 570-18658-86 MSD
Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)
Matrix: Tissue
Prep Type: Total/NA
Analysis Batch: 48536
Prep Batch: 47606

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*93*		*10 - 160*
Nitrobenzene-d5 (Surr)	*80*		*10 - 160*
p-Terphenyl-d14 (Surr)	*92*		*10 - 160*

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 570-48400/1-A ^20
Client Sample ID: Method Blank
Matrix: Tissue
Prep Type: Total/NA
Analysis Batch: 48841
Prep Batch: 48400

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.150	0.0705	mg/Kg		02/03/20 17:00	02/05/20 04:11	20
Silver	ND		0.150	0.0234	mg/Kg		02/03/20 17:00	02/05/20 04:11	20

Lab Sample ID: LCS 570-48400/2-A ^20
Client Sample ID: Lab Control Sample
Matrix: Tissue
Prep Type: Total/NA
Analysis Batch: 48841
Prep Batch: 48400

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			12.5	12.63		mg/Kg		101	80 - 120		
Silver			6.25	5.915		mg/Kg		95	80 - 120		

Lab Sample ID: LCSD 570-48400/3-A ^20
Client Sample ID: Lab Control Sample Dup
Matrix: Tissue
Prep Type: Total/NA
Analysis Batch: 48841
Prep Batch: 48400

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic			12.5	12.82		mg/Kg		103	80 - 120	1	20
Silver			6.25	6.018		mg/Kg		96	80 - 120	2	20

Lab Sample ID: 570-18658-1 MS
Client Sample ID: Nereis-T0
Matrix: Tissue
Prep Type: Total/NA
Analysis Batch: 48841
Prep Batch: 48400

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	3.31		12.3	15.89		mg/Kg		102	80 - 120		
Silver	ND	F1	6.17	0.6951	F1	mg/Kg		11	80 - 120		

Lab Sample ID: 570-18658-1 MSD
Client Sample ID: Nereis-T0
Matrix: Tissue
Prep Type: Total/NA
Analysis Batch: 48841
Prep Batch: 48400

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.31		12.3	15.77		mg/Kg		101	80 - 120	1	20
Silver	ND	F1	6.17	0.5859	F1	mg/Kg		9	80 - 120	17	20

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Method: Lipids - Percent Lipids

Lab Sample ID: MB 570-47736/4-A
Matrix: Tissue
Analysis Batch: 47696

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 47736

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids	ND		0.100	0.100	%		01/30/20 18:35	01/30/20 16:56	1

Lab Sample ID: 570-18658-1 DU
Matrix: Tissue
Analysis Batch: 47696

Client Sample ID: Nereis-T0
Prep Type: Total/NA
Prep Batch: 47736

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Lipids	1.54			1.310		%					25

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Nereis-T0

Lab Sample ID: 570-18658-1

Date Collected: 11/17/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 15:40	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.05 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 05:53	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Analysis	Lipids		1			47696	01/30/20 16:56	UWEZ	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Prep	3541			20 g	2 mL	47736	01/30/20 18:35	USUL	ECL 1

Client Sample ID: Control-A-Nereis-Day 28

Lab Sample ID: 570-18658-2

Date Collected: 12/05/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Control-B-Nereis-Day 28

Lab Sample ID: 570-18658-3

Date Collected: 12/05/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Control-C-Nereis-Day 28

Lab Sample ID: 570-18658-4

Date Collected: 12/05/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Control-D-Nereis-Day 28

Lab Sample ID: 570-18658-5
Date Collected: 12/05/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Control-E-Nereis-Day 28

Lab Sample ID: 570-18658-6
Date Collected: 12/05/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (Control-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-7
Date Collected: 12/05/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.0 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 16:00	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.01 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:04	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: SF-10 Comp-A-Nereis-Day 28

Lab Sample ID: 570-18658-8
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-B-Nereis-Day 28

Lab Sample ID: 570-18658-9
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: SF-10 Comp-B-Nereis-Day 28

Lab Sample ID: 570-18658-9
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3

Client Sample ID: SF-10 Comp-C-Nereis-Day 28

Lab Sample ID: 570-18658-10
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-D-Nereis-Day 28

Lab Sample ID: 570-18658-11
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-E-Nereis-Day 28

Lab Sample ID: 570-18658-12
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (SF-10 Comp-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-13
Date Collected: 12/05/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 16:20	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.07 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:07	UFLE	ECL 1
	Instrument ID: ICPMS05									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: MOTCO-2019-DU1-Comp-A-Nereis-Day 28
Lab Sample ID: 570-18658-14
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-B-Nereis-Day 28
Lab Sample ID: 570-18658-15
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-C-Nereis-Day 28
Lab Sample ID: 570-18658-16
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-D-Nereis-Day 28
Lab Sample ID: 570-18658-17
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-E-Nereis-Day 28
Lab Sample ID: 570-18658-18
Date Collected: 12/05/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-19

Date Collected: 12/05/19 12:02
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 16:40	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.00 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:10	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2a-Comp-A-Nereis-Day 28

Lab Sample ID: 570-18658-20

Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-B-Nereis-Day 28

Lab Sample ID: 570-18658-21

Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-C-Nereis-Day 28

Lab Sample ID: 570-18658-22

Date Collected: 12/05/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: MOTCO-2019-DU2a-Comp-D-Nereis-Day 28

Lab Sample ID: 570-18658-23
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-E-Nereis-Day 28

Lab Sample ID: 570-18658-24
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-25
Date Collected: 12/05/19 12:03
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 17:00	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.03 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:13	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-Comp-A-Nereis-Day 28

Lab Sample ID: 570-18658-26
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-B-Nereis-Day 28
Lab Sample ID: 570-18658-27
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:30	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-C-Nereis-Day 28
Lab Sample ID: 570-18658-28
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-D-Nereis-Day 28
Lab Sample ID: 570-18658-29
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-E-Nereis-Day 28
Lab Sample ID: 570-18658-30
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28)
Lab Sample ID: 570-18658-31
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 17:20	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-31
Date Collected: 12/05/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.10 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:16	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU3-Comp-A-Nereis-Day 28

Lab Sample ID: 570-18658-32
Date Collected: 12/05/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-B-Nereis-Day 28

Lab Sample ID: 570-18658-33
Date Collected: 12/05/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-C-Nereis-Day 28

Lab Sample ID: 570-18658-34
Date Collected: 12/05/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-D-Nereis-Day 28

Lab Sample ID: 570-18658-35
Date Collected: 12/05/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-E-Nereis-Day 28

Lab Sample ID: 570-18658-36

Date Collected: 12/05/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-37

Date Collected: 12/05/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 17:40	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.04 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:24	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU4-Comp-A-Nereis-Day 28

Lab Sample ID: 570-18658-38

Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-B-Nereis-Day 28

Lab Sample ID: 570-18658-39

Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: MOTCO-2019-DU4-Comp-C-Nereis-Day 28

Lab Sample ID: 570-18658-40
Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-D-Nereis-Day 28

Lab Sample ID: 570-18658-41
Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-E-Nereis-Day 28

Lab Sample ID: 570-18658-42
Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Day 28)

Lab Sample ID: 570-18658-43
Date Collected: 12/05/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 18:00	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.01 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:27	UFLE	ECL 1
	Instrument ID: ICPMS05									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Macoma-T0

Lab Sample ID: 570-18658-44
Date Collected: 11/08/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.3 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48535	02/04/20 18:20	AJ2Q	ECL 1
	Instrument ID: GCMSEEE									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.05 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:49	UFLE	ECL 1
	Instrument ID: ICPMS05									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Analysis	Lipids		1			47696	01/30/20 16:56	UWEZ	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Prep	3541			20.2 g	2 mL	47736	01/30/20 18:35	USUL	ECL 1

Client Sample ID: Control-A-Macoma-Day 28

Lab Sample ID: 570-18658-45
Date Collected: 12/06/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Control-B-Macoma-Day 28

Lab Sample ID: 570-18658-46
Date Collected: 12/06/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Control-C-Macoma-Day 28

Lab Sample ID: 570-18658-47
Date Collected: 12/06/19 12:00
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Control-D-Macoma-Day 28

Lab Sample ID: 570-18658-48

Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Control-E-Macoma-Day 28

Lab Sample ID: 570-18658-49

Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (Control-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-50

Date Collected: 12/06/19 12:00
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.1 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 16:51	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.01 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:29	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: SF-10 Comp-A-Macoma-Day 28

Lab Sample ID: 570-18658-51

Date Collected: 12/06/19 12:01
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-B-Macoma-Day 28

Lab Sample ID: 570-18658-52

Date Collected: 12/06/19 12:01

Matrix: Tissue

Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-C-Macoma-Day 28

Lab Sample ID: 570-18658-53

Date Collected: 12/06/19 12:01

Matrix: Tissue

Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-D-Macoma-Day 28

Lab Sample ID: 570-18658-54

Date Collected: 12/06/19 12:01

Matrix: Tissue

Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:31	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: SF-10 Comp-E-Macoma-Day 28

Lab Sample ID: 570-18658-55

Date Collected: 12/06/19 12:01

Matrix: Tissue

Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (SF-10 Comp-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-56

Date Collected: 12/06/19 12:01

Matrix: Tissue

Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 17:11	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									

Client Sample ID: Composite (SF-10 Comp-ABCDE-Macoma-Day 28)
Lab Sample ID: 570-18658-56
Date Collected: 12/06/19 12:01
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.04 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:32	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU1-Comp-A-Macoma-Day 28
Lab Sample ID: 570-18658-57
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-B-Macoma-Day 28
Lab Sample ID: 570-18658-58
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-C-Macoma-Day 28
Lab Sample ID: 570-18658-59
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU1-Comp-D-Macoma-Day 28
Lab Sample ID: 570-18658-60
Date Collected: 12/06/19 12:02
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: MOTCO-2019-DU1-Comp-E-Macoma-Day 28

Lab Sample ID: 570-18658-61

Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-62

Date Collected: 12/06/19 12:02
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 17:31	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.04 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:35	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2a-Comp-A-Macoma-Day 28

Lab Sample ID: 570-18658-63

Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-B-Macoma-Day 28

Lab Sample ID: 570-18658-64

Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-C-Macoma-Day 28

Lab Sample ID: 570-18658-65

Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-D-Macoma-Day 28

Lab Sample ID: 570-18658-66

Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2a-Comp-E-Macoma-Day 28

Lab Sample ID: 570-18658-67

Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-68

Date Collected: 12/06/19 12:03
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 17:50	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.10 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:38	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU2b-Comp-A-Macoma-Day 28
Lab Sample ID: 570-18658-69

Date Collected: 12/06/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-B-Macoma-Day 28
Lab Sample ID: 570-18658-70

Date Collected: 12/06/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:38	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-C-Macoma-Day 28
Lab Sample ID: 570-18658-71

Date Collected: 12/06/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU2b-Comp-D-Macoma-Day 28
Lab Sample ID: 570-18658-72

Date Collected: 12/06/19 12:04
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: MOTCO-2019-DU2b-Comp-E-Macoma-Day 28

Lab Sample ID: 570-18658-73

Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-74

Date Collected: 12/06/19 12:04
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.3 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 18:10	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.07 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:40	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU3-Comp-A-Macoma-Day 28

Lab Sample ID: 570-18658-75

Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-B-Macoma-Day 28

Lab Sample ID: 570-18658-76

Date Collected: 12/06/19 12:05
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: MOTCO-2019-DU3-Comp-C-Macoma-Day 28

Lab Sample ID: 570-18658-77
Date Collected: 12/06/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-D-Macoma-Day 28

Lab Sample ID: 570-18658-78
Date Collected: 12/06/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:32	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU3-Comp-E-Macoma-Day 28

Lab Sample ID: 570-18658-79
Date Collected: 12/06/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:43	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-80
Date Collected: 12/06/19 12:05
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 18:29	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.04 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:43	UFLE	ECL 1
	Instrument ID: ICPMS05									

Client Sample ID: MOTCO-2019-DU4-Comp-A-Macoma-Day 28

Lab Sample ID: 570-18658-81

Date Collected: 12/06/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:44	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-B-Macoma-Day 28

Lab Sample ID: 570-18658-82

Date Collected: 12/06/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:44	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-C-Macoma-Day 28

Lab Sample ID: 570-18658-83

Date Collected: 12/06/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:44	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-D-Macoma-Day 28

Lab Sample ID: 570-18658-84

Date Collected: 12/06/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:44	USUL	ECL 3
	Instrument ID: NOEQUIP									

Client Sample ID: MOTCO-2019-DU4-Comp-E-Macoma-Day 28

Lab Sample ID: 570-18658-85

Date Collected: 12/06/19 12:06
Matrix: Tissue
Date Received: 01/15/20 10:52

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	In House		1			47705	01/30/20 17:33	USUL	ECL 1
	Instrument ID: NOEQUIP									
Total/NA	Analysis	Composite		1			47713	01/30/20 17:44	USUL	ECL 3
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Client Sample ID: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)

Lab Sample ID: 570-18658-86

Date Collected: 12/06/19 12:06
Date Received: 01/15/20 10:52

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3541			20.2 g	2 mL	47606	01/30/20 12:10	UWEZ	ECL 1
Total/NA	Analysis	8270C SIM		1			48536	02/04/20 16:32	AJ2Q	ECL 1
	Instrument ID: GCMSAAA									
Total/NA	Pre Prep	In House					47266	01/29/20 09:22	UWEZ	ECL 3
Total/NA	Prep	3050B			4.04 g	100 mL	48400	02/03/20 17:00	X7RL	ECL 1
Total/NA	Analysis	6020		20			48841	02/05/20 06:46	UFLE	ECL 1
	Instrument ID: ICPMS05									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 3 = Eurofins Calscience LLC Knott, 11380 Knott Street, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: Pacific EcoRisk Inc
Job ID: 570-18658-1
Project/Site: USACE: MOTCO Tissues

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Arizona	State	AZ0781	03-13-20
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Hawaii	State	<cert No.>	07-02-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-21
Washington	State	C916-18	10-11-20

Method Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Method	Method Description	Protocol	Laboratory
8270C SIM	PAHs (GC/MS SIM)	SW846	ECL 1
6020	Metals (ICP/MS)	SW846	ECL 1
In House	Tissue Preparation/Homgenization	NOAA	ECL 1
Lipids	Percent Lipids	TestAmerica SOP	ECL 1
Composite	Sample Composite for Organic Extraction	None	ECL 3
3050B	Preparation, Metals	SW846	ECL 1
3541	Automated Soxhlet Extraction	SW846	ECL 1
In House	Tissue Handling and Preparation	NOAA	ECL 3

Protocol References:

NOAA = National Marine Fisheries Service, National Oceanic And Atmospheric Administration, Seattle, WA, November 1988

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 3 = Eurofins Calscience LLC Knott, 11380 Knott Street, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-18658-1	Nereis-T0	Tissue	11/17/19 12:00	01/15/20 10:52	
570-18658-2	Control-A-Nereis-Day 28	Tissue	12/05/19 12:00	01/15/20 10:52	
570-18658-3	Control-B-Nereis-Day 28	Tissue	12/05/19 12:00	01/15/20 10:52	
570-18658-4	Control-C-Nereis-Day 28	Tissue	12/05/19 12:00	01/15/20 10:52	
570-18658-5	Control-D-Nereis-Day 28	Tissue	12/05/19 12:00	01/15/20 10:52	
570-18658-6	Control-E-Nereis-Day 28	Tissue	12/05/19 12:00	01/15/20 10:52	
570-18658-7	Composite (Control-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:00	01/15/20 10:52	
570-18658-8	SF-10 Comp-A-Nereis-Day 28	Tissue	12/05/19 12:01	01/15/20 10:52	
570-18658-9	SF-10 Comp-B-Nereis-Day 28	Tissue	12/05/19 12:01	01/15/20 10:52	
570-18658-10	SF-10 Comp-C-Nereis-Day 28	Tissue	12/05/19 12:01	01/15/20 10:52	
570-18658-11	SF-10 Comp-D-Nereis-Day 28	Tissue	12/05/19 12:01	01/15/20 10:52	
570-18658-12	SF-10 Comp-E-Nereis-Day 28	Tissue	12/05/19 12:01	01/15/20 10:52	
570-18658-13	Composite (SF-10 Comp-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:01	01/15/20 10:52	
570-18658-14	MOTCO-2019-DU1-Comp-A-Nereis-Day 28	Tissue	12/05/19 12:02	01/15/20 10:52	
570-18658-15	MOTCO-2019-DU1-Comp-B-Nereis-Day 28	Tissue	12/05/19 12:02	01/15/20 10:52	
570-18658-16	MOTCO-2019-DU1-Comp-C-Nereis-Day 28	Tissue	12/05/19 12:02	01/15/20 10:52	
570-18658-17	MOTCO-2019-DU1-Comp-D-Nereis-Day 28	Tissue	12/05/19 12:02	01/15/20 10:52	
570-18658-18	MOTCO-2019-DU1-Comp-E-Nereis-Day 28	Tissue	12/05/19 12:02	01/15/20 10:52	
570-18658-19	Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:02	01/15/20 10:52	
570-18658-20	MOTCO-2019-DU2a-Comp-A-Nereis-Day 28	Tissue	12/05/19 12:03	01/15/20 10:52	
570-18658-21	MOTCO-2019-DU2a-Comp-B-Nereis-Day 28	Tissue	12/05/19 12:03	01/15/20 10:52	
570-18658-22	MOTCO-2019-DU2a-Comp-C-Nereis-Day 28	Tissue	12/05/19 12:03	01/15/20 10:52	
570-18658-23	MOTCO-2019-DU2a-Comp-D-Nereis-Day 28	Tissue	12/05/19 12:03	01/15/20 10:52	
570-18658-24	MOTCO-2019-DU2a-Comp-E-Nereis-Day 28	Tissue	12/05/19 12:03	01/15/20 10:52	
570-18658-25	Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:03	01/15/20 10:52	
570-18658-26	MOTCO-2019-DU2b-Comp-A-Nereis-Day 28	Tissue	12/05/19 12:04	01/15/20 10:52	
570-18658-27	MOTCO-2019-DU2b-Comp-B-Nereis-Day 28	Tissue	12/05/19 12:04	01/15/20 10:52	
570-18658-28	MOTCO-2019-DU2b-Comp-C-Nereis-Day 28	Tissue	12/05/19 12:04	01/15/20 10:52	
570-18658-29	MOTCO-2019-DU2b-Comp-D-Nereis-Day 28	Tissue	12/05/19 12:04	01/15/20 10:52	
570-18658-30	MOTCO-2019-DU2b-Comp-E-Nereis-Day 28	Tissue	12/05/19 12:04	01/15/20 10:52	
570-18658-31	Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:04	01/15/20 10:52	
570-18658-32	MOTCO-2019-DU3-Comp-A-Nereis-Day 28	Tissue	12/05/19 12:05	01/15/20 10:52	
570-18658-33	MOTCO-2019-DU3-Comp-B-Nereis-Day 28	Tissue	12/05/19 12:05	01/15/20 10:52	
570-18658-34	MOTCO-2019-DU3-Comp-C-Nereis-Day 28	Tissue	12/05/19 12:05	01/15/20 10:52	
570-18658-35	MOTCO-2019-DU3-Comp-D-Nereis-Day 28	Tissue	12/05/19 12:05	01/15/20 10:52	
570-18658-36	MOTCO-2019-DU3-Comp-E-Nereis-Day 28	Tissue	12/05/19 12:05	01/15/20 10:52	
570-18658-37	MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:05	01/15/20 10:52	
570-18658-38	MOTCO-2019-DU4-Comp-A-Nereis-Day 28	Tissue	12/05/19 12:06	01/15/20 10:52	
570-18658-39	MOTCO-2019-DU4-Comp-B-Nereis-Day 28	Tissue	12/05/19 12:06	01/15/20 10:52	
570-18658-40	MOTCO-2019-DU4-Comp-C-Nereis-Day 28	Tissue	12/05/19 12:06	01/15/20 10:52	
570-18658-41	MOTCO-2019-DU4-Comp-D-Nereis-Day 28	Tissue	12/05/19 12:06	01/15/20 10:52	
570-18658-42	MOTCO-2019-DU4-Comp-E-Nereis-Day 28	Tissue	12/05/19 12:06	01/15/20 10:52	
570-18658-43	Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Day 28)	Tissue	12/05/19 12:06	01/15/20 10:52	
570-18658-44	Macoma-T0	Tissue	11/08/19 12:00	01/15/20 10:52	
570-18658-45	Control-A-Macoma-Day 28	Tissue	12/06/19 12:00	01/15/20 10:52	
570-18658-46	Control-B-Macoma-Day 28	Tissue	12/06/19 12:00	01/15/20 10:52	

Sample Summary

Client: Pacific EcoRisk Inc
Project/Site: USACE: MOTCO Tissues

Job ID: 570-18658-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-18658-47	Control-C-Macoma-Day 28	Tissue	12/06/19 12:00	01/15/20 10:52	
570-18658-48	Control-D-Macoma-Day 28	Tissue	12/06/19 12:00	01/15/20 10:52	
570-18658-49	Control-E-Macoma-Day 28	Tissue	12/06/19 12:00	01/15/20 10:52	
570-18658-50	Composite (Control-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:00	01/15/20 10:52	
570-18658-51	SF-10 Comp-A-Macoma-Day 28	Tissue	12/06/19 12:01	01/15/20 10:52	
570-18658-52	SF-10 Comp-B-Macoma-Day 28	Tissue	12/06/19 12:01	01/15/20 10:52	
570-18658-53	SF-10 Comp-C-Macoma-Day 28	Tissue	12/06/19 12:01	01/15/20 10:52	
570-18658-54	SF-10 Comp-D-Macoma-Day 28	Tissue	12/06/19 12:01	01/15/20 10:52	
570-18658-55	SF-10 Comp-E-Macoma-Day 28	Tissue	12/06/19 12:01	01/15/20 10:52	
570-18658-56	Composite (SF-10 Comp-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:01	01/15/20 10:52	
570-18658-57	MOTCO-2019-DU1-Comp-A-Macoma-Day 28	Tissue	12/06/19 12:02	01/15/20 10:52	
570-18658-58	MOTCO-2019-DU1-Comp-B-Macoma-Day 28	Tissue	12/06/19 12:02	01/15/20 10:52	
570-18658-59	MOTCO-2019-DU1-Comp-C-Macoma-Day 28	Tissue	12/06/19 12:02	01/15/20 10:52	
570-18658-60	MOTCO-2019-DU1-Comp-D-Macoma-Day 28	Tissue	12/06/19 12:02	01/15/20 10:52	
570-18658-61	MOTCO-2019-DU1-Comp-E-Macoma-Day 28	Tissue	12/06/19 12:02	01/15/20 10:52	
570-18658-62	Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:02	01/15/20 10:52	
570-18658-63	MOTCO-2019-DU2a-Comp-A-Macoma-Day 28	Tissue	12/06/19 12:03	01/15/20 10:52	
570-18658-64	MOTCO-2019-DU2a-Comp-B-Macoma-Day 28	Tissue	12/06/19 12:03	01/15/20 10:52	
570-18658-65	MOTCO-2019-DU2a-Comp-C-Macoma-Day 28	Tissue	12/06/19 12:03	01/15/20 10:52	
570-18658-66	MOTCO-2019-DU2a-Comp-D-Macoma-Day 28	Tissue	12/06/19 12:03	01/15/20 10:52	
570-18658-67	MOTCO-2019-DU2a-Comp-E-Macoma-Day 28	Tissue	12/06/19 12:03	01/15/20 10:52	
570-18658-68	Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:03	01/15/20 10:52	
570-18658-69	MOTCO-2019-DU2b-Comp-A-Macoma-Day 28	Tissue	12/06/19 12:04	01/15/20 10:52	
570-18658-70	MOTCO-2019-DU2b-Comp-B-Macoma-Day 28	Tissue	12/06/19 12:04	01/15/20 10:52	
570-18658-71	MOTCO-2019-DU2b-Comp-C-Macoma-Day 28	Tissue	12/06/19 12:04	01/15/20 10:52	
570-18658-72	MOTCO-2019-DU2b-Comp-D-Macoma-Day 28	Tissue	12/06/19 12:04	01/15/20 10:52	
570-18658-73	MOTCO-2019-DU2b-Comp-E-Macoma-Day 28	Tissue	12/06/19 12:04	01/15/20 10:52	
570-18658-74	Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:04	01/15/20 10:52	
570-18658-75	MOTCO-2019-DU3-Comp-A-Macoma-Day 28	Tissue	12/06/19 12:05	01/15/20 10:52	
570-18658-76	MOTCO-2019-DU3-Comp-B-Macoma-Day 28	Tissue	12/06/19 12:05	01/15/20 10:52	
570-18658-77	MOTCO-2019-DU3-Comp-C-Macoma-Day 28	Tissue	12/06/19 12:05	01/15/20 10:52	
570-18658-78	MOTCO-2019-DU3-Comp-D-Macoma-Day 28	Tissue	12/06/19 12:05	01/15/20 10:52	
570-18658-79	MOTCO-2019-DU3-Comp-E-Macoma-Day 28	Tissue	12/06/19 12:05	01/15/20 10:52	
570-18658-80	Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:05	01/15/20 10:52	
570-18658-81	MOTCO-2019-DU4-Comp-A-Macoma-Day 28	Tissue	12/06/19 12:06	01/15/20 10:52	
570-18658-82	MOTCO-2019-DU4-Comp-B-Macoma-Day 28	Tissue	12/06/19 12:06	01/15/20 10:52	
570-18658-83	MOTCO-2019-DU4-Comp-C-Macoma-Day 28	Tissue	12/06/19 12:06	01/15/20 10:52	
570-18658-84	MOTCO-2019-DU4-Comp-D-Macoma-Day 28	Tissue	12/06/19 12:06	01/15/20 10:52	
570-18658-85	MOTCO-2019-DU4-Comp-E-Macoma-Day 28	Tissue	12/06/19 12:06	01/15/20 10:52	
570-18658-86	Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)	Tissue	12/06/19 12:06	01/15/20 10:52	

BROOKS APPLIED LABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

February 14, 2020

Eurofins Calscience
[redacted]
7440 Lincoln Way
Garden Grove, CA
carlahollowell@eurofinsus.com

RE: Project CEL-GG2001 Client Project: 570-18658

Revision 1: At the client's request, the analyses for silver (Ag), arsenic (As), and % total solids (% TS) were removed. No further changes were made to the content of this report.

Dear Carla Lee Hollowell,

On January 30, 2020, Brooks Applied Labs (BAL) received sixteen (16) biota samples. The samples were logged-in for the analysis of total recoverable selenium (Se) according to the chain-of-custody form. The sample was received and stored according to BAL SOPs and EPA methodology.

Total Metals Quantitation by ICP-QQQ-MS
The sample was digested via modified EPA Method 3050B with a mix of concentrated nitric acid, hydrochloric acid, and hydrogen peroxide.
Trace metals were analyzed using inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, brooksapplied.com.

The results were not method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without qualification, aside from concentration qualifiers, and all associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Sincerely,

[redacted]
Client Services Manager
Brooks Applied Labs
Lydia@brooksapplied.com

[redacted]
Project Coordinator
Brooks Applied Labs
Jenna@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received
BAL	Brooks Applied Labs
BLK	method blank
BS	blank spike
CAL	calibration standard
CCB	continuing calibration blank
CCV	continuing calibration verification
COC	chain of custody record
D	dissolved fraction
DUP	duplicate
IBL	instrument blank
ICV	initial calibration verification
MDL	method detection limit
MRL	method reporting limit
MS	matrix spike
MSD	matrix spike duplicate
ND	non-detect
NR	non-reportable
N/C	not calculated
PS	post preparation spike
REC	percent recovery
RPD	relative percent difference
SCV	secondary calibration verification
SOP	standard operating procedure
SRM	reference material
T	total fraction
TR	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch.
	Result is estimated.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
Nereis-T0 (570-18658-1)	2005052-01	Tissue	Sample	11/17/2019	01/30/2020
Composite (Control-ABCDE-Nereis-Day 28) (570-18658-7)	2005052-02	Tissue	Sample	12/05/2019	01/30/2020
Composite (SF-10 Comp-ABCDE-Nereis-Day 28) (570-18658-13)	2005052-03	Tissue	Sample	12/05/2019	01/30/2020
Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28) (570-18658-19)	2005052-04	Tissue	Sample	12/05/2019	01/30/2020
Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28) (570-18658-25)	2005052-05	Tissue	Sample	12/05/2019	01/30/2020
Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28) (570-18658-31)	2005052-06	Tissue	Sample	12/05/2019	01/30/2020
MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28) (570-18658-37)	2005052-07	Tissue	Sample	12/05/2019	01/30/2020
Composite (MOTCO-2019-DU4-Comp-ABCDE-N ereis-Day 28) (570-18658-43)	2005052-08	Tissue	Sample	12/05/2019	01/30/220
Macoma-T0 (570-18658-44)	2005052-09	Tissue	Sample	11/08/2019	01/30/2020
Composite (Control-ABCDE-Macoma-Day 28) (570-18658-50)	2005052-10	Tissue	Sample	12/06/2019	01/30/2020
Composite (SF-10 Comp-ABCDE-Macoma-Day 28) (570-18658-56)	2005052-11	Tissue	Sample	12/06/2019	01/30/2020
Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28) (570-18658-62)	2005052-12	Tissue	Sample	12/06/2019	01/30/2020
Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28) (570-18658-68)	2005052-13	Tissue	Sample	12/06/2019	01/30/2020
Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28) (570-18658-74)	2005052-14	Tissue	Sample	12/06/2019	01/30/2020
Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28) (570-18658-80)	2005052-15	Tissue	Sample	12/06/2019	01/30/2020
Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28) (570-18658-86)	2005052-16	Tissue	Sample	12/06/2019	01/30/2020

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Se	Biota	EPA 6020B Mod	02/05/2020	02/06/2020	B200331	2000190

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
Nereis-T0 (570-18658-1)										
2005052-01	Se	Tissue	AR	0.353		0.099	0.198	mg/kg	B200331	2000190
Composite (Control-ABCDE-Nereis-Day 28) (570-18658-7)										
2005052-02	Se	Tissue	AR	0.261		0.099	0.199	mg/kg	B200331	2000190
Composite (SF-10 Comp-ABCDE-Nereis-Day 28) (570-18658-13)										
2005052-03	Se	Tissue	AR	0.291		0.086	0.173	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28) (570-18658-19)										
2005052-04	Se	Tissue	AR	0.269		0.095	0.190	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28) (570-18658-25)										
2005052-05	Se	Tissue	AR	0.303		0.093	0.186	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28) (570-18658-31)										
2005052-06	Se	Tissue	AR	0.224		0.090	0.180	mg/kg	B200331	2000190
MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28) (570-18658-37)										
2005052-07	Se	Tissue	AR	0.229		0.092	0.183	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Day 28) (570-18658-43)										
2005052-08	Se	Tissue	AR	0.256		0.089	0.179	mg/kg	B200331	2000190
Macoma-T0 (570-18658-44)										
2005052-09	Se	Tissue	AR	0.283		0.073	0.145	mg/kg	B200331	2000190
Composite (Control-ABCDE-Macoma-Day 28) (570-18658-50)										
2005052-10	Se	Tissue	AR	0.226		0.087	0.173	mg/kg	B200331	2000190
Composite (SF-10 Comp-ABCDE-Macoma-Day 28) (570-18658-56)										
2005052-11	Se	Tissue	AR	0.237		0.099	0.198	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28) (570-18658-62)										
2005052-12	Se	Tissue	AR	0.238		0.083	0.167	mg/kg	B200331	2000190

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28) (570-18658-68)										
2005052-13	Se	Tissue	AR	0.188		0.072	0.144	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28) (570-18658-74)										
2005052-14	Se	Tissue	AR	0.227		0.075	0.151	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28) (570-18658-80)										
2005052-15	Se	Tissue	AR	0.225		0.063	0.126	mg/kg	B200331	2000190
Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28) (570-18658-86)										
2005052-16	Se	Tissue	AR	0.204		0.091	0.182	mg/kg	B200331	2000190

Project ID: CEL-GG2001
PM: Lydia Greaves

Client PM: Carla Lee Hollowell
Client Project: 570-18658

Accuracy & Precision Summary

Batch: B200331
Lab Matrix: Biota
Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B200331-BS1	**Blank Spike, (1940023)**						
	Se		2.500	25.99	mg/kg	104% 75-125	
B200331-SRM2	**Reference Material 1937002, DORM-4**						
	Se		3.450	3.527	mg/kg	102% 75-125	
B200331-DUP1	**Duplicate, (2005052-09)**						
	Se	0.283		0.281	mg/kg		0.7% 30
B200331-MS1	**Matrix Spike, (2005052-09)**						
	Se	0.283	179.1	192.9	mg/kg	108% 70-130	
B200331-MSD1	**Matrix Spike Duplicate, (2005052-09)**						
	Se	0.283	170.1	183.1	mg/kg	108% 70-130	0.04% 30
B200331-DUP2	**Duplicate, (2005052-16)**						
	Se	0.204		0.223	mg/kg		9% 30
B200331-MS2	**Matrix Spike, (2005052-16)**						
	Se	0.204	176.8	188.9	mg/kg	107% 70-130	
B200331-MSD2	**Matrix Spike Duplicate, (2005052-16)**						
	Se	0.204	197.6	212.3	mg/kg	107% 70-130	0.5% 30

Project ID: CEL-GG2001
PM: Lydia Greaves

Client PM: Carla Lee Hollowell
Client Project: 570-18658

Method Blanks & Reporting Limits

Batch: B200331
Matrix: Biota
Method: EPA 6020B Mod
Analyte: Se

Sample	Result	Units
B200331-BLK1	-0.0005	mg/kg
B200331-BLK2	0.007	mg/kg
B200331-BLK3	0.0004	mg/kg
B200331-BLK4	-0.008	mg/kg

Average: 0.000
Limit: 0.190

MDL: 0.095
MRL: 0.190

Sample Containers

Lab ID: 2005052-01
Sample: Nereis-T0 (570-18658-1)
Report Matrix: Tissue
Sample Type: Sample
Collected: 11/17/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-02
Sample: Composite (Control-ABCDE-Nereis-Day 28) (570-18658-7)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-03
Sample: Composite (SF-10 Comp-ABCDE-Nereis-Day 28) (570-18658-13)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-04
Sample: Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28) (570-18658-19)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-05
Sample: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28) (570-18658-25)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Sample Containers

Lab ID: 2005052-06
Sample: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28) (570-18658-31)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-07
Sample: MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28) (570-18658-37)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-08
Sample: Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Day 28) (570-18658-43)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/05/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-09
Sample: Macoma-T0 (570-18658-44)
Report Matrix: Tissue
Sample Type: Sample
Collected: 11/08/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-10
Sample: Composite (Control-ABCDE-Macoma-Day 28) (570-18658-50)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Sample Containers

Lab ID: 2005052-11
Sample: Composite (SF-10 Comp-ABCDE-Macoma-Day 28) (570-18658-56)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-12
Sample: Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28) (570-18658-62)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-13
Sample: Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28) (570-18658-68)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-14
Sample: Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28) (570-18658-74)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Lab ID: 2005052-15
Sample: Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28) (570-18658-80)
Report Matrix: Tissue
Sample Type: Sample
Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Project ID: CEL-GG2001
PM: Lydia Greaves

Client PM: Carla Lee Hollowell
Client Project: 570-18658

Sample Containers

Lab ID: 2005052-16
Sample: Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28) (570-18658-86)

Report Matrix: Tissue
Sample Type: Sample

Collected: 12/06/2019
Received: 01/30/2020

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	n/a	n/a	none	n/a	n/a	Cooler - 2005052

Shipping Containers

Cooler - 2005052

Received: January 30, 2020 9:44
Tracking No: 777641552144 via FedEx
Coolant Type: Blue Ice
Temperature: 3.7 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: IR #19

Custody seals present? Yes
Custody seals intact? Yes
COC present? Yes

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

eurofins Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-19860.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 1 of 2
Company: Brooks Applied Labs LLC		Accreditations Required (See note):		Job #: 570-18658-1
Address: 18804 Northcreek Pkwy, Suite 100,	Due Date Requested: 1/29/2020			Preservation Codes:
City: Bothell	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:
State, Zip: WA, 98011				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO Tissues	Project #: 57003996			
Site:	SSOW#:			

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (EPA 7742 Equivalent / Selenium)/ EPA 7742 Equivalent / Selenium	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Nereis-T0 (570-18658-1)	11/17/19	12:00 Pacific		Tissue			X	1	Se via 7742 equivalent method; DMMO EDD; NTAT.
Composite (Control-ABCDE-Nereis-Day 28) (570-18658-7)	12/5/19	12:00 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (SF-10 Comp-ABCDE-Nereis-Day 28) (570-18658-13)	12/5/19	12:01 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU1-Comp-ABCDE-Nereis-Day 28) (5	12/5/19	12:02 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU2a-Comp-ABCDE-Nereis-Day 28) (	12/5/19	12:03 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU2b-Comp-ABCDE-Nereis-Day 28) (	12/5/19	12:04 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
MOTCO-2019-DU3-Comp-ABCDE-Nereis-Day 28) (570-18658-3	12/5/19	12:05 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU4-Comp-ABCDE-Nereis-Day 28) (5	12/5/19	12:06 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Macoma-T0 (570-18658-44)	11/8/19	12:00 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Calscience.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	1/29/20 1733			01/30/20 0944	BAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

eurofins Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Hollowell, Carla	Carrier Tracking No(s):	COC No: 570-19860.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: carlahollowell@eurofinsus.com	State of Origin: California	Page: Page 2 of 2
Company: Brooks Applied Labs LLC		Accreditations Required (See note):		Job #: 570-18658-1
Address: 18804 Northcreek Pkwy, Suite 100,	Due Date Requested: 1/29/2020			
City: Bothell	TAT Requested (days):			
State, Zip: WA, 98011				
Phone:	PO #:			
Email:	WO #:			
Project Name: USACE: MOTCO Tissues	Project #: 57003996			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUB (EPA 7742 Equivalent / Selenium)/ EPA 7742 Equivalent / Selenium	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Composite (Control-ABCDE-Macoma-Day 28) (570-18658-50)	12/6/19	12:00 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (SF-10 Comp-ABCDE-Macoma-Day 28) (570-18658-5	12/6/19	12:01 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU1-Comp-ABCDE-Macoma-Day 28)	12/6/19	12:02 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU2a-Comp-ABCDE-Macoma-Day 28	12/6/19	12:03 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU2b-Comp-ABCDE-Macoma-Day 28	12/6/19	12:04 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU3-Comp-ABCDE-Macoma-Day 28)	12/6/19	12:05 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.
Composite (MOTCO-2019-DU4-Comp-ABCDE-Macoma-Day 28)	12/6/19	12:06 Pacific		Tissue			X	1	Se via 7742 equivalent method; EDD; NTAT.

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 1/29/20 1733	Company	Received by:	Date/Time: 01/30/20 0944	Company BAL	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

570-18658 Chain of Custody

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS: % lipids	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*			
1	Nereis-T0	11/7/19	12:00	Tissue	1	poly bag	X	X	X	X		1	
2	Control-A-Nereis-Day 28	12/5/19	12:00	Tissue	1	poly bag						2	
3	Control-B-Nereis-Day 28	12/5/19	12:00	Tissue	1	poly bag						3	
4	Control-C-Nereis-Day 28	12/5/19	12:00	Tissue	1	poly bag		X	X	X		4	7
5	Control-D-Nereis-Day 28	12/5/19	12:00	Tissue	1	poly bag						5	
6	Control-E-Nereis-Day 28	12/5/19	12:00	Tissue	1	poly bag						6	
7	SF-10 Comp-A-Nereis-Day 28	12/5/19	12:01	Tissue	1	poly bag						8	
8	SF-10 Comp-B-Nereis-Day 28	12/5/19	12:01	Tissue	1	poly bag						9	
9	SF-10 Comp-C-Nereis-Day 28	12/5/19	12:01	Tissue	1	poly bag		X	X	X		10	13
10	SF-10 Comp--D--Nereis-Day 28	12/5/19	12:01	Tissue	1	poly bag						11	
11	SF-10 Comp--E--Nereis-Day 28	12/5/19	12:01	Tissue	1	poly bag						12	
12	MOTCO-2019-DU1-Comp-A-Nereis-Day 28	12/5/19	12:02	Tissue	1	poly bag						14	
13	MOTCO-2019-DU1-Comp-B-Nereis-Day 28	12/5/19	12:02	Tissue	1	poly bag						15	
14	MOTCO-2019-DU1-Comp-C-Nereis-Day 28	12/5/19	12:02	Tissue	1	poly bag		X	X	X		16	19
15	MOTCO-2019-DU1-Comp-D-Nereis-Day 28	12/5/19	12:02	Tissue	1	poly bag						17	
16	MOTCO-2019-DU1-Comp-E-Nereis-Day 28	12/5/19	12:02	Tissue	1	poly bag						18	

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite. Perform requested analysis on composite sample.
Report on a Wet Weight Basis

Sample date is date tests were terminated, tissues frozen after 24-h depuration.
***See analyte list for list of PAHs**

RELINQUISHED BY

Signature:	[redacted]	**Signature:**	[redacted]
Print:		**Print:**	
Organization: PER		**Organization:** ECT	
DATE: 1-14-20	**TIME:** 1245	**DATE:** 1/14/20	**TIME** 1630

RECEIVED BY

Signature:	ECT	**Signature:**	
Print:	Mark Valentini	**Print:**	Gary Soriano
Organization:	ECT	**Organization:**	
DATE: 1-14-20	**TIME:** 1245	**DATE:** 1/15/20	**TIME** 1052

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

-2.6 13.5 56

18658

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS: Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*
20	1 MOTCO-2019-DU2a-Comp-A-Nereis-Day 28	12/5/19	12:03	Tissue	1	poly bag			
21	2 MOTCO-2019-DU2a-Comp-B-Nereis-Day 28	12/5/19	12:03	Tissue	1	poly bag			
25 22	3 MOTCO-2019-DU2a-Comp-C-Nereis-Day 28	12/5/19	12:03	Tissue	1	poly bag	X	X	X
23	4 MOTCO-2019-DU2a-Comp-D-Nereis-Day 28	12/5/19	12:03	Tissue	1	poly bag			
24	5 MOTCO-2019-DU2a-Comp-E-Nereis-Day 28	12/5/19	12:03	Tissue	1	poly bag			
26	6 MOTCO-2019-DU2b-Comp-A-Nereis-Day 28	12/5/19	12:04	Tissue	1	poly bag			
27	7 MOTCO-2019-DU2b-Comp-B-Nereis-Day 28	12/5/19	12:04	Tissue	1	poly bag			
31 28	8 MOTCO-2019-DU2b-Comp-C-Nereis-Day 28	12/5/19	12:04	Tissue	1	poly bag	X	X	X
29	9 MOTCO-2019-DU2b-Comp-D-Nereis-Day 28	12/5/19	12:04	Tissue	1	poly bag			
30	10 MOTCO-2019-DU2b-Comp-E-Nereis-Day 28	12/5/19	12:04	Tissue	1	poly bag			
32	11 MOTCO-2019-DU3-Comp-A-Nereis-Day 28	12/5/19	12:05	Tissue	1	poly bag			
33	12 MOTCO-2019-DU3-Comp-B-Nereis-Day 28	12/5/19	12:05	Tissue	1	poly bag			
37 34	13 MOTCO-2019-DU3-Comp-C-Nereis-Day 28	12/5/19	12:05	Tissue	1	poly bag	X	X	X
35	14 MOTCO-2019-DU3-Comp-D-Nereis-Day 28	12/5/19	12:05	Tissue	1	poly bag			
36	15 MOTCO-2019-DU3-Comp-E-Nereis-Day 28	12/5/19	12:05	Tissue	1	poly bag			

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:
Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis

Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
*See analyte list for list of PAHs

RELINQUISHED BY

Signature:	[redacted]	[redacted]
Print:		
Organization:	PER	
DATE:	1-14-20 **TIME:** 1245	**DATE:** 1/14/20 **TIME** 1630

RECEIVED BY

Signature:		
Print:	Mark Valentine	Print: [illegible] SOLURAO
Organization:	ECA	Organization: ECA
DATE:	1/14/20 **TIME:** 1245	**DATE:** 1/15/20 **TIME** 1052

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

18658

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*	REQUESTED ANALYSIS
1	MOTCO-2019-DU4-Comp-A-Nereis-Day 28	12/5/19	12:06	Tissue	1	poly bag	X	X	X	38
2	MOTCO-2019-DU4-Comp-B-Nereis-Day 28	12/5/19	12:06	Tissue	1	poly bag				39
3	MOTCO-2019-DU4-Comp-C-Nereis-Day 28	12/5/19	12:06	Tissue	1	poly bag				40
4	MOTCO-2019-DU4-Comp-D-Nereis-Day 28	12/5/19	12:06	Tissue	1	poly bag				41
5	MOTCO-2019-DU4-Comp-E-Nereis-Day 28	12/5/19	12:06	Tissue	1	poly bag				42
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:
Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite. Perform requested analysis on composite sample.
Report on a Wet Weight Basis
Sample date is date tests were terminated, tissues frozen after 24-h depuration. Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY		RELINQUISHED BY	
Signature:	[redacted]	Signature:	[redacted]
Print:		Print:	
Organization: PER		Organization: ECT	
DATE: 1-14-20	TIME: 1245	DATE: 1/14/20	TIME 1630
RECEIVED BY		**RECEIVED BY**	
Signature:	[redacted]	Signature:	[redacted]
Print:		Print:	
Organization: ECT		Organization:	
DATE: 1/14/20	TIME 1248	DATE: 1/15/20	TIME 1052

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	% lipids	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*								
							REQUESTED ANALYSIS											
1	Macoma-T0	11/8/19	12:00	Tissue	1	poly bag	X	X	X	X		44						
2	Control-A-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						45						
3	Control-B-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						46	50					
4	Control-C-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag		X	X	X		47						
5	Control-D-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						48						
6	Control-E-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						49						
7	SF-10 Comp-A-Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						51						
8	SF-10 Comp-B-Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						52						
9	SF-10 Comp-C-Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag		X	X	X		53	56					
10	SF-10 Comp--D--Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						54						
11	SF-10 Comp--E--Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						55						
12	MOTCO-2019-DU1-Comp-A-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						57						
13	MOTCO-2019-DU1-Comp-B-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						58						
14	MOTCO-2019-DU1-Comp-C-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag		X	X	X		59	62					
15	MOTCO-2019-DU1-Comp-D-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						60						
16	MOTCO-2019-DU1-Comp-E-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						61						

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis

Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY

Signature	[redacted]
Print:	[redacted]
Organization: PER	**Organization:** ECT
DATE: 1-14-20 **TIME:** 1245	**DATE:** 1/14/20 **TIME** 1630

RECEIVED BY

Signature	[redacted]
Print:	[redacted]
Organization: ECT	**Organization:**
DATE: 1/14/20 **TIME:** 1245	**DATE:** 1/15/20 **TIME** 1052

***MATRIX CODES**: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*	REQUESTED ANALYSIS								
1	MOTCO-2019-DU2a-Comp-A-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					63							
2	MOTCO-2019-DU2a-Comp-B-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					64							
3	MOTCO-2019-DU2a-Comp-C-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag	X	X	X		65	} 68						
4	MOTCO-2019-DU2a-Comp-D-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					66							
5	MOTCO-2019-DU2a-Comp-E-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					67							
6	MOTCO-2019-DU2b-Comp-A-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					69							
7	MOTCO-2019-DU2b-Comp-B-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					70							
8	MOTCO-2019-DU2b-Comp-C-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag	X	X	X		71	} 74						
9	MOTCO-2019-DU2b-Comp-D-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					72							
10	MOTCO-2019-DU2b-Comp-E-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					73							
11	MOTCO-2019-DU3-Comp-A-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					75							
12	MOTCO-2019-DU3-Comp-B-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					76							
13	MOTCO-2019-DU3-Comp-C-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag	X	X	X		77	} 80						
14	MOTCO-2019-DU3-Comp-D-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					78							
15	MOTCO-2019-DU3-Comp-E-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					79							

Correct Containers:	Yes	No	
Sample Temperature:	Ambient	Cold	Warm
Sample Preservative:	Yes	No	
Turnaround Time:	STD	Specify:	

Comments:
Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis
Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY	RECEIVED BY
Signature: [redacted]	Signature: [redacted]
Print:	Print:
Organization:	Organization:
DATE: 1-14-20 TIME: 1245	DATE: 11/14/20 TIME 1630
RECEIVED BY	
Signature: [redacted]	Signature: [redacted]
Print:	Print:
Organization:	Organization:
DATE: 11/14/20 TIME: 1245	DATE: 11/15/20 TIME 1052

*MATRIX CODES: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

18658

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*	REQUESTED ANALYSIS
1	MOTCO-2019-DU4-Comp-A-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag	X	X	X	81
2	MOTCO-2019-DU4-Comp-B-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				82
3	MOTCO-2019-DU4-Comp-C-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				83
4	MOTCO-2019-DU4-Comp-D-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				84
5	MOTCO-2019-DU4-Comp-E-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				85
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

86

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:
Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis
Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY		RECEIVED BY	
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	PER	**Organization:**	ERL
DATE:	1-14-20	**TIME:**	1245
RELINQUISHED BY		**RECEIVED BY**	
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	ERL	**Organization:**	[redacted]
DATE:	1/14/20	**TIME:**	1245
RELINQUISHED BY		**RECEIVED BY**	
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	[redacted]	**Organization:**	[redacted]
DATE:	1/15/20	**TIME:**	1052

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

18581

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**
Project #: 30945

ANALYTE	METHOD	ANALYSIS REQUESTED
% Lipids		X*
Arsenic	EPA 6020	X
Silver	EPA 6020	X
Selenium	EPA 7742	X
Acenaphthene	EPA 8270C	X
Acenaphthylene	EPA 8270C	X
Anthracene	EPA 8270C	X
Benz(a)anthracene	EPA 8270C	X
Benzo(a)pyrene	EPA 8270C	X
Benzo(e)pyrene	EPA 8270C	X
Benzo(b)fluoranthene	EPA 8270C	X
Benzo(g,h,i)perylene	EPA 8270C	X
Benzo(k)fluoranthene	EPA 8270C	X
Biphenyl	EPA 8270C	X
Chrysene	EPA 8270C	X
Dibenz(a,h)anthracene	EPA 8270C	X
Dibenzothiophene	EPA 8270C	X
Dimethylnapthalene 2, 6-	EPA 8270C	X
Fluoranthene	EPA 8270C	X
Fluorene	EPA 8270C	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	X
Methylnapthalene, 1-	EPA 8270C	X
Methylnapthalene, 2-	EPA 8270C	X
Methylphenanthrene, 1-	EPA 8270C	X
Naphthalene	EPA 8270C	X
Perylene	EPA 8270C	X
Phenanthrene	EPA 8270C	X
Pyrene	EPA 8270C	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	X
QA/QC		
Standard TAT.		X

* % Lipid analysis to be performed on Nereis-T0 and Macoma-T0 samples only.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

18458

GSO GLS

800-322-5555
www.gso.com

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Ship To
CEL
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD: $0.00
Weight: 0 lb(s)
Reference:
PACIFIC ECORISK
Delivery Instructions:

Signature Type: STANDARD

Tracking #: 547614202

NPS

GARDEN GROVE

S92841A

14315934

ORC CA927-CL0

Print Date: 1/14/2020 2:44 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.
Step 2: Fold this page in half.
Step 3: Securely attach this label to your package and do not cover the barcode.

TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all of the GSO service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at www.gso.com.

Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-18658-1

Login Number: 18658
List Number: 1
Creator: Cruise, Noel

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

18658

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	REQUESTED ANALYSIS: % lipids	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*								
1	Macoma-T0	11/8/19	12:00	Tissue	1	poly bag	X	X	X	X		44						
2	Control-A-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						45						
3	Control-B-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						46	50					
4	Control-C-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag		X	X	X		47						
5	Control-D-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						48						
6	Control-E-Macoma-Day 28	12/6/19	12:00	Tissue	1	poly bag						49						
7	SF-10 Comp-A-Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						51						
8	SF-10 Comp-B-Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						52						
9	SF-10 Comp-C-Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag		X	X	X		53	56					
10	SF-10 Comp--D--Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						54						
11	SF-10 Comp--E--Macoma-Day 28	12/6/19	12:01	Tissue	1	poly bag						55						
12	MOTCO-2019-DU1-Comp-A-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						57						
13	MOTCO-2019-DU1-Comp-B-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						58						
14	MOTCO-2019-DU1-Comp-C-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag		X	X	X		59	62					
15	MOTCO-2019-DU1-Comp-D-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						60						
16	MOTCO-2019-DU1-Comp-E-Macoma-Day 28	12/6/19	12:02	Tissue	1	poly bag						61						

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis

Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY

Signature	[redacted]
Print:	[redacted]
Organization: PER	**Organization:** ECI
DATE: 1-14-20 **TIME:** 1245	**DATE:** 1/14/20 **TIME** 1630

RECEIVED BY

Signature	[redacted]
Print:	[redacted]
Organization: ECI	**Organization:**
DATE: 1/14/20 **TIME:** 1245	**DATE:** 1/15/20 **TIME** 1052

***MATRIX CODES**: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

18658

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*	REQUESTED ANALYSIS									
1	MOTCO-2019-DU2a-Comp-A-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					63								
2	MOTCO-2019-DU2a-Comp-B-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					64								
3	MOTCO-2019-DU2a-Comp-C-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag	X	X	X		65	68							
4	MOTCO-2019-DU2a-Comp-D-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					66								
5	MOTCO-2019-DU2a-Comp-E-Macoma-Day 2	12/6/19	12:03	Tissue	1	poly bag					67								
6	MOTCO-2019-DU2b-Comp-A-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					69								
7	MOTCO-2019-DU2b-Comp-B-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					70								
8	MOTCO-2019-DU2b-Comp-C-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag	X	X	X		71	74							
9	MOTCO-2019-DU2b-Comp-D-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					72								
10	MOTCO-2019-DU2b-Comp-E-Macoma-Day 2	12/6/19	12:04	Tissue	1	poly bag					73								
11	MOTCO-2019-DU3-Comp-A-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					75								
12	MOTCO-2019-DU3-Comp-B-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					76								
13	MOTCO-2019-DU3-Comp-C-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag	X	X	X		77	80							
14	MOTCO-2019-DU3-Comp-D-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					78								
15	MOTCO-2019-DU3-Comp-E-Macoma-Day 28	12/6/19	12:05	Tissue	1	poly bag					79								

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:
Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis
Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY

Signature:	[redacted]
Print:	
Organization:	
DATE: 1-14-20 **TIME:** 1245	

RECEIVED BY

Signature:	[redacted]
Print:	
Organization:	
DATE: 1/14/20 **TIME:** 1245	

RELINQUISHED BY

Signature:	[redacted]
Print:	
Organization: ECL	
DATE: 1/14/20 **TIME** 1630	

RECEIVED BY

Signature:	[redacted]
Print:	
Organization:	
DATE: 1/15/20 **TIME** 1052	

***MATRIX CODES**: (SED = Sediment); (FW = Freshwater); (WW = Wastewater); (STRMW = Stormwater)

Pacific EcoRisk
ENVIRONMENTAL CONSULTING & TESTING
2250 Cordelia Rd., Fairfield, CA 94534
(707)207-7760

Eurofins Calscience CHAIN-OF-CUSTODY RECORD

Client Name:	Pacific EcoRisk
Client Address:	2250 Cordelia Rd. Fairfield, CA 94534
Sampled By:	PER
Phone:	(707) 207-7760
FAX:	(707) 207-7916
Project Manager:	Jeff Cotsifas
Project Name:	USACE: MOTCO
PO Number:	30945

	Client Sample ID	Sample Date	Sample Time	Sample Matrix*	Container Number	Container Type	Arsenic & Silver (EPA 6020)	Selenium (EPA 7742)	PAHs (EPA 8270C)*	REQUESTED ANALYSIS
1	MOTCO-2019-DU4-Comp-A-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag	X	X	X	81
2	MOTCO-2019-DU4-Comp-B-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				82
3	MOTCO-2019-DU4-Comp-C-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				83
4	MOTCO-2019-DU4-Comp-D-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				84
5	MOTCO-2019-DU4-Comp-E-Macoma-Day 28	12/6/19	12:06	Tissue	1	poly bag				85
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

86

Correct Containers:	**Yes**	**No**	
Sample Temperature:	**Ambient**	**Cold**	**Warm**
Sample Preservative:	**Yes**	**No**	
Turnaround Time:	**STD**	**Specify:**	

Comments:
Homogenize each replicate for each sample. Take a subsample for each sample replicate (excepy the T0 where there is only one replicate) and composite.
Perform requested analysis on composite sample.
Report on a Wet Weight Basis
Sample date is date tests were terminated, tissues frozen after 24-h depuration.
Samples shipped on dry ice.
***See analyte list for list of PAHs**

RELINQUISHED BY		RECEIVED BY	
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	PER	**Organization:**	ERL
DATE:	1-14-20	**TIME:**	1245
RELINQUISHED BY		**RECEIVED BY**	
Signature:	[redacted]	**Signature:**	[redacted]
Print:	[redacted]	**Print:**	[redacted]
Organization:	ERL	**Organization:**	[redacted]
DATE:	1/14/20	**TIME:**	1245
DATE:	1/15/20	**TIME**	1052

***MATRIX CODES**: (**SED** = Sediment); (**FW** = Freshwater); (**WW** = Wastewater); (**STRMW** = Stormwater)

ANALYTE LIST

Pacific EcoRisk
2250 Cordelia Rd.
Fairfield, CA 94534

Project Proponent: **USACE: MOTCO**
Project #: 30945

ANALYTE	METHOD	ANALYSIS REQUESTED
% Lipids		X*
Arsenic	EPA 6020	X
Silver	EPA 6020	X
Selenium	EPA 7742	X
Acenaphthene	EPA 8270C	X
Acenaphthylene	EPA 8270C	X
Anthracene	EPA 8270C	X
Benz(a)anthracene	EPA 8270C	X
Benzo(a)pyrene	EPA 8270C	X
Benzo(e)pyrene	EPA 8270C	X
Benzo(b)fluoranthene	EPA 8270C	X
Benzo(g,h,i)perylene	EPA 8270C	X
Benzo(k)fluoranthene	EPA 8270C	X
Biphenyl	EPA 8270C	X
Chrysene	EPA 8270C	X
Dibenz(a,h)anthracene	EPA 8270C	X
Dibenzothiophene	EPA 8270C	X
Dimethylnapthalene 2, 6-	EPA 8270C	X
Fluoranthene	EPA 8270C	X
Fluorene	EPA 8270C	X
Indeno(1,2,3-cd)pyrene	EPA 8270C	X
Methylnapthalene, 1-	EPA 8270C	X
Methylnapthalene, 2-	EPA 8270C	X
Methylphenanthrene, 1-	EPA 8270C	X
Naphthalene	EPA 8270C	X
Perylene	EPA 8270C	X
Phenanthrene	EPA 8270C	X
Pyrene	EPA 8270C	X
Trimethylnapthalene, 2, 3, 5-	EPA 8270C	X
QA/QC		
Standard TAT.		X

* % Lipid analysis to be performed on Nereis-T0 and Macoma-T0 samples only.

If you have any questions regarding this request as checked,
please call Jeff Cotsifas at (707)207-7760

18458

GSO GLS

800-322-5555
www.gso.com

Ship From
CAL SCIENCE- CONCORD
ALAN KEMP
5063 COMMERCIAL CIRCLE
#H
CONCORD, CA 94520

Ship To
CEL
SAMPLE RECEIVING
7440 LINCOLN WAY
GARDEN GROVE, CA 92841

COD: $0.00
Weight: 0 lb(s)
Reference:
PACIFIC ECORISK
Delivery Instructions:

Signature Type: STANDARD

Tracking #: 547614202

NPS

GARDEN GROVE

S92841A

14315934

ORC CA927-CL0

Print Date: 1/14/2020 2:44 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.
Step 2: Fold this page in half.
Step 3: Securely attach this label to your package and do not cover the barcode.

TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all of the GSO service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at www.gso.com.

Login Sample Receipt Checklist

Client: Pacific EcoRisk Inc

Job Number: 570-18658-1

Login Number: 18658
List Number: 1
Creator: Cruise, Noel

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix Y

Summary of USACE ERED Database Values for Use in Toxicity Reference Value (TRV) Development

Table Y-1. USACE ERED Effects Data for PAH Toxicity Reference Value Selection.

Analyte	Invertebrate Species Scientific Name	Invertebrate Species Common Name	Environment	Species Lifestage	Measurement in ERED	Tissue Type	Measured Tissue Effect Concentration (µg/kg ww)[1]	TRV (µg/kg ww)	Effect Class	Ecologically Relevant?	Biases Noted With Study	ERED Reference	Notes
1-Methylnaphthalene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
1-Methylphenanthrene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
2,3,5-Trimethylnaphthalene (1,6,7-Trimethylnaphthalene)	--	--	--	--	--	--	ND	ND	--	--	--	--	--
2,6-Dimethylnaphthalene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Acenaphthene	*Mytilus edulis*	blue mussel	marine	adult	ED50	whole body	29,400	1,470[2]	behavior	No	Feeding behavior assessed	Donkin et al. 1989	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Benzo(a)pyrene	*Asterias rubens*	starfish	marine	adult	NOEC	whole body	10,000	10,000	mortality	Yes	--	Den Besten et al. 1993	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
	Psettichthys melanostictus	ray-finned	marine	egg	LOEC	whole body	2,100	2,100	embryo development	yes	--	Hose et al. 1982	
Benzo(b)fluoranthene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Benzo(e)pyrene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Benzo(g,h,i)perylene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Biphenyl (1,1'-Biphenyl)	*Mytilus edulis*	blue mussel	marine	adult	ED50	whole body	15,600	780[2]	behavior	No	Feeding behavior assessed	Donkin et al. 1989	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
Chrysene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--	--	--	ND	ND	--	--	--	--	-
Dibenzothiophene	*Mytilus edulis*	blue mussel	marine	adult	ED50	whole body	14,200	710[2]	behavior	No	Feeding behavior assessed	Donkin et al. 1989	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
Fluoranthene	*Monopylephorus rubroniveus*	worm	marine	adult	NOEC	whole body	1,040	--	mortality	Yes	Sediment exposure without UV	Weinstein et al. 2003	--
	Monopylephorus rubroniveus	worm	marine	adult	LD50	whole body	1,286,200	64,310[2]	mortality	Yes	--	Weinstein and Sanger 2003	
	Capitella sp.	worm	marine	adult	NOEC	whole body	43,800	--	growth	Yes	Growth rate assessed	Bach et al. 2005	--
	Schizopera knabeni	crustacean	marine	adult	LOEC	whole body	788,800	--	survival	Yes	Mature, non-ovigerous females used	Lotufo.1998	--
	Coullana sp.	crustacean	marine	adult	LOEC	whole body	262,900	--	mortality	Yes	Mature, non-ovigerous females used	Lotufo.1998	
	Streblospio benedicti	worm	marine	adult	LD50	whole body	114,000	5,700[2]	mortality	Yes	--	Weinstein and Sanger 2003	--
Fluorene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	--	--	--	--	--	--	ND	ND	--	--	--	--	--

Table Y-1. *(continued)* USACE ERED Effects Data for PAH and PCB Toxicity Reference Value Selection.

Analyte	Invertebrate Species Scientific Name	Invertebrate Species Common Name	Environment	Species Lifestage	Measurement in ERED	Tissue Type	Measured Tissue Effect Concentration (µg/kg ww)[1]	TRV (µg/kg ww)	Effect Class	Ecologically Relevant?	Biases Noted With Study	ERED Reference	Notes
Naphthalene	*Mytilus edulis*	blue mussel	marine	adult	ED50	whole body	31,300	1,565[2]	behavior	No	Feeding behavior assessed	Donkin et al. 1989	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
Perylene	--	--	--	--	--	--	ND	ND	--	--	--	--	--
Phenanthrene	*Mytilus edulis*	blue mussel	marine	adult	ED50	whole body	30,700	1,535[2]	behavior	No	Feeding behavior assessed	Donkin et al. 1989	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
	Neanthes arenaceodentata	worm	marine	adult	LOED	whole body	780	780	growth, reproduction	Yes	None indicated in ERED	Emery and Dillon 1996	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]
Pyrene	*Mytilus edulis*	blue mussel	marine	adult	ED50	whole body	189,000	9,450[2]	behavior	No	Feeding behavior assessed	Donkin et al. 1989	Not an ecologically relevant effect. Study was removed from consideration for TRV use.[A]

Notes:
Recommended ERED values for use as TRVs
1. Tissue effects data from the USACE ERED Database (USACE 2017)
2. An uncertainty factor of 20 was applied to ED50 and/or LD50 values to estimate LOED
µg/kg: micrograms per kilogram
ED: effective dose
ERDC: U.S. Army Engineer Research and Development Center
ERED: Environmental Residue Effects Database
LD: lethal dose
LOED: lowest observed effect dose
ND: no data
NOED: no observable effect dose
PAH: polycyclic aromatic hydrocarbon
TRV: Toxicity Reference Value
UV: ultraviolet radiation
ww: wet weight