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RECEIVED
By Alameda County Environmental Health at 3:04 pm, Mar 09, 2015

MEMORANDUM

To:	Keith Manson (CBRE); Joshua Baker (Artthaus);
From:	Bridgette DeShields and Avram Frankel, P.E.
Date:	January 18, 2015
Subject:	Evaluation of Sediment Data and Shoreline Area, Allied Engineering Property, 2421 Blanding Avenue, Alameda, CA
Project No.:	C1361

This memorandum has been completed at the request of CBRE and Artthaus and provides further assessment of environmental issues associated with the shoreline area of the Allied Engineering site located at the located at 2421 Blanding Avenue in Alameda, CA (the site), supplementing our initial evaluation dated January 5, 2015 (Initial Evaluation). This supplemental evaluation is based on environmental data collected on January 12, 2015. AEI Consultants collected data for the upland portion of the site and Integral collected data for offshore sediments.

Sediment Conditions

A summary of the sediment sampling program, including sampling methods, observations, photographs and analytical results, is attached. During sampling of offshore sediments, metal debris, similar to that observed on the shoreline, was observed in the sediment grab samples. Concentrations of several metals are above both San Francisco Bay sediment ambient levels and applicable toxicity screening levels. Additional evaluation would be necessary to define the extent of sediment impacted by the metal debris and the magnitude of impact, as well as, measures to mitigate associated potential risks to human health and the environment. Assessment of the upland area by AEI has shown elevated metals concentrations in soils that are along the shoreline, the likely source of metals contamination to the offshore sediments. Petroleum hydrocarbons were also assessed, but detected concentrations were below screening levels.

Summary of Preliminary Sediment Investigation
Allied Engineering Property, 2421 Blanding Avenue, Alameda, CA

The following section describe the field and laboratory methods, field observations, and analytical results for a sediment sampling program implemented for the area offshore of 2421 Blanding Avenue, Alameda, California (the property) on January 12, 2015. Eight composite samples (Figure 1) were successfully collected along the shoreline of the property on January 12, 2015.

Field Methods

Integral personnel and Integral's contracted vessel operator, Leviathan Environmental Services, LLC (Leviathan) mobilized the property on January 12, 2015. A 29-foot Leviathan pontoon boat with single outboard motor was used for sampling activities.

Sampling initially was to be performed with a modified Ponar grab sampler at eight sampling locations along the property shoreline. One grab sample per sample location using the modified Ponar would have allowed for sufficient sample volume to be collected for all required analyses. Penetration depth with this sampler would have been a maximum of 15 cm. Sample recovery with the modified Ponar was poor (due to the presence of metal debris at many sample locations) and use of this device was abandoned. As a backup, a modified petite Ponar was used and recovery markedly improved. Limitations of the petite Ponar include decreased sample volume and decreased penetration depth (10 cm) with respect to the larger, modified Ponar. Due to reduced sample volume using the petite Ponar, several sub-samples in the general vicinity of each sampling location were composited to achieve the required volume for laboratory analyses. Sampler penetration depths ranged from 1.5 to 8 cm, but were frequently 5 cm.

Once brought on board, surface water was removed and the surface sediment sub-samples were described in the field log book. The sub-samples from each location were composited in a stainless steel bowl. Large pieces of debris were documented in the field log book and discarded. Composited, homogenized samples were placed into glass jars. Composited and homogenized sediment from each location was also placed into Ziploc bags and double bagged, in case additional sample volume was needed by the laboratory. Samples were transported under chain of custody to McCampbell Analytical, Inc., of Pittsburg, California for analysis.

Chemical Analytical Methods

Surface sediment samples were analyzed for the following constituents:

- Total petroleum hydrocarbons as diesel (TPHd) using EPA Method SW8015B following silica gel preparation
- Total petroleum hydrocarbons as motor oil range (TPHmo) using EPA Method SW8015B following silica gel preparation
- Priority pollutant metals using EPA Method SW6020.

Surface sediment samples were archived for potential future analysis.

One equipment rinseate blank was analyzed for the following constituents:

- TPHd using EPA Method SW8015B following silica gel preparation
- TPHmo using EPA Method SW8015B following silica gel preparation
- Priority pollutant metals using EPA Method E200.8.

The laboratory was unable to sieve the samples of metal debris with a #10 sieve, as requested. Obvious pieces of metal were excluded by the lab. Sample results were reported on a dry weight basis.

Observations

Metal shavings and debris (hereafter referred to as metal debris) were observed along most of the shoreline of the property. Onshore metal debris ranged from a few inches to several feet in length and was frequently seen in clumped masses.

Most sediment samples contained visible metal debris. Metal debris in sediment ranged from < 1 cm to 15 cm in length. On many occasions, metal debris prohibited complete sampler closure and resulted in a loss of sample mass.

In addition, several samples also contained broken and/or whole clam and/or mussel shells. Whole shells were 3 to 5 cm in length. Some metal wire and brick fragments were also observed in several samples.

Sediment ranged from brown to tan--fine and medium grained sand to dark grey to black and sometimes brown--silt and clay.

One sample (SD-0008) had a hydrocarbon-like odor.

A photo log from the field effort is attached.

Results

Tables 1 and 2 provide the results of the chemical analyses of the 8 sediment samples. As shown in Table 1, TPH concentrations are below screening values utilized by the Regional Water Quality Control Board, San Francisco Region (Water Board), which were developed for the Presidio of San Francisco (USACE, 1997).

Metals were screened against bay ambient values (Water Board, 2002; SFEI, 2014) and conservative sediment quality guidelines (NOAA, 2008). Those metals above both ambient and screening levels could pose an unacceptable risk to ecological receptors; however, additional investigation and evaluation would be necessary to assess the magnitude of impact and need for mitigation. Based on comparisons to these conservative screening values, the following metals are of potential concern: arsenic, chromium, copper, lead, nickel and zinc. For the three metals without ambient or screening levels (antimony, beryllium and thallium), only antimony was detected and at generally low levels. Some samples had concentrations of chromium, copper, lead and nickel above both the low and high screening levels. Onshore soil samples (see AEI Consultants' report) show elevated concentrations of these same metals as well as one sample with elevated antimony.

The degree of bioavailability of these metals is unknown; sample results could have been influenced by the presence of metal fragments in the samples. Additionally, with elevated total chromium, there is a potential for hexavalent chromium to be present.

References

U.S. Army Corps of Engineers (USACE), 1997. Report of Petroleum Hydrocarbon Bioassay and Point of Compliance Concentration Determinations, Saltwater Protection Zone, Presidio of San Francisco, California.

Regional Water Quality Control Board, San Francisco Region (Water Board), 2002. Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines. http://www.waterboards.ca.gov/sanfranciscobay/water_issues/available_documents/benreuse.pdf

San Francisco Estuary Institute (SFEI), 2014. Dredged Material Testing Thresholds for San Francisco Bay Area Sediments. http://www.sfei.org/content/dmmo-ambient-sediment-conditions.

NOAA, 2008. Quick Screening Reference Tables (SQuiRT Tables). http://response.restoration.noaa.gov/sites/default/files/SQuiRTs.pdf

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integral consulting inc.

Figure 1.
Surface Sediment Sampling Locations, January 12, 2015
Former Allied Engineering & Production Corporation
2421 Blanding Avenue
Alameda, California

Table 1. Surface Sediment Sampling Chemical Analysis Results,
January 12, 2015 – Total Petroleum Hydrocarbons

Sample ID	Sample Date	Sample Depth[a]	TPHd (mg/kg)	TPHmo (mg/kg)
Screening Level[b]			144	144
Current Investigation Results				
SD-0001	1/12/2015	grab	<1.8	<9.1
SD-0002	1/12/2015	grab	4.1	19
SD-0003	1/12/2015	grab	3.3	11
SD-0004	1/12/2015	grab	4.4	16
SD-0005	1/12/2015	grab	2.1	17
SD-0006	1/12/2015	grab	3.3	46
SD-0007	1/12/2015	grab	2.3	13
SD-0008	1/12/2015	grab	10	21

Notes:
TPHd analyzed using EPA Method SW8015B following silica gel clean-up.
TPHmo analyzed using EPA Method SW8015B following silica gel clean-up.
All concentrations are reported on a dry weight basis.

<0.050 = not detected at or above the specified laboratory method detection limit
TPHd = total petroleum hydrocarbons as diesel in the carbon range of C10-C23
TPHmo = total petroleum hydrocarbons as motor oil in the carbon range of C18-C36

[a] Sample Depth = Depth of penetration of the sampling device. Multiple grabs were collected from each sample location and composited together in order to achieve sufficient sample volume for required analyses. Sampler penetration was poor as a result of debris present in most locations. Penetration depth ranged from approximately 1.5 to 8 cm, and was generally 5 cm.

[b] Screening Level = TPH screening levels protective of marine ecological receptors (USACE, 1997). See report text for additional information.

Table 2. Surface Sediment Sampling Chemical Analysis Results, January 12, 2015 – Priority Pollutant Metals

Sample ID	Sample Date	Sample Depth[a]	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
Screening Level[b]															
ER-L			--	8.2	--	1.2	81	34	46.7	0.15	20.9	--	1	--	150
ER-M			--	70	--	9.6	370	270	218	0.71	51.6	--	3.7	--	410
Ambient Level[c]			--	15.3	--	0.33	112	68.1	43.2	0.47	112	0.64	0.58	--	158
Current Investigation Results															
SD-0001	1/12/2015	grab	2.6	22	<0.91	1.1	**2,700**	160	40	0.29	**470**	<0.91	<0.91	<0.91	110
SD-0002	1/12/2015	grab	1.8	16	<0.99	<0.99	150	130	73	0.47	**120**	<0.99	<0.99	<0.99	150
SD-0003	1/12/2015	grab	2.2	9.5	<0.91	1.2	190	93	**260**	0.37	94	<0.91	<0.91	<0.91	270
SD-0004	1/12/2015	grab	2.2	11	<1.0	0.53	210	93	73	0.40	**170**	<1.0	<1.0	<1.0	160
SD-0005	1/12/2015	grab	3.2	24	<0.85	<0.85	**410**	**410**	140	0.31	**130**	<0.85	<0.85	<0.85	190
SD-0006	1/12/2015	grab	1.0	4.2	<0.89	0.69	99	65	140	0.43	70	<0.89	<0.89	<0.89	200
SD-0007	1/12/2015	grab	5.0	24	<0.79	0.92	250	97	120	0.31	**180**	<0.79	<0.79	<0.79	160
SD-0008	1/12/2015	grab	1.0	6.9	<0.99	0.63	230	110	70	0.47	72	<0.99	<0.99	<0.99	170

Notes:

Priority pollutant metals analyzed using EPA Method SW6020. All concentrations are reported on a dry weight basis.

<0.050 = not detected at or above the specified laboratory method detection limit

-- = not available

Shading indicates exceedance of ER-L and ambient' bold values also exceed the ERM

[a] Sample Depth = Depth of penetration of the sampling device. Multiple grabs were collected from each sample location and composited together in order to achieve sufficient sample volume for required analyses. Sampler penetration was poor as a result of debris present in most locations. Penetration depth ranged from approximately 1.5 to 8 cm, and was generally 5 cm.

[b] Screening Level = Effects Range-Low (ER-L) and Effects Range-Median (ER-M) values (NOAA, 2008; Water Board, 2002). See report text for additional information.

[c] Ambient Level = 10-year rolling average for mercury (SFEI, 2014); bay-wide ambient values for other metals (Water Board, 2002). See report text for additional information.

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 1. Vessel (January 12, 2015)

Photograph 2. Grand Street Marina Launch (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 3. Site Approach with Bridge (January 12, 2015)

Photograph 4. Site Overview (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 5. Western Portion of Site Approaching SD-1 (January 12, 2015)


Photograph 6. Metal Shavings along Shoreline at SD-1 (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 7. Metal Shavings along Shoreline at SD-1 (January 12, 2015)

Photograph 8. Abandoned location of SD-1 (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 9. Abandoned Location of SD-1, Sub-Sample Poor Recovery in Ponar (January 12, 2015)

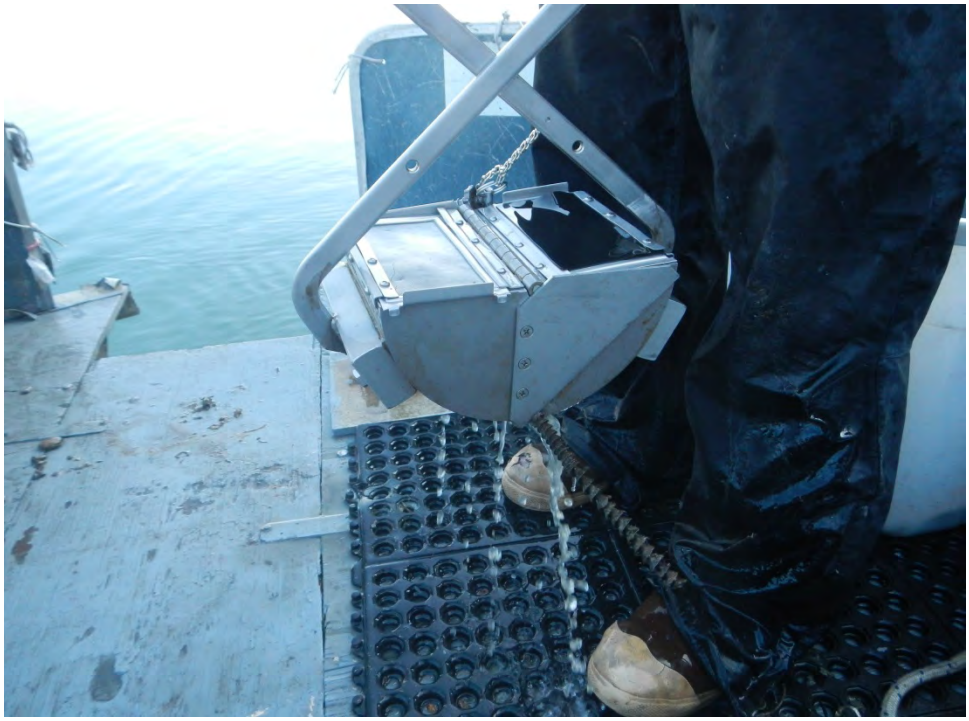
Photograph 10. SD-1 Location (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

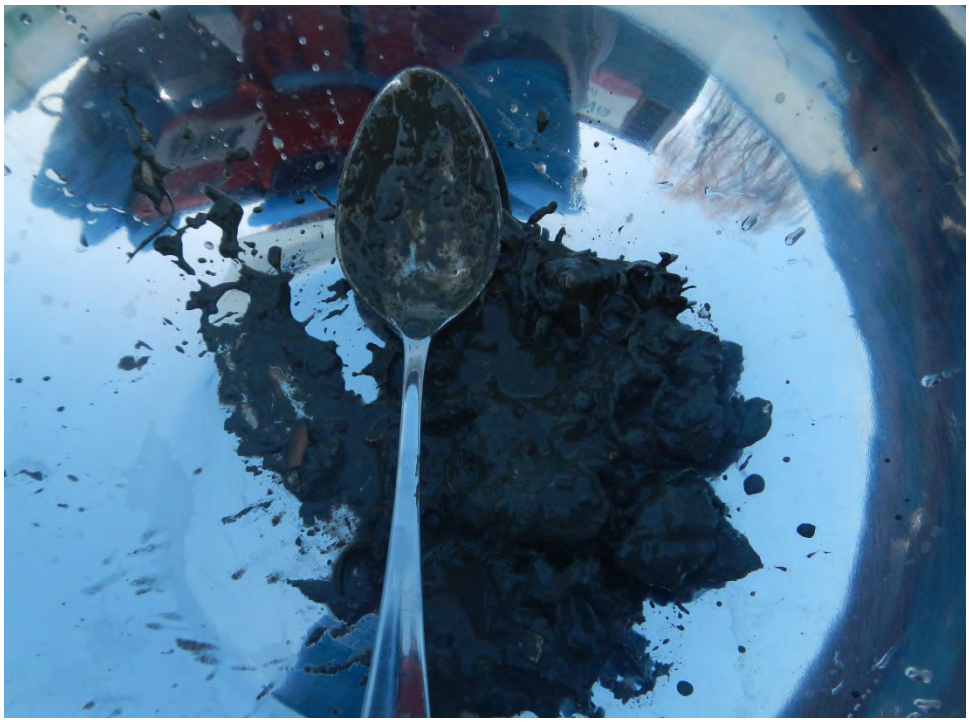
Photograph 11. SD-1 Shoreline (January 12, 2015)

Photograph 12. 73_SD-1 Shoreline Close-Up (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

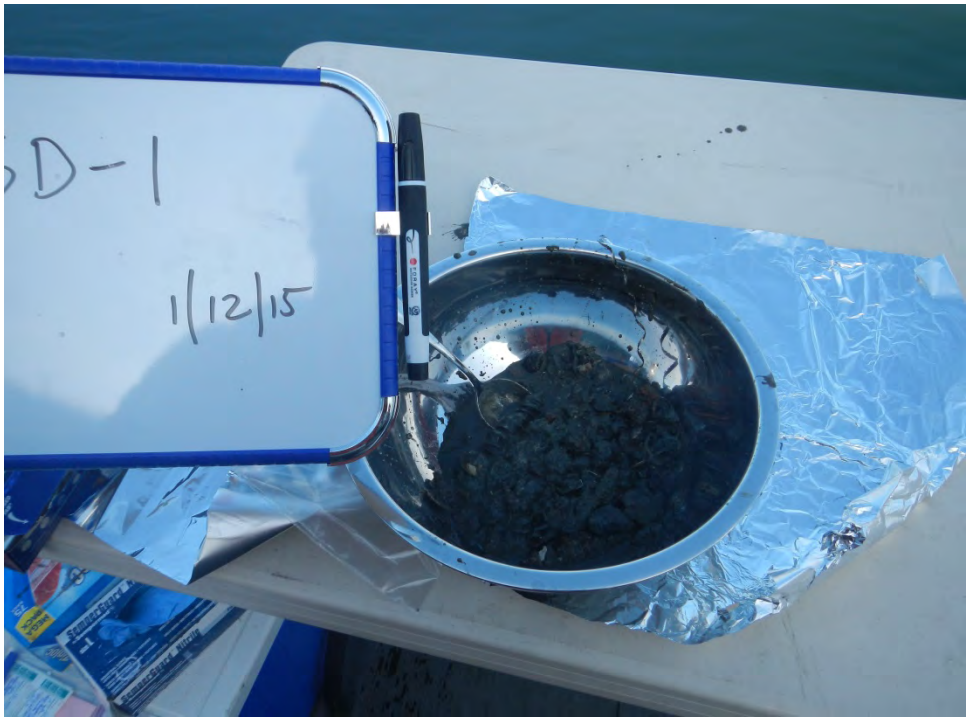


Photograph 13. SD-1 Metal Debris, Incomplete Closure (January 12, 2015)

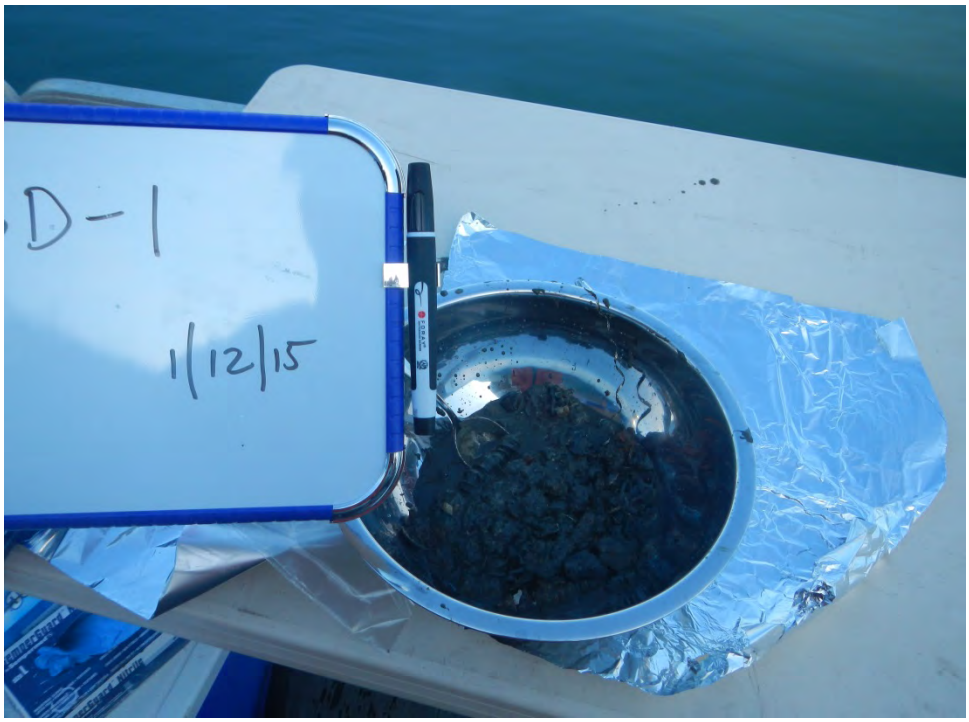


Photograph 14. SD-1 in Bowl (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015



Photograph 15. SD-1 in Bowl (January 12, 2015)



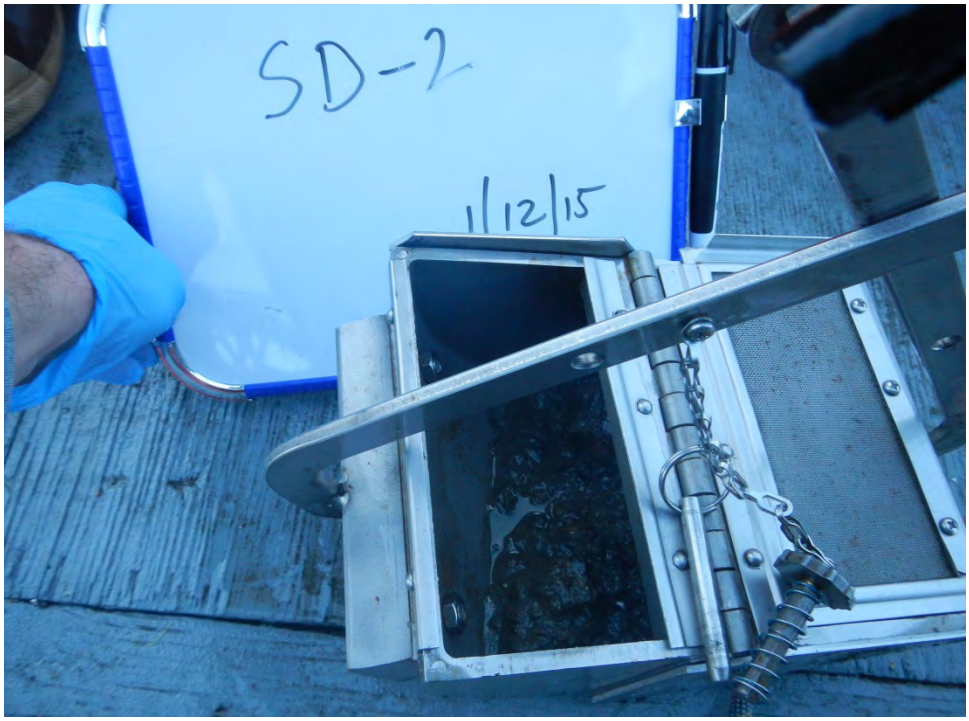
Photograph 16. SD-1 in Bowl (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

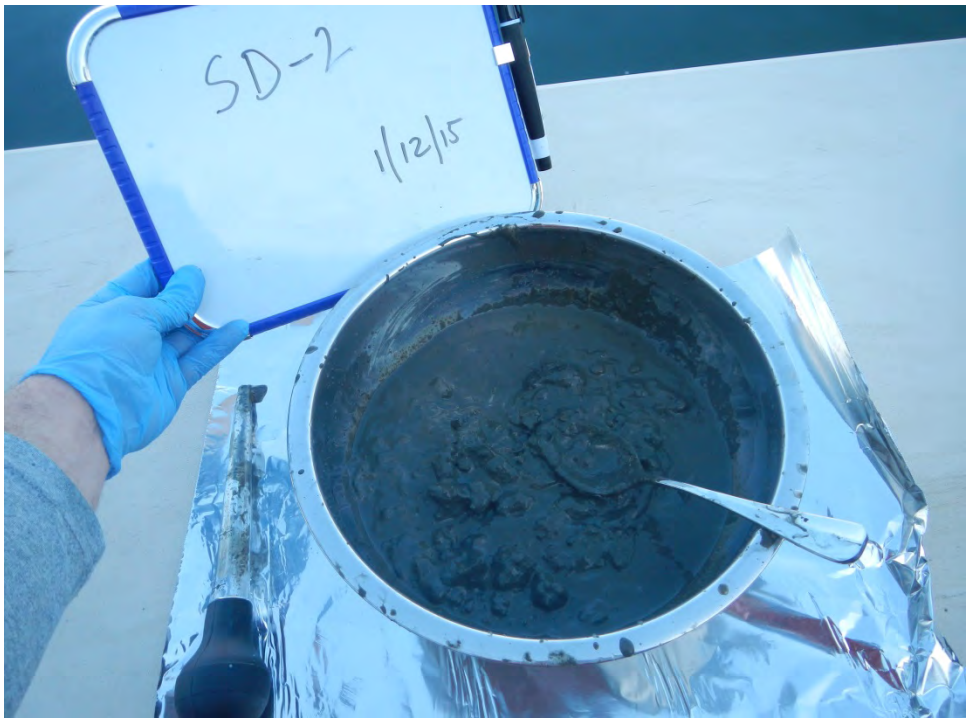
Photograph 17. SD-1 in Bowl with Sample Containers (January 12, 2015)

Photograph 18. SD-2 Location (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015



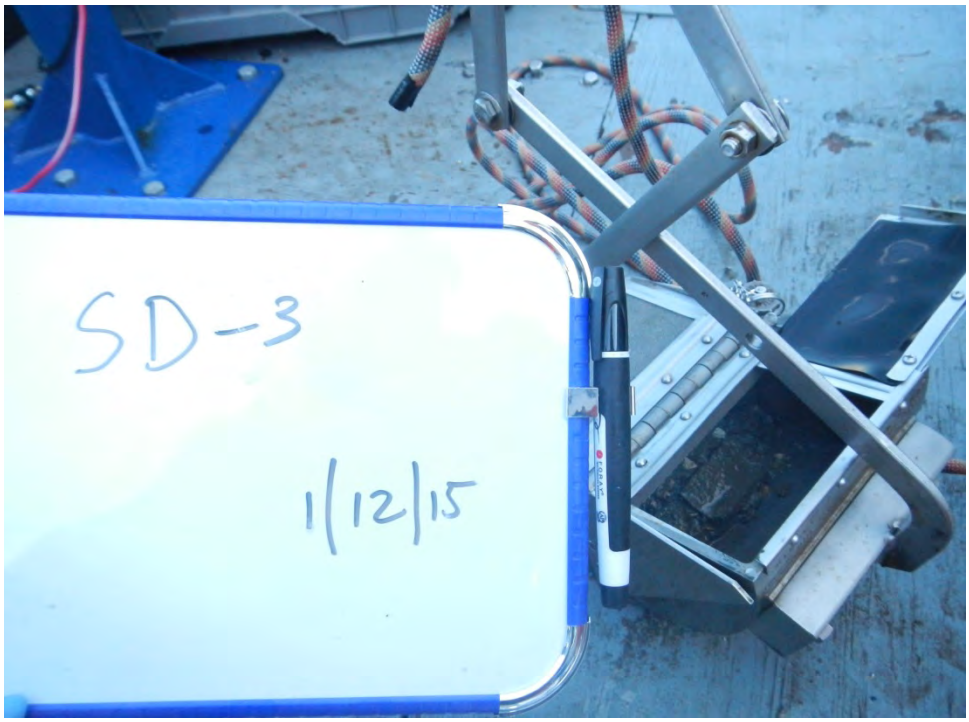
Photograph 19. SD-2 in Petite Ponar (January 12, 2015)



Photograph 20. SD-2 in Bowl (January 12, 2015)

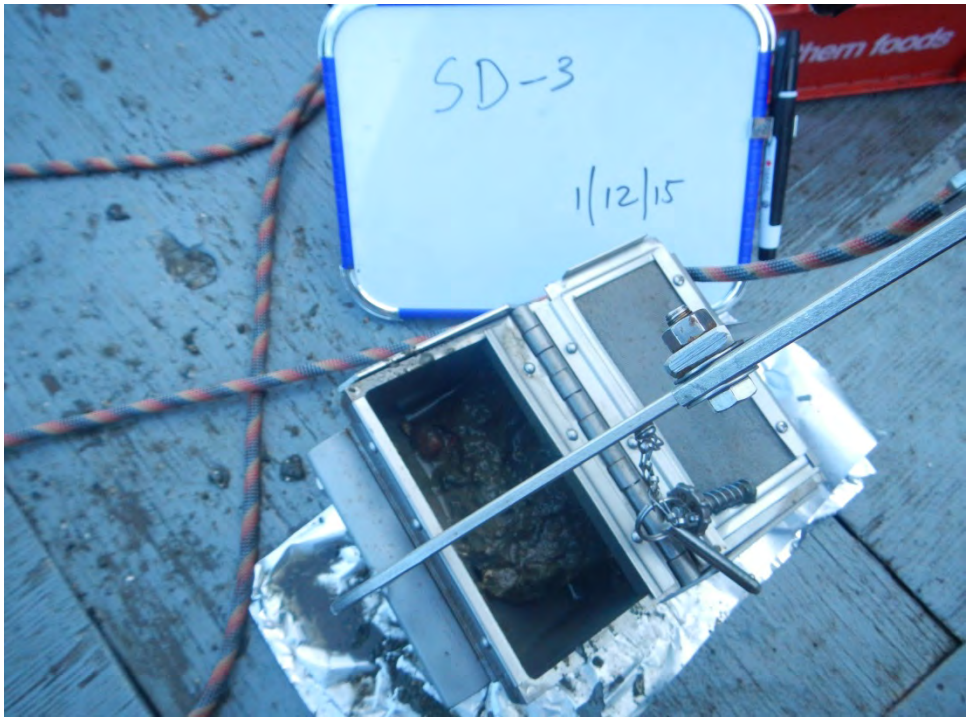
Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 21. SD-3 Location (January 12, 2015)



Photograph 22. SD-3 in Petite Ponar (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015



Photograph 23. SD-3 in Petite Ponar (January 12, 2015)

Photograph 24. SD-3 in Bowl (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 25. SD-4 Location (January 12, 2015)

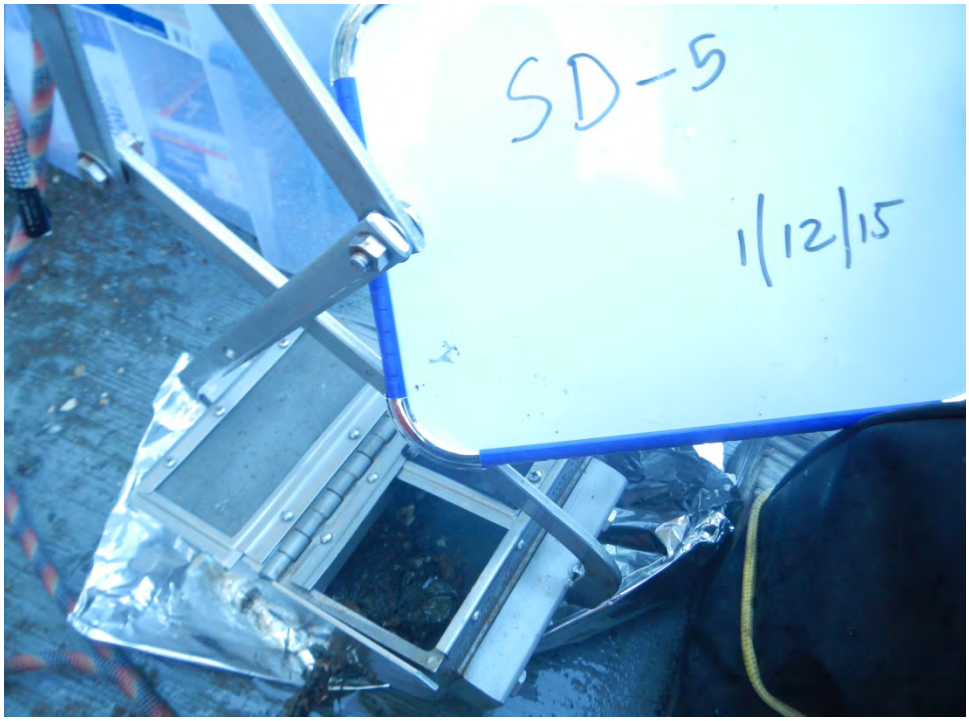
Photograph 26. SD-4 in Petite Ponar (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

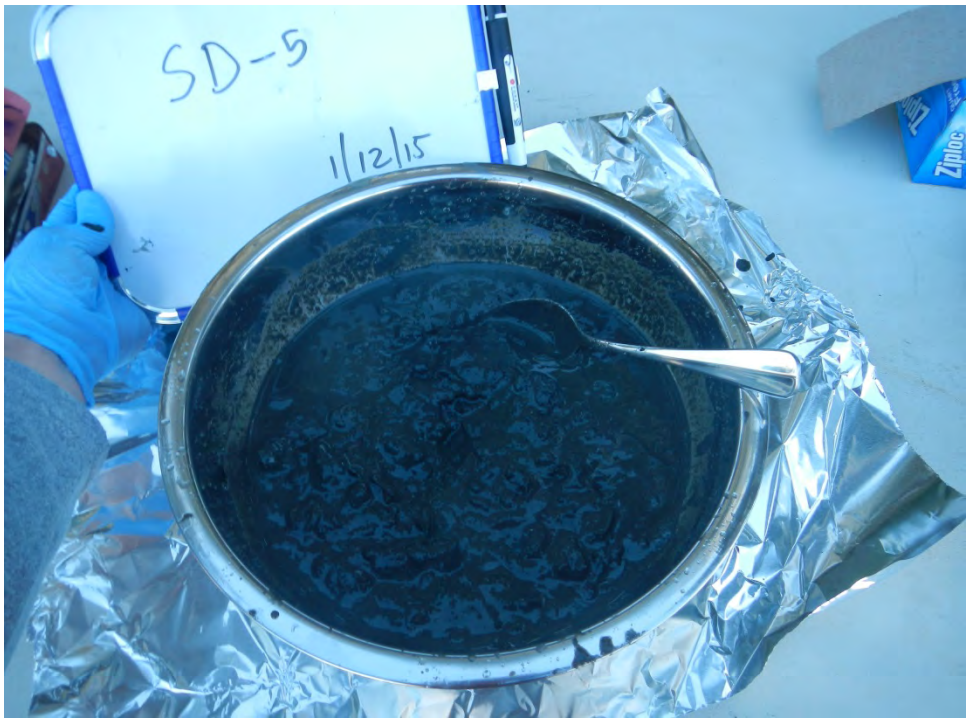
Photograph 27. SD-4 in Bowl (January 12, 2015)

Photograph 28. SD-5 Location (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015



Photograph 29. SD-5 in Petite Ponar (January 12, 2015)



Photograph 30. SD-5 in Bowl (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 31. SD-6 Location (January 12, 2015)


Photograph 32. Large Mass of Metal Shavings in Shoreline Adjacent To SD-6 (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 33. SD-6 in Petite Ponar (January 12, 2015)

Photograph 34. SD-6 in Bowl (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 35. View to East from SD-6 (January 12, 2015)

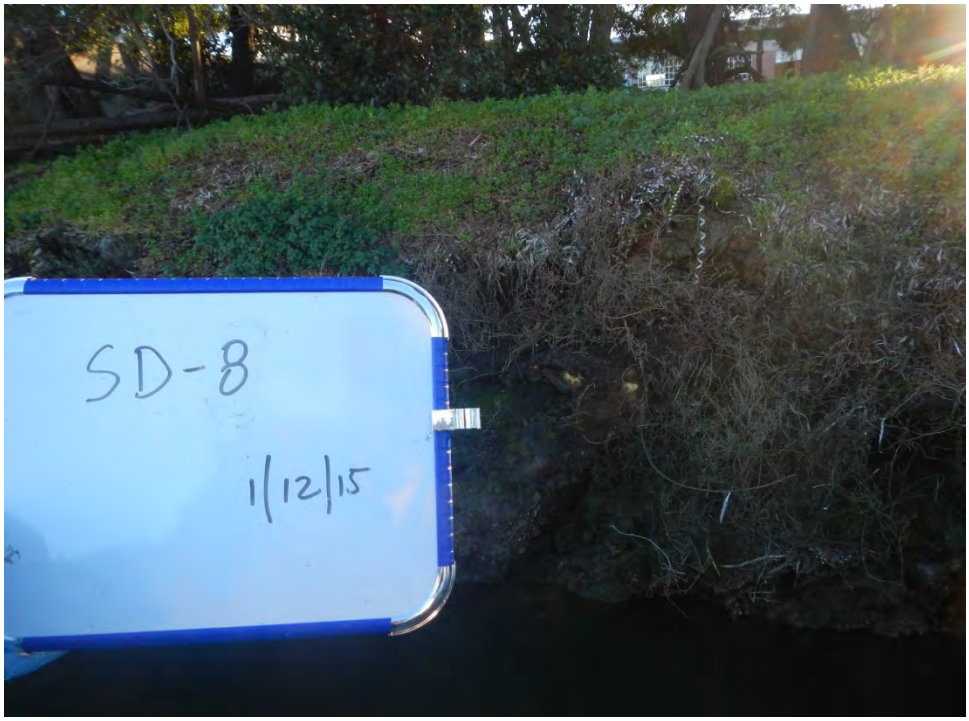
Photograph 36. View to West from SD-6 (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

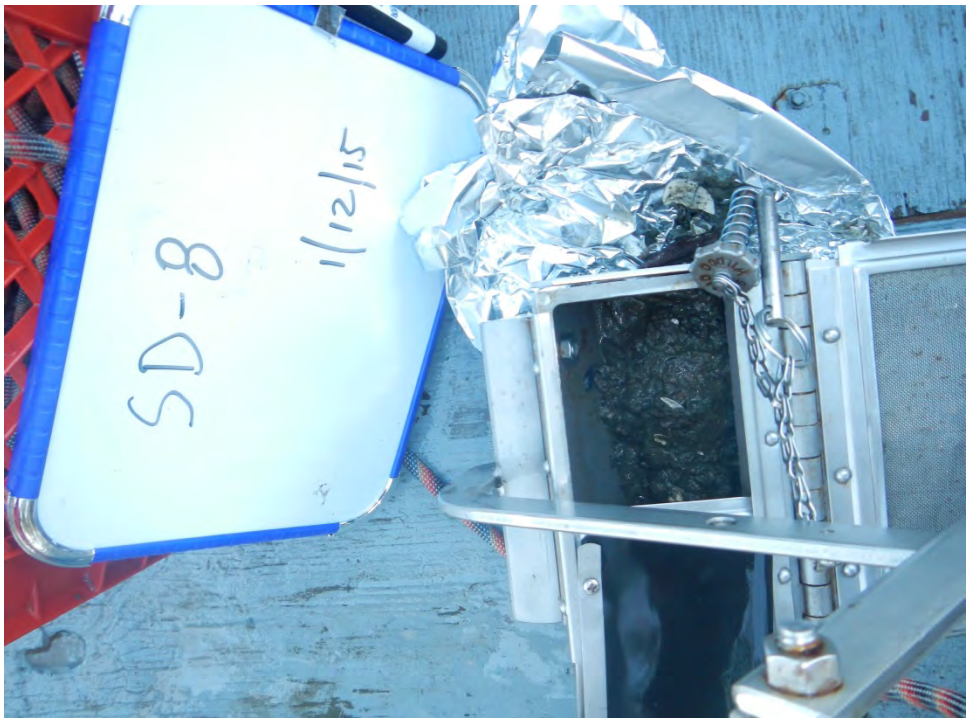
Photograph 37. Metal Shavings in Shoreline adjacent To SD-7 (January 12, 2015)

Photograph 38. SD-7 in Petite Ponar (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015



Photograph 39. SD-8 Location (January 12, 2015)



Photograph 40. SD-8 in Petite Ponar (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 41. SD-8 in Bowl with Possible Bio-Sheen (January 12, 2015)

Photograph 42. SD-8 in Bowl with Possible Bio-Sheen (January 12, 2015)

Former Allied Engineering & Production Corporation
Surface Sediment Sampling
Site Photographs from January 12, 2015

Photograph 43. SD-8 in Bowl with Possible Bio-Sheen (January 12, 2015)


Photograph 44. De-Mobilization at Sunset (January 12, 2015)

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1501290

Report Created for: AEI Consultants
2500 Camino Diablo, Ste.#200
Walnut Creek, CA 94597

Project Contact: Trent Weise
Project P.O.: #74293
Project Name: #338315

Project Received: 01/12/2015

Analytical Report reviewed & approved for release on 01/14/2015 by:

Question about your data?

Click here to email McCampbell

Angela Rydelius,
Laboratory Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: AEI Consultants
Project: #338315
WorkOrder: 1501290

Glossary Abbreviation

95% Interval	95% Confident Interval
DF	Dilution Factor
DUP	Duplicate
EDL	Estimated Detection Limit
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
TEQ	Toxicity Equivalence

Analytical Qualifiers

e2	diesel range compounds are significant; no recognizable pattern
e7	oil range compounds are significant
i1	results are reported on a dry weight basis
j1	see attached narrative

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD was out of acceptance criteria; LCS validated the prep batch.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Case Narrative

Client: AEI Consultants
Project: #338315

Work Order: 1501290
January 14, 2015

j1) obvious pieces of metal &/or wire material were excluded from the sub-sample used for the extraction & analysis of the sample.

McCampbell Analytical, Inc.
"When Quality Counts"

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	ASTMD2216-92
Date Received:	1/12/15 21:17	**Analytical Method:**	ASTMD2216-92
Date Prepared:	1/12/15	**Unit:**	wet wt%

Percent Moisture

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0001	**1501290-001A**	**Sludge**	**01/12/2015 12:22**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**44.9**	0.165	01/13/2015 14:00

Analyst(s): AL

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0002	**1501290-002A**	**Sludge**	**01/12/2015 13:04**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**49.3**	0.140	01/13/2015 14:05

Analyst(s): AL

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0003	**1501290-003A**	**Sludge**	**01/12/2015 13:35**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**44.8**	0.124	01/13/2015 14:10

Analyst(s): AL

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0004	**1501290-004A**	**Sludge**	**01/12/2015 14:20**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**49.8**	0.102	01/13/2015 14:15

Analyst(s): AL

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	ASTMD2216-92
Date Received:	1/12/15 21:17	**Analytical Method:**	ASTMD2216-92
Date Prepared:	1/12/15	**Unit:**	wet wt%

Percent Moisture

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0005	**1501290-005A**	**Sludge**	**01/12/2015 14:50**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**41.5**	0.104	01/13/2015 14:20

Analyst(s): AL

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0006	**1501290-006A**	**Sludge**	**01/12/2015 15:25**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**43.7**	0.0988	01/13/2015 14:25

Analyst(s): AL

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0007	**1501290-007A**	**Sludge**	**01/12/2015 16:00**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**36.4**	0.106	01/13/2015 14:30

Analyst(s): AL

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0008	**1501290-008A**	**Sludge**	**01/12/2015 16:28**	**WetChem**	**99918**

Analytes	Result	RL	Date Analyzed
% Moisture	**49.6**	0.160	01/13/2015 14:35

Analyst(s): AL

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0001	**1501290-001A**	**Sludge/TOTAL**	**01/12/2015 12:22**	**ICP-MS1**	**99933**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**2.6**	0.91	1	01/13/2015 14:35
Arsenic	**22**	0.91	1	01/13/2015 14:35
Beryllium	ND	0.91	1	01/13/2015 14:35
Cadmium	**1.1**	0.45	1	01/13/2015 14:35
Chromium	**2700**	9.1	10	01/13/2015 17:15
Copper	**160**	0.91	1	01/13/2015 14:35
Lead	**40**	0.91	1	01/13/2015 14:35
Mercury	**0.29**	0.091	1	01/13/2015 14:35
Nickel	**470**	0.91	1	01/13/2015 14:35
Selenium	ND	0.91	1	01/13/2015 14:35
Silver	ND	0.91	1	01/13/2015 14:35
Thallium	ND	0.91	1	01/13/2015 14:35
Zinc	**110**	9.1	1	01/13/2015 14:35

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	99	70-130		01/13/2015 14:35

Analyst(s): DVH

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CDPH ELAP 1644 ♦ NELAP 4033ORELAP

Angela Rydelius, Lab Manager

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0002	**1501290-002A**	**Sludge/TOTAL**	**01/12/2015 13:04**	**ICP-MS1**	**99933**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**1.8**	0.99	1	01/13/2015 14:41
Arsenic	**16**	0.99	1	01/13/2015 14:41
Beryllium	ND	0.99	1	01/13/2015 14:41
Cadmium	ND	0.49	1	01/13/2015 14:41
Chromium	**150**	0.99	1	01/13/2015 14:41
Copper	**130**	0.99	1	01/13/2015 14:41
Lead	**73**	0.99	1	01/13/2015 14:41
Mercury	**0.47**	0.099	1	01/13/2015 14:41
Nickel	**120**	0.99	1	01/13/2015 14:41
Selenium	ND	0.99	1	01/13/2015 14:41
Silver	ND	0.99	1	01/13/2015 14:41
Thallium	ND	0.99	1	01/13/2015 14:41
Zinc	**150**	9.9	1	01/13/2015 14:41

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	107	70-130		01/13/2015 14:41

Analyst(s): DVH

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0003	**1501290-003A**	**Sludge/TOTAL**	**01/12/2015 13:35**	**ICP-MS1**	**99933**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**2.2**	0.91	1	01/13/2015 14:47
Arsenic	**9.5**	0.91	1	01/13/2015 14:47
Beryllium	ND	0.91	1	01/13/2015 14:47
Cadmium	**1.2**	0.45	1	01/13/2015 14:47
Chromium	**190**	0.91	1	01/13/2015 14:47
Copper	**93**	0.91	1	01/13/2015 14:47
Lead	**260**	0.91	1	01/13/2015 14:47
Mercury	**0.37**	0.091	1	01/13/2015 14:47
Nickel	**94**	0.91	1	01/13/2015 14:47
Selenium	ND	0.91	1	01/13/2015 14:47
Silver	ND	0.91	1	01/13/2015 14:47
Thallium	ND	0.91	1	01/13/2015 14:47
Zinc	**270**	9.1	1	01/13/2015 14:47

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	106	70-130		01/13/2015 14:47

Analyst(s): DVH

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0004	**1501290-004A**	**Sludge/TOTAL**	**01/12/2015 14:20**	**ICP-MS1**	**99933**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**2.2**	1.0	1	01/13/2015 14:54
Arsenic	**11**	1.0	1	01/13/2015 14:54
Beryllium	ND	1.0	1	01/13/2015 14:54
Cadmium	**0.53**	0.50	1	01/13/2015 14:54
Chromium	**210**	1.0	1	01/13/2015 14:54
Copper	**93**	1.0	1	01/13/2015 14:54
Lead	**73**	1.0	1	01/13/2015 14:54
Mercury	**0.40**	0.10	1	01/13/2015 14:54
Nickel	**170**	1.0	1	01/13/2015 14:54
Selenium	ND	1.0	1	01/13/2015 14:54
Silver	ND	1.0	1	01/13/2015 14:54
Thallium	ND	1.0	1	01/13/2015 14:54
Zinc	**160**	10	1	01/13/2015 14:54

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	103	70-130		01/13/2015 14:54

Analyst(s): DVH

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CDPH ELAP 1644 ♦ NELAP 4033ORELAP

Angela Rydelius, Lab Manager

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0005	**1501290-005A**	**Sludge/TOTAL**	**01/12/2015 14:50**	**ICP-MS1**	**99951**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**3.2**	0.85	1	01/13/2015 15:00
Arsenic	**24**	0.85	1	01/13/2015 15:00
Beryllium	ND	0.85	1	01/13/2015 15:00
Cadmium	ND	0.43	1	01/13/2015 15:00
Chromium	**410**	0.85	1	01/13/2015 15:00
Copper	**410**	0.85	1	01/13/2015 15:00
Lead	**140**	0.85	1	01/13/2015 15:00
Mercury	**0.31**	0.085	1	01/13/2015 15:00
Nickel	**130**	0.85	1	01/13/2015 15:00
Selenium	ND	0.85	1	01/13/2015 15:00
Silver	ND	0.85	1	01/13/2015 15:00
Thallium	ND	0.85	1	01/13/2015 15:00
Zinc	**190**	8.5	1	01/13/2015 15:00

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	103	70-130		01/13/2015 15:00

Analyst(s): DVH

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0006	**1501290-006A**	**Sludge/TOTAL**	**01/12/2015 15:25**	**ICP-MS1**	**99951**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**1.0**	0.89	1	01/13/2015 15:06
Arsenic	**4.2**	0.89	1	01/13/2015 15:06
Beryllium	ND	0.89	1	01/13/2015 15:06
Cadmium	**0.69**	0.44	1	01/13/2015 15:06
Chromium	**99**	0.89	1	01/13/2015 15:06
Copper	**65**	0.89	1	01/13/2015 15:06
Lead	**140**	0.89	1	01/13/2015 15:06
Mercury	**0.43**	0.089	1	01/13/2015 15:06
Nickel	**70**	0.89	1	01/13/2015 15:06
Selenium	ND	0.89	1	01/13/2015 15:06
Silver	ND	0.89	1	01/13/2015 15:06
Thallium	ND	0.89	1	01/13/2015 15:06
Zinc	**200**	8.9	1	01/13/2015 15:06

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	104	70-130		01/13/2015 15:06

Analyst(s): DVH

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0007	**1501290-007A**	**Sludge/TOTAL**	**01/12/2015 16:00**	**ICP-MS1**	**99951**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**5.0**	0.79	1	01/13/2015 15:12
Arsenic	**24**	0.79	1	01/13/2015 15:12
Beryllium	ND	0.79	1	01/13/2015 15:12
Cadmium	**0.92**	0.39	1	01/13/2015 15:12
Chromium	**250**	0.79	1	01/13/2015 15:12
Copper	**97**	0.79	1	01/13/2015 15:12
Lead	**120**	0.79	1	01/13/2015 15:12
Mercury	**0.31**	0.079	1	01/13/2015 15:12
Nickel	**180**	0.79	1	01/13/2015 15:12
Selenium	ND	0.79	1	01/13/2015 15:12
Silver	ND	0.79	1	01/13/2015 15:12
Thallium	ND	0.79	1	01/13/2015 15:12
Zinc	**160**	7.9	1	01/13/2015 15:12

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	104	70-130		01/13/2015 15:12

Analyst(s): DVH

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3050B
Date Received:	1/12/15 21:17	**Analytical Method:**	SW6020
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0008	**1501290-008A**	**Sludge/TOTAL**	**01/12/2015 16:28**	**ICP-MS1**	**99951**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**1.0**	0.99	1	01/13/2015 15:19
Arsenic	**6.9**	0.99	1	01/13/2015 15:19
Beryllium	ND	0.99	1	01/13/2015 15:19
Cadmium	**0.63**	0.50	1	01/13/2015 15:19
Chromium	**230**	0.99	1	01/13/2015 15:19
Copper	**110**	0.99	1	01/13/2015 15:19
Lead	**70**	0.99	1	01/13/2015 15:19
Mercury	**0.47**	0.099	1	01/13/2015 15:19
Nickel	**72**	0.99	1	01/13/2015 15:19
Selenium	ND	0.99	1	01/13/2015 15:19
Silver	ND	0.99	1	01/13/2015 15:19
Thallium	ND	0.99	1	01/13/2015 15:19
Zinc	**170**	9.9	1	01/13/2015 15:19

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
Tb 350.917	93	70-130		01/13/2015 15:19

Analyst(s): DVH

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	E200.8
Date Received:	1/12/15 21:17	**Analytical Method:**	E200.8
Date Prepared:	1/12/15	**Unit:**	µg/L

Priority Pollutant Metals

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
EB-0001	**1501290-009A**	**Water/TOTAL**	**01/12/2015 17:11**	**ICP-MS1**	**99909**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	01/14/2015 09:33
Arsenic	ND	0.50	1	01/14/2015 09:33
Beryllium	ND	0.50	1	01/14/2015 09:33
Cadmium	ND	0.25	1	01/14/2015 09:33
Chromium	ND	0.50	1	01/14/2015 09:33
Copper	**2.9**	2.0	1	01/14/2015 09:33
Lead	ND	0.50	1	01/14/2015 09:33
Mercury	ND	0.025	1	01/14/2015 09:33
Nickel	ND	0.50	1	01/14/2015 09:33
Selenium	ND	0.50	1	01/14/2015 09:33
Silver	ND	0.19	1	01/14/2015 09:33
Thallium	ND	0.50	1	01/14/2015 09:33
Zinc	ND	15	1	01/14/2015 09:33

Surrogates	REC (%)	Limits	
Tb 350.917	98	70-130	01/14/2015 09:33

Analyst(s): DB

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3550B/3630C
Date Received:	1/12/15 21:17	**Analytical Method:**	SW8015B
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0001	**1501290-001A**	**Sludge**	**01/12/2015 12:22**	**GC6A**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.8	1	01/13/2015 11:32
TPH-Motor Oil (C18-C36)	ND	9.1	1	01/13/2015 11:32

Surrogates	REC (%)	Limits	Analytical Comments: i1,j1	
C9	81	70-130		01/13/2015 11:32

Analyst(s): HD

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0002	**1501290-002A**	**Sludge**	**01/12/2015 13:04**	**GC6A**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**4.1**	2.0	1	01/13/2015 12:44
TPH-Motor Oil (C18-C36)	**19**	9.9	1	01/13/2015 12:44

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1	
C9	81	70-130		01/13/2015 12:44

Analyst(s): HD

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0003	**1501290-003A**	**Sludge**	**01/12/2015 13:35**	**GC11A**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**3.3**	1.8	1	01/13/2015 11:37
TPH-Motor Oil (C18-C36)	**11**	9.1	1	01/13/2015 11:37

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1	
C9	96	70-130		01/13/2015 11:37

Analyst(s): HD

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3550B/3630C
Date Received:	1/12/15 21:17	**Analytical Method:**	SW8015B
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0004	**1501290-004A**	**Sludge**	**01/12/2015 14:20**	**GC11A**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**4.4**	2.0	1	01/13/2015 14:03
TPH-Motor Oil (C18-C36)	**16**	10	1	01/13/2015 14:03

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1
C9	96	70-130	01/13/2015 14:03

Analyst(s): HD

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0005	**1501290-005A**	**Sludge**	**01/12/2015 14:50**	**GC11B**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**2.1**	1.7	1	01/13/2015 11:37
TPH-Motor Oil (C18-C36)	**17**	8.5	1	01/13/2015 11:37

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1
C9	102	70-130	01/13/2015 11:37

Analyst(s): HD

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0006	**1501290-006A**	**Sludge**	**01/12/2015 15:25**	**GC11B**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**3.3**	1.8	1	01/13/2015 14:03
TPH-Motor Oil (C18-C36)	**46**	8.9	1	01/13/2015 14:03

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1
C9	101	70-130	01/13/2015 14:03

Analyst(s): HD

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3550B/3630C
Date Received:	1/12/15 21:17	**Analytical Method:**	SW8015B
Date Prepared:	1/12/15	**Unit:**	mg/Kg-dry

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0007	**1501290-007A**	**Sludge**	**01/12/2015 16:00**	**GC9b**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**2.3**	1.6	1	01/13/2015 13:09
TPH-Motor Oil (C18-C36)	**13**	7.9	1	01/13/2015 13:09

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1
C9	91	70-130	01/13/2015 13:09

Analyst(s): HD

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
SD-0008	**1501290-008A**	**Sludge**	**01/12/2015 16:28**	**GC6B**	**99922**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**10**	2.0	1	01/13/2015 14:07
TPH-Motor Oil (C18-C36)	**21**	9.9	1	01/13/2015 14:07

Surrogates	REC (%)	Limits	Analytical Comments: e7,e2,i1,j1
C9	108	70-130	01/13/2015 14:07

Analyst(s): HD

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Analytical Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Project:	#338315	**Extraction Method:**	SW3510C/3630C
Date Received:	1/12/15 21:17	**Analytical Method:**	SW8015B
Date Prepared:	1/12/15	**Unit:**	µg/L

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix/ExtType	Date Collected	Instrument	Batch ID
EB-0001	**1501290-009A**	**Water**	**01/12/2015 17:11**	**GC11B**	**99916**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	50	1	01/13/2015 10:24
TPH-Motor Oil (C18-C36)	ND	250	1	01/13/2015 10:24

Surrogates	REC (%)	Limits	
C9	102	70-130	01/13/2015 10:24

Analyst(s): HD

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Quality Control Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Date Prepared:	1/12/15	**BatchID:**	99918
Date Analyzed:	1/12/15	**Extraction Method:**	ASTMD2216-92
Instrument:	WetChem	**Analytical Method:**	ASTMD2216-92
Matrix:	Soil	**Unit:**	wet wt%
Project:	#338315		

QC Summary Report for ASTM D2216-92 (% Moisture)

SampID	Sample Result	Sample DF	Dup / Serial Dilution Result	Dup / Serial Dilution DF	RPD	Acceptance Criteria (%)
1501198-001A	18.8	2.477	19.3	3.03	2.7	<15

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Quality Control Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Date Prepared:	1/12/15	**BatchID:**	99933
Date Analyzed:	1/13/15	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1, ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	#338315	**Sample ID:**	MB/LCS-99933 1501276-026AMS/MSD

QC SUMMARY REPORT FOR SW6020

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	52.3	0.50	50	-	105	75-125
Arsenic	ND	54.6	0.50	50	-	109	75-125
Beryllium	ND	52.6	0.50	50	-	105	75-125
Cadmium	ND	53.5	0.25	50	-	107	75-125
Chromium	ND	52.7	0.50	50	-	105	75-125
Copper	ND	56.2	0.50	50	-	112	75-125
Lead	ND	55.5	0.50	50	-	111	75-125
Mercury	ND	1.15	0.050	1.25	-	92	75-125
Nickel	ND	56.6	0.50	50	-	113	75-125
Selenium	ND	56.7	0.50	50	-	113	75-125
Silver	ND	53.6	0.50	50	-	107	75-125
Thallium	ND	54.7	0.50	50	-	109	75-125
Zinc	ND	557	5.0	500	-	111	75-125
Surrogate Recovery							
Tb 350.917	529	529		500	106	106	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	62.8	61.5	50	ND	125	122	75-125	2.01	20
Arsenic	67.8	67.7	50	7.058	121	121	75-125	0	20
Beryllium	59.0	58.4	50	ND	117	116	75-125	0.937	20
Cadmium	63.9	61.8	50	ND	128,F1	123	75-125	3.40	20
Chromium	NR	NR	50	67.15	NR	NR	75-125	NR	20
Copper	104	97.2	50	38	132,F1	118	75-125	7.18	20
Lead	73.8	69.4	50	8.382	131,F1	122	75-125	6.16	20
Mercury	1.37	1.36	1.25	ND	107	106	75-125	0.585	20
Nickel	NR	NR	50	84	NR	NR	75-125	NR	20
Selenium	62.5	63.3	50	ND	125	126,F1	75-125	1.30	20
Silver	62.7	60.8	50	ND	125	122	75-125	3.04	20
Thallium	63.0	60.7	50	ND	126,F1	121	75-125	3.69	20
Zinc	701	684	500	76	125	122	75-125	2.44	20
Surrogate Recovery									
Tb 350.917	648	632	500		130	126	70-130	2.52	20

(Cont.)

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Quality Control Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Date Prepared:	1/12/15	**BatchID:**	99951
Date Analyzed:	1/13/15	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	#338315	**Sample ID:**	MB/LCS-99951 1501290-008AMS/MSD

QC SUMMARY REPORT FOR SW6020

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	48.7	0.50	50	-	97	75-125
Arsenic	ND	52.3	0.50	50	-	105	75-125
Beryllium	ND	51.2	0.50	50	-	102	75-125
Cadmium	ND	51.2	0.25	50	-	102	75-125
Chromium	ND	50.0	0.50	50	-	100	75-125
Copper	ND	53.6	0.50	50	-	107	75-125
Lead	ND	52.5	0.50	50	-	105	75-125
Mercury	ND	1.07	0.050	1.25	-	84	75-125
Nickel	ND	54.2	0.50	50	-	108	75-125
Selenium	ND	50.1	0.50	50	-	100	75-125
Silver	ND	51.2	0.50	50	-	102	75-125
Thallium	ND	51.9	0.50	50	-	104	75-125
Zinc	ND	537	5.0	500	-	107	75-125
Surrogate Recovery							
Tb 350.917	509	499		500	102	100	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	53.9	50.4	50	0.5089	107	100	75-125	6.77	20
Arsenic	66.7	56.3	50	3.484	126,F1	106	75-125	16.9	20
Beryllium	49.9	46.9	50	ND	100	93	75-125	6.28	20
Cadmium	54.6	51.0	50	0.3180	109	101	75-125	6.72	20
Chromium	NR	NR	50	115.7	NR	NR	75-125	NR	20
Copper	NR	NR	50	55.13	NR	NR	75-125	NR	20
Lead	150	97.0	50	35.47	229,F1	123	75-125	42.8,F1	20
Mercury	1.45	1.38	1.25	0.2348	97	92	75-125	4.60	20
Nickel	108	141	50	36.34	144,F1	210,F1	75-125	26.3,F1	20
Selenium	52.2	51.5	50	ND	104	103	75-125	1.43	20
Silver	53.1	50.2	50	ND	106	100	75-125	5.58	20
Thallium	54.6	51.5	50	ND	109	103	75-125	5.69	20
Zinc	630	622	500	85.98	109	107	75-125	1.18	20
Surrogate Recovery									
Tb 350.917	544	505	500		109	101	70-130	7.57	20

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Quality Control Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Date Prepared:	1/12/15	**BatchID:**	99909
Date Analyzed:	1/14/15	**Extraction Method:**	E200.8
Instrument:	ICP-MS1	**Analytical Method:**	E200.8
Matrix:	Water	**Unit:**	µg/L
Project:	#338315	**Sample ID:**	MB/LCS-99909 1501295-004AMS/MSD

QC Summary Report for E200.8

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	47.0	0.50	50	-	94	85-115
Arsenic	ND	46.0	0.50	50	-	92	85-115
Beryllium	ND	47.2	0.50	50	-	94	85-115
Cadmium	ND	46.6	0.25	50	-	93	85-115
Chromium	ND	44.8	0.50	50	-	90	85-115
Copper	ND	47.1	2.0	50	-	94	85-115
Lead	ND	47.5	0.50	50	-	95	85-115
Mercury	ND	1.07	0.025	1.25	-	85	85-115
Nickel	ND	47.2	0.50	50	-	94	85-115
Selenium	ND	48.0	0.50	50	-	96	85-115
Silver	ND	46.8	0.19	50	-	94	85-115
Thallium	ND	46.7	0.50	50	-	93	85-115
Zinc	ND	476	15	500	-	95	85-115
Surrogate Recovery							
Tb 350.917	749	747		750	100	100	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	46.9	46.1	50	ND	94	92	70-130	1.81	20
Arsenic	49.6	50.0	50	0.69	98	99	70-130	0.803	20
Beryllium	41.2	41.6	50	ND	82	83	70-130	1.13	20
Cadmium	47.9	47.1	50	ND	96	94	70-130	1.73	20
Chromium	45.5	46.4	50	1.7	88	89	70-130	1.94	20
Copper	55.5	55.8	50	6.8	97	98	70-130	0.557	20
Lead	49.5	48.6	50	0.66	98	96	70-130	1.86	20
Mercury	1.19	1.17	1.25	0.061	90	89	70-130	1.19	20
Nickel	51.0	51.4	50	1.6	99	99	70-130	0	20
Selenium	50.9	49.3	50	ND	102	99	70-130	3.16	20
Silver	47.9	47.2	50	ND	96	94	70-130	1.41	20
Thallium	49.0	48.1	50	ND	98	96	70-130	1.79	20
Zinc	500	502	500	ND	99	99	70-130	0	20
Surrogate Recovery									
Tb 350.917	789	759	750		105	101	70-130	3.85	20

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Quality Control Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Date Prepared:	1/12/15	**BatchID:**	99916
Date Analyzed:	1/13/15	**Extraction Method:**	SW3510C/3630C
Instrument:	GC2A	**Analytical Method:**	SW8015B
Matrix:	Water	**Unit:**	µg/L
Project:	#338315	**Sample ID:**	MB/LCS-99916

QC Summary Report for SW8015B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	1110	50	1000	-	111	59-151
TPH-Motor Oil (C18-C36)	ND	-	250	-	-	-	-
Surrogate Recovery							
C9	688	656		625	110	105	77-130

(Cont.)

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Quality Control Report

Client:	AEI Consultants	**WorkOrder:**	1501290
Date Prepared:	1/12/15	**BatchID:**	99922
Date Analyzed:	1/13/15	**Extraction Method:**	SW3550B/3630C
Instrument:	GC11A, GC2A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	#338315	**Sample ID:**	MB/LCS-99922 1501290-008AMS/MSD

QC Summary Report for SW8015B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	41.1	1.0	40	-	103	70-130
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	25.9	26.0		25	104	104	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	51.4	54.9	40	5.029	116	125	70-130	6.62	30
Surrogate Recovery									
C9	22.6	24.7	25		90	99	70-130	8.97	30

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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1501290 **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Trent Weise
AEI Consultants
2500 Camino Diablo, Ste.#200
Walnut Creek, CA 94597
(925) 283-6000 FAX: (925) 944-2895

Email: tweise@aeiconsultants.com
cc/3rd Party: bdeshields@integral-corp.com
PO: #74293
ProjectNo: #338315

Bill to:
Sara Guerin
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
AccountsPayable@AEIConsultants.com

Requested TAT: 1 day

Date Received: **01/12/2015**
Date Printed: **01/12/2015**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1501290-001	SD-0001	Sludge	1/12/2015 12:22	☐	A		A	A								
1501290-002	SD-0002	Sludge	1/12/2015 13:04	☐	A		A	A								
1501290-003	SD-0003	Sludge	1/12/2015 13:35	☐	A		A	A								
1501290-004	SD-0004	Sludge	1/12/2015 14:20	☐	A		A	A								
1501290-005	SD-0005	Sludge	1/12/2015 14:50	☐	A		A	A								
1501290-006	SD-0006	Sludge	1/12/2015 15:25	☐	A		A	A								
1501290-007	SD-0007	Sludge	1/12/2015 16:00	☐	A		A	A								
1501290-008	SD-0008	Sludge	1/12/2015 16:28	☐	A		A	A								
1501290-009	EB-0001	Water	1/12/2015 17:11	☐		A			A							

Test Legend:

1	PP13MS_S	2	PP13MS_W	3	PR6PTCOMP	4	TPH(DMO)WSG_S	5	TPH(DMO)WSG_W
6		7		8		9		10	
11		12							

Prepared by: Agustina Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: AEI CONSULTANTS
Project: #338315
Comments:

QC Level: LEVEL 2
Client Contact: Trent Weise
Contact's Email: tweise@aeiconsultants.com

Work Order: 1501290
Date Received: 1/12/2015

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1501290-001A	SD-0001	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 12:22	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-002A	SD-0002	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 13:04	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-003A	SD-0003	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 13:35	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-004A	SD-0004	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 14:20	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-005A	SD-0005	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 14:50	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-006A	SD-0006	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 15:25	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-007A	SD-0007	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 16:00	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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WORK ORDER SUMMARY

Client Name: AEI CONSULTANTS
Project: #338315
Comments:

QC Level: LEVEL 2
Client Contact: Trent Weise
Contact's Email: tweise@aeiconsultants.com

Work Order: 1501290
Date Received: 1/12/2015

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1501290-008A	SD-0008	Sludge	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	6 / (6:1)	8OZ g Jar + Plastic Baggie, Medium	☐	1/12/2015 16:28	1 day		☐	
			SW6020 (PP13 Metals)			☐		1 day		☐	
1501290-009A	EB-0001	Water	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	2	1LA	☐	1/12/2015 17:11	1 day	None	☐	
			SW6020 (PP13 Metals)			☐		1 day	None	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

CHAIN OF CUSTODY FORM **RUSH** 1501290 Page 1 of 1

2421 Blanding Ave, Alameda, CA

Project: Former Allied Engineering Property Sediment Sampling (C1361)

Samplers: Chris Lyles

Integral Contact: Bridgette Deshields
Office 707-775-2488 (o)
Phone 707 953-8192 (m)

Ship to:
Lab Name McCampbell Analytical, Inc.
Address 1534 Willow Pass Rd.
Pittsburg, CA 94565
Contact Trent Weise
Phone 925-262-7582

integral consulting inc.

Sample No.	Date	Time	Matrix	TPH diesel by 8015M	TPH as motor oil by 8015M	13 priority pollutant metals	Grain Size # (archive at room temperature)	TCLP, TOC (archive frozen)	%Moisture Dry weight 1-13-15	24 hr Rush TAT	Extra Container	Archive	Comments
SD-0001	1/12/15	1222	SD	X	X	X	X	X	X	X			5-8oz jars
SD-0002	1/12/15	1304	SD	X	X	X	X	X	X	X			
SD-0003	1/12/15	1335	SD	X	X	X	X	X	X	X			
SD-0004	1/12/15	1420	SD	X	X	X	X	X	X	X			
SD-0005	1/12/15	1450	SD	X	X	X	X	X	X	X			
SD-0006	1/12/15	1525	SD	X	X	X	X	X	X	X			
SD-0007	1/12/15	1600	SD	X	X	X	X	X	X	X			
SD-0008	1/12/15	1628	SD	X	X	X	X	X	X	X			
EB-0001	1/12/15	1711	AQ	X	X	X				X			2-1L ambers

ICE/T° 2.5°
GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB
PRESERVATION (VOAs | O&G | METALS | OTHER)
APPROPRIATE CONTAINERS
PRESERVED IN LAB

5:1 COMPS
Sieve #10

Analysis Turn Time: Normal Rush **Rush Results Needed By:** 24 hr TAT.

Matrix Code:	
GW - Groundwater	
SL - Soil	SW - Surface water
SD -Sediment	Other: Aqueous (AQ)

Shipped by: Shipping Tracking No.

Condition of Samples Upon Receipt: Custody Seal Intact? n/a

Relinquished by: (signature) of Integral **Date/Time:** 1/12/15; 1755 **Received by:** (signature) of Levine Fricke **Date/Time:** 1/12/15; 1755

Relinquished by: (signature) **Date/Time:** 1/12/15 1717 **Received by:** (signature) **Date/Time:** 1/12/15 19:17

Special Instructions: * these analyses are to be archived and held until further notice.
Email results to: bdeshields@integral-corp.com and tweise@aeiconsultants.com ; PO # 74293
Pay by AEI
AEI Consultants at 2500 Camino Diablo Walnut Creek, CA 94597
AEI project # 338315

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Suite 550
Seattle, WA 98104

Portland, Maine
45 Exchange St
Suite 200
Portland, ME 04101

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1205 West Bay Dr NW
Olympia, WA 98502

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"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name: **AEI Consultants** Date and Time Received: **1/12/2015 9:17:22 PM**

Project Name: **#338315** LogIn Reviewed by: Agustina Venegas

WorkOrder №: **1501290** Matrix: Sludge/Water Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Sample/Temp Blank temperature	Temp: 2.5°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☑	NA ☐
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

** NOTE: If the "No" box is checked, see comments below.*

Comments: pH adjusted in Lab.