

APPENDIX D

Dual-Phase Extraction Field Test Summary

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Appendix D

Dual-Phase Extraction

Field Test Summary

**Former Lilyblad Site,
Tacoma, Washington**

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Project Number: PNR0697

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
COC	contaminant of concern
DPE	dual-phase extraction
Ecology	Washington State Department of Ecology
gpm	gallons per minute
LGAC	liquid-phase granular-activated carbon
MTCA	Model Toxics Control Act
O&M	Operations and Maintenance
PSCAA	Puget Sound Clean Air Agency
QAPP	Quality Assurance Project Plan
PID	photoionization detector
RCRA	Resource Conservation and Recovery Act
ROI	radius of influence
scfm	standard cubic feet per minute
SVOCs	semi-volatile organic compounds
VOCs	volatile organic compounds
VGAC	vapor-phase granular-activated carbon

1. INTRODUCTION

1.1 Site Background

The former Lilyblad Petroleum Inc. (Lilyblad) site is located at 2244 Port of Tacoma Road in Tacoma, Washington, and consists of the Lilyblad Property and adjacent properties that have been affected by historical releases from the Lilyblad facility (the Site), as shown in Figure 1. Lilyblad began operation in 1972 as a distributor of gasoline, diesel, solvents, and packaged petroleum products. In 1981, Lilyblad notified the Washington State Department of Ecology (Ecology) of its waste management activities, applied for an Ecology Resource Conservation and Recovery Act (RCRA) permit, and was granted interim status. By November 1994, Ecology received authorization for RCRA corrective action and notified Lilyblad that it would proceed with corrective action via the Model Toxics Control Act (MTCA) process, and in 1995, an agreed Order was signed for the facility (Ecology, 1995).

In 2003, a supplemental remedial investigation was conducted by CH2M Hill, and in 2009, a full-scale dual-phase extraction (DPE) system was installed (CH2M Hill, 2005 and PSCAA, 2009). The DPE system was operated by CH2M Hill until January 2019, at which point shutdown procedures, as outlined in the Operation and Maintenance (O&M) manual (CH2M Hill, 2011), were carried out. The system remained inactive until DPE testing was conducted by Geosyntec Consultants (Geosyntec) in February 2020.

1.2 Test Objectives and Scope

Testing of the DPE system was conducted by Geosyntec in February and March 2020 to evaluate its performance and identify maintenance requirements. DPE testing by Geosyntec was conducted in three parts: system evaluation and maintenance; short-term tests; and a long-term test.

System evaluation and maintenance occurred in February 2020. The objectives were to evaluate the condition of system equipment, observe operating requirements, perform necessary repairs prior to startup, and to verify operability of equipment prior to testing.

The DPE system was operated on individual well fields in three short-term tests (well fields E, D, and G) at the end of February 2020. The objectives of these tests were to evaluate applied well vacuums, well performance, and straw placement; evaluate vapor and groundwater flow rates; and select the well field(s) to be used for the long-term test.

At the conclusion of the short-term tests, the DPE system was operated on well field G over the course of seven days. The objectives of this long-term test were to identify long-term operation and maintenance requirements, evaluate system capacity and efficiency, and measure mass removal rates over the duration of the test.

2. DPE TEST IMPLEMENTATION

2.1 Preparation Activities

2.1.1 System Maintenance

Prior to system startup, components of the DPE system were inspected to ensure that the system was in operational condition. A plan view of the as-built drawing associated with the treatment system was reviewed and updated based on current conditions and is presented in Figure 2. Based on a review of historical site data, it was determined that well fields D, E, and G had the highest historical groundwater concentration of the contaminants of concern (COCs). As a result, these three well fields and the DPE treatment system were the focus of the maintenance operations. The following actions were performed and are documented in the maintenance log (Table 1):

- Wells located in well fields D, E, and G were set up for DPE operation, which included opening of valves, connecting stingers to well casings, and lowering stingers to the base of the wells.
- Select monitoring wells were fitted with caps and valves to monitor depth to groundwater and observed vacuum in the well casing.
- In well field E, RW-33-E lacked a stinger connection; thereby, rendering the well unusable for the purposes of DPE extraction. Valves at this well were closed to isolate the well during testing.
- Several wellhead vacuum gauges were observed to be broken. As a result, gauges were replaced with ball valves and sampling ports so that a portable vacuum gauge could be used to monitor vacuums.
- Transfer pipelines from the well fields D, E, and G were cleared of sediment and scale.
- One of the liquid-phase granular-activated carbon (LGAC) vessels was removed from operation due to a corrosion leak¹.
- The single operational LGAC vessel was filled with new carbon media.
- DPE equipment (e.g. knockout tanks, LGAC vessel, equalization tank) was cleaned of sediment/debris.
- Filters (50-micron bags) were installed in the bag filters vessels, per the CH2M Hill 2011 Operation and Maintenance Manual (CH2M Hill, 2011).
- Equipment shafts were rotated (DPE blowers, knockout transfer pumps, air stripper pump, and discharge pump) and bump tested to confirm operation.

¹ Approval to operate with one LGAC units was obtained from the City of Tacoma on 18 February 2020 (Geosyntec, 2020b).

- A temporary flow meter (Greyline PDFRM 5.1 ultrasonic) was installed to monitor instantaneous and total flow during the DPE test. The flow meter was selected based on City of Tacoma requirements².

Attachment 2 provides a photo log summarizing site conditions observed before and during the system operation.

2.1.2 City of Tacoma Wastewater Water Discharge

The water extracted and discharged during system operation was required to meet the City of Tacoma Industrial Wastewater Discharge Permit # TAC-039-2019 (Tacoma, 2019) requirements. The permit requires that the same treatment process be used unless a letter of deviation is provided explaining why the treatment process could not be met. As a result of one of the LGAC vessels containing a hole, a request for deviation to operate with only one LGAC vessel was sent to the City (Geosyntec, 2020a), and approved (Geosyntec, 2020b).

2.2 DPE Testing

Based on an evaluation of available data, information shared by the previous consultant (Jacobs Engineering Group Inc.), and discussions with Ecology, the DPE testing focused on well fields D, E, and G. As shown on Figure 3a, well field E is located under, and around, the warehouse, well field G surrounds the tank farm, and well field D is located on the southeast corner of the Pacific Fluids property. The following section summarizes the short-term and long-term test activities.

2.2.1 Short-Term Tests

Three short-term tests were conducted on well fields D, E, and G. During each test, data were collected from operating recovery wells, surrounding monitoring wells, and the DPE system. The extraction and monitoring wells included in each test are listed in Table 2 and shown in Figures 3b, 3c, and 3d.

The short-term test on well field E was conducted for approximately 23.5 hours between 24 February and 25 February 2020. During this test, the DPE system shut down for the following reasons:

- Bag filter changeout (~17 minutes); and
- Knockout tank high alarm (~6 minutes).

The short-term test on well field D was conducted for approximately 5.75 hours on 25 February 2020. The test was scheduled for 24 hours; however, the test ended early when the extracted groundwater flow rate indicated that the 24-hour discharge permit condition would be exceeded if

² Approved by City of Tacoma in email dated 21 February 2020 (Geosyntec, 2020c).

operations continued overnight. The DPE system shut down for the following reasons during the test:

- Knockout tank high alarm (~5 minutes); and
- Bag filter changeouts (~40 minutes).

The short-term test on well field G was conducted for approximately 24 hours, between 26 February and 27 February 2020. No system shutdowns were observed during operation.

2.2.2 Long-Term Test

The long-term test was conducted on well field G. Data were collected from operating recovery wells, surrounding monitoring wells, and the DPE system. Wells monitored during this test are listed in Table 2 and illustrated in Figure 3e. The test was conducted for a total of 72.7 hours, between 27 February and 4 March 2020. As a result of sediment accumulation in the LGAC vessel, the system was shut down for approximately 74 hours between 28 February and 2 March for media changeout.

2.3 Data Collection

Data collected during the tests are provided in Attachment 1. Data collected includes manual depth to water readings, extraction wellhead vacuums, vapor and groundwater flow rates, extracted groundwater and vapor VOC/SVOC, and semi-volatile and volatile petroleum products concentrations, DPE system operational data, and system operating hours.

2.3.1 DPE System Data

DPE system data were collected periodically during operation to track system performance. Data collected during the DPE system operation are listed in Tables 3a, 3b, 3c, and 3d and consist of operating times, groundwater flow volumes, system vacuums/pressures, and field vapor PID sampling results.

2.3.2 Depth of Groundwater Data and Vacuum Readings

Depth to groundwater readings were collected manually with a water level meter and automatically with transducers from monitoring wells and vacuum readings were collected from monitoring wells and inactive recovery wells.

2.3.2.1 Manual Water Level Readings

Depth to groundwater was collected from monitoring wells (Figures 3b-e) prior to startup and within an hour of shutdown of each test with a manual water level meter. Depth to groundwater was also taken from the monitoring wells three to four times during each short-term test and eight

times during the long-term test. Manual water level data is summarized in Tables 4a, 4b, 4c, and 4d.

2.3.2.2 Transducer Water Level Readings

Groundwater drawdown was measured using eight transducers placed in monitoring wells throughout the Site (Figures 3b-e). MicroDiver[®] transducers (for measuring groundwater drawdown) and BaroDiver[®] transducers (for measuring vacuum in the well casing) were placed in the wells six days prior to system startup. Transducers collected readings every minute during the tests. Due to the volume of the transducer data collected, the data will be submitted in electronic format and not provided with this report.

2.3.3 Vacuum Readings

Manual vacuum readings were collected from recovery and monitoring wells (Figures 3b, 3c, 3d, and 3e) two to four times for each short-term test and seven times for the long-term test using a digital manometer. Vacuum data are summarized in Tables 4a, 4b, 4c, and 4d. BaroDiver[®] transducers placed in eight monitoring wells (Figures 3b, 3c, 3d, and 3e) collected vacuum data every 1 to 15 minutes throughout the system testing. One BaroDiver[®] was not placed in a well, but was used to measure atmospheric pressure changes that would affect BaroDiver[®] readings.

2.3.4 Sample Collection

2.3.4.1 Extracted Water Sampling

A total of six influent and two effluent water samples were collected during the testing. Each influent sample was collected at least one hour after DPE startup to be representative of the well field groundwater. One influent water sample was collected during each short-term test and three influent samples were collected during the long-term test. Influent grab samples were collected from the sample port after the knockout tank. Influent water samples were analyzed for volatile organic compounds (VOCs) by EPA Method 8260D, semi-volatile compounds (SVOCs) by EPA Method 8270E, total petroleum hydrocarbons (TPH) as gasoline by NWTPH-GX, and for #2 diesel and motor oil by NWTPH-DX. Samples were submitted to the laboratory on ice, along with temperature and trip blanks. One influent water sample (collected during the long-term test) was sampled for metals by EPA 200.7, mercury by EPA 245.1, and total organic carbon by SW-846 method 9060, in addition to the above analysis.

Two effluent samples (one grab and one 24-hour composite) were collected during the long-term test. The grab sample was analyzed for VOCs by EPA Method 624, pH by EPA Method 151.1, and TPH (SGT-HEM) by EPA Method 1664A. The composite sample was analyzed for SVOCs by EPA Method 625 and metals by EPA Methods 200.7 and 245.1 (mercury). Both samples were submitted to the laboratory on ice, along with temperature and trip blanks.

2.3.4.2 DPE System Process Water Sampling

To evaluate the performance of sediment levels and treatment within the DPE trailer, five water samples were collected during the long-term test and analyzed for total suspended solids (TSS) by EPA Method 2450D. Samples were collected prior to and after the first bag filter, after the air stripper, after the second bag filter, and after the LGAC vessel. Samples were submitted to the laboratory on ice.

2.3.4.3 Extracted Vapor Sampling

A total of seven vapor samples were collected during testing: five influent samples; one effluent sample; and one sample taken between the vapor-phase granular-activated carbon (VGAC) vessels. As required by the Puget Sound Clean Air Agency (PSCAA) Notice of Construction No. 9367 permit, all discharges are required to be treated with VGAC prior to discharge. Influent samples were collected from a sample port after the heat exchangers and before the first VGAC vessel. Samples were collected in ALS Environmental bottle-vacs and analyzed for total petroleum hydrocarbons as gasoline per EPA Method TO-3 and VOCs per EPA Method TO-15.

3. RESULTS

3.1 System Operation

3.1.1 Short-Term Tests

Three short-term tests were conducted on well fields E, D & G. The test for well field E operated for 23.5 hours with eight out of the nine extraction wells in operation. One extraction well (RW-33-E) did not operate as a result of wellhead construction issues. The maximum groundwater flow rate observed during the test was 20.8 gallons per minute (gpm), with an average flow rate of 5.5 gpm. A total of 7,824 gallons of groundwater was extracted, and an estimated 211,500 cubic feet (ft³) of vapor (150 standard cubic feet per minute[scfm]³) was extracted from the subsurface.

The well field D test operated for 5.75 hours. The test was terminated early due to the high groundwater extraction rate observed from the well field. The ten wells associated with well field D were in operation during this test. The maximum groundwater extraction flow rate observed during the system operation was 23.3 gpm, with an average flow of 8.5 gpm. A total of 2,933 gallons of groundwater was extracted and an estimated 50,715 ft³ vapor (147 scfm) was extracted from the subsurface.

The well field G test operated for 24 hours. All eight wells associated with well field G were in operation during this test. The maximum groundwater extraction flow observed during the system operation was 16 gpm with an average flow of 4.9 gpm. A total of 7,097 gallons of groundwater was extracted, and an estimated 213,120 ft³ of vapor (148 scfm) was extracted from the subsurface.

3.1.2 Long-Term Test

One long-term test was conducted on well field G over seven days and operated for a total of 72.7 hours. The system was shut down for four days in the middle of the test due to sediment buildup in the LGAC vessel. The LGAC vessel was cleaned out and the media was replaced prior to system restart. All eight wells associated with well field G were in operation during this test. The maximum groundwater extraction flow rate observed during the system operation was 17.5 gpm, with an average flow of 4.7 gpm. A total of 20,246 gallons of groundwater was extracted, and an estimated 645,428 ft³ of vapor (148 scfm) was extracted from the subsurface.

3.2 Hydraulic and Pneumatic Responses

Data from the transducers were downloaded at the conclusion of the final test and populated into an Excel document for analysis. MicroDiver[®] data were used in conjunction with the BaroDiver[®] data to track groundwater drawdown. Transducer data from wells within the extraction areas were compared to transducer data from the background well (MW-01), which is located 200 feet from

³ The DPE system is not equipped with a vapor flow meter. Vapor extraction rates are estimated based on the observed vacuum readings and the manufacturers blower curves.

the closest operating recovery well. The background transducer showed negligible temporal change in groundwater elevation during the test, so corrections were not made to the data. Groundwater drawdown curves for each test are shown in Figures 4a through d. The largest drawdown (15 inches) was observed at well B-19 during the long-term test in well field G. Drawdown for each test generally decreased with distance from the nearest extraction well. Rapid groundwater recharge was observed in wells in the vicinity of the extraction wells, during test shutdowns/upsets.

Manual vacuum readings taken from surrounding monitoring wells during each test showed minimal pneumatic response within well casings. BaroDiver[®] data were compared to background BaroDiver[®] data, which also showed negligible change in vacuum within well casings. As a result, adjustments were not made to the groundwater drawdown data.

3.3 Analytical Results

Results of the groundwater and vapor sampling and analysis are provided in the following sections.

3.3.1 Extracted Water Sampling Results

3.3.1.1 Influent Samples

Table 5 presents influent groundwater analytical results, and associated laboratory reports are provided in Attachment 3. The six influent water samples exceeded the site-specific cleanup levels (1,000 micrograms per liter [$\mu\text{g/L}$]) for #2 diesel and motor oil. The highest result for #2 diesel was 25,000 $\mu\text{g/L}$ at the end of the long-term test, and the lowest result for #2 diesel was 11,000 $\mu\text{g/L}$ during the well field D test. The highest analytical result for motor oil was 8,900 $\mu\text{g/L}$ at the end of the long-term test, and the lowest measurement for motor oil was 4,300 $\mu\text{g/L}$ during the well field D test. A number of VOCs and SVOCs were detected in the influent water samples; however, results were below the site-specific cleanup levels.

3.3.1.2 Effluent Results

Table 6 presents the effluent analytical results, and associated laboratory analytical reports are provided in Attachment 3. Two samples were analyzed following City of Tacoma guidelines⁴. An effluent grab sample was analyzed for VOCs, pH, and oil and grease, and a 24-hour composite was analyzed for SVOCs and metals. Results from both samples were below the Site Industrial Wastewater Discharge Permit requirements [TAC-039-20190] (Tacoma, 2019) for all constituents.

⁴ VOCs were analyzed using EPA 624, SVOCs were analyzed using EPA 625, pH was analyzed using EPA 151.1, TPH (SGT-HEM) was analyzed using EPA 1664A, TPH-D were analyzed NWTPHD, metals were analyzed using EPA 200.7, and Mercury was analyzed using EPA 245.1.

3.3.1.3 DPE System Process Water Results

The sampling location and results associated with the TSS water samples collected within the DPE trailer are as follows:

- Prior to first bag filter: 210 mg/L;
- After first bag filter (prior to air stripper): 220 mg/L;
- After air stripper (prior to second bag filter): 200 mg/L;
- After second bag filter (prior to LGAC): 290 mg/L; and
- After LGAC: 230 mg/L.

Based on the results of the TSS sampling, sediment removal with the bag filters did not appear to be occurring during the system testing. Additionally, the TSS values are relatively high suggesting that additional filtration would be needed to prolong the life of the LGAC vessels.

3.3.2 Vapor Results

Table 7 presents the vapor analytical results, and associated laboratory reports are provided in Attachment 3. Effluent vapor samples results were below permit concentration limits (PSCAA, 2007). Elevated TPH-G readings were observed during the well field D (110,000 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) and well field G (250,000 $\mu\text{g}/\text{m}^3$) short-term tests.

3.3.3 Sample Quality Control/Quality Assurance

The 2009 Remedial Action Quality Assurance Project Plan (QAPP) Sections 12 and 13 were used following receipt of laboratory data (CH2M Hill, 2009). As part of the QAPP, a level-two validation was conducted that involved 100 percent of the data quality control summary being reviewed independently of the laboratory quality control. The laboratory data were reviewed based on the detection limits, precision, accuracy, and statistical completeness and identified as useable.

3.4 Mass Removal

Contaminant mass removal estimates in the extracted vapor and groundwater are calculated using the estimated extracted vapor/groundwater volumes and laboratory analytical results. Table 8 summarizes the mass removal results for each test. Approximately 14 pounds of contaminant (gasoline, #2 diesel, motor oil, VOCs, and SVOCs) mass was removed during the entire system operation. Approximately nine pounds of contaminant mass was removed in the water phase, and five pounds was removed in the vapor phase (vapor samples were only analyzed for VOCs and gasoline).

3.5 System Maintenance Observations

In addition to the maintenance issues that were observed prior to system startup (Section 2.1.1), additional operation and maintenance issues were identified during the short and long-term tests, including:

- A leak from a patched hole was observed in the corner of the lead VGAC vessel;
- The transfer pump associated with the second knockout tank was unable to overcome the DPE vacuums, making the unit non-usable;
- Significant vacuum loss was experienced at most wellheads as a result of aged and damaged wellhead fittings; and
- The discharge pump is poorly sized to meet the City of Tacoma permit effluent flow constraints.

4. REFERENCES

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TABLES

Table 1
Maintenance Log
 Project No: PNR0697

Date	Time	Location	Maintenance Item
2/19/2020	9:00	D Well Field	Installed ball valves on all D recovery wells
2/19/2020	11:00	E Well Field	Installed ball valves on all E recovery wells
2/19/2020	11:00	G Well Field	Section of piping between RW-11-G and RW-12-G was disconnected and cleared. Y-connection added for future flushes.
2/19/2020	---	G Well Field	Installed ball valves on all G recovery wells
2/24/2020	7:00	System Trailer	Greyline PDFRM 5.1 ultrasonic flow meter installed and bump tested
2/24/2020	13:29	System Trailer	Bag filter changeout pre-airstripper
2/24/2020	17:29	System Trailer	Bag filter changeout pre-airstripper
2/24/2020	17:39	System Trailer	Bag filter changeout post-airstripper
2/25/2020	12:57	System Trailer	Bag filter changeout (1&2)
2/25/2020	16:50	G Well Field	Snake used to declog G-lines from system trailer inlet and line between RW-13-G and RW-18-G
2/26/2020	12:48	System Trailer	Bag filter changeout post-airstripper
2/26/2020	13:00	System Trailer	Bag filter changeout (1&2)
2/26/2020	14:50	System Trailer	Bag filter changeout post-airstripper
2/26/2020	16:55	G Well Field	Loss of vacuum at well RW-13-G. Ball valve impacted with red clay-like debris. Ball valve cleared and vacuum restored.
2/26/2020	18:35	System Trailer	Bag filter changeout (1&2)
2/27/2020	7:03	VPGAC	Clog in condensate line causing water to build up in VPGAC vessel and leak from crack in corner of vessel. Clog removed, leak ceased within 2 hours.
2/27/2020	11:51	System Trailer	Bag filter changeout (1&2)
2/27/2020	13:25	LPGAC	Backflush
2/28/2020	16:19	LPGAC	Spent GAC removed to lbarrels onsite. LPGAC vessel cleaned.
3/1/2020	8:30	LPGAC	LPGAC vessel filled with new virgin coconut GAC.
3/2/2020	10:40	System Trailer	Second ultrasonic flow meter installed by tee, downstream of permit flow meter.
3/4/2020	16:31	G Well Field	Stingers removed from all G recovery wells
3/5/2020	7:00	E Well Field	Stingers removed from all E recovery wells
3/5/2020	7:00	G Well Field	De-watered lines to G well field
3/5/2020	7:00	E Well Field	De-watered lines to E well field
3/5/2020	7:40	D Well Field	Stingers removed from all D recovery wells
3/5/2020	8:00	D Well Field	De-watered lines to D well field
3/5/2020	9:00	System Trailer	Additional bag filter added to post-airstripper filter

Table 2
Field Collection Plan
 Project NO. PNR0697

Well Monitored	E Well Field Test			D Well Field Test			G Well Field Test (24-hr)			G Well Field Test (Long test)		
	Pressure	Depth to Water	PID	Pressure	Depth to Water	PID	Pressure	Depth to Water	PID	Pressure	Depth to Water	PID
RW-20-E	X	X	X				X					
RW-21-E	X	X	X	X								
RW-24-E	X	X	X	X								
RW-31-E	X	X	X				X					
RW-32-E	X	X	X				X					
RW-33-E												
RW-38-E	X	X	X	X								
RW-39-E	X	X	X				X					
RW-40-E	X	X	X									
RW-23-D				X	X	X						
RW-34-D	X			X	X	X						
RW-35-D				X	X	X						
RW-45-D				X	X	X						
RW-46-D				X	X	X						
RW-47-D				X	X	X						
RW-48-D				X	X	X						
RW-49-D				X	X	X						
RW-51-D				X	X	X						
RW-52-D				X	X	X						
RW-11-G	X						X	X	X	X	X	X
RW-12-G							X	X	X	X	X	X
RW-13-G							X	X	X	X	X	X
RW-18-G							X	X	X	X	X	X
RW-19-G	X						X	X	X	X	X	X
RW-25-G							X	X	X	X	X	X
RW-26-G	X						X	X	X	X	X	X
RW-27-G							X	X	X	X	X	X
MW-4F							X	X				
P-1A	X	X					X	X		X	X	
LM-2							X	X		X	X	
CDM-20	X	X								X	X	
AGI-05	X	X		X	X					X	X	
HS-5(AGI-15)				X	X							
AGI-19				X	X					X	X	
SP-6										X	X	

Notes

- X - indicates measurement taken from indicated well during test.
- PID- Photoionization Detector

Table 3a
System Operation - Well Field E, Short-Term Test
 Project No. PNR0697

Date	Time	Time between flow readings (min)	General								DPE - Vapor Phase Remediation System						DPE - VPGAC System					
			System Operating	Well Field Operating (E, D, and/or G)	Totalizer Reading (gal)	Instantaneous Flow (gpm)	Average Flow (gpm)	DPE Blower hour meter (hrs)	Air Stripper Blower Hour Meter (hrs)	Influent PID (ppm)	Blower System #1						Temperature after heat exchanger (°F)	Pressure before VGAC #1 (in Hg)	Pressure After VGAC #1 (in Hg)	PID Before VGAC #1 (ppm)	Pressure After VGAC #2 (in Hg)	Effluent PID (ppm)
											Vacuum at KO (before filter) (in HG)	Vacuum after Inline Filter (in Hg)	Influent PID Reading Blower (ppm)	Air Temperature after DPE Blower (°F)	Pressure after DPE Blower (in Hg)	Flow Rate (scfm)						
2/24/2020	11:56	0	Yes	E	396.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/24/2020	12:32	36	Yes	E	396.0	18.7	---	---	---	---	14	16	---	260	0	---	60	---	---	17.9	---	1.2
2/24/2020	15:05	153	Yes	E	1856.0	22.3	9.5	2590.6	5830	---	13	16	---	260	0	---	60	2.82	1.72	16.7	0.4	2.1
2/24/2020	16:41	96	Yes	E	2345.8	---	5.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/24/2020	17:39	58	Yes	E	2818.0	---	8.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/24/2020	18:03	24	Yes	E	2955.0	22.3	5.7	2593.2	5832.6	---	13.5	15	---	260	0	---	60	2.96	1.72	11.3	0.4	2.1
2/24/2020	18:29	26	Yes	E	3084.7	---	5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/24/2020	19:00	31	Yes	E	3334.6	---	8.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/25/2020	7:14	734	Yes	E	7162.0	20.8	5.2	2606.4	5845.8	---	13	14.5	---	260	0	---	50	3.08	1.84	7.5	0.44	1.3
2/25/2020	10:18	184	Yes	E	8000.0	---	4.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/25/2020	11:30	72	Yes	E	8220.0	---	3.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

Data presented in this table was collected during the short-term test of well field E.

Acronyms:

- hrs- hours
- min- minute
- gal- gallon
- gpm- gallon per minute
- ppm- parts per million
- in HG- inches mercury
- F- Farenheit
- scfm- standard cubic feet per minute
- psi- pounds per square inch
- DPE- Dual Phase Extraction System
- VGAC- Vapor phase granular activated carbon
- LGAC- Liquid phase granual activated carbon
- EQ- equalization
- "---"- data not collected

Table 3a
System Operation - Well Field E, Short-Term Test
 Project No. PNR0697

Date	Time	Treatment System												Notes
		Pressure at KO #1 Transfer Pump (psi)	Pressure at EQ tank Transfer Pump (psi)	Pressure Prior to Inline Filter (psi)	Pressure Post Inline Filter #1 (psi)	Pressure at Air Stripper Transfer Pump (psi)	Pressure Prior to Inline Filter #2 (psi)	Pressure Post Inline Filter #2 (psi)	Pressure Before LGAC Vessel (psi)	Pressure after LGAC Vessel (psi)	Air Stripper Differential Pressure (in H2O)	Air Stripper Air Flow Rate (scfm)	Air Stripper Effluent PID (ppm)	
2/24/2020	11:56	---	---	---	---	---	---	---	---	---	---	---	---	
2/24/2020	12:32	17.5	40	10	10	80	5	4	---	9	14	3.5	1.1	
2/24/2020	15:05	17.5	30	20.5	19.5	46	12	12	9	9	11	0.1	1.4	
2/24/2020	16:41	---	---	---	---	---	---	---	---	---	---	---	---	
2/24/2020	17:39	---	---	---	---	---	---	---	---	---	---	---	---	
2/24/2020	18:03	17.5	30	20	20	55	12	12	8	11	8.5	2.5	0.3	Heat exchanger 1 being used
2/24/2020	18:29	---	---	---	---	---	---	---	---	---	---	---	---	
2/24/2020	19:00	---	---	---	---	---	---	---	---	---	---	---	---	
2/25/2020	7:14	17.5	30	20	20	58	12	12	8.5	10	9	0	0.2	Heat exchanger 1 being used
2/25/2020	10:18	---	---	---	---	---	---	---	---	---	---	---	---	
2/25/2020	11:30	---	---	---	---	---	---	---	---	---	---	---	---	

Table 3b
System Operation - Well Field D, Short-Term Test
 Project No. PNR0697

Date	Time	Time between flow readings (min)	General								DPE - Vapor Phase Remediation System						DPE - VPGAC System						
			System Operating	Well Field Operating (E, D, and/or G)	Totalizer Reading (gal)	Instantaneous Flow (gpm)	Average Flow (gpm)	DPE Blower hour meter (hrs)	Air Stripper Blower Hour Meter (hrs)	Influent PID (ppm)	Blower System #1						Temperature after heat exchanger # (F)	Pressure before VGAC #1 (in Hg)	Pressure After VGAC #1 (in Hg)	PID Before VGAC #1 (ppm)	Pressure After VGAC #2 (in Hg)	Effluent PID (ppm)	
											Vacuum at KO (before filter) (in HG)	Vacuum after Inline Filter (in Hg)	Influent PID Reading Blower (ppm)	Air Temperature after DPE Blower (°F)	Pressure after DPE Blower (in Hg)	Flow Rate (scfm)							
2/25/2020	12:30	60	Yes	D	8220.0	---	0.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2/25/2020	12:45	---	Yes	D	8357.0	---	---	6543.1	5850.3	---	18	19.5	---	29	0	---	60	---	---	---	---	---	---
2/25/2020	16:00	210	Yes	D	10002.5	23.3	8.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

Data presented in this table was collected during the short-term test of well field E.

Acronyms:

- hrs- hours
- min- minute
- gal- gallon
- gpm- gallon per minute
- ppm- parts per million
- in HG- inches mercury
- F- Farenheit
- scfm- standard cubic feet per minute
- psi- pounds per square inch
- DPE- Dual Phase Extraction System
- VGAC- Vapor phase granular activated carbon
- LGAC- Liquid phase granual activated carbon
- EQ- equalization
- "---"- data not collected

Table 3b
System Operation - Well Field D, Short-Term Test
 Project No. PNR0697

Date	Time	Treatment System												Notes
		Pressure at KO #1 Transfer Pump (psi)	Pressure at EQ tank Transfer Pump (psi)	Pressure Prior to Inline Filter (psi)	Pressure Post Inline Filter #1 (psi)	Pressure at Air Stripper Transfer Pump (psi)	Pressure Prior to Inline Filter #2 (psi)	Pressure Post Inline Filter #2 (psi)	Pressure Before LGAC Vessel (psi)	Pressure after LGAC Vessel (psi)	Air Stripper Differential Pressure (in H2O)	Air Stripper Air Flow Rate (scfm)	Air Stripper Effluent PID (ppm)	
2/25/2020	12:30	---	---	---	---	---	---	---	---	---	---	---	---	
2/25/2020	12:45	17.5	---	---	---	---	---	---	---	---	---	---	---	
2/25/2020	16:00	---	---	---	---	---	---	---	---	---	---	---	---	

Table 3c
System Operation - Well Field G, Short-Term Test
 Project No. PNR0697

Date	Time	Time between flow readings (min)	General								DPE - Vapor Phase Remediation System						DPE - VPGAC System					
			System Operating	Well Field Operating (E, D, and/or G)	Totalizer Reading (gal)	Instantaneous Flow (gpm)	Average Flow (gpm)	DPE Blower hour meter (hrs)	Air Stripper Blower Hour Meter (hrs)	Influent PID (ppm)	Blower System #1						Temperature after heat exchanger # (F)	Pressure before VGAC #1 (in Hg)	Pressure After VGAC #1 (in Hg)	PID Before VGAC #1 (ppm)	Pressure After VGAC #2 (in Hg)	Effluent PID (ppm)
											Vacuum at KO (before filter) (in HG)	Vacuum after Inline Filter (in Hg)	Influent PID Reading Blower (ppm)	Air Temperature after DPE Blower (°F)	Pressure after DPE Blower (in Hg)	Flow Rate (scfm)						
2/26/2020	15:31	1411	Yes	G	11182.5	0	-6.3	2618.3	5858.7	---	18.0	20	---	325	---	---	60	2.30	1.50	10.5	0.32	1.2
2/26/2020	17:55	144	Yes	G	12570.3	16.025	79.1	2620.7	5861.1	---	17.5	19	---	325	---	---	60	2.26	1.50	10.9	0.26	1.3
2/27/2020	7:03	788	Yes	G	16926.5	14.513	5.5	2633.7	5874.2	---	16.5	18	---	310	---	---	50	3.4	1.06	9.0	0.26	1.2
2/27/2020	11:27	264	Yes	G	18250.2	0	5.0	2638.2	5878.5	---	17.0	18.5	---	290	---	---	60	2.90	1.16	11.1	0.26	2.8

Notes:

Data presented in this table was collected during the short-term test of well field E.

Acronyms:

- hrs- hours
- min- minute
- gal- gallon
- gpm- gallon per minute
- ppm- parts per million
- in HG- inches mercury
- F- Farenheit
- scfm- standard cubic feet per minute
- psi- pounds per square inch
- DPE- Dual Phase Extraction System
- VGAC- Vapor phase granular activated carbon
- LGAC- Liquid phase granular activated carbon
- EQ- equalization
- "---"- data not collected

Table 3c
System Operation - Well Field G, Short-Term Test
 Project No. PNR0697

Date	Time	Treatment System											Notes	
		Pressure at KO #1 Transfer Pump (psi)	Pressure at EQ tank Transfer Pump (psi)	Pressure Prior to Inline Filter (psi)	Pressure Post Inline Filter #1 (psi)	Pressure at Air Stripper Transfer Pump (psi)	Pressure Prior to Inline Filter #2 (psi)	Pressure Post Inline Filter #2 (psi)	Pressure Before LGAC Vessel (psi)	Pressure after LGAC Vessel (psi)	Air Stripper Differential Pressure (in H2O)	Air Stripper Air Flow Rate (scfm)		Air Stripper Effluent PID (ppm)
2/26/2020	15:31	17.5	35	22	22	55	18	18	13	12	13.5	0	0.1	
2/26/2020	17:55	17.5	30	21	21	58	16	15	11	10	11.5	0	0.4	
2/27/2020	7:03	28.0	30	22	22	58	24	20	17	12	12	0	0.3	
2/27/2020	11:27	19.0	40	9	9	56	28	24	20	13	15	0.2	0.7	

Table 3d
System Operation - Well Field G, Long-Term Test
 Project No. PNR0697

Date	Time	Time between flow readings (min)	General								DPE - Vapor Phase Remediation System						DPE - VPGAC System					
			System Operating	Well Field Operating (E, D, and/or G)	Totalizer Reading (gal)	Instantaneous Flow (gpm)	Average Flow (gpm)	DPE Blower hour meter (hrs)	Air Stripper Blower Hour Meter (hrs)	Influent PID (ppm)	Blower System #1						Temperature after heat exchanger # (F)	Pressure before VGAC #1 (in Hg)	Pressure After VGAC #1 (in Hg)	PID Before VGAC #1 (ppm)	Pressure After VGAC #2 (in Hg)	Effluent PID (ppm)
											Vacuum at KO (before filter) (in HG)	Vacuum after Inline Filter (in Hg)	Influent PID Reading Blower (ppm)	Air Temperature after DPE Blower (°F)	Pressure after DPE Blower (in Hg)	Flow Rate (scfm)						
2/27/2020	17:31	364	Yes	G + 31E	19480.6	17.54	3.4	2641.7	5882.1	---	11.5	13.0	---	245	5.12	---	60	3.26	1.74	6.5	0.40	1.9
2/28/2020	7:00	809	Yes	G	23179.7	14.251	4.6	2655.2	5895.6	---	11.0	13.0	---	245	5.28	---	50	2.98	1.68	4.7	0.40	0.5
3/2/2020	12:55	4675	Yes	G	23908.9	17.48	0.2	2658.8	5899.0	---	---	---	---	---	---	---	---	---	---	---	---	---
3/2/2020	16:15	200	Yes	G	25458.4	16.624	7.7	2662.1	5902.1	---	16.0	18.5	---	275	3.88	---	60	2.12	1.46	9.6	0.26	0.4
3/3/2020	10:43	1108	Yes	G	30400.2	4.507	4.5	2680.6	5920.6	---	15.5	17.0	---	280	4.16	---	65	2.84	1.48	10.1	0.34	1.6
3/3/2020	14:00	197	Yes	G	31597.0	9.627	6.1	2684.3	5924.3	---	15.0	17.0	---	285	4.04	---	65	2.70	1.52	8.6	0.34	1.3
3/3/2020	16:42	162	Yes	G	32304.0	10.224	4.4	2686.6	5926.5	---	15.0	17.5	---	285	3.66	---	60	2.48	1.42	10.3	0.32	1.6
3/3/2020	18:03	81	Yes	G	32806.6	6.988	6.2	2688.0	5928.0	---	15.0	16.5	---	285	4.32	---	60	2.82	1.36		0.34	
3/4/2020	13:31	1168	Yes	G	38286.0	10.686	4.7	2707.4	5947.4	---	14.5	16.5	---	275	4.7	---	65	3.20	1.48	7.7	0.34	0.2
3/4/2020	14:40	69	No	G	38495.7	---	3.0	2708.0	5948.2	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

Data presented in this table was collected during the short-term test of well field E.

Acronyms:

- hrs- hours
- min- minute
- gal- gallon
- gpm- gallon per minute
- ppm- parts per million
- in HG- inches mercury
- F- Farenheit
- scfm- standard cubic feet per minute
- psi- pounds per square inch
- DPE- Dual Phase Extraction System
- VGAC- Vapor phase granular activated carbon
- LGAC- Liquid phase granular activated carbon
- EQ- equalization
- "---"- data not collected

Table 3d
System Operation - Well Field G, Long-Term Test
 Project No. PNR0697

Date	Time	Treatment System												Notes
		Pressure at KO #1 Transfer Pump (psi)	Pressure at EQ tank Transfer Pump (psi)	Pressure Prior to Inline Filter (psi)	Pressure Post Inline Filter #1 (psi)	Pressure at Air Stripper Transfer Pump (psi)	Pressure Prior to Inline Filter #2 (psi)	Pressure Post Inline Filter #2 (psi)	Pressure Before LGAC Vessel (psi)	Pressure after LGAC Vessel (psi)	Air Stripper Differential Pressure (in H2O)	Air Stripper Air Flow Rate (scfm)	Air Stripper Effluent PID (ppm)	
2/27/2020	17:31	21.0	42	7	7	58	14	14	11	11	14	0.25	0.4	
2/28/2020	7:00	21.0	42	7	7	57	16	16	11	12	17	0.2	0.7	
3/2/2020	12:55	21.0	---	---	---	---	---	---	---	---	---	---	---	
3/2/2020	16:15	21.0	40	8	8	12	13	11	11	11	17.5	0	---	
3/3/2020	10:43	21.0	42	8	8	9	10	6	6	6	13	0	3.5	
3/3/2020	14:00	21.0	41	8	8	11	7	5	8	8	12	0	0.9	
3/3/2020	16:42	21.0	40	8	8	12	14	12	10	10	15	0	5.6	
3/3/2020	18:03	21.0	40	8	8	14	14	12	11	11	18	0	---	
3/4/2020	13:31	21.0	40	7	7	18	18	18	16	12	16.5	0	0	
3/4/2020	14:40	---	---	---	---	---	---	---	---	---	---	---	---	

Table 4a
Well Field E Short-Term Test Pressure and Depth to Water Manual Readings
 Project No. PNR0697

Well ID	Units	Time (hr)					
		2/24/2020			2/25/2020		
		Pre Test	14:49	17:31	7:31	10:18	13:57
Well ID: P-1A¹		Pre Test			Post Test		
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---
Depth to Water	ft	3.22	3.23	3.24	3.24	3.27	3.24
Well ID: CDM-20¹							
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---
Depth to Water	ft	3.37	3.35	3.33	3.39	3.39	3.38
Well ID: AGI-05¹							
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---
Depth to Water	ft	2.81	2.89	2.89	2.95	2.91	2.99
Well ID: RW-11-G²							
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---
Well ID: RW-19-G²							
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---
Well ID: RW-26-G²							
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---
Well ID: RW-34-D²							
Pressure	inH2O	---	0.0	0.0	0.0	0.0	---

Notes

- 1) Monitoring Well
- 2) Non-Operating Recovery Wells

Acronyms

- inH2O - inch of water
- ft - feet

Table 4b
Well Field D Short-Term Test Pressure and Depth to water Manual Readings
 Project No. PNR0697

Well ID	Units	Time (hr)			
		2/25/2020			
		Pre Test	13:58	1658	Post Test
Well ID: HS-5 (AGI-15)¹		Pre Test			Post Test
Pressure	inH2O	---	-3.0	0.0	---
Depth to Water	ft	2.60	2.98	3.31	3.13
Well ID: AGI-19¹					
Pressure	inH2O	---	0.0	0.0	---
Depth to Water	ft	3.19	4.01	4.43	3.79
Well ID: AGI-05¹					
Pressure	inH2O	---	0.0	0.0	---
Depth to Water	ft	2.91	2.99	3.14	3.1
Well ID: RW-21-E²					
Pressure	inH2O	---	0.0	0.0	---
Well ID: RW-24-E²					
Pressure	inH2O	---	0.0	0.0	---
Well ID: RW-38-E²					
Pressure	inH2O	---	0.0	0.0	---

Notes

- 1) Monitoring Well
- 2) Non-Operating Recovery Wells

Acronyms

- inH2O - inch of water
- ft - feet

Table 4c
Well Field G Short-Term Test Pressure and Depth to Water Manual Readings
 Project No. PNR0697

Well ID	Units	Time (hr)					Notes
		2/26/2020			2/27/2020		
		7:38	13:33	17:12	7:54	12:38	
Well ID: (MW-4F) ¹		Pre Test			Post Test		
Pressure	inH2O	---	0.0	0.0	0.0	---	Directly adjacent to RW-4-F.
Depth to Water	ft	3.27	3.3	3.37	3.55	3.55	
Well ID: P-1A ¹							
Pressure	inH2O	---	0.0	0.0	0.0	---	
Depth to Water	in H2O	3.30	3.36	3.37	3.59	3.52	
Well ID: LM-2 ¹							
Pressure	inH2O	---	0.0	0.0	0.0	---	
Depth to Water	ft	2.75	2.79	3.03	3.43	3.4	
Well ID: RW-20-E ²							
Pressure	inH2O	---	0.0	0.0	0.0	---	
Well ID: RW-31-E ²							
Pressure	inH2O	---	0.0	0.0	0.0	---	
Well ID: RW-32-E ²							
Pressure	inH2O	---	0.0	0.0	0.0	---	
Well ID: RW-39-E ²							
Pressure	inH2O	---	0.0	locked	0.0	---	

Notes

- 1) Monitoring Well
- 2) Non-Operating Recovery Wells

Acronyms

- inH2O - inch of water
- ft - feet

Table 4d
Well Field G Long-Term Test Pressure and Depth to Water Manual Readings
 Project No. PNR0697

Well ID	Units	Time (hr)									
		2/27/2020		2/28/2020	3/2/2020		3/3/2020		3/4/2020		3/4/2020
		13:24	15:22	8:47	12:19	14:30	11:07	14:32	9:06	13:33	15:06
Well ID: CDM-20											
Pressure	inH2O	---	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	---
Depth to Water	ft	3.40	3.41	3.42	3.52	3.48	3.52	3.52	3.64	3.55	3.58
Well ID: AGI-05											
Pressure	inH2O	---	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	---
Depth to Water	ft	3.00	3.01	3.00	3.01	3.02	3.03	3.02	3.06	3.05	3.06
Well ID: SP-6											
Pressure	inH2O	---	---	---	---	0.0	0.0	0.0	---	0.0	---
Depth to Water	ft	3.35	3.30	3.28	3.22	3.23	3.24	3.24	---	3.23	3.29
Well ID: AGI-19											
Pressure	inH2O	---	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	---
Depth to Water	ft	3.30	3.36	3.24	3.24	3.23	3.27	3.27	3.34	3.34	3.35
Well ID: P-1A											
Pressure	inH2O	---	0.0	0.0	---	0.0	---	0.0	---	0.0	---
Depth to Water	ft	3.55	3.53	3.68	3.54	3.61	---	3.83	---	4	3.95
Well ID: LM-2											
Pressure	inH2O	---	0.0	0.0	---	0.0	-6.0	0.0	0.0	0.0	---
Depth to Water	ft	3.40	3.35	3.59	3.10	3.33	3.73	3.73	3.92	3.95	3.79

Notes

- 1) Monitoring Well
- 2) Non-Operating Recovery Wells

Acronyms

- inH2O - inch of water
- ft - feet

Table 5
Influent Water Sample Results
 Project No. PNR0697

Result Parameter	Site Specific Cleanup Level	Well Field E Short-2/25/2020 (µg/L)	Well Field D Short-2/25/2020 (ug/L)	Well Field G Short-2/26/2020 (µg/L)	Well Field G Long-2/28/2020 (µg/L)	Well Field G Long-3/2/2020 (µg/L)	Well Field G Long-3/4/2020 (µg/L)
VOCs (8260D)							
1,1,1-Trichloroethane	227	< 3.0 U	2.1 J	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
1,1-Dichloroethane	52,000	0.42 J	3.5 J	1.5 J	1.1 J	1.4 J	1.0 J
1,2,4-Trimethylbenzene	26,000	1.3 J	9.7 J	0.82 J	0.76 J	0.77 J	0.79 J
1,2-Dichlorobenzene	---	3.6 J	13 J	0.77 J	0.79 J	0.59 J	< 2.0 U
1,3,5-Trimethylbenzene	---	< 3.0 U	2.9 J	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
1,3-Dichlorobenzene	---	0.29 J	0.63 J	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
1,4-Dichlorobenzene	4.86	2.7 J	4.4 J	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U
Chlorobenzene	---	16 J	8.7 J	< 2.0 U	2.6 J	< 2.0 U	< 2.0 U
Chloroethane	---	< 20 U	< 5.0 U	1.7 J	1.1 J	1.5 J	< 5.0 U
Cis-1,2-Dichloroethene	5,200	< 3.0 U	38 J	5.7 J	6.0 J	7.5 J	6.2 J
Ethylbenzene	6,910	< 3.0 U	0.74 J	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
m, p-Xylene	26,000	1.4 J	4.1 J	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
Naphthalene	4,940	4.1 J	6.1 J	< 4.0 U	< 4.0 U	< 4.0 U	< 4.0 U
o-Xylene	---	1.3 J	3.2 J	< 2.0 U	0.64 J	< 2.0 U	< 2.0 U
Tetrachloroethene	3.3	< 3.0 U	2.4 J	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
Toluene	15,000	0.7 J	9.6 J	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Trichloroethene	30	< 3.0 U	1.2 J	< 3.0 U	< 3.0 U	< 3.0 U	< 3.0 U
Vinyl Chloride	2.4	< 1.0 U	0.41 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
SVOCs (8270E)							
1,2-Dichlorobenzene	---	2.2 J	7.7 J	0.46 J	< 6.0 U	< 120 U	< 110 U
1,4-Dichlorobenzene	4.86	1.5 J	2.5 J	0.14 J	< 4.0 U	< 80 U	< 76 U
1-Methylnaphthalene	---	0.91 J	1.9 U	< 1.1 U	< 10 U	< 200 U	< 190 U
2,4-Dimethylphenol	---	< 40 U	2.7 J	< 4.3 U	< 40 U	< 800 U	< 760 U
2-Methylnaphthalene	22.5	0.53 J	1.5 U	< 0.43 U	< 4.0 U	< 80 U	< 76 U
2-Methylphenol	---	3.8 J	4.6 J	< 0.65 U	1.6 J	< 120 U	< 110 U
3,4-Methylphenol	---	2.6 J	33 J	1.7 J	12 J	< 160 U	< 150 U
4,6-Dinitro-2-Methylphenol	---	< 50 U	< 53 J	< 5.4 U	< 50 U	< 126 U	< 950 U
4-Nitrophenol	---	< 750 U	< 160 J	< 810 U	< 750 U	< 3000 U	< 2900 U
Acenaphthylene	---	< 50 U	< 11 U	< 54 U	3.5 J	< 80 U	< 76 U
Bis (2-ethylhexyl) pthalate	2.2	< 150 U	< 160 U	0.96 J	< 150 U	< 3000 U	< 2900 U
Hexachlorobenzene	---	< 6.0 U	< 6.3 J	< 0.65 U	< 6.0 U	< 127 U	< 117 U
Naphthalene	4,940	3.0 J	11 J	< 0.43 U	< 4.0 U	< 80 U	< 76 U
Volatile Petroleum Products (NWTPH-GX)							
Gasoline	1,000	420	580	540	530	460	750
Semi Volatile Petroleum Products (NWTPH-DX)							
#2 Diesel	1,000	17000	11000	22000	19000	20000	25000
Motor Oil	1,000	7100	4300	7200	6400	6500	8900

Notes
 Detections are in bold font
 Analytes not detected are presented as <detection limit
 Highlighted results indicate a detection above the site-specific cleanup level.

Acronyms
 --- No site-specific cleanup level
 µg/L- microgram per L
 J- Estimated value. The analyte was present but less than reporting limit
 U- The analyte is not detected above the detection limit.
 VOC- volatile organic compound
 sVOC- semi-volatile organic compound

Table 6
Effluent Water Sample Results

Result Parameter	IWW Permit Requirements (µg/L)	Effluent 1-030320		EffComp-0304020	
		3/3/2020 (µg/L)		3/4/2020 (µg/L)	
VOCs (624.1)					
1,1,1-Trichloroethane		< 0.39	U	-	-
1,1,2,2-Tetrachloroethane		< 0.52	U	-	-
1,1,2-Trichloroethane		< 0.24	U	-	-
1,1-Dichloroethane		< 0.22	U	-	-
1,1-Dichloroethene		< 0.78	U	-	-
1,2-Dichlorobenzene		< 0.46	U	-	-
1,2-Dichloroethane		< 0.53	U	-	-
1,2-Dichloropropane		< 0.18	U	-	-
1,3-Dichlorobenzene		< 0.18	U	-	-
1,4-Dichlorobenzene		< 0.98	U	-	-
Benzene		< 0.53	U	-	-
Bromoform		< 0.56	U	-	-
Carbon Tetrachloride		< 0.30	U	-	-
Chlorobenzene		< 0.44	U	-	-
Chlorodibromomethane		< 0.50	U	-	-
Chloroform		< 0.50	U	-	-
Chloromethane		< 5.4	U	-	-
Dichlorobromomethane		< 0.14	U	-	-
cis-1,3-Dichloropropene		<0.20	U	-	-
trans-1,3-Dichloropropene		<0.16	U	-	-
Ethyl Chloride		< 1.1	U	-	-
Ethylbenzene		< 0.50	U	-	-
m&p-Xylenes		< 0.75	U	-	-
Methyl Bromide		< 1.1	U	-	-
Methylene Chloride (DCM)		< 1.4	U	-	-
o-Xylene		< 0.39	U	-	-
Tetrachloroethene (PCE)		< 0.41	U	-	-
Toluene		< 0.39	U	-	-
trans-1,2-Dichloroethene		< 0.39	U	-	-
Trichloroethene (TCE)		< 0.85	U	-	-
Trichlorofluoromethane		<0.63	U	-	-
Vinyl Chloride		< 0.22	U	-	-
SVOCs (625.1)					
1,2,4-Trichlorobenzene		-	-	< 3.8	U
1,2-Dichlorobenzene		-	-	< 4.7	U
1,3-Dichlorobenzene		-	-	< 3.8	U
1,4-Dichlorobenzene		-	-	< 3.8	U
1,2-Diphenylhydrazine (as Azobenzene)		-	-	<5.7	U
2,4,5-Trichlorophenol		-	-	< 9.5	U
2,4,6-Trichlorophenol		-	-	< 9.5	U
2,4-Dimethylphenol		-	-	< 15	U
2,4-Dinitrophenol		-	-	< 150	U

Table 6
Effluent Water Sample Results

Result Parameter	IWW Permit	Effluent 1-030320	EffComp-0304020	
	Requirements (µg/L)	3/3/2020 (µg/L)	3/4/2020 (µg/L)	
2,4-Dinitrotoluene		-	< 9.5	U
2,6-Dinitrotoluene		-	< 3.8	U
2-Chloronaphthalene		-	< 2.8	U
2-Chlorophenol		-	< 4.7	U
2-Methyl-4,6-Dinitrophenol		-	< 25	U
2-Methylphenol (o-cresol)		-	< 4.7	U
2-Nitrophenol		-	< 14	U
3,3'-Dichlorobenzidine		-	<59	U
4-Bromophenyl phenyl ether		-	<5.7	U
4-Chloro-3-methylphenol (p-Chlorocresol)		-	< 12	U
4-Chlorophenyl Phenyl Ether		-	< 4.7	U
4-Nitrophenol		-	< 160	U
Acenaphthene		-	< 4.7	U
Acenaphthylene		-	< 5.7	U
Anthracene		-	< 4.7	U
Benz[a]anthracene		-	< 4.7	U
Benzo(a)pyrene		-	< 3.8	U
Benzo(g,h,i)perylene		-	< 3.8	U
Benzo[b]fluoranthene		-	< 3.8	U
Benzo[k]fluoranthene		-	< 4.7	U
Benzyl butyl phthalate		-	< 88	U
Bis(2-Chloroethoxy)Methane		-	< 4.7	U
Bis(2-Chloroethyl) Ether		-	< 2.8	U
Bis(2-Chloroisopropyl) ether		-	<5.7	U
Bis(2-ethylhexyl) phthalate		-	< 82	U
Carbazole		-	< 9.5	U
Chrysene		-	< 3.8	U
Decane		-	< 34	U
Dibenz[a,h]anthracene		-	< 6.6	U
Dibenzofuran		-	< 4.7	U
Dibutyl phthalate		-	< 42	U
Diethyl phthalate		-	< 14	U
Dimethyl phthalate		-	< 5.7	U
Di-n-octyl phthalate		-	16	J
Fluoranthene		-	< 5.7	U
Fluorene		-	< 4.7	U
Hexachlorobenzene		-	<3.8	U
Hexachlorobutadiene (HCBD)		-	< 5.7	U
Hexachlorocyclopentadiene		-	<9.5	U
Hexachloroethane		-	< 4.7	U
Indeno(1,2,3-cd)pyrene		-	< 12	U
Isophorone		-	< 9.5	U
Naphthalene		-	< 3.8	U

Table 6
Effluent Water Sample Results

Result Parameter	IWW Permit Requirements (µg/L)	Effluent 1-030320		EffComp-0304020	
		3/3/2020 (µg/L)		3/4/2020 (µg/L)	
Nitrobenzene		-	-	< 3.8	U
n-Nitrosodimethylamine (NDMA)		-	-	< 25	U
n-Nitrosodiphenylamine		-	-	< 6.6	U
n-Nitrosodipropylamine		-	-	< 5.7	U
n-OCTADECANE		-	-	< 19	U
Pentachlorophenol		-	-	< 48	U
Phenanthrene		-	-	< 2.8	U
Phenol		-	-	< 34	U
Pyrene		-	-	< 3.8	U
Total Toxic Organics (VOCs and SVOCs)	2.13			1.07	
Petroleum Products					
Oil & Grease (HEM)			10,700	-	-
Oil & Grease (HEM)(Polar)			10,700	-	-
Total Petroleum Hydrocarbons	50,000		10,700		
General Chemistry					
pH			7.3	J	-
Metals (200.7 Rev 4.4 - ICP)					
Arsenic	0.1	-	-	< 0.0072	U
Cadmium	0.25	-	-	< 0.00050	U
Chromium	1	-	-	< 0.0033	U
Copper	1	-	-	< 0.014	U
Lead	0.4	-	-	0.014	J
Nickel	1	-	-	0.0086	J
Zinc	2	-	-	0.014	J
Metals (245.1 - CVAA)					
Mercury	0.05	-	-	< 0.00015	U

Notes

The effluent composite sample was not analyzed for VOCs, pH, or Oil and Grease.

The effluent grab sample was not analyzed for metals or sVOCs.

Detections are in bold font

Analytes not detected are presented as <detection limit

Acronyms

'-' No site-specific cleanup level

µg/L- microgram per L

IWW - Industrial Wastewater

J- Estimated value. The analyte was present but less than reporting limit

U- The analyte is not detected above the detection limit.

VOC- volatile organic compound

sVOC- semi-volatile organic compound

Table 7
Vapor Sample Results
 Project No. PNR0697

Result Parameter	Samples Taken Before VGAC Vessel					Between VGAC Vessels	Effluent
	E Short-Term Test	D Short-Term Test	G Short-Term Test	G Long-Term Test	G Long-Term Test	G Long-Term Test	E Short-Term Test
	2/24/2020 (µg/m3)	2/25/2020 (µg/m3)	2/26/2020 (µg/m3)	2/28/2020 (µg/m3)	3/2/2020 (µg/m3)	3/3/2020 (µg/m3)	2/24/2020 (µg/m3)
TPH-Gasoline (TO-3)							
TPH as Gasoline	<1,300	110,000	250,000	<1,300	61,000	<1,300	<1,200
VOCs (TO-15)							
1,1,1-Trichloroethane	220	780	43	63	110	25	<2.3
1,1,1,2,2-Tetrachloroethane	<1.4	<1.9	<2.1	<1.1	<1.1	<0.30	<2.5
1,1,2-Trichloroethane	<0.99	<1.4	<1.6	<0.79	<0.77	<0.22	<1.8
1,1,2-Trichlorotrifluoroethane	<1.4	<2.0	<2.2	<1.1	<1.1	<0.31	<2.6
1,1-Dichloroethane	110	340	360	160	270	60	<2.7
1,1-Dichloroethene	<1.4	27	<2.1	<1.1	<1.1	<0.30	<2.5
1,2,4-Trichlorobenzene	<2.4	<3.4	<3.7	<1.9	<1.9	<0.54	<4.5
1,2,4-Trimethylbenzene	160	390	120	61	91	<0.30	<2.5
1,2-Dibromoethane	<1.1	<1.6	<1.8	<0.91	<0.89	<0.26	<2.1
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	<1.5	<2.2	<2.4	<1.2	<1.2	<0.35	<2.9
1,2-Dichlorobenzene	94	180	50	26	29	<0.33	<2.7
1,2-Dichloroethane	<1.1	<1.5	<1.7	<0.86	<0.84	<0.24	<2.0
1,2-Dichloropropane	<1.2	<1.7	<1.9	<0.96	<0.94	<0.27	<2.3
1,3,5-Trimethylbenzene	54	170	25	21	28	<0.32	<2.6
1,3-Butadiene	<1.6	<2.3	<2.5	<1.3	<1.3	<0.36	<3.0
1,3-Dichlorobenzene	11	14	<2.3	<1.2	<1.1	<0.33	<2.7
1,4-Dichlorobenzene	84	84	25	17	16	<0.34	<2.8
1,4-Dioxane	<1.2	<1.7	<1.8	<0.92	<0.90	<0.26	<2.2
2,2,4-Trimethylpentane (Isooctane)	<1.5	<2.1	<2.3	<1.2	<1.1	<0.33	<2.7
2-Butanone (MEK)	<2.0	100	140	250	1100	<0.45	<3.8
2-Hexanone	<1.2	<1.7	26	31	81	<0.27	<2.3
2-Propanol (Isopropyl Alcohol)	<4.0	<5.8	<6.3	<3.2	<3.1	<0.91	<7.5
3-Chloro-1-propene (Allyl Chloride)	<1.3	<1.9	<2.1	<1.1	<1.0	<0.30	<2.5
4-Ethyltoluene	15	30	<2.4	<1.2	8.2	<0.35	<2.9
4-Methyl-2-pentanone	<1.3	<1.9	<2.1	<1.1	<1.0	<0.30	<2.5
Acetone	<22	210	<35	<18	290	<4.9	<41
Benzene	38	40	24	22	16	<0.32	58
Benzyl Chloride	<2.2	<3.1	<3.5	<1.8	<1.7	<0.49	<4.1
Bromodichloromethane	<1.4	<2.0	<2.2	<1.1	<1.1	<0.32	<2.6
Bromoform	<2.0	<2.9	<3.2	<1.6	<1.6	<0.45	<3.8
Bromomethane	<1.4	<1.9	<2.1	<1.1	<1.1	<0.30	<2.5
Carbon Disulfide	<2.9	<4.2	<4.6	<2.3	<2.3	<0.66	<5.5
Carbon Tetrachloride	<1.4	<1.9	<2.1	<1.1	<1.1	<0.30	<2.5
Chlorobenzene	1500	530	70	310	40	<0.29	<2.4
Chloroethane	220	130	870	340	500	120	<2.3
Chloroform	<1.3	<1.9	<2.0	<1.0	<1.0	<0.29	<2.4
Chloromethane	<1.6	<2.3	<2.5	<1.3	<1.2	<0.35	<2.9
cis-1,2-Dichloroethene	550	2800	700	650	1100	150	<2.6
cis-1,3-Dichloropropene	<1.5	<2.2	<2.4	<1.2	<1.2	<0.34	<2.8
Cumene	25	36	25	13	22	<0.32	67
Cyclohexane	22	55	<4.3	<2.2	<2.1	<0.62	<5.1
Dibromochloromethane	<1.3	<1.8	<2.0	<1.0	<1.0	<0.29	<2.4
Dichlorodifluoromethane (CFC 12)	<1.6	<2.3	<2.5	<1.3	<1.2	2.3	<3.0
Dichloromethane (Methylene Chloride)	<2.8	<3.9	<4.3	<2.2	<2.1	<0.62	<5.1
Ethanol	<6.8	<9.7	<11	<5.4	100	<1.5	<13
Ethylbenzene	57	92	27	22	17	<0.31	<2.6
Hexachlorobutadiene	<2.0	<2.9	<3.2	<1.6	<1.6	<0.45	<3.8
Hexane	15	110	56	12	15	8.3	<3.8
m,p-Xylenes	330	440	33	100	24	<0.58	<4.8
Methyl tert-Butyl Ether	<1.2	<1.7	<1.8	<0.92	<0.9	<0.26	<2.2
n-Heptane	10	39	39	10	14	3.7	<2.9
n-Propylbenzene	39	74	47	23	41	<0.32	<2.6
o-Xylene	200	220	21	87	15	<0.32	<2.6
Styrene	<1.6	<2.3	<2.5	<1.3	<1.2	<0.35	<2.9
Tetrachloroethene	37	1600	30	14	16	<0.28	<2.4
Tetrahydrofuran (THF)	<1.2	21	54	<0.98	<0.96	18	<2.3
Toluene	280	990	79	55	61	<0.27	<2.2
trans-1,2-Dichloroethene	<1.4	15	18	8	12	<0.30	<2.5
trans-1,3-Dichloropropene	<2.0	<2.9	<3.2	<1.6	<1.6	<0.45	<3.8
Trichloroethene	34	200	20	10	13	<0.30	<2.5
Trichlorofluoromethane	<1.5	<2.1	<2.3	<1.2	<1.2	<0.33	<2.8
Vinyl Chloride	62	270	250	99	140	35	<2.0

Notes
 Detections are in bold font
 Analytes not detected are presented as <detection limit

Acronyms
 µg/m³- microgram per cubic meter
 VGAC- Vapor phase granular activated carbon
 VOC- volatile organic compound
 svOC- semi-volatile organic compound

Table 8
Mass Removal
Project No. PNR0697

Well Field	Analyte	Influent Water					Influent Vapor				Total Mass Removed (lbs) ⁴
		Concentration (ug/L)	Average Flow (gpm) ¹	Water Removed (gallons)	Mass Removal Rates (lbs/MMgal)	Mass Removed (lbs) ²	Concentration (mg/m3)	Average Flow (scfm)	Vapor Removed (cf) ³	Mass Removed (lbs) ²	
E Short-Test	Gasoline	420	5.5	7,824	3.5	0.03	1.3	150	211,500	0.02	0.04
	#2 Diesel	17,000			141.9	1.11	---			--	1.11
	Motor Oil	7,100			59.3	0.46	---			--	0.46
	VOCs (total)	32			0.3	0.0021	4.2			0.06	0.06
	sVOCs (total)	15			0.1	0.0009	---			---	0.00
D Short-Test	Gasoline	580	6.3	2,933	4.8	0.01	110	147	50,715	0.35	0.36
	#2 Diesel	11,000			91.8	0.27	---			--	0.27
	Motor Oil	4,300			35.9	0.11	---			--	0.11
	VOCs (total)	111			0.9	0.0027	10.0			0.03	0.03
	sVOCs (total)	65			0.5	0.0016	---			---	0.00
G Short-Test	Gasoline	540	4.9	7,097	4.5	0.03	250	148	213,120	3.33	3.36
	#2 Diesel	22,000			183.6	1.30	---			--	1.30
	Motor Oil	7,200			60.1	0.43	---			--	0.43
	VOCs (total)	10			0.1	0.0006	3.2			0.04	0.04
	sVOCs (total)	3.26			0.0	0.0002	---			---	0.00
G Long-Test 2/28/2020	Gasoline	530	4.2	4,930	4.4	0.02	1.3	148	173,752	0.01	0.04
	#2 Diesel	19,000			158.6	0.78	---			--	0.78
	Motor Oil	6,400			53.4	0.26	---			--	0.26
	VOCs (total)	13			0.1	0.0005	2.4			0.03	0.03
	sVOCs (total)	17			0.1	0.0007	---			---	0.00
G Long-Test 3/2/2020	Gasoline	460	4.8	9,124	3.8	0.04	61	148	281,200	1.07	1.11
	#2 Diesel	20,000			166.9	1.52	---			--	1.52
	Motor Oil	6,500			54.2	0.49	---			--	0.49
	VOCs (total)	12			0.1	0.0009	4.2			0.07	0.07
	sVOCs (total)	0			0.0	0	---			---	0.00
G Long-Test 3/4/2020	Gasoline	750	4.8	6,192	6.3	0.04	31.15	148	190,476	0.37	0.41
	#2 Diesel	25,000			208.6	1.29	---			---	1.29
	Motor Oil	8,900			74.3	0.46	---			---	0.46
	VOCs (total)	8			0.1	0.0004	3.3			0.04	0.04
	sVOCs (total)	0			0.0	0	---			---	0.00

Notes

This table provides the estimated mass removed by the DPE system during the three short-term tests and one long-term test by taking the total flow in water extracted, the calculated vapor removed, and the laboratory analytical results.

For the long term test two vapor samples were collected on 2/28/20 and 3/2/20. The vapor value used for 3/4/20 is the average of the two prior vapor concentrations collected.

Acronyms

hr- hour	scfm- standard cubic feet per minute
µg- microgram	cf- cubic feet
L- liter	m- meters
lbs- pounds	VOC- volatile organic carbon
MM gal - million gallons	sVOC- semi-volatile organic carbon
mg- milligram	---" Lab analysis not performed

Calculations

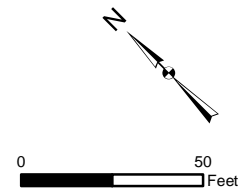
- 1) Average Flow = Total Water Removed / Total Minutes of Operation
- 2) Mass Removed = Concentration x Volume Removed
- 3) Vapor flow rate calculated based on measured pressure readings and using the "Pumping Speed vs Inlet Pressure Curve" provided in the Manufacturer Data included in page 86 of the OM Manual (CH2M Hill, 2011)
- 4) Total Mass Removed = Influent Water Mass Removed + Influent Vapor Mass Removed

FIGURES

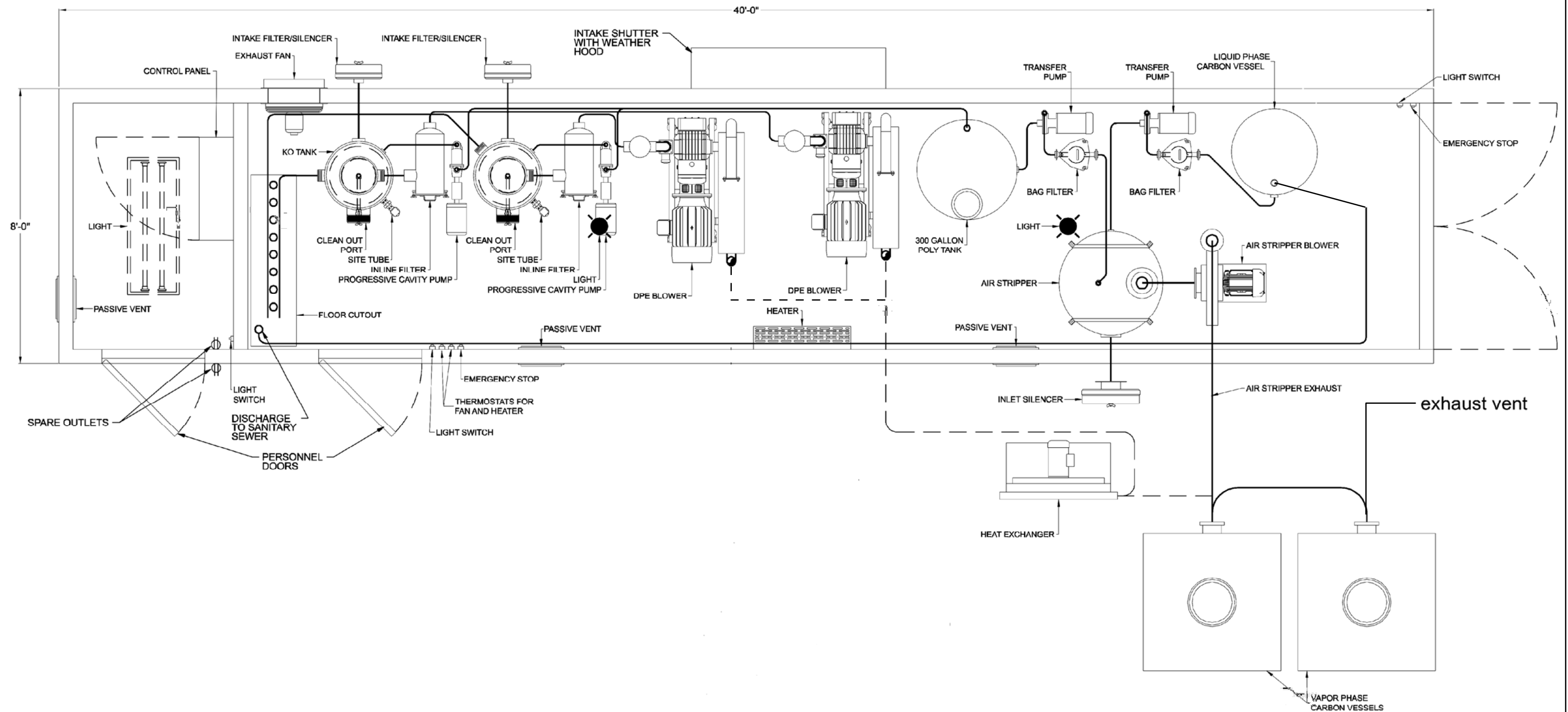


- Legend**
- *— Fence
 - +— Rail Line
 - Road
 - Tax Lot
 - ▭ Building
 - Tank

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community © 2020 Microsoft Corporation © 2020 DigitalGlobe ©CNES (2020) Distribution Airbus DS



<p>Site Map 2244 Port of Tacoma Road, Tacoma, Washington</p>	
	<p>Figure 1</p>
<p>PNR0697</p>	<p>April 2022</p>



Notes:
 Drawing is based off a records drawing of the DPE treatment system prepared by CH2Mhill on October 2008. The drawing has been updated to represent the DPE treatment system during the pilot study in 2020.

Updated Treatment System As-Built Drawing

2244 Port of Tacoma Road,
 Tacoma, Washington

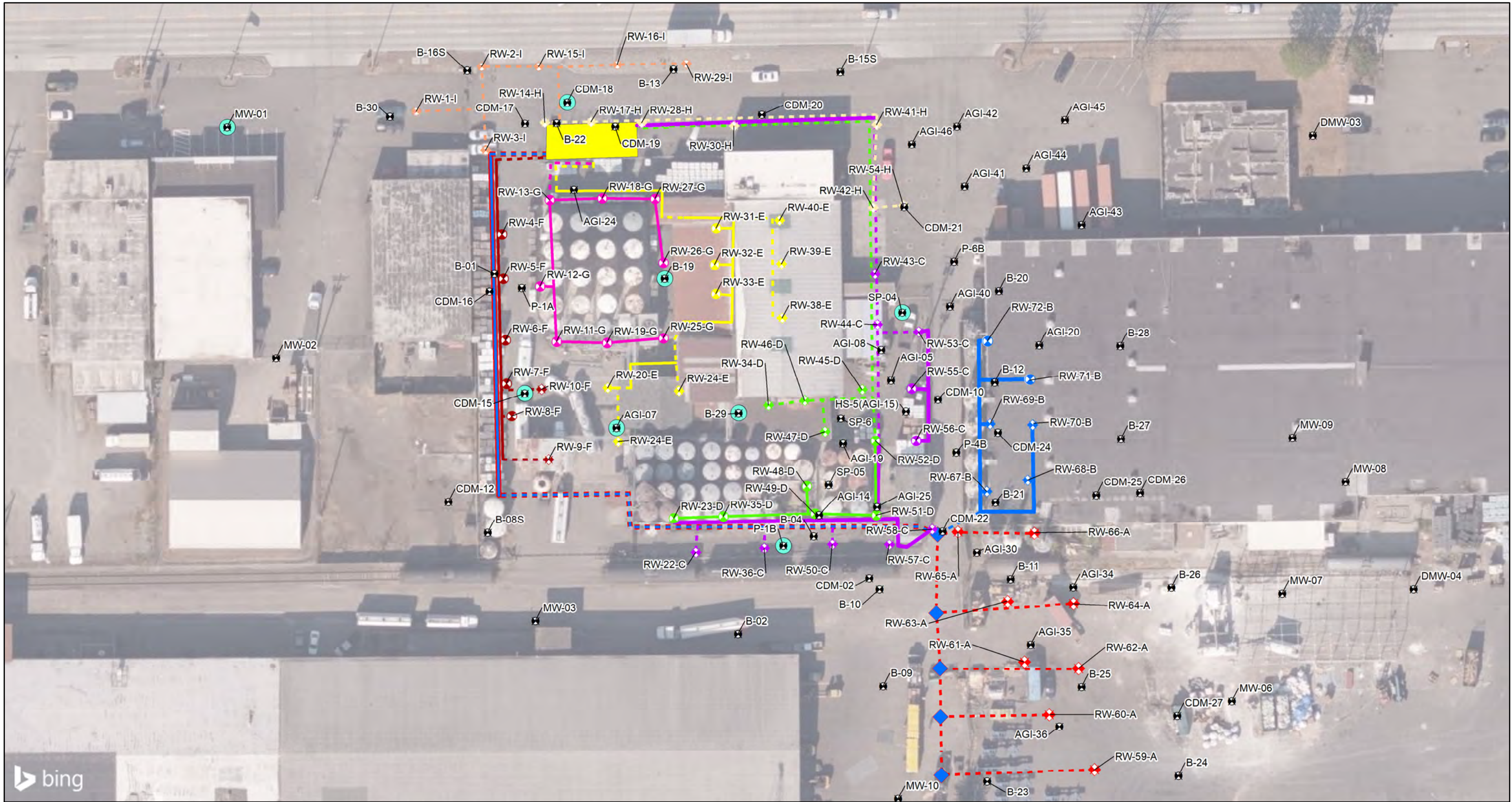
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 consultants

Figure

2

PNR0697


April 2022



Legend					
⊕	Below Grade Recovery Well, A	⊕	Above Grade Recovery Well, E	⊕	Monitoring Well Location
⊕	Above Grade Recovery Well, B	⊕	Below Grade Recovery Well, E	⊕	Transducer Location
⊕	Below Grade Recovery Well, B	⊕	Above Grade Recovery Well, F	⊕	Vault
⊕	Above Grade Recovery Well, C	⊕	Below Grade Recovery Well, F	⊕	Field A, Below
⊕	Below Grade Recovery Well, C	⊕	Above Grade Recovery Well, G	⊕	Field A/B, Below
⊕	Above Grade Recovery Well, D	⊕	Below Grade Recovery Well, H	⊕	Field A/B, Below
⊕	Below Grade Recovery Well, D	⊕	Below Grade Recovery Well, I	⊕	Field B, Above
⊕	Field E, Below	⊕	Field F, Above	⊕	Field C, Above
⊕	Field F, Below	⊕	Field G, Above	⊕	Field C, Below
⊕	Field G, Below	⊕	Field D, Above	⊕	Field D, Below
⊕	Field H, Below	⊕	Field E, Above	⊕	Field I, Below
⊕	Field I, Below	⊕	Remedial Equipment Compound		

Well Field Layout

2244 Port of Tacoma Road,
Tacoma, Washington



PNR0697









April 2022

Figure

3a

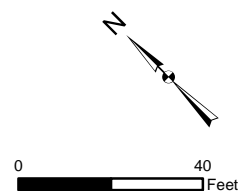


Legend

-  Operating Recovery Well (Field E)
-  Non-operating Recovery Well Used in Test (Field D)
-  Non-operating Recovery Well Used in Test (Field G)
-  Monitoring Wells Used in Test
-  Transducer Location
-  Field E, Above
-  Field E, Below
-  Remedial Equipment Compound

Notes

RW-33-E was not operated during the test



Well Field E, Short-Term Test

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Tacoma, Washington

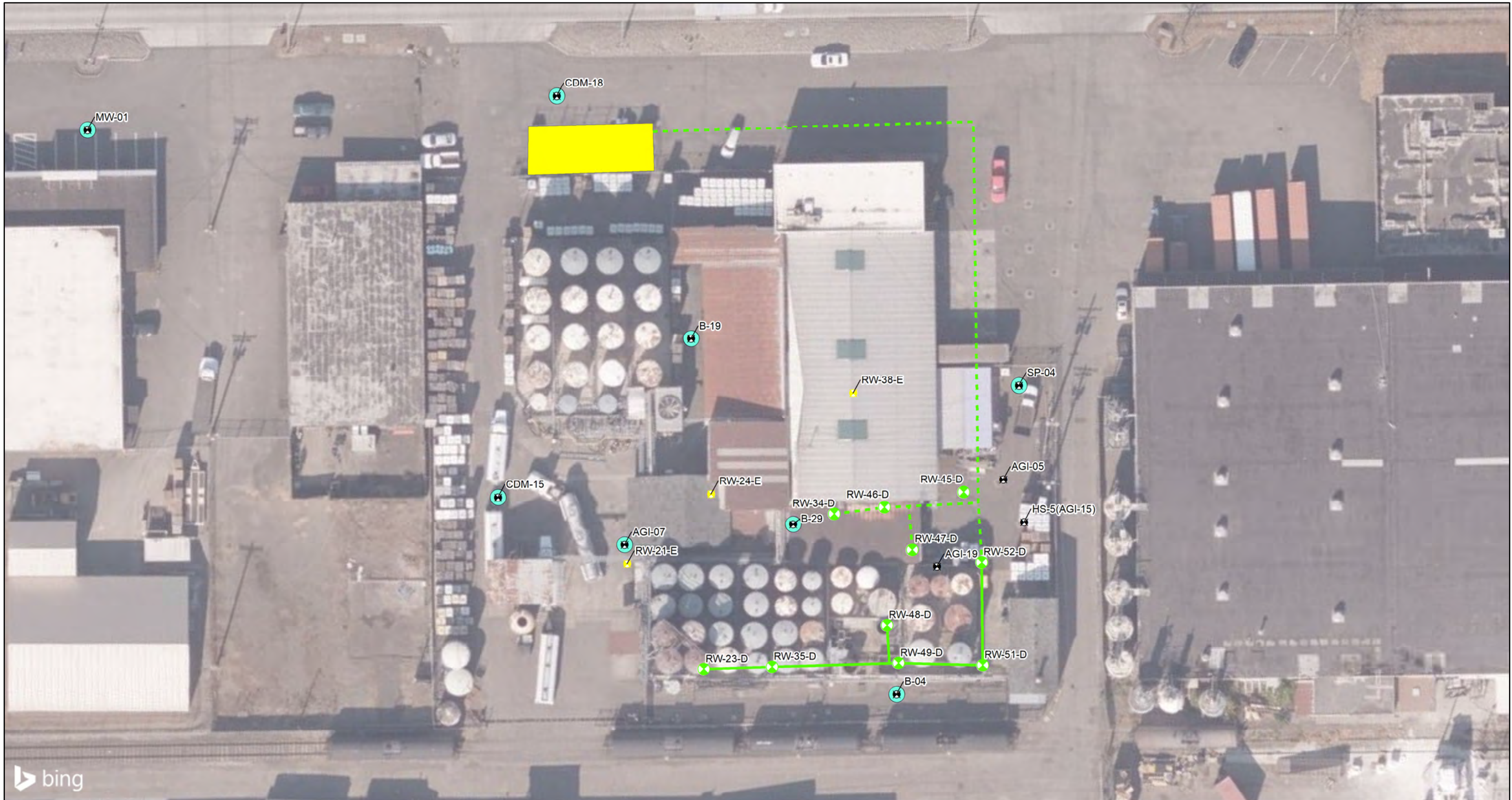
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April 2022

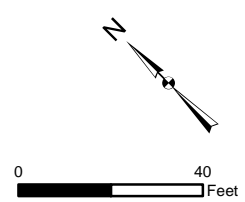
Figure

3b



Legend

- + Operating Recovery Well (Field D)
- + Non-operating Recovery Well Used in Test (Field E)
- + Monitoring Wells Used in Test
- Transducer Location
- Field D,
- - - Field D, Below
- Remedial Equipment Compound



Well Field D, Short-Term Test

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Figure

3c

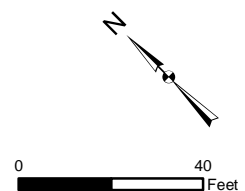
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April 2022



Legend

- Operating Recovery Well (Field G)
- ◆ Non-operating Recovery Well Used in Test (Field E)
- ◆ Monitoring Wells Used in Test
- Transducer Location
- Field G,
- - - Field G, Below
- Remedial Equipment Compound



Well Field G, Short-Term Test

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Figure

3d

PNR0697

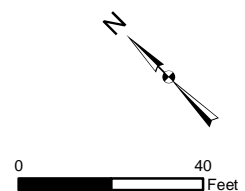
April 2022



bing

Legend

- Operating Recovery Well (Field G)
- ◆ Monitoring Wells Used in Test
- Transducer Location
- Field G,
- - - Field G, Below
- Remedial Equipment Compound



Well Field G, Long-Term Test

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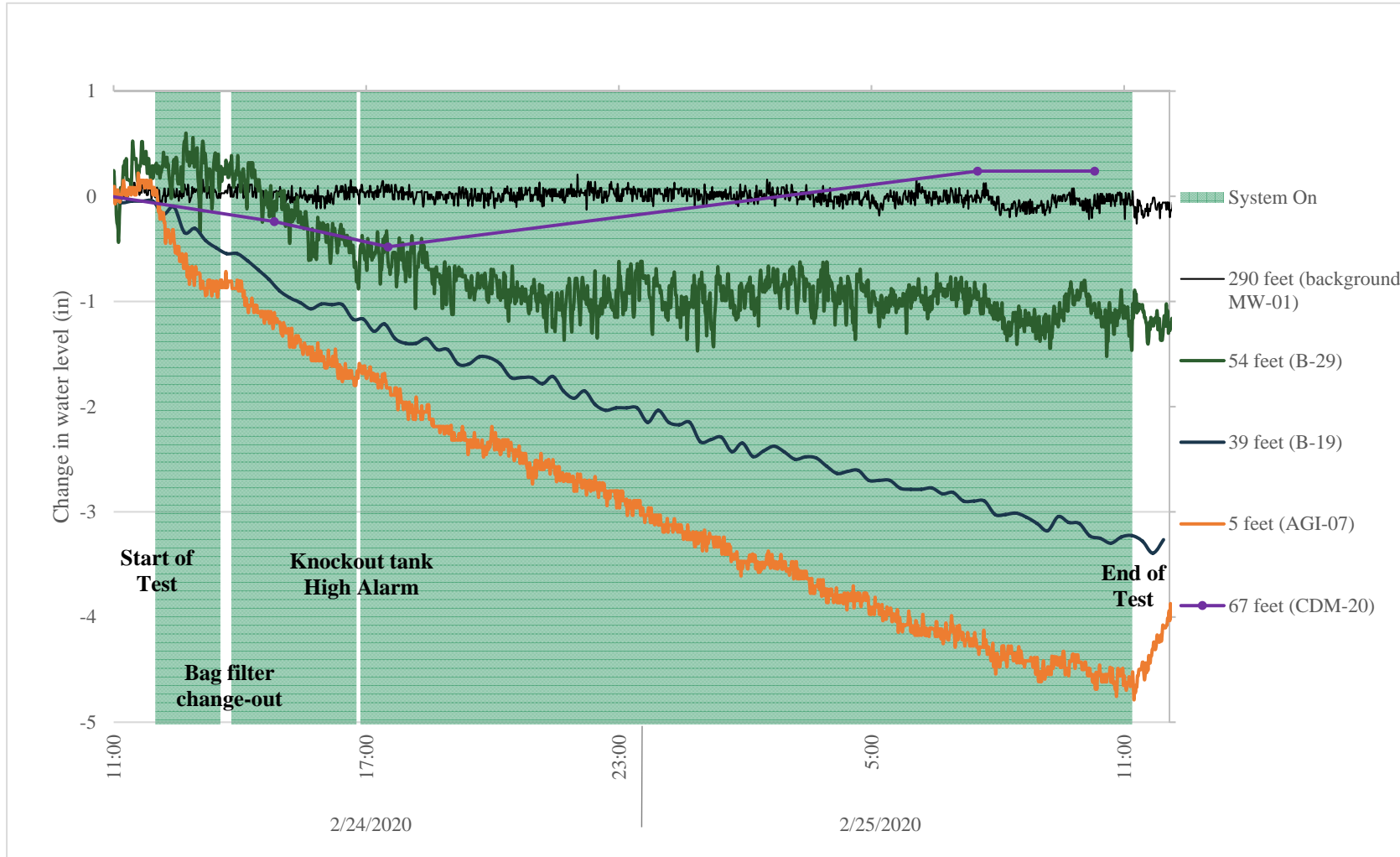
April 2022

Figure

3e

Figure 4a

Groundwater Drawdown Time-Series Graph – Well Field E, Short-Term Test



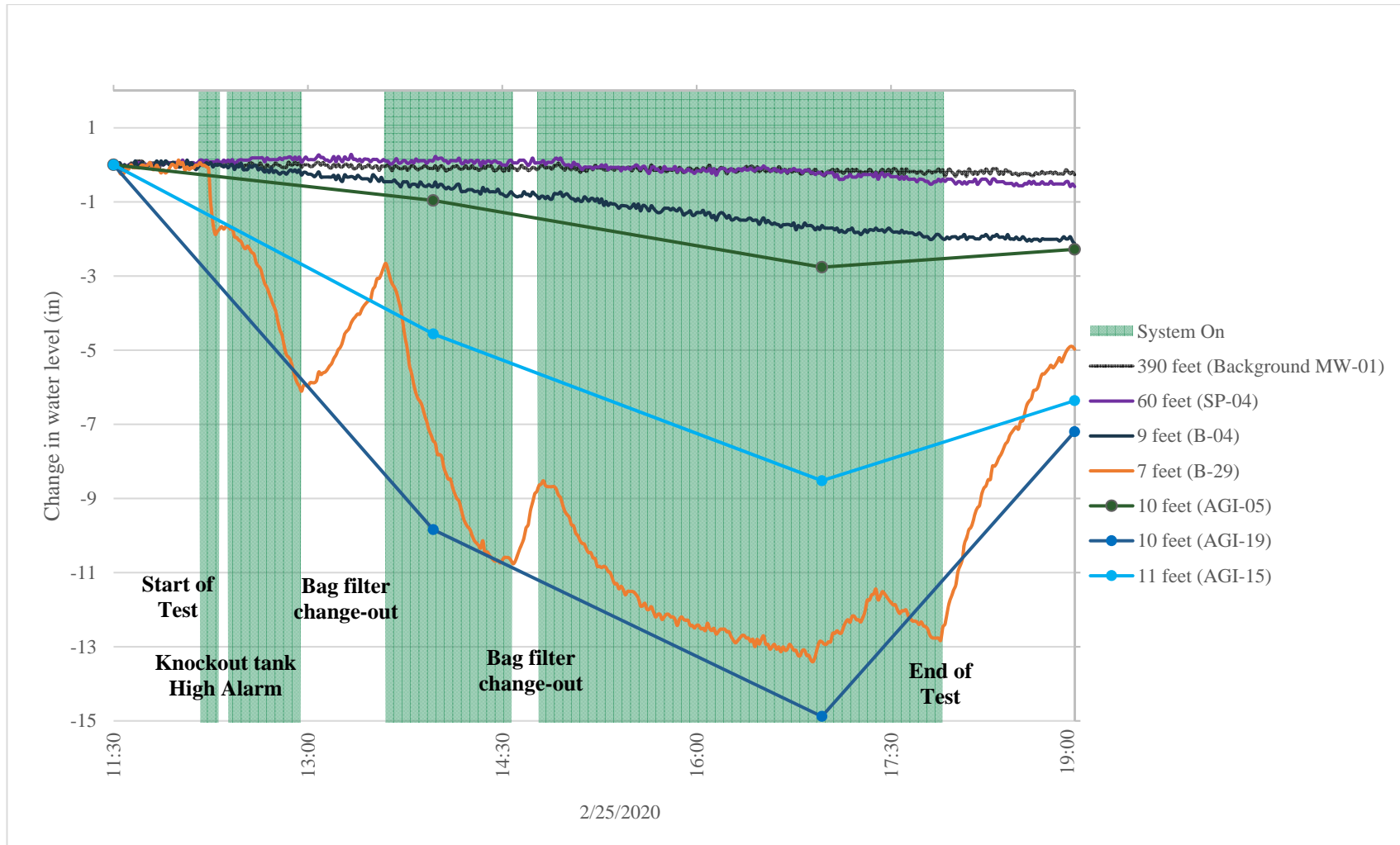
Notes:

Microdiver transducer collected readings every 15 minutes during the test

in- inch

Figure 4b

Groundwater Drawdown Time-Series Graph – Well Field D, Short-Term Test

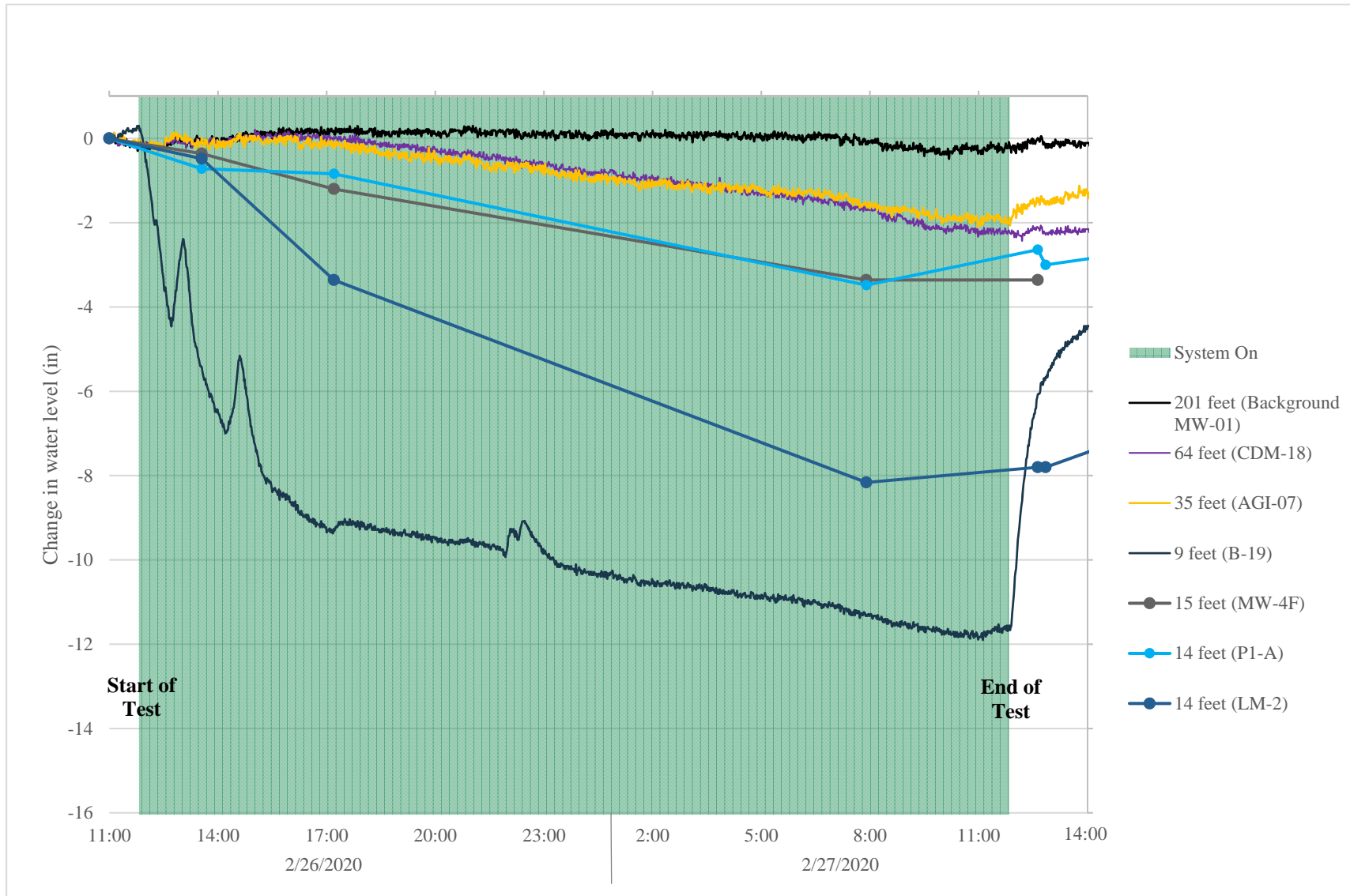


Notes:

Micro-Diver™ transducer collected readings every 1 minute during the test
in- inch

Figure 4c

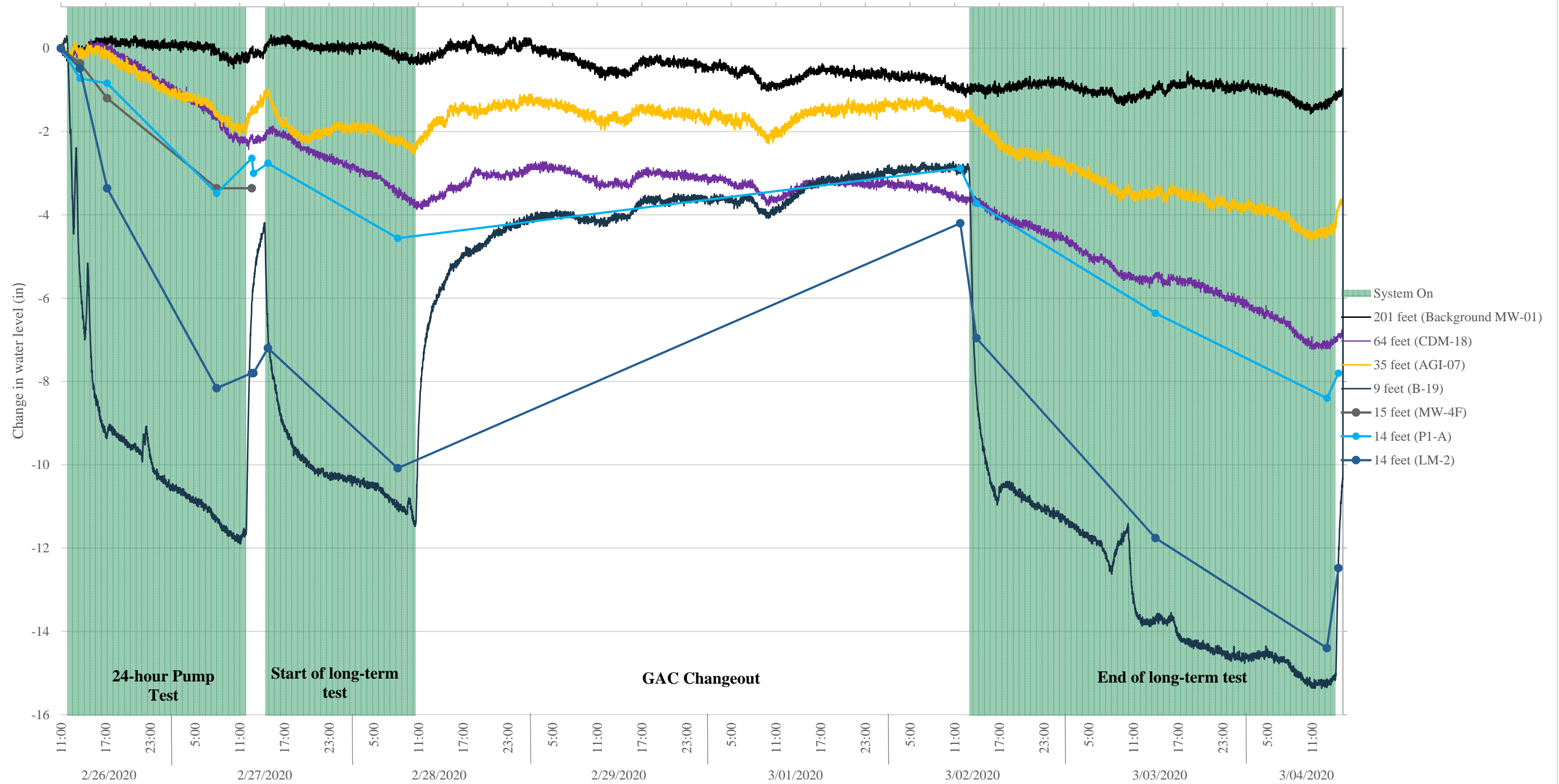
Groundwater Drawdown Time-Series Graph – Well Field G, Short-Term Test



Notes:
Micro-Diver™ transducer collected readings every 1 minute during the test
in- inch

Figure 4d

Groundwater Drawdown Time-Series Graph – Well Field G, Long-Term Test



Notes:
Micro-Diver™ transducer collected readings every 1 minute during the test
in- inch

ATTACHMENT 1

Field Data Measurement

Table 1a - Test 1, Field G Data Collection and Sampling Schedule

Operational Hours	Time of day	Task	Data Collection From			Sample Collection (Table 5a)
			System Data (Table 2)	Recovery Wells (Table 3)	Monitoring Wells (Table 4)	
Pre-Test	-			X	X	
0 to 1 hour	9 am to 10 am	Optimize Stinger Placement	X			
1 to 2 hours	10 am to 11 am			X		
2 to 3 hours	11 am to 12 pm				X	
3 to 4 hours	12 pm to 1 pm		X	X		X (Influent)
4 to 5 hours	1 pm to 2 pm		X		X	
20 to 21 hours	5 pm to 6 pm		X			
21 to 22 hours	6 pm to 7 pm			X		
22 to 23 hours	7 am to 8 am				X	
23 to 24 hours	8 am to 9 am			X		
24 hours	9am	System shutdown	X			

Table 1b - Test 2, Field E Data Collection and Sampling Schedule

Operational Hours	Time of day	Task	Data Collection From			Sample Collection (Table 5)
			System Data (Table 2)	Recovery Wells (Table 3)	Monitoring Wells (Table 4)	
Pre-Test	-			X	X	
0 to 1 hour	10 am to 11 am	Optimize Stinger Placement	X			
1 to 2 hours	11 am to 12 pm			X		
2 to 3 hours	12 pm to 1 pm				X	
3 to 4 hours	1 pm to 2 pm		X			X (Influent)
4 to 5 hours	2 pm to 3 pm			X		
8 to 9 hours	6 pm to 7 pm		X		X	
21 to 22 hours	7 am to 8 am		X			
22 to 23 hours	8 am to 9 am				X	
23 to 24 hours	9 am to 10 am			X		
24 hours	10am	System shutdown	X			

Table 1c - Test 3, Field D Data Collection and Sampling Schedule

Operational Hours	Time of day	Task	Data Collection From			Sample Collection (Table 5a)
			System Data (Table 2)	Recovery Wells (Table 3)	Monitoring Wells (Table 4)	
Pre-Test	-			X	X	
0 to 1 hour	11 am to 12 pm	Optimize Stinger Placement	X			
1 to 2 hours	12 pm to 1 pm			X		
2 to 3 hours	1 pm to 2 pm				X	
3 to 4 hours	2 pm to 3 pm		X			X (Influent)
4 to 5 hours	6 pm to 7 pm			X		
8 to 9 hours	7 am to 8 am				X	
9 to 10 hours	8 am to 9 am		X			
22 to 23 hours	9 am to 10 am				X	
23 to 24 hours	10 am to 11 am			X		
24 hours	11am	System shutdown	X			

Table 1d - Test 4, Field D, E, & G Data Collection and Sampling Schedule

Operational Hours	Operational Days	Time of day	Task	Data Collection From			Sample Collection (Tables 5a & 5b)
				System Data (Table 2)	Recovery Wells (Table 3)	Monitoring Wells (Table 4)	
Pre-Test	-				X	X	
4	1	11 am to 3 pm	Optimize Stinger Placement	X	X		
8		3 pm to 7 pm		X		X	
24		7 am to 11 am		X	X		
28	2	11 am to 3 pm		X		X	
32		3 pm to 7 pm		X	X		X (Influent)
48		7 am to 11 am		X		X	
52	3	11 am to 3 pm		X	X		X (Effluent)
56		3 pm to 7 pm		X		X	
72		7 am to 11 am		X	X		
76	4	11 am to 3 pm		X		X	
80		3 pm to 7 pm		X	X		
96		7 am to 11 am		X		X	
100	5	11 am to 3 pm		X	X		
104		3 pm to 7 pm		X		X	X (Influent)
120		7 am to 11 am		X	X		
124	6	11 am to 3 pm		X		X	
128		3 pm to 7 pm		X	X		
144		7 am to 11 am		X		X	
148	7	11 am to 3 pm		X	X		
152		3 pm to 7 pm		X		X	
168		7 am to 11 am		X	X		
172	8	11 am to 3 pm		X		X	
176		3 pm to 7 pm		X	X		
192		7 am to 11 am		X		X	
196	9	11 am to 3 pm		X	X		
200		3 pm to 7 pm		X		X	
216		7 am to 11 am		X	X		X (Influent)
216			Shutdown System	X			

Table 3a - Test 1, Field G Recovery Well Monitoring

Well ID	Units	Time (hr)					Notes
		2/26/2020			2/27/2020		
		7:47	13:24	16:55	8:13	12:16	
RW-11-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-35.0	-13.0	-40.0		Thick white foam at bottom of well post-te
Depth to Water	ft	6.09				6.90	
PID	ppm	0.0				0.4	
Valve Position	Open/Closed		o	o	o		
RW-12-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-125.0	-155.0	-148.0		Thick white foam at bottom of well post-te
Stinger Vacuum	in H2O						
Depth to Water	ft	5.98				10.00	
PID	ppm	0.0				0.0	
Valve Position	Open/Closed		o	o	o		
RW-13-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-10.0	-22.0	-26.0		
Stinger Vacuum	in H2O						
Depth to Water	ft	6.12				6.79	
PID	ppm	0.0				0.2	
Valve Position	Open/Closed		o	o	o		
RW-18-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-14.0	-68.0	-55.0		
Stinger Vacuum	in H2O						
Depth to Water	ft	6.22				7.10	
PID	ppm	0.0				0.1	
Valve Position	Open/Closed		o	o	o		
RW-19-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-73.0	-90.0	-90.0		
Stinger Vacuum	in H2O						
Depth to Water	ft	6.29				7.51	
PID	ppm	0.0				0.2	
Valve Position	Open/Closed		o	o	o		
RW-25-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-85.0	-61.0	-66.0		
Stinger Vacuum	in H2O						
Depth to Water	ft	6.37				7.76	
PID	ppm	0.2				1.7	
Valve Position	Open/Closed		o	o	o		
RW-26-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-75.0	-106.0	-96.0		
Stinger Vacuum	in H2O						
Depth to Water	ft	5.92				6.57	
PID	ppm	1.9				0.3	
Valve Position	Open/Closed		o	o	o		
RW-27-G		Pre Test			Post Test		
Well Casing Vacuum	inH2O		-59.0	-80.0	-113.0		
Stinger Vacuum	in H2O						
Depth to Water	ft	6.18				8.81	
PID	ppm	0.3				0.1	
Valve Position	Open/Closed		o	o	o		

Table 3b - Test 1, Field E Recovery Well Monitoring

Well ID	Units	Time (hr)						Notes
		2/24/2020			2/25/2020			
		8:50	14:30	17:00	7:08	10:00	12:01	
RW-20-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-83.0	-78.0	truck	truck		
Stinger Vacuum	in H2O							
Depth to Water	ft	2.60					3.29	
PID	ppm	0.2					0.1	
Valve Position	Open/Closed		o	o	o	o		
RW-21-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-71.0	-84.0	truck	truck		
Stinger Vacuum	in H2O							
Depth to Water	ft	2.48					Truck	
PID	ppm	1.7					Truck	
Valve Position	Open/Closed		o	o	o	o		
RW-24-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-35.0	-104.0	-34.0	-38.0		
Stinger Vacuum	in H2O							
Depth to Water	ft	2.83					3.33	
PID	ppm	0.3					5.3	
Valve Position	Open/Closed		o	o	o	o		
RW-31-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-3.0	-13.0	-5.5	-8.0		
Stinger Vacuum	in H2O							
Depth to Water	ft	7.24					7.98	
PID	ppm	1.3					0.0	
Valve Position	Open/Closed		o	o	o	o		
RW-32-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-29.0	-27.0	-24.5	-26.0		
Stinger Vacuum	in H2O							
Depth to Water	ft	6.68					9.50	
PID	ppm	1.5					0.2	
Valve Position	Open/Closed		o	o	o	o		
RW-33-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O							well head r
Stinger Vacuum	in H2O							
Depth to Water	ft							
PID	ppm							
Valve Position	Open/Closed	c	c	c	c	c	c	
RW-38-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-15	-12	-13	-13		
Stinger Vacuum	in H2O							
Depth to Water	ft	7.22					8.20	
PID	ppm	1					2.7	
Valve Position	Open/Closed		o	o	o	o		
RW-39-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-12	-15	-8	-8		
Stinger Vacuum	in H2O							
Depth to Water	ft	7.09					8.13	
PID	ppm	2.3					3.5	
Valve Position	Open/Closed		o	o	o	o		
RW-40-E		Pre Test			Post Test			
Well Casing Vacuum	inH2O		-33	-27	-27	-27		
Stinger Vacuum	in H2O							
Depth to Water	ft	7.09					7.89	
PID	ppm	0.8					2.0	
Valve Position	Open/Closed		o	o	o	o		

Table 3c - Test 1, Field D Recovery Well Monitoring

Well ID	Units	Time (hr)				Notes
		2/25/2020				
		Pre Test	14:22	17:02	17:55	
RW-23-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-78.0	-104.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	4.77			8.61	
PID	ppm	0.4			10.7	
Valve Position	Open/Closed		o	o		
RW-34-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-3.0	-4.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	2.67			3.95	
PID	ppm	0.3			1.8	
Valve Position	Open/Closed		o	o		
RW-35-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-61.0	-69.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	5.56			7.05	
PID	ppm	0.0			0.7	
Valve Position	Open/Closed		o	o		
RW-45-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-128.0	-86.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	2.89			4.46	
PID	ppm	28.6			1.4	
Valve Position	Open/Closed		o	o		
RW-46-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-112.0	-74.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	2.64			4.29	
PID	ppm	17.5			56.2	
Valve Position	Open/Closed		o	o		
RW-47-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-93.0	-62.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	2.67			3.66	
PID	ppm	1.8			2.5	
Valve Position	Open/Closed		o	o		
RW-48-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-106.0	-94.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	6.92			8.15	
PID	ppm	0.0			0.5	
Valve Position	Open/Closed		o	o		
RW-49-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-103.0	-110.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	5.11			6.78	
PID	ppm	0.0			0.0	
Valve Position	Open/Closed		o	o		
RW-51-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-42.0	-87.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	5.73			7.06	
PID	ppm	0.0			1.05	
Valve Position	Open/Closed		o	o		
RW-52-D		Pre Test		Post Test		
Well Casing Vacuum	inH2O		-38.0	-52.0		
Stinger Vacuum	in H2O					
Depth to Water	ft	6.13			7.00	
PID	ppm	0.2			1.2	
Valve Position	Open/Closed		o	o		

Table 3d - Test 4, Field D, E, & G Recovery Well Monitoring

Well ID	Units	Time (hr)										Notes
		2/27/2020		2/28/2020	3/2/2020		3/3/2020		3/4/2020			
		12:16	15:51	9:15	11:21	14:20	10:48	15:00	17:13	13:33	16:10	
RW-11-G		Pre Test					Post Test					
Well Casing Vacuum	inH2O		-27.0	-35.0		-41.0	-43.0	-47.0	-47.0	-47.0		
Depth to Water	ft	6.90			6.40						7.19	
PID	ppm	0.4			0.0							
Stinger Depth	ft											
Valve Position	Open/Closed											
RW-12-G			-102.0	-100.0		-142.0	-146.0	-140.0	-130.0	-137.0		
Well Casing Vacuum	inH2O		-102.0	-100.0		-142.0	-146.0	-140.0	-130.0	-137.0		
Depth to Water	ft	10.00			6.21						8.37	
PID	ppm	0.0			0.0							
Valve Position	Open/Closed											
RW-13-G			-23.0	-20.0		-29.0	-34.0	-34.0	-35.0	-36.0		
Well Casing Vacuum	inH2O		-23.0	-20.0		-29.0	-34.0	-34.0	-35.0	-36.0		
Depth to Water	ft	6.79			6.42						7.10	
PID	ppm	0.2			0.0							
Valve Position	Open/Closed											
RW-18-G			-61.0	-61.0		-71.0	-78.0	-76.0	-71.0	-73.0		
Well Casing Vacuum	inH2O		-61.0	-61.0		-71.0	-78.0	-76.0	-71.0	-73.0		
Depth to Water	ft	7.10			6.65						7.50	
PID	ppm	0.1			0.2							
Valve Position	Open/Closed											
RW-19-G			-38.0	-43.0		-89.0	-98.0	-102.0	-107.0	-105.0		
Well Casing Vacuum	inH2O		-38.0	-43.0		-89.0	-98.0	-102.0	-107.0	-105.0		
Depth to Water	ft	7.51			6.72						7.60	
PID	ppm	0.2			0.9							
Valve Position	Open/Closed											
RW-25-G			-37.0	-54.0		-59.0	-95.0	-78.0	-92.0	-93.0		
Well Casing Vacuum	inH2O		-37.0	-54.0		-59.0	-95.0	-78.0	-92.0	-93.0		
Depth to Water	ft	7.76			6.6						8.05	
PID	ppm	1.7			0.3							
Valve Position	Open/Closed											
RW-26-G			-77.0	-69.0		-89.0	-102.0	-102.0	-101.0	-106.0		
Well Casing Vacuum	inH2O		-77.0	-69.0		-89.0	-102.0	-102.0	-101.0	-106.0		
Depth to Water	ft	6.57			6.25						6.86	
PID	ppm	0.3			1.2							
Valve Position	Open/Closed											
RW-27-G			-72.0	-88.0		-81.0	-86.0	-97.0	-95.0	-99.0		
Well Casing Vacuum	inH2O		-72.0	-88.0		-81.0	-86.0	-97.0	-95.0	-99.0		
Depth to Water	ft	8.81			6.6						8.00	
PID	ppm	0.1			1.7							
Valve Position	Open/Closed											

Table 4a - Test 1, Field G Monitoring and Non-Operating Recovery Well Monitoring

Well ID	Units	Time (hr)					Notes
		2/26/2020			2/27/2020		
		7:38	13:33	17:12	7:54	12:38	
Well ID: (MW-4F)		Pre Test			Post Test		
Pressure	inH2O		0.0	0.0	0.0		Monitoring well not clearly labeled in provided maps. Dir
Depth to Water	in H2O	3.27	3.3	3.37	3.55	3.55	
Well ID: P-1A							
Pressure	inH2O		0.0	0.0	0.0		
Depth to Water	in H2O	3.30	3.36	3.37	3.59	3.52	
Well ID: LM-2							
Pressure	inH2O		0.0	0.0	0.0		
Depth to Water	in H2O	2.75	2.79	3.03	3.43	3.4	
Well ID: RW-20-E							
Pressure	inH2O		0.0	0.0	0.0		
Well ID: RW-31-E							
Pressure	inH2O		0.0	0.0	0.0		
Well ID: RW-32-E							
Pressure	inH2O		0.0	0.0	0.0		
Well ID: RW-39-E							
Pressure	inH2O		0.0	locked	0.0		
Monitoring Wells							
Non-Operating Recovery Wells							

Table 4b - Test 2, Field E Monitoring and Non-Operating Recovery Well Monitoring

Well ID	Units	Time (hr)						Notes
		2/24/2020			2/25/2020			
		Pre Test	14:49	17:31	7:31	10:18	13:57	
Well ID: P-1A		Pre Test			Post Test			
Pressure	inH2O		0.0	0.0	0.0	0.0		
Depth to Water	in H2O	3.22	3.23	3.24	3.24	3.27	3.24	
Well ID: CDM-20								
Pressure	inH2O		0.0	0.0	0.0	0.0		
Depth to Water	in H2O	3.37	3.35	3.33	3.39	3.39	3.38	
Well ID: AGI-05								
Pressure	inH2O		0.0	0.0	0.0	0.0		
Depth to Water	in H2O	2.81	2.89	2.89	2.95	2.91	2.99	
Well ID: RW-11-G								
Pressure	inH2O		0.0	0.0	0.0	0.0		
Well ID: RW-19-G								
Pressure	inH2O		0.0	0.0	0.0	0.0		
Well ID: RW-26-G								
Pressure	inH2O		0.0	0.0	0.0	0.0		
Well ID: RW-34-D								
Pressure	inH2O		0.0	0.0	0.0	0.0		
Monitoring Wells								
Non-Operating Recovery Wells								

Table 4c - Test 3, Field D Monitoring and Non-Operating Recovery Well Monitoring

Well ID	Units	Time (hr)					Notes
		2/25/2020					
		Pre Test	13:58	1658		Post Test	
Well ID: HS-5 (AGI-15)		Pre Test			Post Test		
Pressure	inH2O		-3.0	0.0			
Depth to Water	in H2O	2.60	2.98	3.31		3.13	
Well ID: AGI-19							
Pressure	inH2O		0.0	0.0			
Depth to Water	in H2O	3.19	4.01	4.43		3.79	
Well ID: AGI-05							
Pressure	inH2O		0.0	0.0			
Depth to Water	in H2O	2.91	2.99	3.14		3.1	
Well ID: RW-21-E							
Pressure	inH2O		0.0	0.0			
Well ID: RW-24-E							
Pressure	inH2O		0.0	0.0			
Well ID: RW-38-E							
Pressure	inH2O		0.0	0.0			
Monitoring Wells							
Non-Operating Recovery Wells							

Table 4d - G Well Monitoring

Well ID	Units	Time (hr)										Notes
		2/27/2020		2/28/2020	3/2/2020		3/3/2020		3/4/2020		3/4/2020	
		13:24	15:22	8:47	12:19	14:30	11:07	14:32	9:06	13:33	15:06	
Well ID: CDM-20												
Pressure	inH20		0.0	0.0	-	0.0	0.0	0.0	0.0	0.0		
Depth to Water	in H20	3.40	3.41	3.42	3.52	3.48	3.52	3.52	3.64	3.55	3.58	
Well ID: AGI-05												
Pressure	inH20		0.0	0.0	-	0.0	0.0	0.0	0.0	0.0		
Depth to Water	in H20	3.00	3.01	3.00	3.01	3.02	3.03	3.02	3.06	3.05	3.06	
Well ID: SP-6												
Pressure	inH20		-	-	-	0.0	0.0	0.0	truck	0.0		
Depth to Water	in H20	3.35	3.30	3.28	3.22	3.23	3.24	3.24		3.23	3.29	
Well ID: AGI-19												
Pressure	inH20		0.0	0.0	-	0.0	0.0	0.0	0.0	0.0		
Depth to Water	in H20	3.30	3.36	3.24	3.24	3.23	3.27	3.27	3.34	3.34	3.35	
Well ID: P-1A												
Pressure	inH20		0.0	0.0	-	0.0	truck	0.0	truck	0.0		
Depth to Water	in H20	3.55	3.53	3.68	3.54	3.61		3.83		4	3.95	
Well ID: LM-2												
Pressure	inH20		0.0	0.0	-	0.0	-6.0	0.0	0.0	0.0		
Depth to Water	in H20	3.40	3.35	3.59	3.10	3.33	3.73	3.73	3.92	3.95	3.79	

Table 4e - Fields D, E, & G Transducer Well Monitoring

Well ID	Units	Depth btoc				Notes
		2/18/2020 8:00	2/19/2020	2/26/2020	3/4/2020 15:14	
		Pre Test			Post Test	
MW-01	ft	3.56	-	3.70	3.80	
CDM-18	ft	3.17	3.22	3.39	3.97	
B-19	ft	2.88	-	3.18	3.95	
CDM-15	ft	2.69	2.66	2.86	3.29	
AGI-07	ft	2.92	2.93	3.19	3.49	
B-29	ft	3.2	2.71	3.11	3.15	
b-04	ft	2.24	2.22	2.38	2.45	
SP-04	ft	2.66	2.57	2.87	2.9	

Table 5a - System Influent Sampling

Sample Type	Sample Location	Water Samples							Vapor Samples		
		Grab sample collected using laboratory-provided liquid containers							PID reading collected using tedlar bag, concurrent with summa canister sample	sample collected using summa canister	
		All System Influent Water Sample				Sampled during Day 2 of Test 4 Only				VOCs	SVOCs
		VOCs	sVOCs	TPH-G	TPH-D	Metals	Mercury	TOC			
EPA 8260D	EPA 8270E	NWTPHG	NWTPHD	EPA 200.7	EPA 245.1	9060	TO-15	TO-13			
Groundwater Samples											
System Influent Water Sample	sample port directly before the air stripper at the pump discharge	X	X	X	X	X	X	X			
Vapor Samples											
System Influent Vapor Sample	sample port directly after the operating blower and before the vapor phase GAC vessels								X	X	X*

Acronyms/Abbreviations:

- X - Sampling This Event
- X* - Sample collect dependent on cannister availability
- VOCs - Volatile Organic Compounds
- sVOCs - Semi-Volatile Organic Compounds
- TPH-D - Total Petroleum Hydrocarbons - Diesel Range
- TPH-G - Total Petroleum Hydrocarbons - Gasoline Range
- EPA - United States Environmental Protection Agency
- GAC - Granular Activated Carbon

Table 5b - System Effluent Sampling

Sample Type	Sample Location	Grab Water Sample				Composite Water Sample		
		Field pH	grab sample collected using laboratory-provided liquid containers			sample collected using ISCO GLS composite sampler		
			Lab pH	VOCs	TPH (SGT-HEM)	sVOCs	Metals	Mercury
			EPA 151.1	EPA 624	EPA 1664A	EPA 625	EPA 200.7	EPA 245.1
System Effluent Water Sample	sample port directly after the liquid phase GAC vessels	X	X	X	X	X	X	X

Notes:

Effluent samples collected for compliance with the City of Tacoma Industrial Wastewater Discharge Permit (Permit Number TAC-039-2019) effluent monitoring requirements.

Acronyms/Abbreviations:

X - Sampling This Event

VOCs - Volatile Organic Compounds

sVOCs - Semi-Volatile Organic Compounds

TPH - Total Petroleum Hydrocarbon

EPA - United States Environmental Protection Agency

GAC - Granular Activated Carbon

ATTACHMENT 2

Photographic Log

Geosyntec Consultants Attachment 3. Photo Log	
Lilyblad Site Review Report	Project Number: PNR0697
Site Address: 2244 Port of Tacoma Road, Tacoma Washington	

Photograph 1
 Date: 2/04/2020
 Direction: ---
 Comments: Well RW-40-E which sits in the warehouse.



Photograph 2
 Date: 2/04/2020
 Direction: ---
 Comments: Well RW-40-E well cap. Large pieces have broken off



Photograph 3
 Date: 2/04/2020
 Direction: ---
 Comments: Well RW-39-E before placing stinger.



Photograph 3
Date: 2/04/2020
Direction: ---
Comments: Well RW-39-E. Pressure gage reads -6 inches mercury and well cap partially sealed with duct tape.



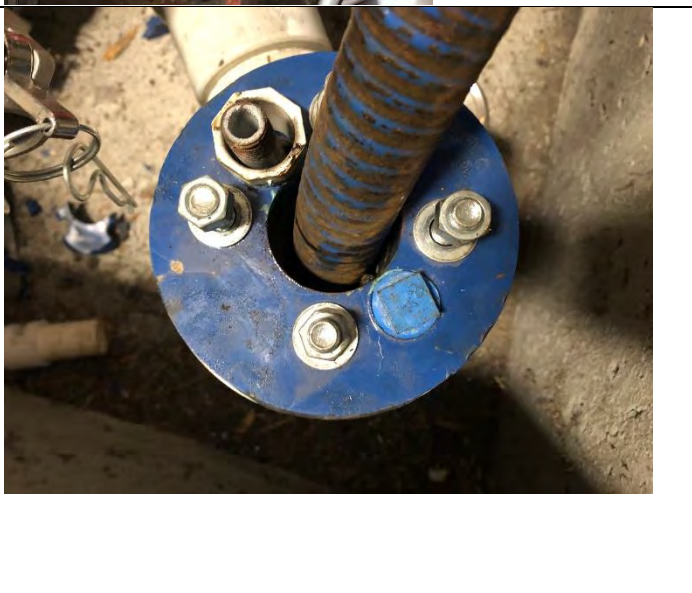


Photograph 4
Date: 2/04/2020
Direction: ---
Comments: RW-39-E well cap. Large pieces of well cap have broken away.



Photograph 5
Date: 2/04/2020
Direction: ---
Comments: RW-38-E well cap. Large pieces of well cap have broken away.



<p>Photograph 6</p> <p>Date: 2/04/2020</p> <p>Direction: ---</p> <p>Comments: Soft reddish debris buildup inside RW-31-E. This well cap has also begun to break apart.</p>	
<p>Photograph 7</p> <p>Date: 2/04/2020</p> <p>Direction: East</p> <p>Comments: RW-33-E missing stinger connection.</p>	
<p>Photograph 8</p> <p>Date: 2/04/2020</p> <p>Direction: ---</p> <p>Comments: RW-24-E with stinger and large gap.</p>	

Photograph 9
Date: 2/05/2020
Direction: ---
Comments: Soft red buildup inside line feeding into well RW-13-G. Disconnected at valve.



Photograph 10
Date: 2/05/2020
Direction: ---
Comments: Crack discovered in piping at connection with valve



Photograph 11
Date: 2/05/2020
Direction: ---
Comments: Location of crack pictured in photograph 10.



Photograph 12
Date: 2/05/2020
Direction: ---
Comments: Soft red build up and blockage in line from RW-11-G. Disconnected at valve



Photograph 13
Date: 2/05/2020
Direction: ---
Comments: Valve impacted with debris at well RW-52-D.



Photograph 14
Date: 2/05/2020
Direction: ---
Comments: RW-51-D debris build up.



ATTACHMENT 3

Laboratory Analytical Results

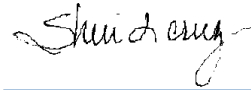
ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-93204-1
Client Project/Site: Lilyblad Site Remediation

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
3/24/2020 12:21:31 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com



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www.testamericainc.com

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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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Job ID: 580-93204-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-93204-1

Comments

No additional comments.

Receipt

The samples were received on 3/4/2020 2:51 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA

Method 625.1: The continuing calibration verification (CCV) associated with batch 580-325154 recovered above the upper control limit for Benzidine, 3,3'-Dichlorobenzidine and Carbazole. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: EffComp-030420 (580-93204-2) and (CCVIS 580-325154/3).

Method 625.1: The CCVIS for analytical batch 580-325154 recovered outside control limits for the following analyte(s): Benzoic acid and 4-Nitrophenol. Benzoic acid and 4-Nitrophenol have been identified as a poor performing analytes when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Method 625.1: (LCS 580-324536/2-A) and (LCSD 580-324536/3-A) recovered outside control limits, low-biased, for 4,6-Dinitro-2-methylphenol, 2,4-Dinitrophenol, and Pentachlorophenol. These analytes have been demonstrated by the laboratory to exhibit poor and/or erratic chromatographic performance; they have been classified as poor-performing compounds. Results for these analytes have been qualified and reported.

Method 625.1: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 580-324536 and analytical batch 580-325154 recovered outside the upper control limit for the following analyte: Carbazole. This analyte was biased high in the LCS/LCSD and was not detected in the associated samples; therefore, the data have been reported.

Method 625.1: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-324536 and analytical batch 580-325154 recovered outside control limits for the following analytes: Benzo[k]fluoranthene and Dibenz(a,h)anthracene. The individual recoveries met acceptance criteria.

Method 625.1: The following sample required a dilution due to the nature of the sample matrix: EffComp-030420 (580-93204-2). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 625.1: The following sample was diluted due to the nature of the sample matrix: EffComp-030420 (580-93204-2). Elevated reporting limits (RLs) are provided.

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

Methods 3510C, CWA_Prep: The following sample formed emulsions during the extraction procedure: EffComp-030420 (580-93204-2). The emulsions were broken up using sodium sulfate and rinsed with DCM.

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Job ID: 580-93204-1 (Continued)

Laboratory: Eurofins TestAmerica, Seattle (Continued)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Qualifiers

GC/MS 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.

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*1	LCS/LCSD 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 recovery exceeds control limits

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.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

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 Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Client Sample ID: Effluent1-030320

Lab Sample ID: 580-93204-1

Date Collected: 03/03/20 09:18

Matrix: Water

Date Received: 03/04/20 14:51

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		20	5.4	ug/L			03/10/20 22:02	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/10/20 22:02	1
Bromomethane	ND		6.0	1.1	ug/L			03/10/20 22:02	1
Chloroethane	ND		5.0	1.1	ug/L			03/10/20 22:02	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/10/20 22:02	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/10/20 22:02	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/10/20 22:02	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/10/20 22:02	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/10/20 22:02	1
Chloroform	ND		5.0	0.50	ug/L			03/10/20 22:02	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/10/20 22:02	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/10/20 22:02	1
Benzene	ND		3.0	0.53	ug/L			03/10/20 22:02	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/10/20 22:02	1
Trichloroethene	ND		3.0	0.85	ug/L			03/10/20 22:02	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/10/20 22:02	1
Dichlorobromomethane	ND		2.0	0.14	ug/L			03/10/20 22:02	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/10/20 22:02	1
Toluene	ND		2.0	0.39	ug/L			03/10/20 22:02	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/10/20 22:02	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/10/20 22:02	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/10/20 22:02	1
Chlorodibromomethane	ND		2.0	0.50	ug/L			03/10/20 22:02	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/10/20 22:02	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/10/20 22:02	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/10/20 22:02	1
o-Xylene	ND		2.0	0.39	ug/L			03/10/20 22:02	1
Bromoform	ND		3.0	0.56	ug/L			03/10/20 22:02	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/10/20 22:02	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/10/20 22:02	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/10/20 22:02	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/10/20 22:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		74 - 123		03/10/20 22:02	1
Toluene-d8 (Surr)	99		79 - 122		03/10/20 22:02	1
4-Bromofluorobenzene (Surr)	96		78 - 119		03/10/20 22:02	1
Dibromofluoromethane (Surr)	102		70 - 120		03/10/20 22:02	1
1,2-Dichloroethane-d4 (Surr)	108		70 - 120		03/10/20 22:02	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	7.3	HF			SU			03/05/20 12:40	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil & Grease)	10.7		5.1	5.1	mg/L		03/17/20 16:10	03/17/20 18:48	1
SGT-HEM (Oil and Grease - Nonpolar)	ND		5.1	5.1	mg/L		03/17/20 16:10	03/17/20 18:48	1
HEM Polar (Oil and Grease - Polar)	10.7		5.1	5.1	mg/L		03/17/20 16:10	03/17/20 18:48	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Client Sample ID: EffComp-030420

Lab Sample ID: 580-93204-2

Date Collected: 03/04/20 12:10

Matrix: Water

Date Received: 03/04/20 14:51

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		380	34	ug/L		03/10/20 10:21	03/19/20 17:04	100
Bis(2-chloroethyl)ether	ND		57	2.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
2-Chlorophenol	ND		95	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
1,3-Dichlorobenzene	ND		38	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
1,4-Dichlorobenzene	ND		38	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
1,2-Dichlorobenzene	ND		57	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
2-Methylphenol	ND		57	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
N-Nitrosodi-n-propylamine	ND		57	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Hexachloroethane	ND		95	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Nitrobenzene	ND		95	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Isophorone	ND		38	9.5	ug/L		03/10/20 10:21	03/19/20 17:04	100
2-Nitrophenol	ND		95	14	ug/L		03/10/20 10:21	03/19/20 17:04	100
2,4-Dimethylphenol	ND		380	15	ug/L		03/10/20 10:21	03/19/20 17:04	100
Bis(2-chloroethoxy)methane	ND		57	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
1,2,4-Trichlorobenzene	ND		38	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Naphthalene	ND		38	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Hexachlorobutadiene	ND		95	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
4-Chloro-3-methylphenol	ND		57	12	ug/L		03/10/20 10:21	03/19/20 17:04	100
Hexachlorocyclopentadiene	ND		470	9.5	ug/L		03/10/20 10:21	03/19/20 17:04	100
2,4,6-Trichlorophenol	ND		57	9.5	ug/L		03/10/20 10:21	03/19/20 17:04	100
2,4,5-Trichlorophenol	ND		38	9.5	ug/L		03/10/20 10:21	03/19/20 17:04	100
2-Chloronaphthalene	ND		95	2.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Dimethyl phthalate	ND		57	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Acenaphthylene	ND		95	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
2,6-Dinitrotoluene	ND		57	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Acenaphthene	ND		38	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
2,4-Dinitrophenol	ND *		470	150	ug/L		03/10/20 10:21	03/19/20 17:04	100
4-Nitrophenol	ND		1400	160	ug/L		03/10/20 10:21	03/19/20 17:04	100
Dibenzofuran	ND		38	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
2,4-Dinitrotoluene	ND		95	9.5	ug/L		03/10/20 10:21	03/19/20 17:04	100
Diethyl phthalate	ND		1100	14	ug/L		03/10/20 10:21	03/19/20 17:04	100
4-Chlorophenyl phenyl ether	ND		57	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Fluorene	ND		190	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
4,6-Dinitro-2-methylphenol	ND *		470	25	ug/L		03/10/20 10:21	03/19/20 17:04	100
N-Nitrosodiphenylamine	ND		1400	6.6	ug/L		03/10/20 10:21	03/19/20 17:04	100
4-Bromophenyl phenyl ether	ND		57	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Hexachlorobenzene	ND		57	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Pentachlorophenol	ND *		950	48	ug/L		03/10/20 10:21	03/19/20 17:04	100
Phenanthrene	ND		95	2.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Anthracene	ND		1400	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Di-n-butyl phthalate	ND		280	42	ug/L		03/10/20 10:21	03/19/20 17:04	100
Fluoranthene	ND		280	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Pyrene	ND		190	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Butyl benzyl phthalate	ND		950	88	ug/L		03/10/20 10:21	03/19/20 17:04	100
3,3'-Dichlorobenzidine	ND		1400	59	ug/L		03/10/20 10:21	03/19/20 17:04	100
Benzo[a]anthracene	ND		95	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Chrysene	ND		57	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Bis(2-ethylhexyl) phthalate	ND		1400	82	ug/L		03/10/20 10:21	03/19/20 17:04	100
Di-n-octyl phthalate	16	J	95	12	ug/L		03/10/20 10:21	03/19/20 17:04	100

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Client Sample ID: EffComp-030420

Lab Sample ID: 580-93204-2

Date Collected: 03/04/20 12:10

Matrix: Water

Date Received: 03/04/20 14:51

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene	ND		95	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Indeno[1,2,3-cd]pyrene	ND		95	12	ug/L		03/10/20 10:21	03/19/20 17:04	100
Dibenz(a,h)anthracene	ND	*1	57	6.6	ug/L		03/10/20 10:21	03/19/20 17:04	100
Benzo[g,h,i]perylene	ND		95	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
Carbazole	ND	*	57	9.5	ug/L		03/10/20 10:21	03/19/20 17:04	100
N-Nitrosodimethylamine	ND		380	25	ug/L		03/10/20 10:21	03/19/20 17:04	100
n-Decane	ND		570	34	ug/L		03/10/20 10:21	03/19/20 17:04	100
Octadecane	ND		280	19	ug/L		03/10/20 10:21	03/19/20 17:04	100
Benzo[k]fluoranthene	ND	*1	95	4.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
Benzo[b]fluoranthene	ND		95	3.8	ug/L		03/10/20 10:21	03/19/20 17:04	100
1,2-Diphenylhydrazine (as Azobenzene)	ND		190	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100
bis (2-chloroisopropyl) ether	ND		57	5.7	ug/L		03/10/20 10:21	03/19/20 17:04	100

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol	0	X	20 - 122	03/10/20 10:21	03/19/20 17:04	100
Phenol-d5	0	X	20 - 123	03/10/20 10:21	03/19/20 17:04	100
Nitrobenzene-d5	0	X	59 - 123	03/10/20 10:21	03/19/20 17:04	100
2-Fluorobiphenyl	70		56 - 124	03/10/20 10:21	03/19/20 17:04	100
2,4,6-Tribromophenol	0	X	47 - 137	03/10/20 10:21	03/19/20 17:04	100
Terphenyl-d14	0	X	60 - 135	03/10/20 10:21	03/19/20 17:04	100

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.060	0.0072	mg/L		03/05/20 15:22	03/06/20 16:06	1
Lead	0.014	J	0.030	0.0027	mg/L		03/05/20 15:22	03/06/20 16:06	1
Cadmium	ND		0.020	0.00050	mg/L		03/05/20 15:22	03/06/20 16:06	1
Chromium	ND		0.025	0.0033	mg/L		03/05/20 15:22	03/06/20 16:06	1
Copper	ND		0.060	0.014	mg/L		03/05/20 15:22	03/06/20 16:06	1
Nickel	0.0086	J	0.020	0.0023	mg/L		03/05/20 15:22	03/06/20 16:06	1
Zinc	0.014	J	0.040	0.0093	mg/L		03/05/20 15:22	03/06/20 16:06	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00030	0.00015	mg/L		03/06/20 10:59	03/06/20 14:36	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Client Sample ID: TripBlank-030320

Lab Sample ID: 580-93204-3

Date Collected: 03/03/20 09:20

Matrix: Water

Date Received: 03/04/20 14:51

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		20	5.4	ug/L			03/10/20 14:02	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/10/20 14:02	1
Bromomethane	ND		6.0	1.1	ug/L			03/10/20 14:02	1
Chloroethane	ND		5.0	1.1	ug/L			03/10/20 14:02	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/10/20 14:02	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/10/20 14:02	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/10/20 14:02	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/10/20 14:02	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/10/20 14:02	1
Chloroform	ND		5.0	0.50	ug/L			03/10/20 14:02	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/10/20 14:02	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/10/20 14:02	1
Benzene	ND		3.0	0.53	ug/L			03/10/20 14:02	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/10/20 14:02	1
Trichloroethene	ND		3.0	0.85	ug/L			03/10/20 14:02	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/10/20 14:02	1
Dichlorobromomethane	ND		2.0	0.14	ug/L			03/10/20 14:02	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/10/20 14:02	1
Toluene	ND		2.0	0.39	ug/L			03/10/20 14:02	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/10/20 14:02	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/10/20 14:02	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/10/20 14:02	1
Chlorodibromomethane	ND		2.0	0.50	ug/L			03/10/20 14:02	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/10/20 14:02	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/10/20 14:02	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/10/20 14:02	1
o-Xylene	ND		2.0	0.39	ug/L			03/10/20 14:02	1
Bromoform	ND		3.0	0.56	ug/L			03/10/20 14:02	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/10/20 14:02	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/10/20 14:02	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/10/20 14:02	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/10/20 14:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	97		74 - 123		03/10/20 14:02	1
Toluene-d8 (Surr)	102		79 - 122		03/10/20 14:02	1
4-Bromofluorobenzene (Surr)	101		78 - 119		03/10/20 14:02	1
Dibromofluoromethane (Surr)	99		70 - 120		03/10/20 14:02	1
1,2-Dichloroethane-d4 (Surr)	102		70 - 120		03/10/20 14:02	1

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-324634/7
Matrix: Water
Analysis Batch: 324634

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloromethane	ND		20	5.4	ug/L			03/10/20 12:58	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/10/20 12:58	1
Bromomethane	ND		6.0	1.1	ug/L			03/10/20 12:58	1
Chloroethane	ND		5.0	1.1	ug/L			03/10/20 12:58	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/10/20 12:58	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/10/20 12:58	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/10/20 12:58	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/10/20 12:58	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/10/20 12:58	1
Chloroform	ND		5.0	0.50	ug/L			03/10/20 12:58	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/10/20 12:58	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/10/20 12:58	1
Benzene	ND		3.0	0.53	ug/L			03/10/20 12:58	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/10/20 12:58	1
Trichloroethene	ND		3.0	0.85	ug/L			03/10/20 12:58	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/10/20 12:58	1
Dichlorobromomethane	ND		2.0	0.14	ug/L			03/10/20 12:58	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/10/20 12:58	1
Toluene	ND		2.0	0.39	ug/L			03/10/20 12:58	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/10/20 12:58	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/10/20 12:58	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/10/20 12:58	1
Chlorodibromomethane	ND		2.0	0.50	ug/L			03/10/20 12:58	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/10/20 12:58	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/10/20 12:58	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/10/20 12:58	1
o-Xylene	ND		2.0	0.39	ug/L			03/10/20 12:58	1
Bromoform	ND		3.0	0.56	ug/L			03/10/20 12:58	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/10/20 12:58	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/10/20 12:58	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/10/20 12:58	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/10/20 12:58	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	104		74 - 123		03/10/20 12:58	1
Toluene-d8 (Surr)	98		79 - 122		03/10/20 12:58	1
4-Bromofluorobenzene (Surr)	92		78 - 119		03/10/20 12:58	1
Dibromofluoromethane (Surr)	103		70 - 120		03/10/20 12:58	1
1,2-Dichloroethane-d4 (Surr)	106		70 - 120		03/10/20 12:58	1

Lab Sample ID: LCS 580-324634/4
Matrix: Water
Analysis Batch: 324634

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	10.0	8.46	J	ug/L		85	10 - 205
Vinyl chloride	10.0	8.77		ug/L		88	10 - 195
Bromomethane	10.0	8.65		ug/L		86	15 - 185

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324634/4
Matrix: Water
Analysis Batch: 324634

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	10.0	9.45		ug/L		95	40 - 160
Trichlorofluoromethane	10.0	9.54		ug/L		95	50 - 150
1,1-Dichloroethene	10.0	10.1		ug/L		101	50 - 150
Methylene Chloride	10.0	9.58		ug/L		96	60 - 140
trans-1,2-Dichloroethene	10.0	9.96		ug/L		100	70 - 130
1,1-Dichloroethane	10.0	10.4		ug/L		104	70 - 130
Chloroform	10.0	10.4		ug/L		104	70 - 135
1,1,1-Trichloroethane	10.0	10.2		ug/L		102	70 - 130
Carbon tetrachloride	10.0	10.1		ug/L		101	70 - 130
Benzene	10.0	9.97		ug/L		100	65 - 135
1,2-Dichloroethane	10.0	9.98		ug/L		100	70 - 130
Trichloroethene	10.0	10.2		ug/L		102	65 - 135
1,2-Dichloropropane	10.0	10.2		ug/L		102	35 - 165
Dichlorobromomethane	10.0	10.3		ug/L		103	70 - 135
cis-1,3-Dichloropropene	10.0	10.5		ug/L		105	25 - 175
Toluene	10.0	9.93		ug/L		99	70 - 130
trans-1,3-Dichloropropene	10.0	10.4		ug/L		104	50 - 150
1,1,2-Trichloroethane	10.0	10.2		ug/L		102	70 - 130
Tetrachloroethene	10.0	10.4		ug/L		104	70 - 130
Chlorodibromomethane	10.0	10.6		ug/L		106	71 - 120
Chlorobenzene	10.0	10.4		ug/L		104	65 - 135
Ethylbenzene	10.0	10.3		ug/L		103	60 - 140
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	75 - 120
o-Xylene	10.0	10.3		ug/L		103	74 - 120
Bromoform	10.0	10.8		ug/L		108	70 - 130
1,1,2,2-Tetrachloroethane	10.0	10.7		ug/L		107	60 - 140
1,3-Dichlorobenzene	10.0	10.2		ug/L		102	70 - 130
1,4-Dichlorobenzene	10.0	10.2		ug/L		102	65 - 135
1,2-Dichlorobenzene	10.0	10.6		ug/L		106	65 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	100		74 - 123
Toluene-d8 (Surr)	100		79 - 122
4-Bromofluorobenzene (Surr)	98		78 - 119
Dibromofluoromethane (Surr)	99		70 - 120
1,2-Dichloroethane-d4 (Surr)	101		70 - 120

Lab Sample ID: LCSD 580-324634/5
Matrix: Water
Analysis Batch: 324634

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
Chloromethane	10.0	8.52	J	ug/L		85	10 - 205	1	35
Vinyl chloride	10.0	8.92		ug/L		89	10 - 195	2	35
Bromomethane	10.0	8.92		ug/L		89	15 - 185	3	35
Chloroethane	10.0	9.36		ug/L		94	40 - 160	1	35
Trichlorofluoromethane	10.0	9.57		ug/L		96	50 - 150	0	35
1,1-Dichloroethene	10.0	9.61		ug/L		96	50 - 150	5	27

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324634/5
Matrix: Water
Analysis Batch: 324634

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
Methylene Chloride	10.0	9.60		ug/L		96	60 - 140	0	29
trans-1,2-Dichloroethene	10.0	9.80		ug/L		98	70 - 130	2	21
1,1-Dichloroethane	10.0	10.1		ug/L		101	70 - 130	3	20
Chloroform	10.0	10.1		ug/L		101	70 - 135	3	15
1,1,1-Trichloroethane	10.0	10.1		ug/L		101	70 - 130	1	18
Carbon tetrachloride	10.0	10.3		ug/L		103	70 - 130	2	19
Benzene	10.0	9.99		ug/L		100	65 - 135	0	33
1,2-Dichloroethane	10.0	9.92		ug/L		99	70 - 130	1	11
Trichloroethene	10.0	10.3		ug/L		103	65 - 135	0	15
1,2-Dichloropropane	10.0	10.1		ug/L		101	35 - 165	1	26
Dichlorobromomethane	10.0	10.2		ug/L		102	70 - 135	1	34
cis-1,3-Dichloropropene	10.0	10.4		ug/L		104	25 - 175	1	12
Toluene	10.0	10.1		ug/L		101	70 - 130	2	13
trans-1,3-Dichloropropene	10.0	10.3		ug/L		103	50 - 150	2	13
1,1,2-Trichloroethane	10.0	10.6		ug/L		106	70 - 130	4	14
Tetrachloroethene	10.0	10.3		ug/L		103	70 - 130	0	20
Chlorodibromomethane	10.0	10.7		ug/L		107	71 - 120	1	35
Chlorobenzene	10.0	10.3		ug/L		103	65 - 135	1	15
Ethylbenzene	10.0	10.4		ug/L		104	60 - 140	1	14
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	75 - 120	0	14
o-Xylene	10.0	10.3		ug/L		103	74 - 120	1	16
Bromoform	10.0	10.6		ug/L		106	70 - 130	1	25
1,1,2,2-Tetrachloroethane	10.0	10.9		ug/L		109	60 - 140	2	18
1,3-Dichlorobenzene	10.0	10.4		ug/L		104	70 - 130	2	14
1,4-Dichlorobenzene	10.0	10.6		ug/L		106	65 - 135	3	17
1,2-Dichlorobenzene	10.0	10.7		ug/L		107	65 - 135	1	15

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Trifluorotoluene (Surr)	100		74 - 123
Toluene-d8 (Surr)	102		79 - 122
4-Bromofluorobenzene (Surr)	99		78 - 119
Dibromofluoromethane (Surr)	98		70 - 120
1,2-Dichloroethane-d4 (Surr)	98		70 - 120

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-324536/1-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324536

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		4.0	0.36	ug/L		03/10/20 10:21	03/19/20 15:55	1
Bis(2-chloroethyl)ether	ND		0.60	0.030	ug/L		03/10/20 10:21	03/19/20 15:55	1
2-Chlorophenol	ND		1.0	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
1,2-Dichlorobenzene	ND		0.60	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
2-Methylphenol	ND		0.60	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
N-Nitrosodi-n-propylamine	ND		0.60	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324536/1-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324536

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Hexachloroethane	ND		1.0	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
Nitrobenzene	ND		1.0	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Isophorone	ND		0.40	0.10	ug/L		03/10/20 10:21	03/19/20 15:55	1
2-Nitrophenol	ND		1.0	0.15	ug/L		03/10/20 10:21	03/19/20 15:55	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		03/10/20 10:21	03/19/20 15:55	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
1,2,4-Trichlorobenzene	ND		0.40	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Naphthalene	ND		0.40	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		03/10/20 10:21	03/19/20 15:55	1
Hexachlorocyclopentadiene	ND		5.0	0.10	ug/L		03/10/20 10:21	03/19/20 15:55	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		03/10/20 10:21	03/19/20 15:55	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		03/10/20 10:21	03/19/20 15:55	1
2-Chloronaphthalene	ND		1.0	0.030	ug/L		03/10/20 10:21	03/19/20 15:55	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1
Acenaphthylene	ND		1.0	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1
2,6-Dinitrotoluene	ND		0.60	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Acenaphthene	ND		0.40	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		03/10/20 10:21	03/19/20 15:55	1
4-Nitrophenol	ND		15	1.7	ug/L		03/10/20 10:21	03/19/20 15:55	1
Dibenzofuran	ND		0.40	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		03/10/20 10:21	03/19/20 15:55	1
Diethyl phthalate	ND		12	0.15	ug/L		03/10/20 10:21	03/19/20 15:55	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
Fluorene	ND		2.0	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
4,6-Dinitro-2-methylphenol	ND		5.0	0.26	ug/L		03/10/20 10:21	03/19/20 15:55	1
N-Nitrosodiphenylamine	ND		15	0.070	ug/L		03/10/20 10:21	03/19/20 15:55	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Pentachlorophenol	ND		10	0.51	ug/L		03/10/20 10:21	03/19/20 15:55	1
Phenanthrene	ND		1.0	0.030	ug/L		03/10/20 10:21	03/19/20 15:55	1
Anthracene	ND		15	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
Di-n-butyl phthalate	ND		3.0	0.44	ug/L		03/10/20 10:21	03/19/20 15:55	1
Fluoranthene	ND		3.0	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1
Pyrene	ND		2.0	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Butyl benzyl phthalate	ND		10	0.93	ug/L		03/10/20 10:21	03/19/20 15:55	1
3,3'-Dichlorobenzidine	ND		15	0.62	ug/L		03/10/20 10:21	03/19/20 15:55	1
Benzo[a]anthracene	ND		1.0	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
Chrysene	ND		0.60	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Bis(2-ethylhexyl) phthalate	ND		15	0.87	ug/L		03/10/20 10:21	03/19/20 15:55	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		03/10/20 10:21	03/19/20 15:55	1
Benzo[a]pyrene	ND		1.0	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.13	ug/L		03/10/20 10:21	03/19/20 15:55	1
Dibenz(a,h)anthracene	ND		0.60	0.070	ug/L		03/10/20 10:21	03/19/20 15:55	1
Benzo[g,h,i]perylene	ND		1.0	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
Carbazole	ND		0.60	0.10	ug/L		03/10/20 10:21	03/19/20 15:55	1
N-Nitrosodimethylamine	ND		4.0	0.26	ug/L		03/10/20 10:21	03/19/20 15:55	1
n-Decane	ND		6.0	0.36	ug/L		03/10/20 10:21	03/19/20 15:55	1
Octadecane	ND		3.0	0.20	ug/L		03/10/20 10:21	03/19/20 15:55	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324536/1-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324536

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[k]fluoranthene	ND		1.0	0.050	ug/L		03/10/20 10:21	03/19/20 15:55	1
Benzo[b]fluoranthene	ND		1.0	0.040	ug/L		03/10/20 10:21	03/19/20 15:55	1
1,2-Diphenylhydrazine (as Azobenzene)	ND		2.0	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1
bis (2-chloroisopropyl) ether	ND		0.60	0.060	ug/L		03/10/20 10:21	03/19/20 15:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol	37		20 - 122	03/10/20 10:21	03/19/20 15:55	1
Phenol-d5	21		20 - 123	03/10/20 10:21	03/19/20 15:55	1
Nitrobenzene-d5	115		59 - 123	03/10/20 10:21	03/19/20 15:55	1
2-Fluorobiphenyl	108		56 - 124	03/10/20 10:21	03/19/20 15:55	1
2,4,6-Tribromophenol	51		47 - 137	03/10/20 10:21	03/19/20 15:55	1
Terphenyl-d14	107		60 - 135	03/10/20 10:21	03/19/20 15:55	1

Lab Sample ID: LCS 580-324536/2-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324536

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Phenol	2.00	0.775	J	ug/L		39	17 - 120
Bis(2-chloroethyl)ether	2.00	1.91		ug/L		95	43 - 126
2-Chlorophenol	2.00	1.75		ug/L		87	36 - 120
1,3-Dichlorobenzene	2.00	1.56		ug/L		78	34 - 121
1,4-Dichlorobenzene	2.00	1.57		ug/L		78	40 - 120
1,2-Dichlorobenzene	2.00	1.55		ug/L		78	44 - 120
2-Methylphenol	2.00	1.48		ug/L		74	53 - 120
N-Nitrosodi-n-propylamine	2.00	2.24		ug/L		112	14 - 198
Hexachloroethane	2.00	1.66		ug/L		83	55 - 120
Nitrobenzene	2.00	2.25		ug/L		112	54 - 158
Isophorone	2.00	2.30		ug/L		115	47 - 180
2-Nitrophenol	2.00	1.62		ug/L		81	45 - 167
2,4-Dimethylphenol	2.00	1.63	J	ug/L		82	42 - 120
Bis(2-chloroethoxy)methane	2.00	1.96		ug/L		98	49 - 165
1,2,4-Trichlorobenzene	2.00	1.55		ug/L		78	57 - 130
Naphthalene	2.00	1.65		ug/L		82	36 - 120
Hexachlorobutadiene	2.00	1.78		ug/L		89	38 - 120
4-Chloro-3-methylphenol	2.00	1.55		ug/L		78	41 - 128
Hexachlorocyclopentadiene	2.00	1.33	J	ug/L		67	20 - 120
2,4,6-Trichlorophenol	2.00	1.60		ug/L		80	55 - 129
2,4,5-Trichlorophenol	2.00	1.73		ug/L		87	52 - 129
2-Chloronaphthalene	2.00	1.74		ug/L		87	65 - 120
Dimethyl phthalate	2.00	1.95		ug/L		97	1 - 120
Acenaphthylene	2.00	1.82		ug/L		91	54 - 126
2,6-Dinitrotoluene	2.00	2.03		ug/L		102	68 - 137
Acenaphthene	2.00	1.81		ug/L		90	60 - 132
2,4-Dinitrophenol	4.00	ND	*	ug/L		0	1 - 173
4-Nitrophenol	4.00	ND		ug/L		13	13 - 129
Dibenzofuran	2.00	1.84		ug/L		92	70 - 125
2,4-Dinitrotoluene	2.00	1.85		ug/L		93	48 - 127

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324536/2-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324536

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diethyl phthalate	2.00	2.10	J	ug/L		105	1 - 120
4-Chlorophenyl phenyl ether	2.00	2.00		ug/L		100	38 - 145
Fluorene	2.00	1.87	J	ug/L		94	70 - 120
4,6-Dinitro-2-methylphenol	4.00	0.576	J *	ug/L		14	53 - 130
N-Nitrosodiphenylamine	2.00	1.85	J	ug/L		92	22 - 135
4-Bromophenyl phenyl ether	2.00	1.90		ug/L		95	65 - 120
Hexachlorobenzene	2.00	1.97		ug/L		98	8 - 142
Pentachlorophenol	4.00	ND	*	ug/L		8	38 - 152
Phenanthrene	2.00	1.73		ug/L		87	65 - 120
Anthracene	2.00	1.89	J	ug/L		94	43 - 120
Di-n-butyl phthalate	2.00	1.87	J	ug/L		93	8 - 120
Fluoranthene	2.00	2.03	J	ug/L		101	43 - 121
Pyrene	2.00	2.11		ug/L		105	70 - 120
Butyl benzyl phthalate	2.00	1.87	J	ug/L		93	1 - 140
3,3'-Dichlorobenzidine	4.00	5.36	J	ug/L		134	8 - 213
Benzo[a]anthracene	2.00	1.80		ug/L		90	42 - 133
Chrysene	2.00	1.85		ug/L		93	44 - 140
Bis(2-ethylhexyl) phthalate	2.00	1.56	J	ug/L		78	29 - 137
Di-n-octyl phthalate	2.00	1.73		ug/L		87	19 - 132
Benzo[a]pyrene	2.00	1.73		ug/L		87	32 - 148
Indeno[1,2,3-cd]pyrene	2.00	1.89		ug/L		94	1 - 151
Dibenz(a,h)anthracene	2.00	1.80		ug/L		90	1 - 200
Benzo[g,h,i]perylene	2.00	2.04		ug/L		102	1 - 195
Carbazole	2.00	3.67	*	ug/L		184	80 - 135
N-Nitrosodimethylamine	2.00	1.09	J	ug/L		54	45 - 125
n-Decane	2.00	1.67	J	ug/L		84	20 - 150
Octadecane	2.00	2.14	J	ug/L		107	58 - 148
Benzo[k]fluoranthene	2.00	1.84		ug/L		92	25 - 146
Benzo[b]fluoranthene	2.00	1.77		ug/L		88	42 - 140
1,2-Diphenylhydrazine (as Azobenzene)	2.00	2.16		ug/L		108	23 - 132
bis (2-chloroisopropyl) ether	2.00	1.87		ug/L		94	53 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol	31		20 - 122
Phenol-d5	26		20 - 123
Nitrobenzene-d5	107		59 - 123
2-Fluorobiphenyl	88		56 - 124
2,4,6-Tribromophenol	83		47 - 137
Terphenyl-d14	98		60 - 135

Lab Sample ID: LCSD 580-324536/3-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324536

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Phenol	2.00	0.772	J	ug/L		39	17 - 120	0	26
Bis(2-chloroethyl)ether	2.00	1.79		ug/L		90	43 - 126	6	20
2-Chlorophenol	2.00	1.98		ug/L		99	36 - 120	12	20

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324536/3-A

Matrix: Water

Analysis Batch: 325154

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 324536

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,3-Dichlorobenzene	2.00	1.67		ug/L		83	34 - 121	7	29
1,4-Dichlorobenzene	2.00	1.61		ug/L		81	40 - 120	3	25
1,2-Dichlorobenzene	2.00	1.68		ug/L		84	44 - 120	8	20
2-Methylphenol	2.00	1.62		ug/L		81	53 - 120	9	33
N-Nitrosodi-n-propylamine	2.00	2.57		ug/L		128	14 - 198	14	20
Hexachloroethane	2.00	1.71		ug/L		85	55 - 120	3	35
Nitrobenzene	2.00	2.35		ug/L		118	54 - 158	4	20
Isophorone	2.00	2.45		ug/L		122	47 - 180	6	20
2-Nitrophenol	2.00	1.79		ug/L		90	45 - 167	10	35
2,4-Dimethylphenol	2.00	1.93	J	ug/L		97	42 - 120	17	35
Bis(2-chloroethoxy)methane	2.00	2.10		ug/L		105	49 - 165	7	26
1,2,4-Trichlorobenzene	2.00	1.67		ug/L		83	57 - 130	7	20
Naphthalene	2.00	1.67		ug/L		83	36 - 120	1	20
Hexachlorobutadiene	2.00	1.63		ug/L		81	38 - 120	9	31
4-Chloro-3-methylphenol	2.00	1.36		ug/L		68	41 - 128	13	20
Hexachlorocyclopentadiene	2.00	1.52	J	ug/L		76	20 - 120	13	35
2,4,6-Trichlorophenol	2.00	1.72		ug/L		86	55 - 129	8	20
2,4,5-Trichlorophenol	2.00	1.99		ug/L		99	52 - 129	14	25
2-Chloronaphthalene	2.00	1.95		ug/L		97	65 - 120	12	20
Dimethyl phthalate	2.00	2.06		ug/L		103	1 - 120	6	20
Acenaphthylene	2.00	2.00		ug/L		100	54 - 126	10	20
2,6-Dinitrotoluene	2.00	2.14		ug/L		107	68 - 137	5	24
Acenaphthene	2.00	1.93		ug/L		96	60 - 132	6	20
2,4-Dinitrophenol	4.00	ND	*	ug/L		0	1 - 173	NC	35
4-Nitrophenol	4.00	ND		ug/L		15	13 - 129	13	23
Dibenzofuran	2.00	1.92		ug/L		96	70 - 125	4	20
2,4-Dinitrotoluene	2.00	2.08		ug/L		104	48 - 127	11	29
Diethyl phthalate	2.00	2.32	J	ug/L		116	1 - 120	10	20
4-Chlorophenyl phenyl ether	2.00	2.04		ug/L		102	38 - 145	2	20
Fluorene	2.00	2.03		ug/L		102	70 - 120	8	20
4,6-Dinitro-2-methylphenol	4.00	0.783	J *	ug/L		20	53 - 130	30	35
N-Nitrosodiphenylamine	2.00	2.02	J	ug/L		101	22 - 135	9	29
4-Bromophenyl phenyl ether	2.00	1.99		ug/L		100	65 - 120	5	20
Hexachlorobenzene	2.00	2.08		ug/L		104	8 - 142	6	20
Pentachlorophenol	4.00	ND	*	ug/L		9	38 - 152	23	35
Phenanthrene	2.00	1.89		ug/L		95	65 - 120	9	20
Anthracene	2.00	2.00	J	ug/L		100	43 - 120	6	26
Di-n-butyl phthalate	2.00	2.04	J	ug/L		102	8 - 120	9	20
Fluoranthene	2.00	2.22	J	ug/L		111	43 - 121	9	20
Pyrene	2.00	2.27		ug/L		113	70 - 120	7	20
Butyl benzyl phthalate	2.00	2.18	J	ug/L		109	1 - 140	16	20
3,3'-Dichlorobenzidine	4.00	5.96	J	ug/L		149	8 - 213	10	35
Benzo[a]anthracene	2.00	2.18		ug/L		109	42 - 133	19	20
Chrysene	2.00	2.10		ug/L		105	44 - 140	13	20
Bis(2-ethylhexyl) phthalate	2.00	1.80	J	ug/L		90	29 - 137	14	35
Di-n-octyl phthalate	2.00	1.89		ug/L		95	19 - 132	9	20
Benzo[a]pyrene	2.00	2.01		ug/L		100	32 - 148	15	35
Indeno[1,2,3-cd]pyrene	2.00	2.26		ug/L		113	1 - 151	18	20
Dibenz(a,h)anthracene	2.00	2.24	*1	ug/L		112	1 - 200	21	20

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324536/3-A
Matrix: Water
Analysis Batch: 325154

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324536

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[g,h,i]perylene	2.00	2.25		ug/L		112	1 - 195	9	20
Carbazole	2.00	3.91	*	ug/L		195	80 - 135	6	20
N-Nitrosodimethylamine	2.00	1.10	J	ug/L		55	45 - 125	1	25
n-Decane	2.00	1.76	J	ug/L		88	20 - 150	5	34
Octadecane	2.00	2.26	J	ug/L		113	58 - 148	6	20
Benzo[k]fluoranthene	2.00	2.28	*1	ug/L		114	25 - 146	22	20
Benzo[b]fluoranthene	2.00	1.94		ug/L		97	42 - 140	10	20
1,2-Diphenylhydrazine (as Azobenzene)	2.00	2.39		ug/L		119	23 - 132	10	35
bis (2-chloroisopropyl) ether	2.00	2.07		ug/L		104	53 - 133	10	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorophenol	37		20 - 122
Phenol-d5	25		20 - 123
Nitrobenzene-d5	110		59 - 123
2-Fluorobiphenyl	92		56 - 124
2,4,6-Tribromophenol	90		47 - 137
Terphenyl-d14	105		60 - 135

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 580-324312/10-A
Matrix: Water
Analysis Batch: 324466

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324312

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.060	0.0072	mg/L		03/05/20 15:22	03/06/20 15:25	1
Lead	ND		0.030	0.0027	mg/L		03/05/20 15:22	03/06/20 15:25	1
Cadmium	ND		0.020	0.00050	mg/L		03/05/20 15:22	03/06/20 15:25	1
Chromium	ND		0.025	0.0033	mg/L		03/05/20 15:22	03/06/20 15:25	1
Copper	ND		0.060	0.014	mg/L		03/05/20 15:22	03/06/20 15:25	1
Nickel	ND		0.020	0.0023	mg/L		03/05/20 15:22	03/06/20 15:25	1
Zinc	ND		0.040	0.0093	mg/L		03/05/20 15:22	03/06/20 15:25	1

Lab Sample ID: LCS 580-324312/11-A
Matrix: Water
Analysis Batch: 324466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324312

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	1.00	0.964		mg/L		96	85 - 115
Lead	1.00	0.989		mg/L		99	85 - 115
Cadmium	1.00	0.962		mg/L		96	85 - 115
Chromium	1.00	1.02		mg/L		102	85 - 115
Copper	1.00	1.02		mg/L		102	85 - 115
Nickel	1.00	0.976		mg/L		98	85 - 115
Zinc	1.00	0.899		mg/L		90	85 - 115

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCSD 580-324312/12-A
Matrix: Water
Analysis Batch: 324466

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324312

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Arsenic	1.00	0.966		mg/L		97	85 - 115	0	20	
Lead	1.00	0.989		mg/L		99	85 - 115	0	20	
Cadmium	1.00	0.963		mg/L		96	85 - 115	0	20	
Chromium	1.00	1.02		mg/L		102	85 - 115	0	20	
Copper	1.00	1.03		mg/L		103	85 - 115	1	20	
Nickel	1.00	0.977		mg/L		98	85 - 115	0	20	
Zinc	1.00	0.906		mg/L		91	85 - 115	1	20	

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 580-324362/18-A
Matrix: Water
Analysis Batch: 324393

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324362

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00030	0.00015	mg/L		03/06/20 10:59	03/06/20 14:02	1

Lab Sample ID: LCS 580-324362/19-A
Matrix: Water
Analysis Batch: 324393

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324362

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	RPD
Mercury	0.00200	0.00194		mg/L		97	85 - 115	

Lab Sample ID: LCSD 580-324362/20-A
Matrix: Water
Analysis Batch: 324393

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324362

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Mercury	0.00200	0.00187		mg/L		93	85 - 115	4	20	

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 580-325033/1-A
Matrix: Water
Analysis Batch: 325053

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 325033

Analyte	MB MB		RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
HEM (Oil & Grease)	ND		5.2	5.2	mg/L		03/17/20 16:10	03/17/20 18:48	1
SGT-HEM (Oil and Grease - Nonpolar)	ND		5.2	5.2	mg/L		03/17/20 16:10	03/17/20 18:48	1
HEM Polar (Oil and Grease - Polar)	ND		5.2	5.2	mg/L		03/17/20 16:10	03/17/20 18:48	1

Lab Sample ID: LCS 580-325033/2-A
Matrix: Water
Analysis Batch: 325053

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 325033

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.	
							Limits	RPD
HEM (Oil & Grease)	40.9	40.96		mg/L		100	78 - 114	
SGT-HEM (Oil and Grease - Nonpolar)	20.4	14.71		mg/L		72	64 - 132	

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCSD 580-325033/3-A
 Matrix: Water
 Analysis Batch: 325053

Client Sample ID: Lab Control Sample Dup
 Prep Type: Total/NA
 Prep Batch: 325033

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HEM (Oil & Grease)	41.0	37.64		mg/L		92	78 - 114	8	18
SGT-HEM (Oil and Grease - Nonpolar)	20.5	13.85		mg/L		67	64 - 132	6	34

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Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Client Sample ID: Effluent1-030320

Lab Sample ID: 580-93204-1

Date Collected: 03/03/20 09:18

Matrix: Water

Date Received: 03/04/20 14:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	324634	03/10/20 22:02	CJB	TAL SEA
Total/NA	Analysis	150.1		1	324272	03/05/20 12:40	MLT	TAL SEA
Total/NA	Prep	1664A			325033	03/17/20 16:10	AAC	TAL SEA
Total/NA	Analysis	1664A		1	325053	03/17/20 18:48	AAC	TAL SEA

Client Sample ID: EffComp-030420

Lab Sample ID: 580-93204-2

Date Collected: 03/04/20 12:10

Matrix: Water

Date Received: 03/04/20 14:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	CWA_Prep			324536	03/10/20 10:21	T1L	TAL SEA
Total/NA	Analysis	625.1		100	325154	03/19/20 17:04	CJ	TAL SEA
Total/NA	Prep	200.7			324312	03/05/20 15:22	ART	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	324466	03/06/20 16:06	TMH	TAL SEA
Total/NA	Prep	245.1			324362	03/06/20 10:59	A1B	TAL SEA
Total/NA	Analysis	245.1		1	324393	03/06/20 14:36	A1B	TAL SEA

Client Sample ID: TripBlank-030320

Lab Sample ID: 580-93204-3

Date Collected: 03/03/20 09:20

Matrix: Water

Date Received: 03/04/20 14:51

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624.1		1	324634	03/10/20 14:02	CJB	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Laboratory: Eurofins TestAmerica, Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-18-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
150.1		Water	pH
1664A	1664A	Water	HEM Polar (Oil and Grease - Polar)
200.7 Rev 4.4	200.7	Water	Cadmium
200.7 Rev 4.4	200.7	Water	Chromium
200.7 Rev 4.4	200.7	Water	Copper
200.7 Rev 4.4	200.7	Water	Lead
200.7 Rev 4.4	200.7	Water	Nickel
200.7 Rev 4.4	200.7	Water	Zinc
245.1	245.1	Water	Mercury
625.1	CWA_Prep	Water	1,2-Dichlorobenzene
625.1	CWA_Prep	Water	1,2-Diphenylhydrazine (as Azobenzene)
625.1	CWA_Prep	Water	1,3-Dichlorobenzene
625.1	CWA_Prep	Water	1,4-Dichlorobenzene

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93204-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-93204-1	Effluent1-030320	Water	03/03/20 09:18	03/04/20 14:51	
580-93204-2	EffComp-030420	Water	03/04/20 12:10	03/04/20 14:51	
580-93204-3	TripBlank-030320	Water	03/03/20 09:20	03/04/20 14:51	

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Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-93204-1

Login Number: 93204

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

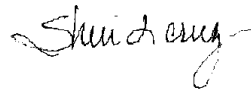
ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-93089-1
Client Project/Site: Lilyblad Site Remediation

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
3/23/2020 4:29:35 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com



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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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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Job ID: 580-93089-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-93089-1

Comments

No additional comments.

Receipt

The samples were received on 2/28/2020 10:59 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 10.0° C.

Receipt Exceptions

The following sample was received at the laboratory outside the required temperature criteria: GWaterInf-022620 (580-93089-1) and Test4Inf1-022820 (580-93089-2).

The following samples were received with headspace in the sample container: GWaterInf-022620 (580-93089-1) and Test4Inf1-022820 (580-93089-2). Use of containers with headspace for analysis must be narrated by analytical staff.

The client requested to add 8260 analyses on the trip blank.

GC/MS VOA

Method 8260D: The following volatile samples were analyzed with significant headspace in the sample container(s): GWaterInf-022620 (580-93089-1) and Test4Inf1-022820 (580-93089-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Methods 8270D, 8270E: The CCV for preparation batch 580-324045 and analytical batch 580-324182 recovered outside control limits for the following analyte(s): 4,6-Dinitro-2-methylphenol, Pentachlorophenol, Benzyl alcohol and 4-Nitrophenol. 4,6-Dinitro-2-methylphenol, Pentachlorophenol, Benzyl alcohol and 4-Nitrophenol have been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Methods 8270D, 8270E: The laboratory control sample (LCS) for preparation batch 580-324045 and analytical batch 580-324182 recovered outside the upper control limit for the following analyte: Bis(2-chloroethyl)ether. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Methods 8270D, 8270E: The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for preparation batch 580-324045 and analytical batch 580-324182 recovered outside control limits for the following analytes: Pentachlorophenol and Benzyl alcohol. Pentachlorophenol and Benzyl alcohol have been identified as a poor performing analytes when analyzed using this method; therefore, re-extraction/re-analysis was not performed.

Methods 8270D, 8270E: The CCVIS for preparation batch 580-324045 and analytical batch 580-325325 recovered outside control limits for the following analyte(s): 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 2,4-Dinitrophenol and 4-Nitrophenol. These analytes have been identified as poor performers when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Methods 8270D, 8270E: The continuing calibration verification (CCV) associated with batch 580-325325 recovered above the upper control limit for Hexachlorocyclopentadiene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: GWaterInf-022620 (580-93089-1), Test4Inf1-022820 (580-93089-2) and (CCVIS 580-325325/3).

Methods 8270D, 8270E: (CCVIS 580-325325/3), (LCS 580-324045/2-A) and (LCSD 580-324045/3-A) recovered outside control limits, low-biased, for 4-Nitrophenol. This analyte has been demonstrated by the laboratory to exhibit poor and/or erratic chromatographic performance; it is classified as a poor-performing compound. Results for this analyte have been qualified and reported.

Methods 8270D, 8270E: The following samples required a dilution due to the nature of the sample matrix: GWaterInf-022620

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Job ID: 580-93089-1 (Continued)

Laboratory: Eurofins TestAmerica, Seattle (Continued)

(580-93089-1) and Test4Inf1-022820 (580-93089-2). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

Method NWTPH-Gx: Sample displays an atypical hydrocarbon pattern when compared to laboratory control samples. GWaterInf-022620 (580-93089-1) and Test4Inf1-022820 (580-93089-2)

Method NWTPH-Gx: The following volatile samples were analyzed with significant headspace in the sample container(s): GWaterInf-022620 (580-93089-1) and Test4Inf1-022820 (580-93089-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method NWTPH-Dx: (CCVRT 580-324594/3) recovers outside drift limits for o-Terphenyl surrogate. The CCVRT and associated samples recovered within control limits; therefore, the data is reported.

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

Method 3510C: The following samples formed emulsions during the extraction procedure: GWaterInf-022620 (580-93089-1) and Test4Inf1-022820 (580-93089-2). The emulsions were broken up using sodium sulfate and rinsed with DCM. Excess sodium sulfate was removed and fresh sodium sulfate was added and then rinsed with DCM.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Qualifiers

GC/MS 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.

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD 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.
X	Surrogate recovery exceeds control limits

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.

General Chemistry

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.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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 Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: GWaterInf-022620

Lab Sample ID: 580-93089-1

Date Collected: 02/26/20 17:45

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/08/20 22:24	1
Chloromethane	ND		20	5.4	ug/L			03/08/20 22:24	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/08/20 22:24	1
Bromomethane	ND		6.0	1.1	ug/L			03/08/20 22:24	1
Chloroethane	1.7	J	5.0	1.1	ug/L			03/08/20 22:24	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/08/20 22:24	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/08/20 22:24	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/08/20 22:24	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/08/20 22:24	1
1,1-Dichloroethane	1.5	J	2.0	0.22	ug/L			03/08/20 22:24	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/08/20 22:24	1
cis-1,2-Dichloroethene	5.7		3.0	0.69	ug/L			03/08/20 22:24	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/08/20 22:24	1
Chloroform	ND		5.0	0.50	ug/L			03/08/20 22:24	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/08/20 22:24	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/08/20 22:24	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/08/20 22:24	1
Benzene	ND		3.0	0.53	ug/L			03/08/20 22:24	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/08/20 22:24	1
Trichloroethene	ND		3.0	0.85	ug/L			03/08/20 22:24	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/08/20 22:24	1
Dibromomethane	ND		2.0	0.34	ug/L			03/08/20 22:24	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/08/20 22:24	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/08/20 22:24	1
Toluene	ND		2.0	0.39	ug/L			03/08/20 22:24	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/08/20 22:24	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/08/20 22:24	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/08/20 22:24	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/08/20 22:24	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/08/20 22:24	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/08/20 22:24	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/08/20 22:24	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/08/20 22:24	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/08/20 22:24	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/08/20 22:24	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/08/20 22:24	1
o-Xylene	ND		2.0	0.39	ug/L			03/08/20 22:24	1
Styrene	ND		5.0	1.0	ug/L			03/08/20 22:24	1
Bromoform	ND		3.0	0.56	ug/L			03/08/20 22:24	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/08/20 22:24	1
Bromobenzene	ND		2.0	0.43	ug/L			03/08/20 22:24	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/08/20 22:24	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/08/20 22:24	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/08/20 22:24	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/08/20 22:24	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/08/20 22:24	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/08/20 22:24	1
1,2,4-Trimethylbenzene	0.82	J	3.0	0.61	ug/L			03/08/20 22:24	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/08/20 22:24	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: GWaterInf-022620

Lab Sample ID: 580-93089-1

Date Collected: 02/26/20 17:45

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/08/20 22:24	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/08/20 22:24	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/08/20 22:24	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/08/20 22:24	1
1,2-Dichlorobenzene	0.77	J	2.0	0.46	ug/L			03/08/20 22:24	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/08/20 22:24	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/08/20 22:24	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/08/20 22:24	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/08/20 22:24	1
Naphthalene	ND		4.0	0.93	ug/L			03/08/20 22:24	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/08/20 22:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120					03/08/20 22:24	1
4-Bromofluorobenzene (Surr)	97		80 - 120					03/08/20 22:24	1
Dibromofluoromethane (Surr)	100		80 - 120					03/08/20 22:24	1
Trifluorotoluene (Surr)	102		80 - 120					03/08/20 22:24	1
1,2-Dichloroethane-d4 (Surr)	103		80 - 126					03/08/20 22:24	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		4.3	0.39	ug/L		03/02/20 10:54	03/04/20 17:15	1
Bis(2-chloroethyl)ether	ND	*	0.65	0.032	ug/L		03/02/20 10:54	03/04/20 17:15	1
2-Chlorophenol	ND		1.1	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
1,3-Dichlorobenzene	ND		0.43	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
1,4-Dichlorobenzene	0.14	J	0.43	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Benzyl alcohol	ND	*	5.4	1.4	ug/L		03/02/20 10:54	03/04/20 17:15	1
1,2-Dichlorobenzene	0.46	J	0.65	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
2-Methylphenol	ND		0.65	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
3 & 4 Methylphenol	1.7		0.86	0.032	ug/L		03/02/20 10:54	03/04/20 17:15	1
N-Nitrosodi-n-propylamine	ND		0.65	0.065	ug/L		03/02/20 10:54	03/04/20 17:15	1
Hexachloroethane	ND		1.1	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
Nitrobenzene	ND		1.1	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Isophorone	ND		0.43	0.11	ug/L		03/02/20 10:54	03/04/20 17:15	1
2-Nitrophenol	ND		1.1	0.16	ug/L		03/02/20 10:54	03/04/20 17:15	1
2,4-Dimethylphenol	ND		4.3	0.17	ug/L		03/02/20 10:54	03/04/20 17:15	1
Bis(2-chloroethoxy)methane	ND		0.65	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
2,4-Dichlorophenol	ND		4.3	0.22	ug/L		03/02/20 10:54	03/04/20 17:15	1
1,2,4-Trichlorobenzene	ND		0.43	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Naphthalene	ND		0.43	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
4-Chloroaniline	ND		11	0.64	ug/L		03/02/20 10:54	03/04/20 17:15	1
Hexachlorobutadiene	ND		1.1	0.065	ug/L		03/02/20 10:54	03/04/20 17:15	1
2-Methylnaphthalene	ND		0.43	0.032	ug/L		03/02/20 10:54	03/04/20 17:15	1
4,6-Dinitro-2-methylphenol	ND		5.4	0.28	ug/L		03/02/20 10:54	03/04/20 17:15	1
N-Nitrosodiphenylamine	ND		16	0.075	ug/L		03/02/20 10:54	03/04/20 17:15	1
4-Bromophenyl phenyl ether	ND		0.65	0.065	ug/L		03/02/20 10:54	03/04/20 17:15	1
Hexachlorobenzene	ND		0.65	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Pentachlorophenol	ND	*	11	0.55	ug/L		03/02/20 10:54	03/04/20 17:15	1
Phenanthrene	ND		1.1	0.032	ug/L		03/02/20 10:54	03/04/20 17:15	1
Anthracene	ND		16	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: GWaterInf-022620

Lab Sample ID: 580-93089-1

Date Collected: 02/26/20 17:45

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	ND		3.2	0.47	ug/L		03/02/20 10:54	03/04/20 17:15	1
Fluoranthene	ND		3.2	0.065	ug/L		03/02/20 10:54	03/04/20 17:15	1
Pyrene	ND		2.2	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Butyl benzyl phthalate	ND		11	1.0	ug/L		03/02/20 10:54	03/04/20 17:15	1
3,3'-Dichlorobenzidine	ND		16	0.67	ug/L		03/02/20 10:54	03/04/20 17:15	1
Benzo[a]anthracene	ND		1.1	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
Chrysene	ND		0.65	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Bis(2-ethylhexyl) phthalate	0.96	J	16	0.94	ug/L		03/02/20 10:54	03/04/20 17:15	1
Di-n-octyl phthalate	ND		1.1	0.14	ug/L		03/02/20 10:54	03/04/20 17:15	1
Benzo[a]pyrene	ND		1.1	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Indeno[1,2,3-cd]pyrene	ND		1.1	0.14	ug/L		03/02/20 10:54	03/04/20 17:15	1
Dibenz(a,h)anthracene	ND		0.65	0.075	ug/L		03/02/20 10:54	03/04/20 17:15	1
Benzo[g,h,i]perylene	ND		1.1	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Carbazole	ND		0.65	0.11	ug/L		03/02/20 10:54	03/04/20 17:15	1
1-Methylnaphthalene	ND		1.1	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
Benzo[b]fluoranthene	ND		1.1	0.043	ug/L		03/02/20 10:54	03/04/20 17:15	1
Benzo[k]fluoranthene	ND		1.1	0.054	ug/L		03/02/20 10:54	03/04/20 17:15	1
bis(chloroisopropyl) ether	ND		0.65	0.065	ug/L		03/02/20 10:54	03/04/20 17:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	23		20 - 110	03/02/20 10:54	03/04/20 17:15	1
Phenol-d5 (Surr)	20		10 - 115	03/02/20 10:54	03/04/20 17:15	1
Nitrobenzene-d5 (Surr)	62		40 - 110	03/02/20 10:54	03/04/20 17:15	1
2,4,6-Tribromophenol (Surr)	72		40 - 125	03/02/20 10:54	03/04/20 17:15	1
Terphenyl-d14 (Surr)	71		50 - 135	03/02/20 10:54	03/04/20 17:15	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzoic acid	ND		220	38	ug/L		03/02/20 10:54	03/21/20 14:12	50
4-Chloro-3-methylphenol	ND		32	7.0	ug/L		03/02/20 10:54	03/21/20 14:12	50
Hexachlorocyclopentadiene	ND		270	5.4	ug/L		03/02/20 10:54	03/21/20 14:12	50
2,4,6-Trichlorophenol	ND		32	5.4	ug/L		03/02/20 10:54	03/21/20 14:12	50
2,4,5-Trichlorophenol	ND		22	5.4	ug/L		03/02/20 10:54	03/21/20 14:12	50
2-Chloronaphthalene	ND		54	1.6	ug/L		03/02/20 10:54	03/21/20 14:12	50
2-Nitroaniline	ND		32	5.4	ug/L		03/02/20 10:54	03/21/20 14:12	50
Dimethyl phthalate	ND		32	3.2	ug/L		03/02/20 10:54	03/21/20 14:12	50
Acenaphthylene	ND		54	3.2	ug/L		03/02/20 10:54	03/21/20 14:12	50
2,6-Dinitrotoluene	ND		32	2.2	ug/L		03/02/20 10:54	03/21/20 14:12	50
3-Nitroaniline	ND		160	8.6	ug/L		03/02/20 10:54	03/21/20 14:12	50
Acenaphthene	ND		22	2.7	ug/L		03/02/20 10:54	03/21/20 14:12	50
2,4-Dinitrophenol	ND		270	86	ug/L		03/02/20 10:54	03/21/20 14:12	50
4-Nitrophenol	ND *		810	92	ug/L		03/02/20 10:54	03/21/20 14:12	50
Dibenzofuran	ND		22	2.7	ug/L		03/02/20 10:54	03/21/20 14:12	50
2,4-Dinitrotoluene	ND		54	5.4	ug/L		03/02/20 10:54	03/21/20 14:12	50
Diethyl phthalate	ND		650	8.1	ug/L		03/02/20 10:54	03/21/20 14:12	50
4-Chlorophenyl phenyl ether	ND		32	2.7	ug/L		03/02/20 10:54	03/21/20 14:12	50
Fluorene	ND		110	2.7	ug/L		03/02/20 10:54	03/21/20 14:12	50
4-Nitroaniline	ND		110	11	ug/L		03/02/20 10:54	03/21/20 14:12	50

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: GWaterInf-022620

Lab Sample ID: 580-93089-1

Date Collected: 02/26/20 17:45

Matrix: Water

Date Received: 02/28/20 10:59

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	0	X	20 - 110	03/02/20 10:54	03/21/20 14:12	50
Phenol-d5 (Surr)	0	X	10 - 115	03/02/20 10:54	03/21/20 14:12	50
Nitrobenzene-d5 (Surr)	0	X	40 - 110	03/02/20 10:54	03/21/20 14:12	50
2-Fluorobiphenyl	24	X	50 - 110	03/02/20 10:54	03/21/20 14:12	50
2,4,6-Tribromophenol (Surr)	0	X	40 - 125	03/02/20 10:54	03/21/20 14:12	50
Terphenyl-d14 (Surr)	30	X	50 - 135	03/02/20 10:54	03/21/20 14:12	50

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.54		0.25	0.10	mg/L			03/04/20 16:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150		03/04/20 16:45	1
Trifluorotoluene (Surr)	95		50 - 150		03/04/20 16:45	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	22		0.11	0.064	mg/L		03/09/20 10:15	03/10/20 04:59	1
Motor Oil (>C24-C36)	7.2		0.35	0.095	mg/L		03/09/20 10:15	03/10/20 04:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	81		50 - 150	03/09/20 10:15	03/10/20 04:59	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: Test4Inf1-022820

Lab Sample ID: 580-93089-2

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/08/20 22:51	1
Chloromethane	ND		20	5.4	ug/L			03/08/20 22:51	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/08/20 22:51	1
Bromomethane	ND		6.0	1.1	ug/L			03/08/20 22:51	1
Chloroethane	1.1	J	5.0	1.1	ug/L			03/08/20 22:51	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/08/20 22:51	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/08/20 22:51	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/08/20 22:51	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/08/20 22:51	1
1,1-Dichloroethane	1.1	J	2.0	0.22	ug/L			03/08/20 22:51	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/08/20 22:51	1
cis-1,2-Dichloroethene	6.0		3.0	0.69	ug/L			03/08/20 22:51	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/08/20 22:51	1
Chloroform	ND		5.0	0.50	ug/L			03/08/20 22:51	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/08/20 22:51	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/08/20 22:51	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/08/20 22:51	1
Benzene	ND		3.0	0.53	ug/L			03/08/20 22:51	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/08/20 22:51	1
Trichloroethene	ND		3.0	0.85	ug/L			03/08/20 22:51	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/08/20 22:51	1
Dibromomethane	ND		2.0	0.34	ug/L			03/08/20 22:51	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/08/20 22:51	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/08/20 22:51	1
Toluene	ND		2.0	0.39	ug/L			03/08/20 22:51	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/08/20 22:51	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/08/20 22:51	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/08/20 22:51	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/08/20 22:51	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/08/20 22:51	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/08/20 22:51	1
Chlorobenzene	2.6		2.0	0.44	ug/L			03/08/20 22:51	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/08/20 22:51	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/08/20 22:51	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/08/20 22:51	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/08/20 22:51	1
o-Xylene	0.64	J	2.0	0.39	ug/L			03/08/20 22:51	1
Styrene	ND		5.0	1.0	ug/L			03/08/20 22:51	1
Bromoform	ND		3.0	0.56	ug/L			03/08/20 22:51	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/08/20 22:51	1
Bromobenzene	ND		2.0	0.43	ug/L			03/08/20 22:51	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/08/20 22:51	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/08/20 22:51	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/08/20 22:51	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/08/20 22:51	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/08/20 22:51	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/08/20 22:51	1
1,2,4-Trimethylbenzene	0.76	J	3.0	0.61	ug/L			03/08/20 22:51	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/08/20 22:51	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: Test4Inf1-022820

Lab Sample ID: 580-93089-2

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/08/20 22:51	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/08/20 22:51	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/08/20 22:51	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/08/20 22:51	1
1,2-Dichlorobenzene	0.79	J	2.0	0.46	ug/L			03/08/20 22:51	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/08/20 22:51	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/08/20 22:51	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/08/20 22:51	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/08/20 22:51	1
Naphthalene	ND		4.0	0.93	ug/L			03/08/20 22:51	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/08/20 22:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120					03/08/20 22:51	1
4-Bromofluorobenzene (Surr)	96		80 - 120					03/08/20 22:51	1
Dibromofluoromethane (Surr)	100		80 - 120					03/08/20 22:51	1
Trifluorotoluene (Surr)	101		80 - 120					03/08/20 22:51	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126					03/08/20 22:51	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		40	3.6	ug/L		03/02/20 10:54	03/04/20 17:38	10
Bis(2-chloroethyl)ether	ND	*	6.0	0.30	ug/L		03/02/20 10:54	03/04/20 17:38	10
2-Chlorophenol	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
1,3-Dichlorobenzene	ND		4.0	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
1,4-Dichlorobenzene	ND		4.0	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Benzyl alcohol	ND	*	50	13	ug/L		03/02/20 10:54	03/04/20 17:38	10
1,2-Dichlorobenzene	ND		6.0	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
2-Methylphenol	1.6	J	6.0	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
3 & 4 Methylphenol	12		8.0	0.30	ug/L		03/02/20 10:54	03/04/20 17:38	10
N-Nitrosodi-n-propylamine	ND		6.0	0.60	ug/L		03/02/20 10:54	03/04/20 17:38	10
Hexachloroethane	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
Nitrobenzene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Isophorone	ND		4.0	1.0	ug/L		03/02/20 10:54	03/04/20 17:38	10
2-Nitrophenol	ND		10	1.5	ug/L		03/02/20 10:54	03/04/20 17:38	10
2,4-Dimethylphenol	ND		40	1.6	ug/L		03/02/20 10:54	03/04/20 17:38	10
Bis(2-chloroethoxy)methane	ND		6.0	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
2,4-Dichlorophenol	ND		40	2.0	ug/L		03/02/20 10:54	03/04/20 17:38	10
1,2,4-Trichlorobenzene	ND		4.0	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Naphthalene	ND		4.0	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
4-Chloroaniline	ND		100	5.9	ug/L		03/02/20 10:54	03/04/20 17:38	10
Hexachlorobutadiene	ND		10	0.60	ug/L		03/02/20 10:54	03/04/20 17:38	10
2-Methylnaphthalene	ND		4.0	0.30	ug/L		03/02/20 10:54	03/04/20 17:38	10
4,6-Dinitro-2-methylphenol	ND		50	2.6	ug/L		03/02/20 10:54	03/04/20 17:38	10
N-Nitrosodiphenylamine	ND		150	0.70	ug/L		03/02/20 10:54	03/04/20 17:38	10
4-Bromophenyl phenyl ether	ND		6.0	0.60	ug/L		03/02/20 10:54	03/04/20 17:38	10
Hexachlorobenzene	ND		6.0	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Pentachlorophenol	ND	*	100	5.1	ug/L		03/02/20 10:54	03/04/20 17:38	10
Phenanthrene	ND		10	0.30	ug/L		03/02/20 10:54	03/04/20 17:38	10
Anthracene	ND		150	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: Test4Inf1-022820

Lab Sample ID: 580-93089-2

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	ND		30	4.4	ug/L		03/02/20 10:54	03/04/20 17:38	10
Fluoranthene	ND		30	0.60	ug/L		03/02/20 10:54	03/04/20 17:38	10
Pyrene	ND		20	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Butyl benzyl phthalate	ND		100	9.3	ug/L		03/02/20 10:54	03/04/20 17:38	10
3,3'-Dichlorobenzidine	ND		150	6.2	ug/L		03/02/20 10:54	03/04/20 17:38	10
Benzo[a]anthracene	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
Chrysene	ND		6.0	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Bis(2-ethylhexyl) phthalate	ND		150	8.7	ug/L		03/02/20 10:54	03/04/20 17:38	10
Di-n-octyl phthalate	ND		10	1.3	ug/L		03/02/20 10:54	03/04/20 17:38	10
Benzo[a]pyrene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Indeno[1,2,3-cd]pyrene	ND		10	1.3	ug/L		03/02/20 10:54	03/04/20 17:38	10
Dibenz(a,h)anthracene	ND		6.0	0.70	ug/L		03/02/20 10:54	03/04/20 17:38	10
Benzo[g,h,i]perylene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Carbazole	ND		6.0	1.0	ug/L		03/02/20 10:54	03/04/20 17:38	10
1-Methylnaphthalene	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
Benzo[b]fluoranthene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 17:38	10
Benzo[k]fluoranthene	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 17:38	10
bis(chloroisopropyl) ether	ND		6.0	0.60	ug/L		03/02/20 10:54	03/04/20 17:38	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	0	X	20 - 110	03/02/20 10:54	03/04/20 17:38	10
Phenol-d5 (Surr)	56		10 - 115	03/02/20 10:54	03/04/20 17:38	10
Nitrobenzene-d5 (Surr)	56		40 - 110	03/02/20 10:54	03/04/20 17:38	10
2,4,6-Tribromophenol (Surr)	111		40 - 125	03/02/20 10:54	03/04/20 17:38	10
Terphenyl-d14 (Surr)	101		50 - 135	03/02/20 10:54	03/04/20 17:38	10

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzoic acid	ND		200	35	ug/L		03/02/20 10:54	03/21/20 14:35	50
4-Chloro-3-methylphenol	ND		30	6.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
Hexachlorocyclopentadiene	ND		250	5.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
2,4,6-Trichlorophenol	ND		30	5.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
2,4,5-Trichlorophenol	ND		20	5.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
2-Chloronaphthalene	ND		50	1.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
2-Nitroaniline	ND		30	5.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
Dimethyl phthalate	ND		30	3.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
Acenaphthylene	3.5	J	50	3.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
2,6-Dinitrotoluene	ND		30	2.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
3-Nitroaniline	ND		150	8.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
Acenaphthene	ND		20	2.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
2,4-Dinitrophenol	ND		250	80	ug/L		03/02/20 10:54	03/21/20 14:35	50
4-Nitrophenol	ND	*	750	85	ug/L		03/02/20 10:54	03/21/20 14:35	50
Dibenzofuran	ND		20	2.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
2,4-Dinitrotoluene	ND		50	5.0	ug/L		03/02/20 10:54	03/21/20 14:35	50
Diethyl phthalate	ND		600	7.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
4-Chlorophenyl phenyl ether	ND		30	2.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
Fluorene	ND		100	2.5	ug/L		03/02/20 10:54	03/21/20 14:35	50
4-Nitroaniline	ND		100	10	ug/L		03/02/20 10:54	03/21/20 14:35	50

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: Test4Inf1-022820

Lab Sample ID: 580-93089-2

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	0	X	20 - 110	03/02/20 10:54	03/21/20 14:35	50
Phenol-d5 (Surr)	44		10 - 115	03/02/20 10:54	03/21/20 14:35	50
Nitrobenzene-d5 (Surr)	98		40 - 110	03/02/20 10:54	03/21/20 14:35	50
2-Fluorobiphenyl	38	X	50 - 110	03/02/20 10:54	03/21/20 14:35	50
2,4,6-Tribromophenol (Surr)	118		40 - 125	03/02/20 10:54	03/21/20 14:35	50
Terphenyl-d14 (Surr)	96		50 - 135	03/02/20 10:54	03/21/20 14:35	50

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.53		0.25	0.10	mg/L			03/04/20 17:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		50 - 150		03/04/20 17:09	1
Trifluorotoluene (Surr)	103		50 - 150		03/04/20 17:09	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	19		0.12	0.068	mg/L		03/10/20 10:00	03/10/20 22:50	1
Motor Oil (>C24-C36)	6.4		0.37	0.10	mg/L		03/10/20 10:00	03/10/20 22:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	66		50 - 150	03/10/20 10:00	03/10/20 22:50	1

Method: 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.013	J	0.060	0.0072	mg/L		03/02/20 14:28	03/03/20 19:17	1
Lead	ND		0.030	0.0027	mg/L		03/02/20 14:28	03/03/20 19:17	1
Cadmium	ND		0.020	0.00050	mg/L		03/02/20 14:28	03/03/20 19:17	1
Chromium	0.0033	J	0.025	0.0033	mg/L		03/02/20 14:28	03/03/20 19:17	1
Copper	0.024	J	0.060	0.014	mg/L		03/02/20 14:28	03/03/20 19:17	1
Nickel	0.014	J	0.020	0.0023	mg/L		03/02/20 14:28	03/03/20 19:17	1
Zinc	0.021	J	0.040	0.0093	mg/L		03/02/20 14:28	03/03/20 19:17	1

Method: 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00030	0.00015	mg/L		03/02/20 08:30	03/02/20 12:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	100		7.5	1.9	mg/L			03/10/20 15:45	5

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: Test Blank

Lab Sample ID: 580-93089-3

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/08/20 19:42	1
Chloromethane	ND		20	5.4	ug/L			03/08/20 19:42	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/08/20 19:42	1
Bromomethane	ND		6.0	1.1	ug/L			03/08/20 19:42	1
Chloroethane	ND		5.0	1.1	ug/L			03/08/20 19:42	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/08/20 19:42	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/08/20 19:42	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/08/20 19:42	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/08/20 19:42	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/08/20 19:42	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/08/20 19:42	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			03/08/20 19:42	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/08/20 19:42	1
Chloroform	ND		5.0	0.50	ug/L			03/08/20 19:42	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/08/20 19:42	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/08/20 19:42	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/08/20 19:42	1
Benzene	ND		3.0	0.53	ug/L			03/08/20 19:42	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/08/20 19:42	1
Trichloroethene	ND		3.0	0.85	ug/L			03/08/20 19:42	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/08/20 19:42	1
Dibromomethane	ND		2.0	0.34	ug/L			03/08/20 19:42	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/08/20 19:42	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/08/20 19:42	1
Toluene	ND		2.0	0.39	ug/L			03/08/20 19:42	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/08/20 19:42	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/08/20 19:42	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/08/20 19:42	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/08/20 19:42	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/08/20 19:42	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/08/20 19:42	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/08/20 19:42	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/08/20 19:42	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/08/20 19:42	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/08/20 19:42	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/08/20 19:42	1
o-Xylene	ND		2.0	0.39	ug/L			03/08/20 19:42	1
Styrene	ND		5.0	1.0	ug/L			03/08/20 19:42	1
Bromoform	ND		3.0	0.56	ug/L			03/08/20 19:42	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/08/20 19:42	1
Bromobenzene	ND		2.0	0.43	ug/L			03/08/20 19:42	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/08/20 19:42	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/08/20 19:42	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/08/20 19:42	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/08/20 19:42	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/08/20 19:42	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/08/20 19:42	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			03/08/20 19:42	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/08/20 19:42	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: Test Blank

Lab Sample ID: 580-93089-3

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/08/20 19:42	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/08/20 19:42	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/08/20 19:42	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/08/20 19:42	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/08/20 19:42	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/08/20 19:42	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/08/20 19:42	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/08/20 19:42	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/08/20 19:42	1
Naphthalene	ND		4.0	0.93	ug/L			03/08/20 19:42	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/08/20 19:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		03/08/20 19:42	1
4-Bromofluorobenzene (Surr)	96		80 - 120		03/08/20 19:42	1
Dibromofluoromethane (Surr)	101		80 - 120		03/08/20 19:42	1
Trifluorotoluene (Surr)	102		80 - 120		03/08/20 19:42	1
1,2-Dichloroethane-d4 (Surr)	103		80 - 126		03/08/20 19:42	1

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-324429/7
Matrix: Water
Analysis Batch: 324429

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/08/20 17:28	1
Chloromethane	ND		20	5.4	ug/L			03/08/20 17:28	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/08/20 17:28	1
Bromomethane	ND		6.0	1.1	ug/L			03/08/20 17:28	1
Chloroethane	ND		5.0	1.1	ug/L			03/08/20 17:28	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/08/20 17:28	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/08/20 17:28	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/08/20 17:28	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/08/20 17:28	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/08/20 17:28	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/08/20 17:28	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			03/08/20 17:28	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/08/20 17:28	1
Chloroform	ND		5.0	0.50	ug/L			03/08/20 17:28	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/08/20 17:28	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/08/20 17:28	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/08/20 17:28	1
Benzene	ND		3.0	0.53	ug/L			03/08/20 17:28	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/08/20 17:28	1
Trichloroethene	ND		3.0	0.85	ug/L			03/08/20 17:28	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/08/20 17:28	1
Dibromomethane	ND		2.0	0.34	ug/L			03/08/20 17:28	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/08/20 17:28	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/08/20 17:28	1
Toluene	ND		2.0	0.39	ug/L			03/08/20 17:28	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/08/20 17:28	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/08/20 17:28	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/08/20 17:28	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/08/20 17:28	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/08/20 17:28	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/08/20 17:28	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/08/20 17:28	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/08/20 17:28	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/08/20 17:28	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/08/20 17:28	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/08/20 17:28	1
o-Xylene	ND		2.0	0.39	ug/L			03/08/20 17:28	1
Styrene	ND		5.0	1.0	ug/L			03/08/20 17:28	1
Bromoform	ND		3.0	0.56	ug/L			03/08/20 17:28	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/08/20 17:28	1
Bromobenzene	ND		2.0	0.43	ug/L			03/08/20 17:28	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/08/20 17:28	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/08/20 17:28	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/08/20 17:28	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/08/20 17:28	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/08/20 17:28	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/08/20 17:28	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			03/08/20 17:28	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-324429/7
Matrix: Water
Analysis Batch: 324429

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/08/20 17:28	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/08/20 17:28	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/08/20 17:28	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/08/20 17:28	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/08/20 17:28	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/08/20 17:28	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/08/20 17:28	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/08/20 17:28	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/08/20 17:28	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/08/20 17:28	1
Naphthalene	ND		4.0	0.93	ug/L			03/08/20 17:28	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/08/20 17:28	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		03/08/20 17:28	1
4-Bromofluorobenzene (Surr)	97		80 - 120		03/08/20 17:28	1
Dibromofluoromethane (Surr)	99		80 - 120		03/08/20 17:28	1
Trifluorotoluene (Surr)	101		80 - 120		03/08/20 17:28	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126		03/08/20 17:28	1

Lab Sample ID: LCS 580-324429/4
Matrix: Water
Analysis Batch: 324429

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	10.0	10.2		ug/L		102	20 - 150
Chloromethane	10.0	9.26	J	ug/L		93	52 - 135
Vinyl chloride	10.0	9.94		ug/L		99	65 - 130
Bromomethane	10.0	9.45		ug/L		94	66 - 125
Chloroethane	10.0	9.87		ug/L		99	65 - 132
Trichlorofluoromethane	10.0	10.3		ug/L		103	64 - 136
1,1-Dichloroethene	10.0	10.1		ug/L		101	70 - 129
Methylene Chloride	10.0	9.57		ug/L		96	77 - 125
trans-1,2-Dichloroethene	10.0	9.90		ug/L		99	77 - 124
1,1-Dichloroethane	10.0	9.92		ug/L		99	70 - 129
2,2-Dichloropropane	10.0	10.4		ug/L		104	62 - 140
cis-1,2-Dichloroethene	10.0	10.2		ug/L		102	76 - 129
Bromochloromethane	10.0	9.95		ug/L		99	78 - 120
Chloroform	10.0	9.96		ug/L		100	73 - 127
1,1,1-Trichloroethane	10.0	10.2		ug/L		102	74 - 130
Carbon tetrachloride	10.0	10.2		ug/L		102	72 - 129
1,1-Dichloropropene	10.0	10.3		ug/L		103	80 - 120
Benzene	10.0	10.1		ug/L		101	75 - 121
1,2-Dichloroethane	10.0	9.73		ug/L		97	76 - 131
Trichloroethene	10.0	10.1		ug/L		101	70 - 120
1,2-Dichloropropane	10.0	9.63		ug/L		96	72 - 126
Dibromomethane	10.0	9.42		ug/L		94	80 - 120
Bromodichloromethane	10.0	9.77		ug/L		98	75 - 124

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-324429/4
Matrix: Water
Analysis Batch: 324429

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	10.0	10.0		ug/L		100	77 - 120
Toluene	10.0	9.81		ug/L		98	80 - 120
trans-1,3-Dichloropropene	10.0	9.51		ug/L		95	80 - 122
1,1,2-Trichloroethane	10.0	9.30		ug/L		93	80 - 121
Tetrachloroethene	10.0	9.91		ug/L		99	76 - 120
1,3-Dichloropropane	10.0	9.69		ug/L		97	79 - 120
Dibromochloromethane	10.0	9.62		ug/L		96	71 - 120
1,2-Dibromoethane	10.0	9.52		ug/L		95	79 - 120
Chlorobenzene	10.0	9.69		ug/L		97	80 - 120
Ethylbenzene	10.0	10.1		ug/L		101	80 - 120
1,1,1,2-Tetrachloroethane	10.0	9.78		ug/L		98	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.48		ug/L		95	74 - 124
m-Xylene & p-Xylene	10.0	10.1		ug/L		101	80 - 120
o-Xylene	10.0	10.3		ug/L		103	80 - 120
Styrene	10.0	9.84		ug/L		98	76 - 121
Bromoform	10.0	9.43		ug/L		94	61 - 132
Isopropylbenzene	10.0	10.4		ug/L		104	75 - 120
Bromobenzene	10.0	10.1		ug/L		101	80 - 120
N-Propylbenzene	10.0	10.5		ug/L		105	80 - 120
1,2,3-Trichloropropane	10.0	9.77		ug/L		98	76 - 124
2-Chlorotoluene	10.0	10.2		ug/L		102	80 - 120
1,3,5-Trimethylbenzene	10.0	10.6		ug/L		106	80 - 120
4-Chlorotoluene	10.0	10.4		ug/L		104	80 - 120
t-Butylbenzene	10.0	10.7		ug/L		107	80 - 121
1,2,4-Trimethylbenzene	10.0	10.7		ug/L		107	80 - 120
sec-Butylbenzene	10.0	10.7		ug/L		107	78 - 120
1,3-Dichlorobenzene	10.0	10.0		ug/L		100	80 - 120
4-Isopropyltoluene	10.0	10.8		ug/L		108	77 - 120
1,4-Dichlorobenzene	10.0	9.97		ug/L		100	80 - 120
n-Butylbenzene	10.0	10.7		ug/L		107	78 - 120
1,2-Dichlorobenzene	10.0	9.97		ug/L		100	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	9.89	J	ug/L		99	65 - 125
1,2,4-Trichlorobenzene	10.0	10.6		ug/L		106	57 - 140
1,2,3-Trichlorobenzene	10.0	10.6		ug/L		106	23 - 150
Hexachlorobutadiene	10.0	10.0		ug/L		100	74 - 125
Naphthalene	10.0	10.6		ug/L		106	44 - 144
Methyl tert-butyl ether	10.0	10.0		ug/L		100	72 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120
Trifluorotoluene (Surr)	98		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 126

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-324429/5
Matrix: Water
Analysis Batch: 324429

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
Dichlorodifluoromethane	10.0	9.62	J	ug/L		96	20 - 150	5	35
Chloromethane	10.0	8.82	J	ug/L		88	52 - 135	5	23
Vinyl chloride	10.0	9.34		ug/L		93	65 - 130	6	28
Bromomethane	10.0	9.33		ug/L		93	66 - 125	1	27
Chloroethane	10.0	9.21		ug/L		92	65 - 132	7	35
Trichlorofluoromethane	10.0	9.93		ug/L		99	64 - 136	3	27
1,1-Dichloroethene	10.0	9.82		ug/L		98	70 - 129	3	27
Methylene Chloride	10.0	9.43		ug/L		94	77 - 125	2	18
trans-1,2-Dichloroethene	10.0	9.62		ug/L		96	77 - 124	3	21
1,1-Dichloroethane	10.0	9.77		ug/L		98	70 - 129	1	26
2,2-Dichloropropane	10.0	9.58		ug/L		96	62 - 140	8	23
cis-1,2-Dichloroethene	10.0	9.77		ug/L		98	76 - 129	4	15
Bromochloromethane	10.0	9.76		ug/L		98	78 - 120	2	20
Chloroform	10.0	9.76		ug/L		98	73 - 127	2	22
1,1,1-Trichloroethane	10.0	9.95		ug/L		99	74 - 130	3	18
Carbon tetrachloride	10.0	9.83		ug/L		98	72 - 129	4	19
1,1-Dichloropropene	10.0	10.0		ug/L		100	80 - 120	2	14
Benzene	10.0	9.60		ug/L		96	75 - 121	5	14
1,2-Dichloroethane	10.0	9.51		ug/L		95	76 - 131	2	18
Trichloroethene	10.0	9.86		ug/L		99	70 - 120	3	21
1,2-Dichloropropane	10.0	9.57		ug/L		96	72 - 126	1	26
Dibromomethane	10.0	9.71		ug/L		97	80 - 120	3	22
Bromodichloromethane	10.0	9.66		ug/L		97	75 - 124	1	22
cis-1,3-Dichloropropene	10.0	10.1		ug/L		101	77 - 120	1	20
Toluene	10.0	9.67		ug/L		97	80 - 120	1	19
trans-1,3-Dichloropropene	10.0	9.70		ug/L		97	80 - 122	2	25
1,1,2-Trichloroethane	10.0	9.52		ug/L		95	80 - 121	2	21
Tetrachloroethene	10.0	10.1		ug/L		101	76 - 120	2	20
1,3-Dichloropropane	10.0	9.98		ug/L		100	79 - 120	3	26
Dibromochloromethane	10.0	9.92		ug/L		99	71 - 120	3	24
1,2-Dibromoethane	10.0	9.80		ug/L		98	79 - 120	3	20
Chlorobenzene	10.0	9.74		ug/L		97	80 - 120	1	15
Ethylbenzene	10.0	9.96		ug/L		100	80 - 120	2	14
1,1,1,2-Tetrachloroethane	10.0	10.1		ug/L		101	79 - 120	3	20
1,1,2,2-Tetrachloroethane	10.0	9.63		ug/L		96	74 - 124	1	18
m-Xylene & p-Xylene	10.0	9.92		ug/L		99	80 - 120	2	14
o-Xylene	10.0	10.1		ug/L		101	80 - 120	2	16
Styrene	10.0	9.86		ug/L		99	76 - 121	0	16
Bromoform	10.0	9.78		ug/L		98	61 - 132	4	20
Isopropylbenzene	10.0	10.2		ug/L		102	75 - 120	2	20
Bromobenzene	10.0	9.96		ug/L		100	80 - 120	1	13
N-Propylbenzene	10.0	10.1		ug/L		101	80 - 120	4	13
1,2,3-Trichloropropane	10.0	10.1		ug/L		101	76 - 124	3	30
2-Chlorotoluene	10.0	9.22		ug/L		92	80 - 120	10	15
1,3,5-Trimethylbenzene	10.0	9.79		ug/L		98	80 - 120	8	14
4-Chlorotoluene	10.0	9.68		ug/L		97	80 - 120	7	14
t-Butylbenzene	10.0	10.4		ug/L		104	80 - 121	3	14
1,2,4-Trimethylbenzene	10.0	10.4		ug/L		104	80 - 120	3	16

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-324429/5
Matrix: Water
Analysis Batch: 324429

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
sec-Butylbenzene	10.0	10.3		ug/L		103	78 - 120	4	15
1,3-Dichlorobenzene	10.0	9.88		ug/L		99	80 - 120	1	14
4-Isopropyltoluene	10.0	10.4		ug/L		104	77 - 120	4	13
1,4-Dichlorobenzene	10.0	9.82		ug/L		98	80 - 120	2	17
n-Butylbenzene	10.0	10.4		ug/L		104	78 - 120	3	14
1,2-Dichlorobenzene	10.0	9.89		ug/L		99	80 - 120	1	15
1,2-Dibromo-3-Chloropropane	10.0	10.4		ug/L		104	65 - 125	5	27
1,2,4-Trichlorobenzene	10.0	10.5		ug/L		105	57 - 140	0	27
1,2,3-Trichlorobenzene	10.0	10.8		ug/L		108	23 - 150	3	35
Hexachlorobutadiene	10.0	10.1		ug/L		101	74 - 125	1	22
Naphthalene	10.0	10.9		ug/L		109	44 - 144	2	31
Methyl tert-butyl ether	10.0	10.0		ug/L		100	72 - 130	0	18

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
Trifluorotoluene (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 126

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-324045/1-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		4.0	0.36	ug/L		03/02/20 10:54	03/04/20 14:34	1
Bis(2-chloroethyl)ether	ND		0.60	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Chlorophenol	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzyl alcohol	ND		5.0	1.3	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,2-Dichlorobenzene	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Methylphenol	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
3 & 4 Methylphenol	ND		0.80	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
N-Nitrosodi-n-propylamine	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachloroethane	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Nitrobenzene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Isophorone	ND		0.40	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Nitrophenol	ND		1.0	0.15	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzoic acid	ND		4.0	0.70	ug/L		03/02/20 10:54	03/04/20 14:34	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dichlorophenol	ND		4.0	0.20	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,2,4-Trichlorobenzene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Naphthalene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Chloroaniline	ND		10	0.59	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324045/1-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Methylnaphthalene	ND		0.40	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachlorocyclopentadiene	ND		5.0	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Chloronaphthalene	ND		1.0	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Nitroaniline	ND		0.60	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Acenaphthylene	ND		1.0	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,6-Dinitrotoluene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
3-Nitroaniline	ND		3.0	0.16	ug/L		03/02/20 10:54	03/04/20 14:34	1
Acenaphthene	ND		0.40	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Nitrophenol	ND		15	1.7	ug/L		03/02/20 10:54	03/04/20 14:34	1
Dibenzofuran	ND		0.40	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
Diethyl phthalate	ND		12	0.15	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Fluorene	ND		2.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Nitroaniline	ND		2.0	0.21	ug/L		03/02/20 10:54	03/04/20 14:34	1
4,6-Dinitro-2-methylphenol	ND		5.0	0.26	ug/L		03/02/20 10:54	03/04/20 14:34	1
N-Nitrosodiphenylamine	ND		15	0.070	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Pentachlorophenol	ND		10	0.51	ug/L		03/02/20 10:54	03/04/20 14:34	1
Phenanthrene	ND		1.0	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
Anthracene	ND		15	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Di-n-butyl phthalate	ND		3.0	0.44	ug/L		03/02/20 10:54	03/04/20 14:34	1
Fluoranthene	ND		3.0	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Pyrene	ND		2.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Butyl benzyl phthalate	ND		10	0.93	ug/L		03/02/20 10:54	03/04/20 14:34	1
3,3'-Dichlorobenzidine	ND		15	0.62	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[a]anthracene	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Chrysene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Bis(2-ethylhexyl) phthalate	ND		15	0.87	ug/L		03/02/20 10:54	03/04/20 14:34	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[a]pyrene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.13	ug/L		03/02/20 10:54	03/04/20 14:34	1
Dibenz(a,h)anthracene	ND		0.60	0.070	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[g,h,i]perylene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Carbazole	ND		0.60	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[b]fluoranthene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[k]fluoranthene	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
bis(chloroisopropyl) ether	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	55		20 - 110	03/02/20 10:54	03/04/20 14:34	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324045/1-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324045

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Phenol-d5 (Surr)	35		10 - 115	03/02/20 10:54	03/04/20 14:34	1
Nitrobenzene-d5 (Surr)	92		40 - 110	03/02/20 10:54	03/04/20 14:34	1
2-Fluorobiphenyl	75		50 - 110	03/02/20 10:54	03/04/20 14:34	1
2,4,6-Tribromophenol (Surr)	69		40 - 125	03/02/20 10:54	03/04/20 14:34	1
Terphenyl-d14 (Surr)	117		50 - 135	03/02/20 10:54	03/04/20 14:34	1

Lab Sample ID: MB 580-324045/1-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324045

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzoic acid	ND		4.0	0.70	ug/L		03/02/20 10:54	03/21/20 11:32	1
Hexachlorocyclopentadiene	ND		5.0	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
2-Chloronaphthalene	ND		1.0	0.030	ug/L		03/02/20 10:54	03/21/20 11:32	1
2-Nitroaniline	ND		0.60	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		03/02/20 10:54	03/21/20 11:32	1
Acenaphthylene	ND		1.0	0.060	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,6-Dinitrotoluene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/21/20 11:32	1
3-Nitroaniline	ND		3.0	0.16	ug/L		03/02/20 10:54	03/21/20 11:32	1
Acenaphthene	ND		0.40	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		03/02/20 10:54	03/21/20 11:32	1
4-Nitrophenol	ND		15	1.7	ug/L		03/02/20 10:54	03/21/20 11:32	1
Dibenzofuran	ND		0.40	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
Diethyl phthalate	ND		12	0.15	ug/L		03/02/20 10:54	03/21/20 11:32	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
Fluorene	ND		2.0	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
4-Nitroaniline	ND		2.0	0.21	ug/L		03/02/20 10:54	03/21/20 11:32	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorophenol (Surr)	48		20 - 110	03/02/20 10:54	03/21/20 11:32	1
Phenol-d5 (Surr)	27		10 - 115	03/02/20 10:54	03/21/20 11:32	1
Nitrobenzene-d5 (Surr)	93		40 - 110	03/02/20 10:54	03/21/20 11:32	1
2-Fluorobiphenyl	77		50 - 110	03/02/20 10:54	03/21/20 11:32	1
2,4,6-Tribromophenol (Surr)	55		40 - 125	03/02/20 10:54	03/21/20 11:32	1
Terphenyl-d14 (Surr)	108		50 - 135	03/02/20 10:54	03/21/20 11:32	1

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Phenol	2.00	0.772	J	ug/L		39	30 - 130
Bis(2-chloroethyl)ether	2.00	2.62	*	ug/L		131	55 - 125
2-Chlorophenol	2.00	2.04		ug/L		102	57 - 125
1,3-Dichlorobenzene	2.00	1.68		ug/L		84	40 - 125

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	2.00	1.67		ug/L		84	40 - 125
Benzyl alcohol	2.00	ND		ug/L		50	41 - 144
1,2-Dichlorobenzene	2.00	1.77		ug/L		89	44 - 125
2-Methylphenol	2.00	2.04		ug/L		102	60 - 130
3 & 4 Methylphenol	2.00	1.50		ug/L		75	56 - 130
N-Nitrosodi-n-propylamine	2.00	1.97		ug/L		98	60 - 120
Hexachloroethane	2.00	1.57		ug/L		79	30 - 125
Nitrobenzene	2.00	2.15		ug/L		108	62 - 125
Isophorone	2.00	2.12		ug/L		106	64 - 125
2-Nitrophenol	2.00	1.89		ug/L		95	55 - 140
2,4-Dimethylphenol	2.00	1.95	J	ug/L		97	30 - 135
Bis(2-chloroethoxy)methane	2.00	2.16		ug/L		108	59 - 125
2,4-Dichlorophenol	2.00	1.78	J	ug/L		89	50 - 140
1,2,4-Trichlorobenzene	2.00	1.56		ug/L		78	40 - 125
Naphthalene	2.00	1.86		ug/L		93	56 - 125
4-Chloroaniline	2.00	1.73	J	ug/L		87	20 - 150
Hexachlorobutadiene	2.00	1.27		ug/L		63	25 - 125
4-Chloro-3-methylphenol	2.00	1.67		ug/L		83	65 - 145
2-Methylnaphthalene	2.00	1.83		ug/L		92	56 - 125
Hexachlorocyclopentadiene	2.00	0.901	J	ug/L		45	20 - 125
2,4,6-Trichlorophenol	2.00	1.75		ug/L		88	55 - 140
2,4,5-Trichlorophenol	2.00	2.01		ug/L		101	66 - 130
2-Chloronaphthalene	2.00	1.87		ug/L		94	55 - 125
2-Nitroaniline	2.00	1.89		ug/L		95	52 - 140
Dimethyl phthalate	2.00	2.24		ug/L		112	65 - 155
Acenaphthylene	2.00	2.06		ug/L		103	62 - 125
2,6-Dinitrotoluene	2.00	2.00		ug/L		100	67 - 134
3-Nitroaniline	2.00	1.63	J	ug/L		82	22 - 124
Acenaphthene	2.00	2.02		ug/L		101	63 - 125
4-Nitrophenol	4.00	ND		ug/L		25	25 - 153
Dibenzofuran	2.00	2.00		ug/L		100	60 - 125
2,4-Dinitrotoluene	2.00	1.87		ug/L		94	73 - 126
Diethyl phthalate	2.00	2.38	J	ug/L		119	60 - 150
4-Chlorophenyl phenyl ether	2.00	2.00		ug/L		100	59 - 125
Fluorene	2.00	2.11		ug/L		105	69 - 125
4-Nitroaniline	2.00	1.55	J	ug/L		78	49 - 125
4,6-Dinitro-2-methylphenol	4.00	2.60	J	ug/L		65	50 - 136
N-Nitrosodiphenylamine	2.00	2.16	J	ug/L		108	40 - 135
4-Bromophenyl phenyl ether	2.00	2.07		ug/L		103	62 - 132
Hexachlorobenzene	2.00	2.06		ug/L		103	61 - 125
Pentachlorophenol	4.00	0.736	J *	ug/L		18	20 - 145
Phenanthrene	2.00	2.12		ug/L		106	70 - 125
Anthracene	2.00	2.07	J	ug/L		103	50 - 125
Di-n-butyl phthalate	2.00	2.70	J	ug/L		135	55 - 167
Fluoranthene	2.00	2.17	J	ug/L		109	70 - 145
Pyrene	2.00	2.26		ug/L		113	70 - 133
Butyl benzyl phthalate	2.00	2.72	J	ug/L		136	60 - 167
3,3'-Dichlorobenzidine	4.00	3.92	J	ug/L		98	20 - 175
Benzo[a]anthracene	2.00	2.38		ug/L		119	65 - 125

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chrysene	2.00	2.46		ug/L		123	70 - 125
Bis(2-ethylhexyl) phthalate	2.00	2.65	J	ug/L		132	70 - 185
Di-n-octyl phthalate	2.00	2.48		ug/L		124	55 - 150
Benzo[a]pyrene	2.00	2.25		ug/L		113	45 - 125
Indeno[1,2,3-cd]pyrene	2.00	2.20		ug/L		110	70 - 136
Dibenz(a,h)anthracene	2.00	2.22		ug/L		111	69 - 154
Benzo[g,h,i]perylene	2.00	2.24		ug/L		112	65 - 153
Carbazole	2.00	2.73		ug/L		136	75 - 142
1-Methylnaphthalene	2.00	1.92		ug/L		96	54 - 125
Benzo[b]fluoranthene	2.00	2.30		ug/L		115	70 - 129
Benzo[k]fluoranthene	2.00	2.16		ug/L		108	70 - 123
bis(chloroisopropyl) ether	2.00	1.93		ug/L		97	44 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	28		20 - 110
Phenol-d5 (Surr)	24		10 - 115
Nitrobenzene-d5 (Surr)	91		40 - 110
2-Fluorobiphenyl	89		50 - 110
2,4,6-Tribromophenol (Surr)	96		40 - 125
Terphenyl-d14 (Surr)	102		50 - 135

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzoic acid	4.00	2.06	J	ug/L		51	20 - 144
Hexachlorocyclopentadiene	2.00	1.71	J	ug/L		86	20 - 125
2,4,6-Trichlorophenol	2.00	1.92		ug/L		96	55 - 140
2,4,5-Trichlorophenol	2.00	1.85		ug/L		92	66 - 130
2-Chloronaphthalene	2.00	1.70		ug/L		85	55 - 125
2-Nitroaniline	2.00	2.20		ug/L		110	52 - 140
Dimethyl phthalate	2.00	2.17		ug/L		109	65 - 155
Acenaphthylene	2.00	1.90		ug/L		95	62 - 125
2,6-Dinitrotoluene	2.00	2.31		ug/L		115	67 - 134
3-Nitroaniline	2.00	2.03	J	ug/L		102	22 - 124
Acenaphthene	2.00	1.86		ug/L		93	63 - 125
2,4-Dinitrophenol	4.00	3.39	J	ug/L		85	24 - 146
4-Nitrophenol	4.00	ND	*	ug/L		7	25 - 153
Dibenzofuran	2.00	1.83		ug/L		92	60 - 125
2,4-Dinitrotoluene	2.00	2.11		ug/L		106	73 - 126
Diethyl phthalate	2.00	2.26	J	ug/L		113	60 - 150
4-Chlorophenyl phenyl ether	2.00	1.96		ug/L		98	59 - 125
Fluorene	2.00	1.99	J	ug/L		100	69 - 125
4-Nitroaniline	2.00	2.27		ug/L		113	49 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	50		20 - 110

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Phenol-d5 (Surr)	30		10 - 115
Nitrobenzene-d5 (Surr)	93		40 - 110
2-Fluorobiphenyl	84		50 - 110
2,4,6-Tribromophenol (Surr)	102		40 - 125
Terphenyl-d14 (Surr)	104		50 - 135

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phenol	2.00	0.698	J	ug/L		35	30 - 130	10	30
Bis(2-chloroethyl)ether	2.00	2.09		ug/L		105	55 - 125	22	30
2-Chlorophenol	2.00	1.79		ug/L		90	57 - 125	13	30
1,3-Dichlorobenzene	2.00	1.52		ug/L		76	40 - 125	10	30
1,4-Dichlorobenzene	2.00	1.56		ug/L		78	40 - 125	7	30
Benzyl alcohol	2.00	ND	*	ug/L		40	41 - 144	23	30
1,2-Dichlorobenzene	2.00	1.60		ug/L		80	44 - 125	10	30
2-Methylphenol	2.00	1.55		ug/L		77	60 - 130	27	30
3 & 4 Methylphenol	2.00	1.27		ug/L		64	56 - 130	16	30
N-Nitrosodi-n-propylamine	2.00	1.74		ug/L		87	60 - 120	12	30
Hexachloroethane	2.00	1.43		ug/L		72	30 - 125	9	30
Nitrobenzene	2.00	1.90		ug/L		95	62 - 125	12	30
Isophorone	2.00	2.03		ug/L		101	64 - 125	4	30
2-Nitrophenol	2.00	1.64		ug/L		82	55 - 140	14	30
2,4-Dimethylphenol	2.00	1.76	J	ug/L		88	30 - 135	10	30
Bis(2-chloroethoxy)methane	2.00	1.98		ug/L		99	59 - 125	9	30
2,4-Dichlorophenol	2.00	1.58	J	ug/L		79	50 - 140	12	30
1,2,4-Trichlorobenzene	2.00	1.34		ug/L		67	40 - 125	15	30
Naphthalene	2.00	1.72		ug/L		86	56 - 125	8	30
4-Chloroaniline	2.00	1.50	J	ug/L		75	20 - 150	14	30
Hexachlorobutadiene	2.00	1.12		ug/L		56	25 - 125	13	30
4-Chloro-3-methylphenol	2.00	1.43		ug/L		71	65 - 145	16	30
2-Methylnaphthalene	2.00	1.63		ug/L		82	56 - 125	12	30
Hexachlorocyclopentadiene	2.00	0.802	J	ug/L		40	20 - 125	12	30
2,4,6-Trichlorophenol	2.00	1.53		ug/L		76	55 - 140	14	30
2,4,5-Trichlorophenol	2.00	1.79		ug/L		90	66 - 130	11	30
2-Chloronaphthalene	2.00	1.62		ug/L		81	55 - 125	15	30
2-Nitroaniline	2.00	1.61		ug/L		81	52 - 140	16	30
Dimethyl phthalate	2.00	1.98		ug/L		99	65 - 155	12	30
Acenaphthylene	2.00	1.84		ug/L		92	62 - 125	12	30
2,6-Dinitrotoluene	2.00	1.83		ug/L		92	67 - 134	9	30
3-Nitroaniline	2.00	1.56	J	ug/L		78	22 - 124	4	30
Acenaphthene	2.00	1.86		ug/L		93	63 - 125	8	30
4-Nitrophenol	4.00	ND		ug/L		26	25 - 153	2	30
Dibenzofuran	2.00	1.80		ug/L		90	60 - 125	11	30
2,4-Dinitrotoluene	2.00	1.64		ug/L		82	73 - 126	13	30
Diethyl phthalate	2.00	2.11	J	ug/L		106	60 - 150	12	30

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4-Chlorophenyl phenyl ether	2.00	1.72		ug/L		86	59 - 125	15	30
Fluorene	2.00	1.87	J	ug/L		93	69 - 125	12	30
4-Nitroaniline	2.00	1.87	J	ug/L		94	49 - 125	19	30
4,6-Dinitro-2-methylphenol	4.00	2.54	J	ug/L		63	50 - 136	3	30
N-Nitrosodiphenylamine	2.00	2.04	J	ug/L		102	40 - 135	6	30
4-Bromophenyl phenyl ether	2.00	1.97		ug/L		98	62 - 132	5	30
Hexachlorobenzene	2.00	1.95		ug/L		98	61 - 125	5	30
Pentachlorophenol	4.00	0.638	J *	ug/L		16	20 - 145	14	30
Phenanthrene	2.00	2.01		ug/L		100	70 - 125	6	30
Anthracene	2.00	2.00	J	ug/L		100	50 - 125	3	30
Di-n-butyl phthalate	2.00	2.60	J	ug/L		130	55 - 167	4	30
Fluoranthene	2.00	2.08	J	ug/L		104	70 - 145	4	30
Pyrene	2.00	2.19		ug/L		109	70 - 133	3	30
Butyl benzyl phthalate	2.00	2.42	J	ug/L		121	60 - 167	11	30
3,3'-Dichlorobenzidine	4.00	3.33	J	ug/L		83	20 - 175	16	30
Benzo[a]anthracene	2.00	2.05		ug/L		103	65 - 125	15	30
Chrysene	2.00	2.08		ug/L		104	70 - 125	16	30
Bis(2-ethylhexyl) phthalate	2.00	2.36	J	ug/L		118	70 - 185	11	30
Di-n-octyl phthalate	2.00	2.17		ug/L		108	55 - 150	13	30
Benzo[a]pyrene	2.00	1.90		ug/L		95	45 - 125	17	30
Indeno[1,2,3-cd]pyrene	2.00	1.71		ug/L		86	70 - 136	25	30
Dibenz(a,h)anthracene	2.00	1.76		ug/L		88	69 - 154	23	30
Benzo[g,h,i]perylene	2.00	1.89		ug/L		95	65 - 153	17	30
Carbazole	2.00	2.62		ug/L		131	75 - 142	4	30
1-Methylnaphthalene	2.00	1.70		ug/L		85	54 - 125	12	30
Benzo[b]fluoranthene	2.00	1.91		ug/L		95	70 - 129	19	30
Benzo[k]fluoranthene	2.00	1.79		ug/L		89	70 - 123	19	30
bis(chloroisopropyl) ether	2.00	1.73		ug/L		86	44 - 130	11	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorophenol (Surr)	37		20 - 110
Phenol-d5 (Surr)	26		10 - 115
Nitrobenzene-d5 (Surr)	81		40 - 110
2-Fluorobiphenyl	77		50 - 110
2,4,6-Tribromophenol (Surr)	92		40 - 125
Terphenyl-d14 (Surr)	97		50 - 135

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzoic acid	4.00	2.11	J	ug/L		53	20 - 144	3	30
Hexachlorocyclopentadiene	2.00	1.54	J	ug/L		77	20 - 125	11	30
2,4,6-Trichlorophenol	2.00	1.67		ug/L		84	55 - 140	14	30
2,4,5-Trichlorophenol	2.00	1.64		ug/L		82	66 - 130	12	30
2-Chloronaphthalene	2.00	1.55		ug/L		77	55 - 125	9	30
2-Nitroaniline	2.00	2.04		ug/L		102	52 - 140	8	30

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dimethyl phthalate	2.00	1.95		ug/L		97	65 - 155	11	30
Acenaphthylene	2.00	1.72		ug/L		86	62 - 125	10	30
2,6-Dinitrotoluene	2.00	2.05		ug/L		102	67 - 134	12	30
3-Nitroaniline	2.00	1.66	J	ug/L		83	22 - 124	20	30
Acenaphthene	2.00	1.66		ug/L		83	63 - 125	11	30
2,4-Dinitrophenol	4.00	3.05	J	ug/L		76	24 - 146	11	30
4-Nitrophenol	4.00	ND	*	ug/L		7	25 - 153	8	30
Dibenzofuran	2.00	1.67		ug/L		83	60 - 125	10	30
2,4-Dinitrotoluene	2.00	1.86		ug/L		93	73 - 126	13	30
Diethyl phthalate	2.00	2.07	J	ug/L		103	60 - 150	9	30
4-Chlorophenyl phenyl ether	2.00	1.72		ug/L		86	59 - 125	13	30
Fluorene	2.00	1.71	J	ug/L		86	69 - 125	15	30
4-Nitroaniline	2.00	1.91	J	ug/L		96	49 - 125	17	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorophenol (Surr)	41		20 - 110
Phenol-d5 (Surr)	25		10 - 115
Nitrobenzene-d5 (Surr)	81		40 - 110
2-Fluorobiphenyl	73		50 - 110
2,4,6-Tribromophenol (Surr)	95		40 - 125
Terphenyl-d14 (Surr)	97		50 - 135

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-324209/8
Matrix: Water
Analysis Batch: 324209

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			03/04/20 14:45	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		50 - 150		03/04/20 14:45	1
Trifluorotoluene (Surr)	97		50 - 150		03/04/20 14:45	1

Lab Sample ID: LCS 580-324209/9
Matrix: Water
Analysis Batch: 324209

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1.00	0.990		mg/L		99	79 - 120

Surrogate	LCS %Recovery	LCS Qualifier	LCS Limits
4-Bromofluorobenzene (Surr)	106		50 - 150
Trifluorotoluene (Surr)	100		50 - 150

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCSD 580-324209/10
Matrix: Water
Analysis Batch: 324209

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
Gasoline	1.00	0.987		mg/L		99	79 - 120	0	10
Surrogate	%Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	106		50 - 150						
Trifluorotoluene (Surr)	97		50 - 150						

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-324471/1-A
Matrix: Water
Analysis Batch: 324515

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324471

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		03/09/20 10:15	03/10/20 00:37	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		03/09/20 10:15	03/10/20 00:37	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	85		50 - 150				03/09/20 10:15	03/10/20 00:37	1

Lab Sample ID: LCS 580-324471/2-A
Matrix: Water
Analysis Batch: 324515

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324471

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)	2.00	1.81		mg/L		91	50 - 120		
Motor Oil (>C24-C36)	2.00	2.02		mg/L		101	64 - 120		
Surrogate	%Recovery	LCS Qualifier	Limits						
o-Terphenyl	86		50 - 150						

Lab Sample ID: LCSD 580-324471/3-A
Matrix: Water
Analysis Batch: 324515

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324471

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	2.00	1.58		mg/L		79	50 - 120	13	26
Motor Oil (>C24-C36)	2.00	1.77		mg/L		88	64 - 120	13	24
Surrogate	%Recovery	LCSD Qualifier	Limits						
o-Terphenyl	77		50 - 150						

Lab Sample ID: MB 580-324532/1-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324532

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		03/10/20 10:00	03/10/20 21:09	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		03/10/20 10:00	03/10/20 21:09	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>o</i> -Terphenyl	66		50 - 150	03/10/20 10:00	03/10/20 21:09	1

Lab Sample ID: LCS 580-324532/2-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
#2 Diesel (C10-C24)	2.00	1.47		mg/L		74	50 - 120
Motor Oil (>C24-C36)	2.00	1.63		mg/L		82	64 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
<i>o</i> -Terphenyl	68		50 - 150

Lab Sample ID: LCSD 580-324532/3-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324532

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	2.00	1.38		mg/L		69	50 - 120	6	26
Motor Oil (>C24-C36)	2.00	1.56		mg/L		78	64 - 120	4	24

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
<i>o</i> -Terphenyl	65		50 - 150

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 580-324067/7-A
Matrix: Water
Analysis Batch: 324194

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324067

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.060	0.0072	mg/L		03/02/20 14:28	03/03/20 18:36	1
Lead	ND		0.030	0.0027	mg/L		03/02/20 14:28	03/03/20 18:36	1
Cadmium	ND		0.020	0.00050	mg/L		03/02/20 14:28	03/03/20 18:36	1
Chromium	ND		0.025	0.0033	mg/L		03/02/20 14:28	03/03/20 18:36	1
Copper	ND		0.060	0.014	mg/L		03/02/20 14:28	03/03/20 18:36	1
Nickel	ND		0.020	0.0023	mg/L		03/02/20 14:28	03/03/20 18:36	1
Zinc	ND		0.040	0.0093	mg/L		03/02/20 14:28	03/03/20 18:36	1

Lab Sample ID: LCS 580-324067/8-A
Matrix: Water
Analysis Batch: 324194

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324067

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	1.00	0.924		mg/L		92	85 - 115
Lead	1.00	0.945		mg/L		94	85 - 115
Cadmium	1.00	0.926		mg/L		93	85 - 115
Chromium	1.00	0.979		mg/L		98	85 - 115
Copper	1.00	0.979		mg/L		98	85 - 115
Nickel	1.00	0.938		mg/L		94	85 - 115
Zinc	1.00	0.905		mg/L		91	85 - 115

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCSD 580-324067/9-A
Matrix: Water
Analysis Batch: 324194

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324067

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Arsenic	1.00	0.938		mg/L		94	85 - 115	2	20	
Lead	1.00	0.965		mg/L		96	85 - 115	2	20	
Cadmium	1.00	0.943		mg/L		94	85 - 115	2	20	
Chromium	1.00	0.999		mg/L		100	85 - 115	2	20	
Copper	1.00	0.984		mg/L		98	85 - 115	0	20	
Nickel	1.00	0.954		mg/L		95	85 - 115	2	20	
Zinc	1.00	0.913		mg/L		91	85 - 115	1	20	

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 580-324010/9-A
Matrix: Water
Analysis Batch: 324052

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324010

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Mercury	ND		0.00030	0.00015	mg/L		03/02/20 08:30	03/02/20 11:32	1

Lab Sample ID: LCS 580-324010/10-A
Matrix: Water
Analysis Batch: 324052

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324010

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Mercury	0.00200	0.00216		mg/L		108	85 - 115			

Lab Sample ID: LCSD 580-324010/11-A
Matrix: Water
Analysis Batch: 324052

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324010

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Mercury	0.00200	0.00217		mg/L		109	85 - 115	0	20	

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 580-324608/3
Matrix: Water
Analysis Batch: 324608

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Total Organic Carbon	ND		1.5	0.38	mg/L			03/10/20 13:10	1

Lab Sample ID: LCS 580-324608/4
Matrix: Water
Analysis Batch: 324608

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.		RPD	Limit
							Limits	RPD		
Total Organic Carbon	10.0	9.99		mg/L		100	85 - 115			

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCSD 580-324608/5
Matrix: Water
Analysis Batch: 324608

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 Organic Carbon	10.0	10.2		mg/L		102	85 - 115	2	20

Lab Sample ID: 580-93089-2 MS
Matrix: Water
Analysis Batch: 324608

Client Sample ID: Test4Inf1-022820
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	100		10.0	110	4	mg/L		67	85 - 115		

Lab Sample ID: 580-93089-2 MSD
Matrix: Water
Analysis Batch: 324608

Client Sample ID: Test4Inf1-022820
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	100		10.0	108	4	mg/L		54	85 - 115	1	20

Lab Sample ID: 580-93089-2 DU
Matrix: Water
Analysis Batch: 324608

Client Sample ID: Test4Inf1-022820
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	100		101		mg/L		2	20

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Client Sample ID: GWaterInf-022620

Lab Sample ID: 580-93089-1

Date Collected: 02/26/20 17:45

Matrix: Water

Date Received: 02/28/20 10:59

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324429	03/08/20 22:24	T1W	TAL SEA
Total/NA	Prep	3510C			324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E		1	324182	03/04/20 17:15	W1T	TAL SEA
Total/NA	Prep	3510C	RA		324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E	RA	50	325325	03/21/20 14:12	CJ	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	324209	03/04/20 16:45	PRO	TAL SEA
Total/NA	Prep	3510C			324471	03/09/20 10:15	T1L	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324515	03/10/20 04:59	JCM	TAL SEA

Client Sample ID: Test4Inf1-022820

Lab Sample ID: 580-93089-2

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324429	03/08/20 22:51	T1W	TAL SEA
Total/NA	Prep	3510C			324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E		10	324182	03/04/20 17:38	W1T	TAL SEA
Total/NA	Prep	3510C	RA		324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E	RA	50	325325	03/21/20 14:35	CJ	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	324209	03/04/20 17:09	PRO	TAL SEA
Total/NA	Prep	3510C			324532	03/10/20 10:00	T1L	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324594	03/10/20 22:50	JCM	TAL SEA
Total/NA	Prep	200.7			324067	03/02/20 14:28	ART	TAL SEA
Total/NA	Analysis	200.7 Rev 4.4		1	324194	03/03/20 19:17	TMH	TAL SEA
Total/NA	Prep	245.1			324010	03/02/20 08:30	A1B	TAL SEA
Total/NA	Analysis	245.1		1	324052	03/02/20 12:00	A1B	TAL SEA
Total/NA	Analysis	9060A		5	324608	03/10/20 15:45	R1K	TAL SEA

Client Sample ID: Test Blank

Lab Sample ID: 580-93089-3

Date Collected: 02/28/20 10:09

Matrix: Water

Date Received: 02/28/20 10:59

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324429	03/08/20 19:42	T1W	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

Laboratory: Eurofins TestAmerica, Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-18-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
200.7 Rev 4.4	200.7	Water	Cadmium
200.7 Rev 4.4	200.7	Water	Chromium
200.7 Rev 4.4	200.7	Water	Copper
200.7 Rev 4.4	200.7	Water	Lead
200.7 Rev 4.4	200.7	Water	Nickel
200.7 Rev 4.4	200.7	Water	Zinc
245.1	245.1	Water	Mercury

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93089-1

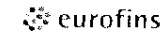
Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-93089-1	GWaterInf-022620	Water	02/26/20 17:45	02/28/20 10:59	
580-93089-2	Test4Inf1-022820	Water	02/28/20 10:09	02/28/20 10:59	
580-93089-3	Test Blank	Water	02/28/20 10:09	02/28/20 10:59	

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Eurofins TestAmerica, Seattle

5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record



Environment Testing
TestAmerica

Client Information	Sampler: <i>Sasha Williams</i>	Lab PM: Cruz, Sheri L	Carrier Tracking No(s):	COC No: 580-37733-12071.1
Client Contact: Dottie Metcalf	Phone:	E-Mail: sheri.cruz@testamericainc.com		Page: Page 1 of 1
Company: Geosyntec Consultants, Inc.				Job #:

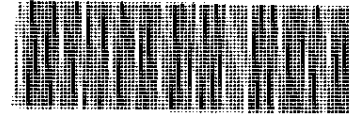
Address: 520 Pike Street Suite 2600	Due Date Requested:	Analysis Requested		Preservation Codes:
--	---------------------	---------------------------	--	---------------------

City: Seattle	TAT Requested (days): <i>Standard</i>	Field Filtered Sample (Yes or No)	Perform MS/MS (Yes or No)	8260D VOCs full list	8270E - (MOD) RCRA list Semivolatiles	200.8 As, Cd, Cr, Cu, Pb, Ni, Zn	200.7 As, Cd, Cr, Cu, Pb, Ni, Zn	SM5310_TOC_B · TOC	NWTPH_Dx · Northwest · DRORRO	NWTPH_Gx	245.1 Hg	TOC 9060	Total Number of Containers	A - HCL	M - Hexane
State, Zip: WA, 98101	PO #: Purchase Order Requested													B - NaOH	N - None
Phone: 206-496-1463(Tel)	WO #: <i>PNR0697/3</i>													C - Zn Acetate	O - AsNaO2
Email: dmetcalfindenburger@geosyntec.com	Project #: 58014826													D - Nitric Acid	P - Na2O4S

Project Name: Lilyblad Site Remediation	SSOW#:												Other:
Site: GW Influent System													Loc: 580 93089 hydrate

Sample Identification	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/MS (Yes or No)	8260D VOCs full list	8270E - (MOD) RCRA list Semivolatiles	200.8 As, Cd, Cr, Cu, Pb, Ni, Zn	200.7 As, Cd, Cr, Cu, Pb, Ni, Zn	SM5310_TOC_B · TOC	NWTPH_Dx · Northwest · DRORRO	NWTPH_Gx	245.1 Hg	TOC 9060	Total Number of Containers	Special Instructions/Note:
<i>GWaterInf-022620</i>	<i>2/26/20</i>	<i>17:45</i>	<i>G</i>	<i>Water</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
<i>Test 4 Inf 1 -022820</i>	<i>2/28/20</i>	<i>10:09</i>	<i>G</i>	<i>Water</i>						<input checked="" type="checkbox"/>							
<i>Test Blank</i>	<i>2/28/20</i>	<i>10:09</i>		<i>Water</i>													
				<i>Water</i>													
				<i>Water</i>													
				<i>Water</i>													
				<i>Water</i>													

Therm ID: *7* Cor: *0.0* ° Unc: *10.3* °
Cooler Dsc: *L15*
Packing: *B+D* FedEx: _____
Cust. Seal: Yes No UPS: _____
Blue Ice: Dry, None Other: *CO*



580-93089 Chain of Custody

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <i>Sasha Williams</i>	Date/Time: <i>2-28-20/10:59</i>	Company: <i>Geosyntec</i>	Received by: <i>Kevin J. Hill</i>
Relinquished by:	Date/Time:	Company:	Received by:
Relinquished by:	Date/Time:	Company:	Received by:

Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
---	-------------------	---

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-93089-1

Login Number: 93089

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	False	
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 <math><6\text{mm}</math> (1/4").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

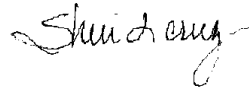
Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-93203-1
Client Project/Site: Lilyblad Site

For:

Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf



*Authorized for release by:
3/17/2020 3:38:47 PM*

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

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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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Job ID: 580-93203-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

CASE NARRATIVE

Client: Geosyntec Consultants, Inc.

Project: Lilyblad Site

Report Number: 580-93203-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 03/04/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.7 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

TOTAL SUSPENDED SOLIDS

Samples InfpreFilter-030420 (580-93203-1), PostFiltPreStrip-030420 (580-93203-2), PostStripPreFilt-030420 (580-93203-3), PostFiltPreGAC-030420 (580-93203-4) and PostGAC-030420 (580-93203-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/08/2020 and 03/09/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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 Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: InfpreFilter-030420

Lab Sample ID: 580-93203-1

Date Collected: 03/04/20 12:20

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	210		8.3	8.3	mg/L			03/08/20 12:24	1

- 1
- 2
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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: PostFiltPreStrip-030420

Lab Sample ID: 580-93203-2

Date Collected: 03/04/20 12:25

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	220		7.2	7.2	mg/L			03/08/20 12:24	1

- 1
- 2
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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: PostStripPreFilt-030420

Lab Sample ID: 580-93203-3

Date Collected: 03/04/20 12:30

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	200		8.2	8.2	mg/L			03/08/20 12:24	1

- 1
- 2
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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: PostFiltPreGAC-030420

Lab Sample ID: 580-93203-4

Date Collected: 03/04/20 12:35

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	290		8.9	8.9	mg/L			03/09/20 14:20	1

- 1
- 2
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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: PostGAC-030420

Lab Sample ID: 580-93203-5

Date Collected: 03/04/20 12:40

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	230		10	10	mg/L			03/09/20 14:20	1

- 1
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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 580-324427/1
Matrix: Water
Analysis Batch: 324427

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		2.0	2.0	mg/L			03/08/20 12:24	1

Lab Sample ID: LCS 580-324427/2
Matrix: Water
Analysis Batch: 324427

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	27.6	24.0		mg/L		87	80 - 120

Lab Sample ID: MB 580-324494/1
Matrix: Water
Analysis Batch: 324494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		2.0	2.0	mg/L			03/09/20 14:20	1

Lab Sample ID: LCS 580-324494/2
Matrix: Water
Analysis Batch: 324494

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	27.6	23.6		mg/L		86	80 - 120

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: InfpreFilter-030420

Date Collected: 03/04/20 12:20

Date Received: 03/04/20 12:52

Lab Sample ID: 580-93203-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324427	03/08/20 12:24	ESB	TAL SEA

Client Sample ID: PostFiltPreStrip-030420

Date Collected: 03/04/20 12:25

Date Received: 03/04/20 12:52

Lab Sample ID: 580-93203-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324427	03/08/20 12:24	ESB	TAL SEA

Client Sample ID: PostStripPreFilt-030420

Date Collected: 03/04/20 12:30

Date Received: 03/04/20 12:52

Lab Sample ID: 580-93203-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324427	03/08/20 12:24	ESB	TAL SEA

Client Sample ID: PostFiltPreGAC-030420

Date Collected: 03/04/20 12:35

Date Received: 03/04/20 12:52

Lab Sample ID: 580-93203-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324494	03/09/20 14:20	FCG	TAL SEA

Client Sample ID: PostGAC-030420

Date Collected: 03/04/20 12:40

Date Received: 03/04/20 12:52

Lab Sample ID: 580-93203-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324494	03/09/20 14:20	FCG	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-18-21

- 1
- 2
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Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-93203-1	InfpreFilter-030420	Water	03/04/20 12:20	03/04/20 12:52	
580-93203-2	PostFiltPreStrip-030420	Water	03/04/20 12:25	03/04/20 12:52	
580-93203-3	PostStripPreFilt-030420	Water	03/04/20 12:30	03/04/20 12:52	
580-93203-4	PostFiltPreGAC-030420	Water	03/04/20 12:35	03/04/20 12:52	
580-93203-5	PostGAC-030420	Water	03/04/20 12:40	03/04/20 12:52	

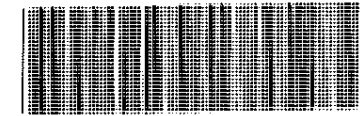
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Client: Geosyntec Consultants Client Contact: Luke Smith / Dottie Metcalf-Tindan Date: 3/4/20 Chain of Custody Number: 39797
 Address: 520 Pike St ste 2600 Telephone Number (Area Code)/Fax Number: 206-496-1463 Lab Number: LSmith@geosyntec.com Page 1 of 1

City: Seattle State: WA Zip Code: 98101 Sampler: FAR Lab Contact: Sheri Cruz Analysis (Attach list if more space is needed):
 Project Name and Location (State): Lilyblad Site Billing Contact: _____

Contract/Purchase Order/Quote No.: PNR0697.02.01 / 58014826 Matrix: _____ Containers & Preservatives: _____
 Sample I.D. and Location/Description (Containers for each sample may be combined on one line): _____ Date: _____ Time: _____

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives					TSS	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH		
InPreFilter - 030420	3-4-20	1220		X				X						X
PostFiltPreStrip - 030420	3-4-20	1225		X				X						X
PostStripPreFilt - 030420	3-4-20	1230		X				X						X
PostFiltPreGAC - 030420	3-4-20	1235		X				X						X
PostGAC - 030420	3-4-20	1240		X				X						X



580-93203 Chain of Custody

Therm ID: IR6 Cor: 4.7 Unc: 4.3
 Cooler Dsc: Sm Blue FedEx: _____
 Packing: _____ UPS: _____
 Cust. Seal: Yes No X Lab Cour: _____
 Blue Ice: Wet Dry, None Other: Clidra

Cooler: Yes No Cooler Temp: _____ Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown
 Sample Disposal: Disposal By Lab Return To Client Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days): 24 Hours 48 Hours 5 Days 10 Days 15 Days Other Standard QC Requirements (Specify): _____

1. Relinquished By Sign/Print: <u>Rorie Frank</u> Date: <u>3/4/20</u> Time: <u>1252</u>	1. Received By Sign/Print: <u>Tom Blankinship</u> Date: <u>3/4/20</u> Time: <u>1252</u>
2. Relinquished By Sign/Print: _____ Date: _____ Time: _____	2. Received By Sign/Print: _____ Date: _____ Time: _____
3. Relinquished By Sign/Print: _____ Date: _____ Time: _____	3. Received By Sign/Print: _____ Date: _____ Time: _____

Comments: _____

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-93203-1

Login Number: 93203

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Job Number: 580-93203-1

Job Description: Lilyblad Site

For:

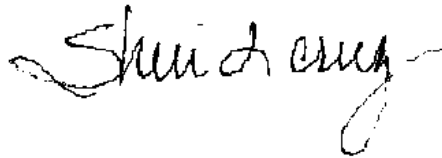
Geosyntec Consultants, Inc.

520 Pike Street

Suite 2600

Seattle, WA 98101

Attention: Dottie Metcalf



Approved for release.
Sheri L. Cruz
Project Manager I
3/17/2020 3:38 PM

Sheri L Cruz, Project Manager I
5755 8th Street East, Tacoma, WA, 98424
(253)922-2310
sheri.cruz@testamericainc.com
03/17/2020

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The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

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.

Eurofins TestAmerica, Seattle

5755 8th Street East, Tacoma, WA 98424

Tel (253) 922-2310 Fax (253) 922-5047 www.testamericainc.com

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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

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)

CASE NARRATIVE

Client: Geosyntec Consultants, Inc.

Project: Lilyblad Site

Report Number: 580-93203-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 03/04/2020; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 4.7 C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

TOTAL SUSPENDED SOLIDS

Samples InfpreFilter-030420 (580-93203-1), PostFiltPreStrip-030420 (580-93203-2), PostStripPreFilt-030420 (580-93203-3), PostFiltPreGAC-030420 (580-93203-4) and PostGAC-030420 (580-93203-5) were analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 03/08/2020 and 03/09/2020.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: InfpreFilter-030420

Lab Sample ID: 580-93203-1

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	210		8.3	8.3	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PostFiltPreStrip-030420

Lab Sample ID: 580-93203-2

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	220		7.2	7.2	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PostStripPreFilt-030420

Lab Sample ID: 580-93203-3

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	200		8.2	8.2	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PostFiltPreGAC-030420

Lab Sample ID: 580-93203-4

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	290		8.9	8.9	mg/L	1		SM 2540D	Total/NA

Client Sample ID: PostGAC-030420

Lab Sample ID: 580-93203-5

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	230		10	10	mg/L	1		SM 2540D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: InfpreFilter-030420

Lab Sample ID: 580-93203-1

Date Collected: 03/04/20 12:20

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	210		8.3	8.3	mg/L			03/08/20 12:24	1

Client Sample ID: PostFiltPreStrip-030420

Lab Sample ID: 580-93203-2

Date Collected: 03/04/20 12:25

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	220		7.2	7.2	mg/L			03/08/20 12:24	1

Client Sample ID: PostStripPreFilt-030420

Lab Sample ID: 580-93203-3

Date Collected: 03/04/20 12:30

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	200		8.2	8.2	mg/L			03/08/20 12:24	1

Client Sample ID: PostFiltPreGAC-030420

Lab Sample ID: 580-93203-4

Date Collected: 03/04/20 12:35

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	290		8.9	8.9	mg/L			03/09/20 14:20	1

Client Sample ID: PostGAC-030420

Lab Sample ID: 580-93203-5

Date Collected: 03/04/20 12:40

Matrix: Water

Date Received: 03/04/20 12:52

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	230		10	10	mg/L			03/09/20 14:20	1

Default Detection Limits

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

General Chemistry

Analyte	RL	RL	Units
Total Suspended Solids	2.0	2.0	mg/L

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 580-324427/1
Matrix: Water
Analysis Batch: 324427

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		2.0	2.0	mg/L			03/08/20 12:24	1

Lab Sample ID: LCS 580-324427/2
Matrix: Water
Analysis Batch: 324427

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	27.6	24.0		mg/L		87	80 - 120

Lab Sample ID: MB 580-324494/1
Matrix: Water
Analysis Batch: 324494

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		2.0	2.0	mg/L			03/09/20 14:20	1

Lab Sample ID: LCS 580-324494/2
Matrix: Water
Analysis Batch: 324494

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	27.6	23.6		mg/L		86	80 - 120

QC Association Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

General Chemistry

Analysis Batch: 324427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-93203-1	InfpreFilter-030420	Total/NA	Water	SM 2540D	
580-93203-2	PostFiltPreStrip-030420	Total/NA	Water	SM 2540D	
580-93203-3	PostStripPreFilt-030420	Total/NA	Water	SM 2540D	
MB 580-324427/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 580-324427/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 324494

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-93203-4	PostFiltPreGAC-030420	Total/NA	Water	SM 2540D	
580-93203-5	PostGAC-030420	Total/NA	Water	SM 2540D	
MB 580-324494/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 580-324494/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Client Sample ID: InfpreFilter-030420

Lab Sample ID: 580-93203-1

Date Collected: 03/04/20 12:20

Matrix: Water

Date Received: 03/04/20 12:52

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324427	03/08/20 12:24	ESB	TAL SEA

Client Sample ID: PostFiltPreStrip-030420

Lab Sample ID: 580-93203-2

Date Collected: 03/04/20 12:25

Matrix: Water

Date Received: 03/04/20 12:52

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324427	03/08/20 12:24	ESB	TAL SEA

Client Sample ID: PostStripPreFilt-030420

Lab Sample ID: 580-93203-3

Date Collected: 03/04/20 12:30

Matrix: Water

Date Received: 03/04/20 12:52

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324427	03/08/20 12:24	ESB	TAL SEA

Client Sample ID: PostFiltPreGAC-030420

Lab Sample ID: 580-93203-4

Date Collected: 03/04/20 12:35

Matrix: Water

Date Received: 03/04/20 12:52

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324494	03/09/20 14:20	FCG	TAL SEA

Client Sample ID: PostGAC-030420

Lab Sample ID: 580-93203-5

Date Collected: 03/04/20 12:40

Matrix: Water

Date Received: 03/04/20 12:52

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	324494	03/09/20 14:20	FCG	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-18-21

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Method	Method Description	Protocol	Laboratory
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL SEA

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site

Job ID: 580-93203-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-93203-1	InfpreFilter-030420	Water	03/04/20 12:20	03/04/20 12:52	
580-93203-2	PostFiltPreStrip-030420	Water	03/04/20 12:25	03/04/20 12:52	
580-93203-3	PostStripPreFilt-030420	Water	03/04/20 12:30	03/04/20 12:52	
580-93203-4	PostFiltPreGAC-030420	Water	03/04/20 12:35	03/04/20 12:52	
580-93203-5	PostGAC-030420	Water	03/04/20 12:40	03/04/20 12:52	

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-93203-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
Solids STD 00046	02/28/21		NSI, Lot 083019			(Purchased Reagent)	Total Suspended Solids	27.6 mg/L

Reagent

Solids_STD_00046



7212 ACC Blvd.
Raleigh, NC 27617
800-234-7837

PACKING LIST

Order No	Date	Page No
3033781	2/7/2020	1

Customer P/O Number
3070259

Bill To TestAmerica - Seattle - email invoices
4101 Shuffel Street, NW
ATTN:
North Canton, OH 44720
US

Shipped To Test America - Seattle
5755 8th Street East
Attn: Elizabeth Bishop
Tacoma, WA 98424
US

Shipping Instructions

Customer No	Ship Date			
16099	2/7/2020			
Ship via:	UPS GROUND			
Qty Ordered	Qty to Ship	Item No/Description	UOM	Qty Packed
6.0000	6.0000	QCI-057 Low Level TSS Standard 4 x 1 Liter	EA	
	Lot No 200123		6.0000	



2573365
ID Solids_STD_00046
Exp: 02/28/21 Prpd: ESB
Low Level TSS, TDS, TS

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle

Job Number: 580-93203-1

SDG No.: _____

Project: Lilyblad Site

Client Sample ID	Lab Sample ID
<u>InfpreFilter-030420</u>	<u>580-93203-1</u>
<u>PostFiltPreStrip-030420</u>	<u>580-93203-2</u>
<u>PostStripPreFilt-030420</u>	<u>580-93203-3</u>
<u>PostFiltPreGAC-030420</u>	<u>580-93203-4</u>
<u>PostGAC-030420</u>	<u>580-93203-5</u>

Comments:

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: InfpreFilter-030420

Lab Sample ID: 580-93203-1

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-93203-1

SDG ID.: _____

Matrix: Water

Date Sampled: 03/04/2020 12:20

Reporting Basis: WET

Date Received: 03/04/2020 12:52

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Total Suspended Solids	210	8.3		mg/L			1	SM 2540D

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: PostFiltPreStrip-030420

Lab Sample ID: 580-93203-2

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-93203-1

SDG ID.: _____

Matrix: Water

Date Sampled: 03/04/2020 12:25

Reporting Basis: WET

Date Received: 03/04/2020 12:52

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Total Suspended Solids	220	7.2		mg/L			1	SM 2540D

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: PostStripPreFilt-030420

Lab Sample ID: 580-93203-3

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-93203-1

SDG ID.: _____

Matrix: Water

Date Sampled: 03/04/2020 12:30

Reporting Basis: WET

Date Received: 03/04/2020 12:52

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Total Suspended Solids	200	8.2		mg/L			1	SM 2540D

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: PostFiltPreGAC-030420

Lab Sample ID: 580-93203-4

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-93203-1

SDG ID.: _____

Matrix: Water

Date Sampled: 03/04/2020 12:35

Reporting Basis: WET

Date Received: 03/04/2020 12:52

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Total Suspended Solids	290	8.9		mg/L			1	SM 2540D

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: PostGAC-030420

Lab Sample ID: 580-93203-5

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-93203-1

SDG ID.: _____

Matrix: Water

Date Sampled: 03/04/2020 12:40

Reporting Basis: WET

Date Received: 03/04/2020 12:52

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Total Suspended Solids	230	10		mg/L			1	SM 2540D

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-93203-1

SDG No.: _____

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 324427 Date: 03/08/2020 12:24							
SM 2540D	MB 580-324427/1	Total Suspended Solids	ND		mg/L	2.0	1
Batch ID: 324494 Date: 03/09/2020 14:20							
SM 2540D	MB 580-324494/1	Total Suspended Solids	ND		mg/L	2.0	1

7A-IN
 LAB CONTROL SAMPLE
 GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-93203-1

SDG No.: _____

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 324427 Date: 03/08/2020 12:24											
						LCS Source: Solids_STD_00046					
SM 2540D	LCS 580-324427/2	Total Suspended Solids	24.0		mg/L	27.6	87	80-120			
Batch ID: 324494 Date: 03/09/2020 14:20											
						LCS Source: Solids_STD_00046					
SM 2540D	LCS 580-324494/2	Total Suspended Solids	23.6		mg/L	27.6	86	80-120			

Calculations are performed before rounding to avoid round-off errors in calculated results.

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle Job Number: 580-93203-1
SDG Number: _____
Matrix: Water Instrument ID: NOEQUIP
Method: SM 2540D RL Date: 04/11/2018 14:31

Analyte	Wavelength/ Mass	RL (mg/L)	
Total Suspended Solids		2	

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: Eurofins TestAmerica, Seattle Job Number: 580-93203-1
SDG Number: _____
Matrix: Water Instrument ID: NOEQUIP
Method: SM 2540D XMDL Date: 03/23/2019 11:03

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Total Suspended Solids		2	2

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-93203-1

SDG No.: _____

Batch Number: 324427 Batch Start Date: 03/08/20 12:24 Batch Analyst: Bishop, Elizabeth S

Batch Method: SM 2540D Batch End Date: 03/11/20 17:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	CrucibleID	TareWeight	InitialAmount	Weight1	Weight2	Weight3
MB 580-324427/1		SM 2540D		I9XXU	0.1157 g	500 mL	0.1150 g	0.1152 g	0 g
LCS 580-324427/2		SM 2540D		I9XXT	0.1203 g	250 mL	0.1262 g	0.1263 g	0 g
580-93203-A-2	PostFiltPreStrip -030420	SM 2540D	T	I9XXA	0.1201 g	138 mL	0.1502 g	0.1500 g	0 g
580-93203-A-1	InfpreFilter-030 420	SM 2540D	T	I9XX9	0.1168 g	120 mL	0.1416 g	0.1417 g	0 g
580-93203-A-3	PostStripPreFilt -030420	SM 2540D	T	I9XX6	0.1205 g	122 mL	0.1441 g	0.1443 g	0 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	WeightOne%Diff	Residue	Residue2	FinalAmount	Solids STD 00046
MB 580-324427/1		SM 2540D		PASS <0.5mg g	-0.0007 g	-0.0005 g	500 mL	
LCS 580-324427/2		SM 2540D		PASS <0.5mg g	0.0059 g	0.006 g	500 mL	250 mL
580-93203-A-2	PostFiltPreStrip -030420	SM 2540D	T	PASS <0.5mg g	0.0301 g	0.0299 g	500 mL	
580-93203-A-1	InfpreFilter-030 420	SM 2540D	T	PASS <0.5mg g	0.0248 g	0.0249 g	500 mL	
580-93203-A-3	PostStripPreFilt -030420	SM 2540D	T	PASS <0.5mg g	0.0236 g	0.0238 g	500 mL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-93203-1

SDG No.: _____

Batch Number: 324427 Batch Start Date: 03/08/20 12:24 Batch Analyst: Bishop, Elizabeth S

Batch Method: SM 2540D Batch End Date: 03/11/20 17:35

Batch Notes	
Balance ID	SEA227/SEA236
Batch Comment	FCG
Date/Time - In - CW (WT2)	03/09/2020 14:43
Date/Time - Out - CW (WT2)	03/11/2020 16:49
Temperature - Start - CW (WT2) - Correct	103.2 Celsius
Temperature - End - CW (WT2) - Correct	104.2 Celsius
Temperature - Start-CW(WT2) -Uncorrected	104 Celsius
Temperature - End-CW(WT2) -Uncorrected	105.0 Celsius
Temperature - Start - Corrected	103.2 Celsius
Temperature - End - Corrected	103.2 Celsius
Date/Time - In	03/08/2020 13:50
Date/Time - Out	03/09/2020 11:50
Nominal Amount Used	500 mL
Oven ID	TSS1
Perform Calculation (0=No, 1=Yes)	1
Thermometer ID	Digital Readout
Temperature - Start - Uncorrected	104 Celsius
Temperature - End - Uncorrected	104 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-93203-1

SDG No.: _____

Batch Number: 324494 Batch Start Date: 03/09/20 14:19 Batch Analyst: Guerra, Fernando C

Batch Method: SM 2540D Batch End Date: 03/13/20 14:11

Lab Sample ID	Client Sample ID	Method Chain	Basis	CrucibleID	TareWeight	InitialAmount	Weight1	Weight2	Weight3
MB 580-324494/1		SM 2540D		I9XSV	0.1192 g	500 mL	0.1190 g	0.1190 g	
LCS 580-324494/2		SM 2540D		I9XSW	0.1191 g	250 mL	0.1264 g	0.1254 g	.1250 g
580-93203-A-4	PostFiltPreGAC-0 30420	SM 2540D	T	I9XSX	0.1210 g	112 mL	0.1534 g	0.1532 g	
580-93203-A-5	PostGAC-030420	SM 2540D	T	I9XSY	0.1194 g	100 mL	0.1423 g	0.1421 g	

Lab Sample ID	Client Sample ID	Method Chain	Basis	WeightOne%Diff	WeightTwo%Diff	Residue	Residue2	Residue3	FinalAmount
MB 580-324494/1		SM 2540D		PASS <0.5mg g		-0.0002 g	-0.0002 g		500 mL
LCS 580-324494/2		SM 2540D		Fail >=0.5mg g	PASS <0.5mg g	0.0073 g	0.0063 g	0.0059 g	500 mL
580-93203-A-4	PostFiltPreGAC-0 30420	SM 2540D	T	PASS <0.5mg g		0.0324 g	0.0322 g		500 mL
580-93203-A-5	PostGAC-030420	SM 2540D	T	PASS <0.5mg g		0.0229 g	0.0227 g		500 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	Solids STD 00046					
MB 580-324494/1		SM 2540D							
LCS 580-324494/2		SM 2540D		250 mL					
580-93203-A-4	PostFiltPreGAC-0 30420	SM 2540D	T						
580-93203-A-5	PostGAC-030420	SM 2540D	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-93203-1

SDG No.: _____

Batch Number: 324494 Batch Start Date: 03/09/20 14:19 Batch Analyst: Guerra, Fernando C

Batch Method: SM 2540D Batch End Date: 03/13/20 14:11

Batch Notes	
Balance ID	SEA227/
Batch Comment	FCG
Date/Time - In - CW (WT2)	03/11/2020 17:24
Date/Time - Out - CW (WT2)	03/12/2020 13:00
Temperature - Start - CW (WT2) - Correct	103.2 Celsius
Temperature - End - CW (WT2) - Correct	103.2 Celsius
Temperature - Start-CW(WT2) -Uncorrected	104.0 Celsius
Temperature - End-CW(WT2) -Uncorrected	104 Celsius
Date/Time - In - CW (WT3)	03/12/2020 17:05
Date/Time - Out - CW (WT3)	03/13/2020 11:01
Temperature - Start - CW (WT3) - Correct	103.2 Celsius
Temperature - End - CW (WT3) - Correct	103.2 Celsius
Temperature - Start-CW(WT3) -Uncorrected	104 Celsius
Temperature - End-CW(WT3) -Uncorrected	104 Celsius
Temperature - Start - Corrected	103.2 Celsius
Temperature - End - Corrected	103.2 Celsius
Date/Time - In	03/09/2020 15:41
Date/Time - Out	03/11/2020 16:49
Nominal Amount Used	500 mL
Oven ID	TSS1
Perform Calculation (0=No, 1=Yes)	1
Thermometer ID	Digital Readout
Temperature - Start - Uncorrected	104 Celsius
Temperature - End - Uncorrected	104 Celsius

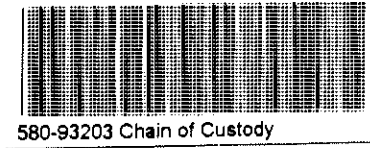
Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

Client Geosyntec Consultants			Client Contact Luke Smith / Dottie Metcalf-Linden			Date 3/4/20		Chain of Custody Number 39797	
Address 520 Pike St ste 2600			Telephone Number (Area Code)/Fax Number 206-496-1463			Lab Number LSmith@geosyntec.com		Page 1 of 1	
City Seattle		State WA	Zip Code 98101		Sampler FAR		Lab Contact Sheri Cruz		93203 Special Instructions/ Conditions of Receipt
Project Name and Location (State) Lilyblad Site			Billing Contact			Analysis (Attach list if more space is needed)			
Contract/Purchase Order/Quote No. PNR0697.02.01 / 58014826			Matrix			Containers & Preservatives			

Sample I.D. and Location/Description (Containers for each sample may be combined on one line)	Date	Time	Matrix					Containers & Preservatives						TSS	
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH			
Infiltrate Filter - 030420	3-4-20	1220		X				X							X
PostFiltPreStrip - 030420	3-4-20	1225		X				X							X
PostStripPreFilt - 030420	3-4-20	1230		X				X							X
PostFiltPreGAC - 030420	3-4-20	1235		X				X							X
PostGAC - 030420	3-4-20	1240		X				X							X



Therm. ID: IRG Cor: 4.7 ° Unc: 4.3 °
 Cooler Dsc: Small Blue
 Packing: _____ FedEx: _____
 Cust. Seal: Yes No X UPS: _____
 Blue Ice: Wet, Dry, None Lab Cour: _____
 Other: Clidra

Cooler Yes No Cooler Temp: _____ Possible Hazard Identification Non-Hazard Flammable Skin Irritant Poison B Unknown Return To Client Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required (business days)
 24 Hours 48 Hours 5 Days 10 Days 15 Days Other Standard

QC Requirements (Specify)

1. Relinquished By Sign/Print Ronie Frank	Date 3/4/20	Time 1252	1. Received By Sign/Print Tom Blankinship	Date 3/4/20	Time 1252
2. Relinquished By Sign/Print	Date	Time	2. Received By Sign/Print	Date	Time
3. Relinquished By Sign/Print	Date	Time	3. Received By Sign/Print	Date	Time

Comments

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-93203-1

Login Number: 93203

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

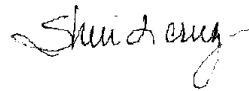
ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-93047-1
Client Project/Site: Lilyblad Site Remediation

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
3/23/2020 3:24:19 PM

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

LINKS

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results through
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Have a Question?



Visit us at:
www.testamericainc.com

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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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Job ID: 580-93047-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-93047-1

Receipt

The samples were received on 2/26/2020 3:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0° C.

Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC). The client confirmed to add the 8260 analysis for the trip blank.

GC/MS VOA

Methods 8260C, 8260D: The continuing calibration verification (CCV) associated with batch 580-323947 recovered above the upper control limit for 2,2-Dichloropropane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: E Water Inf-022520 (580-93047-1), D Water Inf-022520 (580-93047-2), Trip Blank (580-93047-3), and (CCVIS 580-323947/3).

Method 8260D: The following volatile samples were analyzed with significant headspace in the sample container(s): E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Methods 8270D, 8270E: The CCV for preparation batch 580-324045 and analytical batch 580-324182 recovered outside control limits for the following analyte(s): 4,6-Dinitro-2-methylphenol, Pentachlorophenol, Benzyl alcohol and 4-Nitrophenol. 4,6-Dinitro-2-methylphenol, Pentachlorophenol, Benzyl alcohol and 4-Nitrophenol have been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Methods 8270D, 8270E: The laboratory control sample (LCS) for preparation batch 580-324045 and analytical batch 580-324182 recovered outside control limit for the following analyte: Bis(2-chloroethyl)ether. This analyte was biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Methods 8270D, 8270E: The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for preparation batch 580-324045 and analytical batch 580-324182 recovered outside control limits for the following analyte(s): Pentachlorophenol and Benzyl alcohol. Pentachlorophenol and Benzyl alcohol have been identified as a poor performing analytes when analyzed using this method; therefore, re-extraction/re-analysis was not performed.

Methods 8270D, 8270E: The CCVIS for preparation batch 580-324045 and analytical batch 580-325325 recovered outside control limits for the following analyte(s): 4,6-Dinitro-2-methylphenol, 4-Chloro-3-methylphenol, 2,4-Dinitrophenol and 4-Nitrophenol. These analytes have been identified as poor performers when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Methods 8270D, 8270E: The continuing calibration verification (CCV) associated with batch 580-325325 recovered above the upper control limit for Hexachlorocyclopentadiene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: E Water Inf-022520 (580-93047-1) and (CCVIS 580-325325/3).

Methods 8270D, 8270E: (CCVIS 580-325325/3), (LCS 580-324045/2-A) and (LCSD 580-324045/3-A) recovers outside control limits, low-biased, for 4-Nitrophenol. This analyte has been demonstrated by the laboratory to exhibit poor and/or erratic chromatographic performance; it is classified as a poor-performing compound. Results for this analyte have been qualified and reported.

Method 8270E: The following samples were diluted due to the nature of the sample matrix: E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2). Elevated reporting limits (RLs) are provided.

Methods 8270D, 8270E: Surrogate recovery for the following samples were outside control limits: E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Job ID: 580-93047-1 (Continued)

Laboratory: Eurofins TestAmerica, Seattle (Continued)

where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

Method NWTPH-Gx: The following samples displays an atypical hydrocarbon pattern when compare to laboratory standard samples. E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2)

Method NWTPH-Gx: The following volatile samples were analyzed with significant headspace in the sample container(s): E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method NWTPH-Dx: The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method 3510C: The following samples formed emulsions during the extraction procedure: E Water Inf-022520 (580-93047-1) and D Water Inf-022520 (580-93047-2). The emulsions were broken up using sodium sulfate and rinsed with DCM. Excess sodium sulfate was removed and fresh sodium sulfate was added and then rinsed with DCM. .

Method 3510C: The following sample formed emulsions during the extraction procedure: D Water Inf-022520 (580-93047-2). The emulsions were broken up using sodium sulfate and rinsed with DCM.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Qualifiers

GC/MS 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.

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD 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.
X	Surrogate recovery exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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 Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: E Water Inf-022520

Lab Sample ID: 580-93047-1

Date Collected: 02/25/20 08:40

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			02/29/20 02:53	1
Chloromethane	ND		20	5.4	ug/L			02/29/20 02:53	1
Vinyl chloride	ND		1.0	0.22	ug/L			02/29/20 02:53	1
Bromomethane	ND		6.0	1.1	ug/L			02/29/20 02:53	1
Chloroethane	ND		5.0	1.1	ug/L			02/29/20 02:53	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			02/29/20 02:53	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			02/29/20 02:53	1
Methylene Chloride	ND		5.0	1.4	ug/L			02/29/20 02:53	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			02/29/20 02:53	1
1,1-Dichloroethane	0.42	J	2.0	0.22	ug/L			02/29/20 02:53	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			02/29/20 02:53	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			02/29/20 02:53	1
Bromochloromethane	ND		2.0	0.29	ug/L			02/29/20 02:53	1
Chloroform	ND		5.0	0.50	ug/L			02/29/20 02:53	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			02/29/20 02:53	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			02/29/20 02:53	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			02/29/20 02:53	1
Benzene	ND		3.0	0.53	ug/L			02/29/20 02:53	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			02/29/20 02:53	1
Trichloroethene	ND		3.0	0.85	ug/L			02/29/20 02:53	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			02/29/20 02:53	1
Dibromomethane	ND		2.0	0.34	ug/L			02/29/20 02:53	1
Bromodichloromethane	ND		2.0	0.14	ug/L			02/29/20 02:53	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			02/29/20 02:53	1
Toluene	0.70	J	2.0	0.39	ug/L			02/29/20 02:53	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			02/29/20 02:53	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			02/29/20 02:53	1
Tetrachloroethene	ND		3.0	0.41	ug/L			02/29/20 02:53	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			02/29/20 02:53	1
Dibromochloromethane	ND		2.0	0.50	ug/L			02/29/20 02:53	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			02/29/20 02:53	1
Chlorobenzene	16		2.0	0.44	ug/L			02/29/20 02:53	1
Ethylbenzene	ND		3.0	0.50	ug/L			02/29/20 02:53	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			02/29/20 02:53	1
1,1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			02/29/20 02:53	1
m-Xylene & p-Xylene	1.4	J	3.0	0.75	ug/L			02/29/20 02:53	1
o-Xylene	1.3	J	2.0	0.39	ug/L			02/29/20 02:53	1
Styrene	ND		5.0	1.0	ug/L			02/29/20 02:53	1
Bromoform	ND		3.0	0.56	ug/L			02/29/20 02:53	1
Isopropylbenzene	ND		2.0	0.51	ug/L			02/29/20 02:53	1
Bromobenzene	ND		2.0	0.43	ug/L			02/29/20 02:53	1
N-Propylbenzene	ND		3.0	0.50	ug/L			02/29/20 02:53	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			02/29/20 02:53	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			02/29/20 02:53	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			02/29/20 02:53	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			02/29/20 02:53	1
t-Butylbenzene	ND		3.0	0.58	ug/L			02/29/20 02:53	1
1,2,4-Trimethylbenzene	1.3	J	3.0	0.61	ug/L			02/29/20 02:53	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			02/29/20 02:53	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: E Water Inf-022520

Lab Sample ID: 580-93047-1

Date Collected: 02/25/20 08:40

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	0.29	J	2.0	0.18	ug/L			02/29/20 02:53	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			02/29/20 02:53	1
1,4-Dichlorobenzene	2.7	J	4.0	0.98	ug/L			02/29/20 02:53	1
n-Butylbenzene	ND		3.0	0.44	ug/L			02/29/20 02:53	1
1,2-Dichlorobenzene	3.6		2.0	0.46	ug/L			02/29/20 02:53	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			02/29/20 02:53	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			02/29/20 02:53	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			02/29/20 02:53	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			02/29/20 02:53	1
Naphthalene	4.1		4.0	0.93	ug/L			02/29/20 02:53	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			02/29/20 02:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120					02/29/20 02:53	1
4-Bromofluorobenzene (Surr)	95		80 - 120					02/29/20 02:53	1
Dibromofluoromethane (Surr)	100		80 - 120					02/29/20 02:53	1
Trifluorotoluene (Surr)	102		80 - 120					02/29/20 02:53	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126					02/29/20 02:53	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		40	3.6	ug/L		03/02/20 10:54	03/04/20 16:29	10
Bis(2-chloroethyl)ether	ND	*	6.0	0.30	ug/L		03/02/20 10:54	03/04/20 16:29	10
2-Chlorophenol	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
1,3-Dichlorobenzene	ND		4.0	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
1,4-Dichlorobenzene	1.5	J	4.0	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Benzyl alcohol	ND	*	50	13	ug/L		03/02/20 10:54	03/04/20 16:29	10
1,2-Dichlorobenzene	2.2	J	6.0	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
2-Methylphenol	3.8	J	6.0	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
3 & 4 Methylphenol	2.6	J	8.0	0.30	ug/L		03/02/20 10:54	03/04/20 16:29	10
N-Nitrosodi-n-propylamine	ND		6.0	0.60	ug/L		03/02/20 10:54	03/04/20 16:29	10
Hexachloroethane	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
Nitrobenzene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Isophorone	ND		4.0	1.0	ug/L		03/02/20 10:54	03/04/20 16:29	10
2-Nitrophenol	ND		10	1.5	ug/L		03/02/20 10:54	03/04/20 16:29	10
2,4-Dimethylphenol	ND		40	1.6	ug/L		03/02/20 10:54	03/04/20 16:29	10
Bis(2-chloroethoxy)methane	ND		6.0	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
2,4-Dichlorophenol	ND		40	2.0	ug/L		03/02/20 10:54	03/04/20 16:29	10
1,2,4-Trichlorobenzene	ND		4.0	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Naphthalene	3.0	J	4.0	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
4-Chloroaniline	ND		100	5.9	ug/L		03/02/20 10:54	03/04/20 16:29	10
Hexachlorobutadiene	ND		10	0.60	ug/L		03/02/20 10:54	03/04/20 16:29	10
2-Methylnaphthalene	0.53	J	4.0	0.30	ug/L		03/02/20 10:54	03/04/20 16:29	10
4,6-Dinitro-2-methylphenol	ND		50	2.6	ug/L		03/02/20 10:54	03/04/20 16:29	10
N-Nitrosodiphenylamine	ND		150	0.70	ug/L		03/02/20 10:54	03/04/20 16:29	10
4-Bromophenyl phenyl ether	ND		6.0	0.60	ug/L		03/02/20 10:54	03/04/20 16:29	10
Hexachlorobenzene	ND		6.0	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Pentachlorophenol	ND	*	100	5.1	ug/L		03/02/20 10:54	03/04/20 16:29	10
Phenanthrene	ND		10	0.30	ug/L		03/02/20 10:54	03/04/20 16:29	10
Anthracene	ND		150	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: E Water Inf-022520

Lab Sample ID: 580-93047-1

Date Collected: 02/25/20 08:40

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	ND		30	4.4	ug/L		03/02/20 10:54	03/04/20 16:29	10
Fluoranthene	ND		30	0.60	ug/L		03/02/20 10:54	03/04/20 16:29	10
Pyrene	ND		20	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Butyl benzyl phthalate	ND		100	9.3	ug/L		03/02/20 10:54	03/04/20 16:29	10
3,3'-Dichlorobenzidine	ND		150	6.2	ug/L		03/02/20 10:54	03/04/20 16:29	10
Benzo[a]anthracene	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
Chrysene	ND		6.0	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Bis(2-ethylhexyl) phthalate	ND		150	8.7	ug/L		03/02/20 10:54	03/04/20 16:29	10
Di-n-octyl phthalate	ND		10	1.3	ug/L		03/02/20 10:54	03/04/20 16:29	10
Benzo[a]pyrene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Indeno[1,2,3-cd]pyrene	ND		10	1.3	ug/L		03/02/20 10:54	03/04/20 16:29	10
Dibenz(a,h)anthracene	ND		6.0	0.70	ug/L		03/02/20 10:54	03/04/20 16:29	10
Benzo[g,h,i]perylene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Carbazole	ND		6.0	1.0	ug/L		03/02/20 10:54	03/04/20 16:29	10
1-Methylnaphthalene	0.91	J	10	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
Benzo[b]fluoranthene	ND		10	0.40	ug/L		03/02/20 10:54	03/04/20 16:29	10
Benzo[k]fluoranthene	ND		10	0.50	ug/L		03/02/20 10:54	03/04/20 16:29	10
bis(chloroisopropyl) ether	ND		6.0	0.60	ug/L		03/02/20 10:54	03/04/20 16:29	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	23		20 - 110	03/02/20 10:54	03/04/20 16:29	10
Phenol-d5 (Surr)	62		10 - 115	03/02/20 10:54	03/04/20 16:29	10
Nitrobenzene-d5 (Surr)	49		40 - 110	03/02/20 10:54	03/04/20 16:29	10
2,4,6-Tribromophenol (Surr)	113		40 - 125	03/02/20 10:54	03/04/20 16:29	10
Terphenyl-d14 (Surr)	96		50 - 135	03/02/20 10:54	03/04/20 16:29	10

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzoic acid	ND		200	35	ug/L		03/02/20 10:54	03/21/20 13:26	50
4-Chloro-3-methylphenol	ND		30	6.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
Hexachlorocyclopentadiene	ND		250	5.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
2,4,6-Trichlorophenol	ND		30	5.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
2,4,5-Trichlorophenol	ND		20	5.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
2-Chloronaphthalene	ND		50	1.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
2-Nitroaniline	ND		30	5.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
Dimethyl phthalate	ND		30	3.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
Acenaphthylene	ND		50	3.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
2,6-Dinitrotoluene	ND		30	2.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
3-Nitroaniline	ND		150	8.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
Acenaphthene	ND		20	2.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
2,4-Dinitrophenol	ND		250	80	ug/L		03/02/20 10:54	03/21/20 13:26	50
4-Nitrophenol	ND	*	750	85	ug/L		03/02/20 10:54	03/21/20 13:26	50
Dibenzofuran	ND		20	2.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
2,4-Dinitrotoluene	ND		50	5.0	ug/L		03/02/20 10:54	03/21/20 13:26	50
Diethyl phthalate	ND		600	7.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
4-Chlorophenyl phenyl ether	ND		30	2.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
Fluorene	ND		100	2.5	ug/L		03/02/20 10:54	03/21/20 13:26	50
4-Nitroaniline	ND		100	10	ug/L		03/02/20 10:54	03/21/20 13:26	50

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: E Water Inf-022520

Lab Sample ID: 580-93047-1

Date Collected: 02/25/20 08:40

Matrix: Water

Date Received: 02/26/20 15:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	3	X	20 - 110	03/02/20 10:54	03/21/20 13:26	50
Phenol-d5 (Surr)	31		10 - 115	03/02/20 10:54	03/21/20 13:26	50
Nitrobenzene-d5 (Surr)	99		40 - 110	03/02/20 10:54	03/21/20 13:26	50
2-Fluorobiphenyl	41	X	50 - 110	03/02/20 10:54	03/21/20 13:26	50
2,4,6-Tribromophenol (Surr)	104		40 - 125	03/02/20 10:54	03/21/20 13:26	50
Terphenyl-d14 (Surr)	95		50 - 135	03/02/20 10:54	03/21/20 13:26	50

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.42		0.25	0.10	mg/L			02/28/20 07:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		50 - 150		02/28/20 07:43	1
Trifluorotoluene (Surr)	95		50 - 150		02/28/20 07:43	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	17		0.11	0.067	mg/L		03/04/20 11:59	03/05/20 19:08	1
Motor Oil (>C24-C36)	7.1		0.36	0.099	mg/L		03/04/20 11:59	03/05/20 19:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	88		50 - 150	03/04/20 11:59	03/05/20 19:08	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: D Water Inf-022520

Lab Sample ID: 580-93047-2

Date Collected: 02/25/20 17:42

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			02/29/20 03:20	1
Chloromethane	ND		20	5.4	ug/L			02/29/20 03:20	1
Vinyl chloride	0.41	J	1.0	0.22	ug/L			02/29/20 03:20	1
Bromomethane	ND		6.0	1.1	ug/L			02/29/20 03:20	1
Chloroethane	ND		5.0	1.1	ug/L			02/29/20 03:20	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			02/29/20 03:20	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			02/29/20 03:20	1
Methylene Chloride	ND		5.0	1.4	ug/L			02/29/20 03:20	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			02/29/20 03:20	1
1,1-Dichloroethane	3.5		2.0	0.22	ug/L			02/29/20 03:20	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			02/29/20 03:20	1
cis-1,2-Dichloroethene	38		3.0	0.69	ug/L			02/29/20 03:20	1
Bromochloromethane	ND		2.0	0.29	ug/L			02/29/20 03:20	1
Chloroform	ND		5.0	0.50	ug/L			02/29/20 03:20	1
1,1,1-Trichloroethane	2.1	J	3.0	0.39	ug/L			02/29/20 03:20	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			02/29/20 03:20	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			02/29/20 03:20	1
Benzene	ND		3.0	0.53	ug/L			02/29/20 03:20	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			02/29/20 03:20	1
Trichloroethene	1.2	J	3.0	0.85	ug/L			02/29/20 03:20	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			02/29/20 03:20	1
Dibromomethane	ND		2.0	0.34	ug/L			02/29/20 03:20	1
Bromodichloromethane	ND		2.0	0.14	ug/L			02/29/20 03:20	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			02/29/20 03:20	1
Toluene	9.6		2.0	0.39	ug/L			02/29/20 03:20	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			02/29/20 03:20	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			02/29/20 03:20	1
Tetrachloroethene	2.4	J	3.0	0.41	ug/L			02/29/20 03:20	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			02/29/20 03:20	1
Dibromochloromethane	ND		2.0	0.50	ug/L			02/29/20 03:20	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			02/29/20 03:20	1
Chlorobenzene	8.7		2.0	0.44	ug/L			02/29/20 03:20	1
Ethylbenzene	0.74	J	3.0	0.50	ug/L			02/29/20 03:20	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			02/29/20 03:20	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			02/29/20 03:20	1
m-Xylene & p-Xylene	4.1		3.0	0.75	ug/L			02/29/20 03:20	1
o-Xylene	3.2		2.0	0.39	ug/L			02/29/20 03:20	1
Styrene	ND		5.0	1.0	ug/L			02/29/20 03:20	1
Bromoform	ND		3.0	0.56	ug/L			02/29/20 03:20	1
Isopropylbenzene	ND		2.0	0.51	ug/L			02/29/20 03:20	1
Bromobenzene	ND		2.0	0.43	ug/L			02/29/20 03:20	1
N-Propylbenzene	ND		3.0	0.50	ug/L			02/29/20 03:20	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			02/29/20 03:20	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			02/29/20 03:20	1
1,3,5-Trimethylbenzene	2.9	J	3.0	0.55	ug/L			02/29/20 03:20	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			02/29/20 03:20	1
t-Butylbenzene	ND		3.0	0.58	ug/L			02/29/20 03:20	1
1,2,4-Trimethylbenzene	9.7		3.0	0.61	ug/L			02/29/20 03:20	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			02/29/20 03:20	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: D Water Inf-022520

Lab Sample ID: 580-93047-2

Date Collected: 02/25/20 17:42

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	0.63	J	2.0	0.18	ug/L			02/29/20 03:20	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			02/29/20 03:20	1
1,4-Dichlorobenzene	4.4		4.0	0.98	ug/L			02/29/20 03:20	1
n-Butylbenzene	ND		3.0	0.44	ug/L			02/29/20 03:20	1
1,2-Dichlorobenzene	13		2.0	0.46	ug/L			02/29/20 03:20	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			02/29/20 03:20	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			02/29/20 03:20	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			02/29/20 03:20	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			02/29/20 03:20	1
Naphthalene	6.1		4.0	0.93	ug/L			02/29/20 03:20	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			02/29/20 03:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120					02/29/20 03:20	1
4-Bromofluorobenzene (Surr)	93		80 - 120					02/29/20 03:20	1
Dibromofluoromethane (Surr)	95		80 - 120					02/29/20 03:20	1
Trifluorotoluene (Surr)	105		80 - 120					02/29/20 03:20	1
1,2-Dichloroethane-d4 (Surr)	102		80 - 126					02/29/20 03:20	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		42	3.8	ug/L		03/02/20 10:54	03/04/20 16:52	10
Bis(2-chloroethyl)ether	ND	*	6.3	0.32	ug/L		03/02/20 10:54	03/04/20 16:52	10
2-Chlorophenol	ND		11	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
1,3-Dichlorobenzene	ND		4.2	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
1,4-Dichlorobenzene	2.5	J	4.2	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Benzyl alcohol	ND	*	53	13	ug/L		03/02/20 10:54	03/04/20 16:52	10
1,2-Dichlorobenzene	7.7		6.3	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
2-Methylphenol	4.6	J	6.3	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
3 & 4 Methylphenol	33		8.4	0.32	ug/L		03/02/20 10:54	03/04/20 16:52	10
N-Nitrosodi-n-propylamine	ND		6.3	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10
Hexachloroethane	ND		11	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
Nitrobenzene	ND		11	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Isophorone	ND		4.2	1.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
2-Nitrophenol	ND		11	1.6	ug/L		03/02/20 10:54	03/04/20 16:52	10
2,4-Dimethylphenol	2.7	J	42	1.7	ug/L		03/02/20 10:54	03/04/20 16:52	10
Bis(2-chloroethoxy)methane	ND		6.3	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
2,4-Dichlorophenol	ND		42	2.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
1,2,4-Trichlorobenzene	ND		4.2	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Naphthalene	11		4.2	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
4-Chloroaniline	ND		110	6.2	ug/L		03/02/20 10:54	03/04/20 16:52	10
Hexachlorobutadiene	ND		11	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10
4-Chloro-3-methylphenol	ND		6.3	1.4	ug/L		03/02/20 10:54	03/04/20 16:52	10
2-Methylnaphthalene	1.5	J	4.2	0.32	ug/L		03/02/20 10:54	03/04/20 16:52	10
2,4,6-Trichlorophenol	ND		6.3	1.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
2,4,5-Trichlorophenol	ND		4.2	1.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
2-Chloronaphthalene	0.71	J	11	0.32	ug/L		03/02/20 10:54	03/04/20 16:52	10
2-Nitroaniline	ND		6.3	1.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
Dimethyl phthalate	ND		6.3	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10
Acenaphthylene	ND		11	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: D Water Inf-022520

Lab Sample ID: 580-93047-2

Date Collected: 02/25/20 17:42

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,6-Dinitrotoluene	ND		6.3	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
3-Nitroaniline	ND		32	1.7	ug/L		03/02/20 10:54	03/04/20 16:52	10
Acenaphthene	ND		4.2	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
4-Nitrophenol	ND		160	18	ug/L		03/02/20 10:54	03/04/20 16:52	10
Dibenzofuran	ND		4.2	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
2,4-Dinitrotoluene	ND		11	1.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
Diethyl phthalate	ND		130	1.6	ug/L		03/02/20 10:54	03/04/20 16:52	10
4-Chlorophenyl phenyl ether	ND		6.3	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
Fluorene	ND		21	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
4-Nitroaniline	ND		21	2.2	ug/L		03/02/20 10:54	03/04/20 16:52	10
4,6-Dinitro-2-methylphenol	ND		53	2.7	ug/L		03/02/20 10:54	03/04/20 16:52	10
N-Nitrosodiphenylamine	ND		160	0.74	ug/L		03/02/20 10:54	03/04/20 16:52	10
4-Bromophenyl phenyl ether	ND		6.3	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10
Hexachlorobenzene	ND		6.3	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Pentachlorophenol	ND *		110	5.4	ug/L		03/02/20 10:54	03/04/20 16:52	10
Phenanthrene	ND		11	0.32	ug/L		03/02/20 10:54	03/04/20 16:52	10
Anthracene	ND		160	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
Di-n-butyl phthalate	ND		32	4.6	ug/L		03/02/20 10:54	03/04/20 16:52	10
Fluoranthene	ND		32	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10
Pyrene	ND		21	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Butyl benzyl phthalate	ND		110	9.8	ug/L		03/02/20 10:54	03/04/20 16:52	10
3,3'-Dichlorobenzidine	ND		160	6.5	ug/L		03/02/20 10:54	03/04/20 16:52	10
Benzo[a]anthracene	ND		11	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
Chrysene	ND		6.3	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Bis(2-ethylhexyl) phthalate	ND		160	9.2	ug/L		03/02/20 10:54	03/04/20 16:52	10
Di-n-octyl phthalate	ND		11	1.4	ug/L		03/02/20 10:54	03/04/20 16:52	10
Benzo[a]pyrene	ND		11	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Indeno[1,2,3-cd]pyrene	ND		11	1.4	ug/L		03/02/20 10:54	03/04/20 16:52	10
Dibenz(a,h)anthracene	ND		6.3	0.74	ug/L		03/02/20 10:54	03/04/20 16:52	10
Benzo[g,h,i]perylene	ND		11	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Carbazole	ND		6.3	1.1	ug/L		03/02/20 10:54	03/04/20 16:52	10
1-Methylnaphthalene	1.9	J	11	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
Benzo[b]fluoranthene	ND		11	0.42	ug/L		03/02/20 10:54	03/04/20 16:52	10
Benzo[k]fluoranthene	ND		11	0.53	ug/L		03/02/20 10:54	03/04/20 16:52	10
bis(chloroisopropyl) ether	ND		6.3	0.63	ug/L		03/02/20 10:54	03/04/20 16:52	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	33		20 - 110	03/02/20 10:54	03/04/20 16:52	10
Phenol-d5 (Surr)	37		10 - 115	03/02/20 10:54	03/04/20 16:52	10
Nitrobenzene-d5 (Surr)	68		40 - 110	03/02/20 10:54	03/04/20 16:52	10
2-Fluorobiphenyl	59		50 - 110	03/02/20 10:54	03/04/20 16:52	10
2,4,6-Tribromophenol (Surr)	76		40 - 125	03/02/20 10:54	03/04/20 16:52	10
Terphenyl-d14 (Surr)	80		50 - 135	03/02/20 10:54	03/04/20 16:52	10

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzoic acid	ND		210	37	ug/L		03/02/20 10:54	03/21/20 13:49	50
Hexachlorocyclopentadiene	ND		260	5.3	ug/L		03/02/20 10:54	03/21/20 13:49	50
2,4-Dinitrophenol	ND		260	84	ug/L		03/02/20 10:54	03/21/20 13:49	50

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: D Water Inf-022520

Lab Sample ID: 580-93047-2

Date Collected: 02/25/20 17:42

Matrix: Water

Date Received: 02/26/20 15:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	6	X	20 - 110	03/02/20 10:54	03/21/20 13:49	50
Phenol-d5 (Surr)	18		10 - 115	03/02/20 10:54	03/21/20 13:49	50
Nitrobenzene-d5 (Surr)	68		40 - 110	03/02/20 10:54	03/21/20 13:49	50
2-Fluorobiphenyl	53		50 - 110	03/02/20 10:54	03/21/20 13:49	50
2,4,6-Tribromophenol (Surr)	61		40 - 125	03/02/20 10:54	03/21/20 13:49	50
Terphenyl-d14 (Surr)	83		50 - 135	03/02/20 10:54	03/21/20 13:49	50

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.58		0.25	0.10	mg/L			02/28/20 08:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		50 - 150		02/28/20 08:07	1
Trifluorotoluene (Surr)	108		50 - 150		02/28/20 08:07	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	11		0.11	0.068	mg/L		03/04/20 11:59	03/05/20 19:28	1
Motor Oil (>C24-C36)	4.3		0.36	0.10	mg/L		03/04/20 11:59	03/05/20 19:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	81		50 - 150	03/04/20 11:59	03/05/20 19:28	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-93047-3

Date Collected: 02/25/20 00:01

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			02/28/20 20:32	1
Chloromethane	ND		20	5.4	ug/L			02/28/20 20:32	1
Vinyl chloride	ND		1.0	0.22	ug/L			02/28/20 20:32	1
Bromomethane	ND		6.0	1.1	ug/L			02/28/20 20:32	1
Chloroethane	ND		5.0	1.1	ug/L			02/28/20 20:32	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			02/28/20 20:32	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			02/28/20 20:32	1
Methylene Chloride	ND		5.0	1.4	ug/L			02/28/20 20:32	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			02/28/20 20:32	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			02/28/20 20:32	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			02/28/20 20:32	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			02/28/20 20:32	1
Bromochloromethane	ND		2.0	0.29	ug/L			02/28/20 20:32	1
Chloroform	ND		5.0	0.50	ug/L			02/28/20 20:32	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			02/28/20 20:32	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			02/28/20 20:32	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			02/28/20 20:32	1
Benzene	ND		3.0	0.53	ug/L			02/28/20 20:32	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			02/28/20 20:32	1
Trichloroethene	ND		3.0	0.85	ug/L			02/28/20 20:32	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			02/28/20 20:32	1
Dibromomethane	ND		2.0	0.34	ug/L			02/28/20 20:32	1
Bromodichloromethane	ND		2.0	0.14	ug/L			02/28/20 20:32	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			02/28/20 20:32	1
Toluene	ND		2.0	0.39	ug/L			02/28/20 20:32	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			02/28/20 20:32	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			02/28/20 20:32	1
Tetrachloroethene	ND		3.0	0.41	ug/L			02/28/20 20:32	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			02/28/20 20:32	1
Dibromochloromethane	ND		2.0	0.50	ug/L			02/28/20 20:32	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			02/28/20 20:32	1
Chlorobenzene	ND		2.0	0.44	ug/L			02/28/20 20:32	1
Ethylbenzene	ND		3.0	0.50	ug/L			02/28/20 20:32	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			02/28/20 20:32	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			02/28/20 20:32	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			02/28/20 20:32	1
o-Xylene	ND		2.0	0.39	ug/L			02/28/20 20:32	1
Styrene	ND		5.0	1.0	ug/L			02/28/20 20:32	1
Bromoform	ND		3.0	0.56	ug/L			02/28/20 20:32	1
Isopropylbenzene	ND		2.0	0.51	ug/L			02/28/20 20:32	1
Bromobenzene	ND		2.0	0.43	ug/L			02/28/20 20:32	1
N-Propylbenzene	ND		3.0	0.50	ug/L			02/28/20 20:32	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			02/28/20 20:32	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			02/28/20 20:32	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			02/28/20 20:32	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			02/28/20 20:32	1
t-Butylbenzene	ND		3.0	0.58	ug/L			02/28/20 20:32	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			02/28/20 20:32	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			02/28/20 20:32	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-93047-3

Date Collected: 02/25/20 00:01

Matrix: Water

Date Received: 02/26/20 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			02/28/20 20:32	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			02/28/20 20:32	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			02/28/20 20:32	1
n-Butylbenzene	ND		3.0	0.44	ug/L			02/28/20 20:32	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			02/28/20 20:32	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			02/28/20 20:32	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			02/28/20 20:32	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			02/28/20 20:32	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			02/28/20 20:32	1
Naphthalene	ND		4.0	0.93	ug/L			02/28/20 20:32	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			02/28/20 20:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		02/28/20 20:32	1
4-Bromofluorobenzene (Surr)	90		80 - 120		02/28/20 20:32	1
Dibromofluoromethane (Surr)	97		80 - 120		02/28/20 20:32	1
Trifluorotoluene (Surr)	105		80 - 120		02/28/20 20:32	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 126		02/28/20 20:32	1

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-323947/7
Matrix: Water
Analysis Batch: 323947

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Dichlorodifluoromethane	ND		10	2.3	ug/L			02/28/20 19:37	1
Chloromethane	ND		20	5.4	ug/L			02/28/20 19:37	1
Vinyl chloride	ND		1.0	0.22	ug/L			02/28/20 19:37	1
Bromomethane	ND		6.0	1.1	ug/L			02/28/20 19:37	1
Chloroethane	ND		5.0	1.1	ug/L			02/28/20 19:37	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			02/28/20 19:37	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			02/28/20 19:37	1
Methylene Chloride	ND		5.0	1.4	ug/L			02/28/20 19:37	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			02/28/20 19:37	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			02/28/20 19:37	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			02/28/20 19:37	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			02/28/20 19:37	1
Bromochloromethane	ND		2.0	0.29	ug/L			02/28/20 19:37	1
Chloroform	ND		5.0	0.50	ug/L			02/28/20 19:37	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			02/28/20 19:37	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			02/28/20 19:37	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			02/28/20 19:37	1
Benzene	ND		3.0	0.53	ug/L			02/28/20 19:37	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			02/28/20 19:37	1
Trichloroethene	ND		3.0	0.85	ug/L			02/28/20 19:37	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			02/28/20 19:37	1
Dibromomethane	ND		2.0	0.34	ug/L			02/28/20 19:37	1
Bromodichloromethane	ND		2.0	0.14	ug/L			02/28/20 19:37	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			02/28/20 19:37	1
Toluene	ND		2.0	0.39	ug/L			02/28/20 19:37	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			02/28/20 19:37	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			02/28/20 19:37	1
Tetrachloroethene	ND		3.0	0.41	ug/L			02/28/20 19:37	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			02/28/20 19:37	1
Dibromochloromethane	ND		2.0	0.50	ug/L			02/28/20 19:37	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			02/28/20 19:37	1
Chlorobenzene	ND		2.0	0.44	ug/L			02/28/20 19:37	1
Ethylbenzene	ND		3.0	0.50	ug/L			02/28/20 19:37	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			02/28/20 19:37	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			02/28/20 19:37	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			02/28/20 19:37	1
o-Xylene	ND		2.0	0.39	ug/L			02/28/20 19:37	1
Styrene	ND		5.0	1.0	ug/L			02/28/20 19:37	1
Bromoform	ND		3.0	0.56	ug/L			02/28/20 19:37	1
Isopropylbenzene	ND		2.0	0.51	ug/L			02/28/20 19:37	1
Bromobenzene	ND		2.0	0.43	ug/L			02/28/20 19:37	1
N-Propylbenzene	ND		3.0	0.50	ug/L			02/28/20 19:37	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			02/28/20 19:37	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			02/28/20 19:37	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			02/28/20 19:37	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			02/28/20 19:37	1
t-Butylbenzene	ND		3.0	0.58	ug/L			02/28/20 19:37	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			02/28/20 19:37	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-323947/7

Matrix: Water

Analysis Batch: 323947

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		3.0	0.49	ug/L			02/28/20 19:37	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			02/28/20 19:37	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			02/28/20 19:37	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			02/28/20 19:37	1
n-Butylbenzene	ND		3.0	0.44	ug/L			02/28/20 19:37	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			02/28/20 19:37	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			02/28/20 19:37	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			02/28/20 19:37	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			02/28/20 19:37	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			02/28/20 19:37	1
Naphthalene	ND		4.0	0.93	ug/L			02/28/20 19:37	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			02/28/20 19:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 120		02/28/20 19:37	1
4-Bromofluorobenzene (Surr)	94		80 - 120		02/28/20 19:37	1
Dibromofluoromethane (Surr)	97		80 - 120		02/28/20 19:37	1
Trifluorotoluene (Surr)	104		80 - 120		02/28/20 19:37	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126		02/28/20 19:37	1

Lab Sample ID: LCS 580-323947/4

Matrix: Water

Analysis Batch: 323947

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	10.0	9.69	J	ug/L		97	20 - 150
Chloromethane	10.0	8.11	J	ug/L		81	52 - 135
Vinyl chloride	10.0	8.18		ug/L		82	65 - 130
Bromomethane	10.0	9.78		ug/L		98	66 - 125
Chloroethane	10.0	10.2		ug/L		102	65 - 132
Trichlorofluoromethane	10.0	10.2		ug/L		102	64 - 136
1,1-Dichloroethene	10.0	10.2		ug/L		102	70 - 129
Methylene Chloride	10.0	10.0		ug/L		100	77 - 125
trans-1,2-Dichloroethene	10.0	9.82		ug/L		98	77 - 124
1,1-Dichloroethane	10.0	10.0		ug/L		100	70 - 129
2,2-Dichloropropane	10.0	13.6		ug/L		136	62 - 140
cis-1,2-Dichloroethene	10.0	9.86		ug/L		99	76 - 129
Bromochloromethane	10.0	10.1		ug/L		101	78 - 120
Chloroform	10.0	9.90		ug/L		99	73 - 127
1,1,1-Trichloroethane	10.0	9.91		ug/L		99	74 - 130
Carbon tetrachloride	10.0	9.61		ug/L		96	72 - 129
1,1-Dichloropropene	10.0	10.3		ug/L		103	80 - 120
Benzene	10.0	10.1		ug/L		101	75 - 121
1,2-Dichloroethane	10.0	10.5		ug/L		105	76 - 131
Trichloroethene	10.0	10.3		ug/L		103	70 - 120
1,2-Dichloropropane	10.0	9.93		ug/L		99	72 - 126
Dibromomethane	10.0	10.3		ug/L		103	80 - 120
Bromodichloromethane	10.0	9.47		ug/L		95	75 - 124

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-323947/4

Matrix: Water

Analysis Batch: 323947

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	10.0	10.2		ug/L		102	77 - 120
Toluene	10.0	10.6		ug/L		106	80 - 120
trans-1,3-Dichloropropene	10.0	10.3		ug/L		103	80 - 122
1,1,2-Trichloroethane	10.0	10.4		ug/L		104	80 - 121
Tetrachloroethene	10.0	11.4		ug/L		114	76 - 120
1,3-Dichloropropane	10.0	10.6		ug/L		106	79 - 120
Dibromochloromethane	10.0	9.65		ug/L		96	71 - 120
1,2-Dibromoethane	10.0	10.4		ug/L		104	79 - 120
Chlorobenzene	10.0	10.4		ug/L		104	80 - 120
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120
1,1,1,2-Tetrachloroethane	10.0	9.82		ug/L		98	79 - 120
1,1,2,2-Tetrachloroethane	10.0	10.4		ug/L		104	74 - 124
m-Xylene & p-Xylene	10.0	10.4		ug/L		104	80 - 120
o-Xylene	10.0	10.0		ug/L		100	80 - 120
Styrene	10.0	9.96		ug/L		100	76 - 121
Bromoform	10.0	9.52		ug/L		95	61 - 132
Isopropylbenzene	10.0	10.1		ug/L		101	75 - 120
Bromobenzene	10.0	10.1		ug/L		101	80 - 120
N-Propylbenzene	10.0	10.1		ug/L		101	80 - 120
1,2,3-Trichloropropane	10.0	10.4		ug/L		104	76 - 124
2-Chlorotoluene	10.0	10.1		ug/L		101	80 - 120
1,3,5-Trimethylbenzene	10.0	10.1		ug/L		101	80 - 120
4-Chlorotoluene	10.0	10.1		ug/L		101	80 - 120
t-Butylbenzene	10.0	9.96		ug/L		100	80 - 121
1,2,4-Trimethylbenzene	10.0	9.94		ug/L		99	80 - 120
sec-Butylbenzene	10.0	10.2		ug/L		102	78 - 120
1,3-Dichlorobenzene	10.0	10.2		ug/L		102	80 - 120
4-Isopropyltoluene	10.0	10.1		ug/L		101	77 - 120
1,4-Dichlorobenzene	10.0	10.3		ug/L		103	80 - 120
n-Butylbenzene	10.0	10.4		ug/L		104	78 - 120
1,2-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	10.2		ug/L		102	65 - 125
1,2,4-Trichlorobenzene	10.0	10.5		ug/L		105	57 - 140
1,2,3-Trichlorobenzene	10.0	10.9		ug/L		109	23 - 150
Hexachlorobutadiene	10.0	12.1		ug/L		121	74 - 125
Naphthalene	10.0	10.0		ug/L		100	44 - 144
Methyl tert-butyl ether	10.0	9.81		ug/L		98	72 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
Trifluorotoluene (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	101		80 - 126

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-323947/5
Matrix: Water
Analysis Batch: 323947

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
Dichlorodifluoromethane	10.0	9.33	J	ug/L		93	20 - 150	4	35
Chloromethane	10.0	8.08	J	ug/L		81	52 - 135	0	23
Vinyl chloride	10.0	7.81		ug/L		78	65 - 130	5	28
Bromomethane	10.0	9.76		ug/L		98	66 - 125	0	27
Chloroethane	10.0	9.97		ug/L		100	65 - 132	3	35
Trichlorofluoromethane	10.0	10.1		ug/L		101	64 - 136	1	27
1,1-Dichloroethene	10.0	9.90		ug/L		99	70 - 129	3	27
Methylene Chloride	10.0	9.99		ug/L		100	77 - 125	0	18
trans-1,2-Dichloroethene	10.0	9.62		ug/L		96	77 - 124	2	21
1,1-Dichloroethane	10.0	9.81		ug/L		98	70 - 129	2	26
2,2-Dichloropropane	10.0	12.9		ug/L		129	62 - 140	6	23
cis-1,2-Dichloroethene	10.0	9.83		ug/L		98	76 - 129	0	15
Bromochloromethane	10.0	10.3		ug/L		103	78 - 120	2	20
Chloroform	10.0	9.74		ug/L		97	73 - 127	2	22
1,1,1-Trichloroethane	10.0	9.62		ug/L		96	74 - 130	3	18
Carbon tetrachloride	10.0	9.67		ug/L		97	72 - 129	1	19
1,1-Dichloropropene	10.0	9.94		ug/L		99	80 - 120	3	14
Benzene	10.0	9.86		ug/L		99	75 - 121	2	14
1,2-Dichloroethane	10.0	10.4		ug/L		104	76 - 131	2	18
Trichloroethene	10.0	10.2		ug/L		102	70 - 120	0	21
1,2-Dichloropropane	10.0	10.0		ug/L		100	72 - 126	1	26
Dibromomethane	10.0	10.6		ug/L		106	80 - 120	3	22
Bromodichloromethane	10.0	9.36		ug/L		94	75 - 124	1	22
cis-1,3-Dichloropropene	10.0	10.3		ug/L		103	77 - 120	1	20
Toluene	10.0	10.6		ug/L		106	80 - 120	1	19
trans-1,3-Dichloropropene	10.0	9.93		ug/L		99	80 - 122	4	25
1,1,2-Trichloroethane	10.0	10.6		ug/L		106	80 - 121	3	21
Tetrachloroethene	10.0	11.7		ug/L		117	76 - 120	3	20
1,3-Dichloropropane	10.0	10.7		ug/L		107	79 - 120	1	26
Dibromochloromethane	10.0	9.79		ug/L		98	71 - 120	1	24
1,2-Dibromoethane	10.0	10.6		ug/L		106	79 - 120	1	20
Chlorobenzene	10.0	10.4		ug/L		104	80 - 120	0	15
Ethylbenzene	10.0	10.4		ug/L		104	80 - 120	1	14
1,1,1,2-Tetrachloroethane	10.0	10.2		ug/L		102	79 - 120	4	20
1,1,2,2-Tetrachloroethane	10.0	10.7		ug/L		107	74 - 124	2	18
m-Xylene & p-Xylene	10.0	10.4		ug/L		104	80 - 120	0	14
o-Xylene	10.0	10.1		ug/L		101	80 - 120	0	16
Styrene	10.0	9.94		ug/L		99	76 - 121	0	16
Bromoform	10.0	9.49		ug/L		95	61 - 132	0	20
Isopropylbenzene	10.0	10.1		ug/L		101	75 - 120	0	20
Bromobenzene	10.0	9.98		ug/L		100	80 - 120	1	13
N-Propylbenzene	10.0	9.98		ug/L		100	80 - 120	2	13
1,2,3-Trichloropropane	10.0	10.5		ug/L		105	76 - 124	0	30
2-Chlorotoluene	10.0	9.97		ug/L		100	80 - 120	2	15
1,3,5-Trimethylbenzene	10.0	9.90		ug/L		99	80 - 120	2	14
4-Chlorotoluene	10.0	10.3		ug/L		103	80 - 120	2	14
t-Butylbenzene	10.0	9.87		ug/L		99	80 - 121	1	14
1,2,4-Trimethylbenzene	10.0	9.79		ug/L		98	80 - 120	2	16

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-323947/5

Matrix: Water

Analysis Batch: 323947

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
sec-Butylbenzene	10.0	10.2		ug/L		102	78 - 120	1	15
1,3-Dichlorobenzene	10.0	10.2		ug/L		102	80 - 120	0	14
4-Isopropyltoluene	10.0	10.2		ug/L		102	77 - 120	0	13
1,4-Dichlorobenzene	10.0	10.4		ug/L		104	80 - 120	1	17
n-Butylbenzene	10.0	10.3		ug/L		103	78 - 120	1	14
1,2-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120	0	15
1,2-Dibromo-3-Chloropropane	10.0	10.2		ug/L		102	65 - 125	0	27
1,2,4-Trichlorobenzene	10.0	10.4		ug/L		104	57 - 140	1	27
1,2,3-Trichlorobenzene	10.0	11.3		ug/L		113	23 - 150	3	35
Hexachlorobutadiene	10.0	12.0		ug/L		120	74 - 125	1	22
Naphthalene	10.0	10.0		ug/L		100	44 - 144	0	31
Methyl tert-butyl ether	10.0	9.92		ug/L		99	72 - 130	1	18

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120
Trifluorotoluene (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	102		80 - 126

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-324045/1-A

Matrix: Water

Analysis Batch: 324182

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 324045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		4.0	0.36	ug/L		03/02/20 10:54	03/04/20 14:34	1
Bis(2-chloroethyl)ether	ND		0.60	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Chlorophenol	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzyl alcohol	ND		5.0	1.3	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,2-Dichlorobenzene	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Methylphenol	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
3 & 4 Methylphenol	ND		0.80	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
N-Nitrosodi-n-propylamine	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachloroethane	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Nitrobenzene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Isophorone	ND		0.40	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Nitrophenol	ND		1.0	0.15	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzoic acid	ND		4.0	0.70	ug/L		03/02/20 10:54	03/04/20 14:34	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dichlorophenol	ND		4.0	0.20	ug/L		03/02/20 10:54	03/04/20 14:34	1
1,2,4-Trichlorobenzene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Naphthalene	ND		0.40	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Chloroaniline	ND		10	0.59	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324045/1-A

Matrix: Water

Analysis Batch: 324182

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 324045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Methylnaphthalene	ND		0.40	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachlorocyclopentadiene	ND		5.0	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Chloronaphthalene	ND		1.0	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
2-Nitroaniline	ND		0.60	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Acenaphthylene	ND		1.0	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,6-Dinitrotoluene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
3-Nitroaniline	ND		3.0	0.16	ug/L		03/02/20 10:54	03/04/20 14:34	1
Acenaphthene	ND		0.40	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Nitrophenol	ND		15	1.7	ug/L		03/02/20 10:54	03/04/20 14:34	1
Dibenzofuran	ND		0.40	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
Diethyl phthalate	ND		12	0.15	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Fluorene	ND		2.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Nitroaniline	ND		2.0	0.21	ug/L		03/02/20 10:54	03/04/20 14:34	1
4,6-Dinitro-2-methylphenol	ND		5.0	0.26	ug/L		03/02/20 10:54	03/04/20 14:34	1
N-Nitrosodiphenylamine	ND		15	0.070	ug/L		03/02/20 10:54	03/04/20 14:34	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Pentachlorophenol	ND		10	0.51	ug/L		03/02/20 10:54	03/04/20 14:34	1
Phenanthrene	ND		1.0	0.030	ug/L		03/02/20 10:54	03/04/20 14:34	1
Anthracene	ND		15	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Di-n-butyl phthalate	ND		3.0	0.44	ug/L		03/02/20 10:54	03/04/20 14:34	1
Fluoranthene	ND		3.0	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1
Pyrene	ND		2.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Butyl benzyl phthalate	ND		10	0.93	ug/L		03/02/20 10:54	03/04/20 14:34	1
3,3'-Dichlorobenzidine	ND		15	0.62	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[a]anthracene	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Chrysene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Bis(2-ethylhexyl) phthalate	ND		15	0.87	ug/L		03/02/20 10:54	03/04/20 14:34	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[a]pyrene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.13	ug/L		03/02/20 10:54	03/04/20 14:34	1
Dibenz(a,h)anthracene	ND		0.60	0.070	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[g,h,i]perylene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Carbazole	ND		0.60	0.10	ug/L		03/02/20 10:54	03/04/20 14:34	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[b]fluoranthene	ND		1.0	0.040	ug/L		03/02/20 10:54	03/04/20 14:34	1
Benzo[k]fluoranthene	ND		1.0	0.050	ug/L		03/02/20 10:54	03/04/20 14:34	1
bis(chloroisopropyl) ether	ND		0.60	0.060	ug/L		03/02/20 10:54	03/04/20 14:34	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	55		20 - 110	03/02/20 10:54	03/04/20 14:34	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324045/1-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324045

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Phenol-d5 (Surr)	35		10 - 115	03/02/20 10:54	03/04/20 14:34	1
Nitrobenzene-d5 (Surr)	92		40 - 110	03/02/20 10:54	03/04/20 14:34	1
2-Fluorobiphenyl	75		50 - 110	03/02/20 10:54	03/04/20 14:34	1
2,4,6-Tribromophenol (Surr)	69		40 - 125	03/02/20 10:54	03/04/20 14:34	1
Terphenyl-d14 (Surr)	117		50 - 135	03/02/20 10:54	03/04/20 14:34	1

Lab Sample ID: MB 580-324045/1-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324045

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzoic acid	ND		4.0	0.70	ug/L		03/02/20 10:54	03/21/20 11:32	1
Hexachlorocyclopentadiene	ND		5.0	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
2-Chloronaphthalene	ND		1.0	0.030	ug/L		03/02/20 10:54	03/21/20 11:32	1
2-Nitroaniline	ND		0.60	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		03/02/20 10:54	03/21/20 11:32	1
Acenaphthylene	ND		1.0	0.060	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,6-Dinitrotoluene	ND		0.60	0.040	ug/L		03/02/20 10:54	03/21/20 11:32	1
3-Nitroaniline	ND		3.0	0.16	ug/L		03/02/20 10:54	03/21/20 11:32	1
Acenaphthene	ND		0.40	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		03/02/20 10:54	03/21/20 11:32	1
4-Nitrophenol	ND		15	1.7	ug/L		03/02/20 10:54	03/21/20 11:32	1
Dibenzofuran	ND		0.40	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		03/02/20 10:54	03/21/20 11:32	1
Diethyl phthalate	ND		12	0.15	ug/L		03/02/20 10:54	03/21/20 11:32	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
Fluorene	ND		2.0	0.050	ug/L		03/02/20 10:54	03/21/20 11:32	1
4-Nitroaniline	ND		2.0	0.21	ug/L		03/02/20 10:54	03/21/20 11:32	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
2-Fluorophenol (Surr)	48		20 - 110	03/02/20 10:54	03/21/20 11:32	1
Phenol-d5 (Surr)	27		10 - 115	03/02/20 10:54	03/21/20 11:32	1
Nitrobenzene-d5 (Surr)	93		40 - 110	03/02/20 10:54	03/21/20 11:32	1
2-Fluorobiphenyl	77		50 - 110	03/02/20 10:54	03/21/20 11:32	1
2,4,6-Tribromophenol (Surr)	55		40 - 125	03/02/20 10:54	03/21/20 11:32	1
Terphenyl-d14 (Surr)	108		50 - 135	03/02/20 10:54	03/21/20 11:32	1

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Bis(2-chloroethyl)ether	2.00	2.62	*	ug/L		131	55 - 125
2-Chlorophenol	2.00	2.04		ug/L		102	57 - 125
1,3-Dichlorobenzene	2.00	1.68		ug/L		84	40 - 125

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	2.00	1.67		ug/L		84	40 - 125
Benzyl alcohol	2.00	ND		ug/L		50	41 - 144
1,2-Dichlorobenzene	2.00	1.77		ug/L		89	44 - 125
2-Methylphenol	2.00	2.04		ug/L		102	60 - 130
3 & 4 Methylphenol	2.00	1.50		ug/L		75	56 - 130
N-Nitrosodi-n-propylamine	2.00	1.97		ug/L		98	60 - 120
Hexachloroethane	2.00	1.57		ug/L		79	30 - 125
Nitrobenzene	2.00	2.15		ug/L		108	62 - 125
Isophorone	2.00	2.12		ug/L		106	64 - 125
2-Nitrophenol	2.00	1.89		ug/L		95	55 - 140
2,4-Dimethylphenol	2.00	1.95	J	ug/L		97	30 - 135
Bis(2-chloroethoxy)methane	2.00	2.16		ug/L		108	59 - 125
2,4-Dichlorophenol	2.00	1.78	J	ug/L		89	50 - 140
1,2,4-Trichlorobenzene	2.00	1.56		ug/L		78	40 - 125
Naphthalene	2.00	1.86		ug/L		93	56 - 125
4-Chloroaniline	2.00	1.73	J	ug/L		87	20 - 150
Hexachlorobutadiene	2.00	1.27		ug/L		63	25 - 125
4-Chloro-3-methylphenol	2.00	1.67		ug/L		83	65 - 145
2-Methylnaphthalene	2.00	1.83		ug/L		92	56 - 125
Hexachlorocyclopentadiene	2.00	0.901	J	ug/L		45	20 - 125
2,4,6-Trichlorophenol	2.00	1.75		ug/L		88	55 - 140
2,4,5-Trichlorophenol	2.00	2.01		ug/L		101	66 - 130
2-Chloronaphthalene	2.00	1.87		ug/L		94	55 - 125
2-Nitroaniline	2.00	1.89		ug/L		95	52 - 140
Dimethyl phthalate	2.00	2.24		ug/L		112	65 - 155
Acenaphthylene	2.00	2.06		ug/L		103	62 - 125
2,6-Dinitrotoluene	2.00	2.00		ug/L		100	67 - 134
3-Nitroaniline	2.00	1.63	J	ug/L		82	22 - 124
Acenaphthene	2.00	2.02		ug/L		101	63 - 125
4-Nitrophenol	4.00	ND		ug/L		25	25 - 153
Dibenzofuran	2.00	2.00		ug/L		100	60 - 125
2,4-Dinitrotoluene	2.00	1.87		ug/L		94	73 - 126
Diethyl phthalate	2.00	2.38	J	ug/L		119	60 - 150
4-Chlorophenyl phenyl ether	2.00	2.00		ug/L		100	59 - 125
Fluorene	2.00	2.11		ug/L		105	69 - 125
4-Nitroaniline	2.00	1.55	J	ug/L		78	49 - 125
4,6-Dinitro-2-methylphenol	4.00	2.60	J	ug/L		65	50 - 136
N-Nitrosodiphenylamine	2.00	2.16	J	ug/L		108	40 - 135
4-Bromophenyl phenyl ether	2.00	2.07		ug/L		103	62 - 132
Hexachlorobenzene	2.00	2.06		ug/L		103	61 - 125
Pentachlorophenol	4.00	0.736	J *	ug/L		18	20 - 145
Phenanthrene	2.00	2.12		ug/L		106	70 - 125
Anthracene	2.00	2.07	J	ug/L		103	50 - 125
Di-n-butyl phthalate	2.00	2.70	J	ug/L		135	55 - 167
Fluoranthene	2.00	2.17	J	ug/L		109	70 - 145
Pyrene	2.00	2.26		ug/L		113	70 - 133
Butyl benzyl phthalate	2.00	2.72	J	ug/L		136	60 - 167
3,3'-Dichlorobenzidine	4.00	3.92	J	ug/L		98	20 - 175
Benzo[a]anthracene	2.00	2.38		ug/L		119	65 - 125

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chrysene	2.00	2.46		ug/L		123	70 - 125
Bis(2-ethylhexyl) phthalate	2.00	2.65	J	ug/L		132	70 - 185
Di-n-octyl phthalate	2.00	2.48		ug/L		124	55 - 150
Benzo[a]pyrene	2.00	2.25		ug/L		113	45 - 125
Indeno[1,2,3-cd]pyrene	2.00	2.20		ug/L		110	70 - 136
Dibenz(a,h)anthracene	2.00	2.22		ug/L		111	69 - 154
Benzo[g,h,i]perylene	2.00	2.24		ug/L		112	65 - 153
Carbazole	2.00	2.73		ug/L		136	75 - 142
1-Methylnaphthalene	2.00	1.92		ug/L		96	54 - 125
Benzo[b]fluoranthene	2.00	2.30		ug/L		115	70 - 129
Benzo[k]fluoranthene	2.00	2.16		ug/L		108	70 - 123
bis(chloroisopropyl) ether	2.00	1.93		ug/L		97	44 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	28		20 - 110
Phenol-d5 (Surr)	24		10 - 115
Nitrobenzene-d5 (Surr)	91		40 - 110
2-Fluorobiphenyl	89		50 - 110
2,4,6-Tribromophenol (Surr)	96		40 - 125
Terphenyl-d14 (Surr)	102		50 - 135

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzoic acid	4.00	2.06	J	ug/L		51	20 - 144
Hexachlorocyclopentadiene	2.00	1.71	J	ug/L		86	20 - 125
2,4,6-Trichlorophenol	2.00	1.92		ug/L		96	55 - 140
2,4,5-Trichlorophenol	2.00	1.85		ug/L		92	66 - 130
2-Chloronaphthalene	2.00	1.70		ug/L		85	55 - 125
2-Nitroaniline	2.00	2.20		ug/L		110	52 - 140
Dimethyl phthalate	2.00	2.17		ug/L		109	65 - 155
Acenaphthylene	2.00	1.90		ug/L		95	62 - 125
2,6-Dinitrotoluene	2.00	2.31		ug/L		115	67 - 134
3-Nitroaniline	2.00	2.03	J	ug/L		102	22 - 124
Acenaphthene	2.00	1.86		ug/L		93	63 - 125
2,4-Dinitrophenol	4.00	3.39	J	ug/L		85	24 - 146
4-Nitrophenol	4.00	ND	*	ug/L		7	25 - 153
Dibenzofuran	2.00	1.83		ug/L		92	60 - 125
2,4-Dinitrotoluene	2.00	2.11		ug/L		106	73 - 126
Diethyl phthalate	2.00	2.26	J	ug/L		113	60 - 150
4-Chlorophenyl phenyl ether	2.00	1.96		ug/L		98	59 - 125
Fluorene	2.00	1.99	J	ug/L		100	69 - 125
4-Nitroaniline	2.00	2.27		ug/L		113	49 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	50		20 - 110

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324045/2-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324045

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Phenol-d5 (Surr)	30		10 - 115
Nitrobenzene-d5 (Surr)	93		40 - 110
2-Fluorobiphenyl	84		50 - 110
2,4,6-Tribromophenol (Surr)	102		40 - 125
Terphenyl-d14 (Surr)	104		50 - 135

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phenol	2.00	0.698	J	ug/L		35	30 - 130	10	30
Bis(2-chloroethyl)ether	2.00	2.09		ug/L		105	55 - 125	22	30
2-Chlorophenol	2.00	1.79		ug/L		90	57 - 125	13	30
1,3-Dichlorobenzene	2.00	1.52		ug/L		76	40 - 125	10	30
1,4-Dichlorobenzene	2.00	1.56		ug/L		78	40 - 125	7	30
Benzyl alcohol	2.00	ND	*	ug/L		40	41 - 144	23	30
1,2-Dichlorobenzene	2.00	1.60		ug/L		80	44 - 125	10	30
2-Methylphenol	2.00	1.55		ug/L		77	60 - 130	27	30
3 & 4 Methylphenol	2.00	1.27		ug/L		64	56 - 130	16	30
N-Nitrosodi-n-propylamine	2.00	1.74		ug/L		87	60 - 120	12	30
Hexachloroethane	2.00	1.43		ug/L		72	30 - 125	9	30
Nitrobenzene	2.00	1.90		ug/L		95	62 - 125	12	30
Isophorone	2.00	2.03		ug/L		101	64 - 125	4	30
2-Nitrophenol	2.00	1.64		ug/L		82	55 - 140	14	30
2,4-Dimethylphenol	2.00	1.76	J	ug/L		88	30 - 135	10	30
Bis(2-chloroethoxy)methane	2.00	1.98		ug/L		99	59 - 125	9	30
2,4-Dichlorophenol	2.00	1.58	J	ug/L		79	50 - 140	12	30
1,2,4-Trichlorobenzene	2.00	1.34		ug/L		67	40 - 125	15	30
Naphthalene	2.00	1.72		ug/L		86	56 - 125	8	30
4-Chloroaniline	2.00	1.50	J	ug/L		75	20 - 150	14	30
Hexachlorobutadiene	2.00	1.12		ug/L		56	25 - 125	13	30
4-Chloro-3-methylphenol	2.00	1.43		ug/L		71	65 - 145	16	30
2-Methylnaphthalene	2.00	1.63		ug/L		82	56 - 125	12	30
Hexachlorocyclopentadiene	2.00	0.802	J	ug/L		40	20 - 125	12	30
2,4,6-Trichlorophenol	2.00	1.53		ug/L		76	55 - 140	14	30
2,4,5-Trichlorophenol	2.00	1.79		ug/L		90	66 - 130	11	30
2-Chloronaphthalene	2.00	1.62		ug/L		81	55 - 125	15	30
2-Nitroaniline	2.00	1.61		ug/L		81	52 - 140	16	30
Dimethyl phthalate	2.00	1.98		ug/L		99	65 - 155	12	30
Acenaphthylene	2.00	1.84		ug/L		92	62 - 125	12	30
2,6-Dinitrotoluene	2.00	1.83		ug/L		92	67 - 134	9	30
3-Nitroaniline	2.00	1.56	J	ug/L		78	22 - 124	4	30
Acenaphthene	2.00	1.86		ug/L		93	63 - 125	8	30
4-Nitrophenol	4.00	ND		ug/L		26	25 - 153	2	30
Dibenzofuran	2.00	1.80		ug/L		90	60 - 125	11	30
2,4-Dinitrotoluene	2.00	1.64		ug/L		82	73 - 126	13	30
Diethyl phthalate	2.00	2.11	J	ug/L		106	60 - 150	12	30

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 324182

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4-Chlorophenyl phenyl ether	2.00	1.72		ug/L		86	59 - 125	15	30
Fluorene	2.00	1.87	J	ug/L		93	69 - 125	12	30
4-Nitroaniline	2.00	1.87	J	ug/L		94	49 - 125	19	30
4,6-Dinitro-2-methylphenol	4.00	2.54	J	ug/L		63	50 - 136	3	30
N-Nitrosodiphenylamine	2.00	2.04	J	ug/L		102	40 - 135	6	30
4-Bromophenyl phenyl ether	2.00	1.97		ug/L		98	62 - 132	5	30
Hexachlorobenzene	2.00	1.95		ug/L		98	61 - 125	5	30
Pentachlorophenol	4.00	0.638	J *	ug/L		16	20 - 145	14	30
Phenanthrene	2.00	2.01		ug/L		100	70 - 125	6	30
Anthracene	2.00	2.00	J	ug/L		100	50 - 125	3	30
Di-n-butyl phthalate	2.00	2.60	J	ug/L		130	55 - 167	4	30
Fluoranthene	2.00	2.08	J	ug/L		104	70 - 145	4	30
Pyrene	2.00	2.19		ug/L		109	70 - 133	3	30
Butyl benzyl phthalate	2.00	2.42	J	ug/L		121	60 - 167	11	30
3,3'-Dichlorobenzidine	4.00	3.33	J	ug/L		83	20 - 175	16	30
Benzo[a]anthracene	2.00	2.05		ug/L		103	65 - 125	15	30
Chrysene	2.00	2.08		ug/L		104	70 - 125	16	30
Bis(2-ethylhexyl) phthalate	2.00	2.36	J	ug/L		118	70 - 185	11	30
Di-n-octyl phthalate	2.00	2.17		ug/L		108	55 - 150	13	30
Benzo[a]pyrene	2.00	1.90		ug/L		95	45 - 125	17	30
Indeno[1,2,3-cd]pyrene	2.00	1.71		ug/L		86	70 - 136	25	30
Dibenz(a,h)anthracene	2.00	1.76		ug/L		88	69 - 154	23	30
Benzo[g,h,i]perylene	2.00	1.89		ug/L		95	65 - 153	17	30
Carbazole	2.00	2.62		ug/L		131	75 - 142	4	30
1-Methylnaphthalene	2.00	1.70		ug/L		85	54 - 125	12	30
Benzo[b]fluoranthene	2.00	1.91		ug/L		95	70 - 129	19	30
Benzo[k]fluoranthene	2.00	1.79		ug/L		89	70 - 123	19	30
bis(chloroisopropyl) ether	2.00	1.73		ug/L		86	44 - 130	11	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorophenol (Surr)	37		20 - 110
Phenol-d5 (Surr)	26		10 - 115
Nitrobenzene-d5 (Surr)	81		40 - 110
2-Fluorobiphenyl	77		50 - 110
2,4,6-Tribromophenol (Surr)	92		40 - 125
Terphenyl-d14 (Surr)	97		50 - 135

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzoic acid	4.00	2.11	J	ug/L		53	20 - 144	3	30
Hexachlorocyclopentadiene	2.00	1.54	J	ug/L		77	20 - 125	11	30
2,4,6-Trichlorophenol	2.00	1.67		ug/L		84	55 - 140	14	30
2,4,5-Trichlorophenol	2.00	1.64		ug/L		82	66 - 130	12	30
2-Chloronaphthalene	2.00	1.55		ug/L		77	55 - 125	9	30
2-Nitroaniline	2.00	2.04		ug/L		102	52 - 140	8	30

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324045/3-A
Matrix: Water
Analysis Batch: 325325

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324045

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dimethyl phthalate	2.00	1.95		ug/L		97	65 - 155	11	30
Acenaphthylene	2.00	1.72		ug/L		86	62 - 125	10	30
2,6-Dinitrotoluene	2.00	2.05		ug/L		102	67 - 134	12	30
3-Nitroaniline	2.00	1.66	J	ug/L		83	22 - 124	20	30
Acenaphthene	2.00	1.66		ug/L		83	63 - 125	11	30
2,4-Dinitrophenol	4.00	3.05	J	ug/L		76	24 - 146	11	30
4-Nitrophenol	4.00	ND	*	ug/L		7	25 - 153	8	30
Dibenzofuran	2.00	1.67		ug/L		83	60 - 125	10	30
2,4-Dinitrotoluene	2.00	1.86		ug/L		93	73 - 126	13	30
Diethyl phthalate	2.00	2.07	J	ug/L		103	60 - 150	9	30
4-Chlorophenyl phenyl ether	2.00	1.72		ug/L		86	59 - 125	13	30
Fluorene	2.00	1.71	J	ug/L		86	69 - 125	15	30
4-Nitroaniline	2.00	1.91	J	ug/L		96	49 - 125	17	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorophenol (Surr)	41		20 - 110
Phenol-d5 (Surr)	25		10 - 115
Nitrobenzene-d5 (Surr)	81		40 - 110
2-Fluorobiphenyl	73		50 - 110
2,4,6-Tribromophenol (Surr)	95		40 - 125
Terphenyl-d14 (Surr)	97		50 - 135

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-323786/1-A
Matrix: Water
Analysis Batch: 323832

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 323786

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		10	4.0	mg/L		02/27/20 10:44	02/27/20 14:51	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150	02/27/20 10:44	02/27/20 14:51	1
Trifluorotoluene (Surr)	108		50 - 150	02/27/20 10:44	02/27/20 14:51	1

Lab Sample ID: MB 580-323832/33
Matrix: Water
Analysis Batch: 323832

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			02/28/20 01:17	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150		02/28/20 01:17	1
Trifluorotoluene (Surr)	94		50 - 150		02/28/20 01:17	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 580-323832/31
Matrix: Water
Analysis Batch: 323832

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1.00	1.00		mg/L		100	79 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	103		50 - 150				
Trifluorotoluene (Surr)	99		50 - 150				

Lab Sample ID: LCSD 580-323832/32
Matrix: Water
Analysis Batch: 323832

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
Gasoline	1.00	0.967		mg/L		97	79 - 120	4	10
Surrogate	%Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	108		50 - 150						
Trifluorotoluene (Surr)	104		50 - 150						

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-324204/1-A
Matrix: Water
Analysis Batch: 324261

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324204

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		03/04/20 11:59	03/05/20 11:24	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		03/04/20 11:59	03/05/20 11:24	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	82		50 - 150				03/04/20 11:59	03/05/20 11:24	1

Lab Sample ID: LCS 580-324204/2-A
Matrix: Water
Analysis Batch: 324261

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324204

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	2.00	1.80		mg/L		90	50 - 120
Motor Oil (>C24-C36)	2.00	1.92		mg/L		96	64 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
o-Terphenyl	87		50 - 150				

Lab Sample ID: LCSD 580-324204/3-A
Matrix: Water
Analysis Batch: 324261

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324204

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	2.00	1.76		mg/L		88	50 - 120	2	26
Motor Oil (>C24-C36)	2.00	1.89		mg/L		94	64 - 120	2	24

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

<i>Surrogate</i>	<i>LCS</i>	<i>D</i>	<i>LCS</i>	<i>D</i>	<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>			
<i>o-Terphenyl</i>	84				50 - 150

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Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Client Sample ID: E Water Inf-022520

Lab Sample ID: 580-93047-1

Date Collected: 02/25/20 08:40

Matrix: Water

Date Received: 02/26/20 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	323947	02/29/20 02:53	CJ	TAL SEA
Total/NA	Prep	3510C			324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E		10	324182	03/04/20 16:29	W1T	TAL SEA
Total/NA	Prep	3510C	RA		324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E	RA	50	325325	03/21/20 13:26	CJ	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	323832	02/28/20 07:43	W1T	TAL SEA
Total/NA	Prep	3510C			324204	03/04/20 11:59	T1L	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324261	03/05/20 19:08	TL1	TAL SEA

Client Sample ID: D Water Inf-022520

Lab Sample ID: 580-93047-2

Date Collected: 02/25/20 17:42

Matrix: Water

Date Received: 02/26/20 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	323947	02/29/20 03:20	CJ	TAL SEA
Total/NA	Prep	3510C			324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E		10	324182	03/04/20 16:52	W1T	TAL SEA
Total/NA	Prep	3510C	RA		324045	03/02/20 10:54	T1L	TAL SEA
Total/NA	Analysis	8270E	RA	50	325325	03/21/20 13:49	CJ	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	323832	02/28/20 08:07	W1T	TAL SEA
Total/NA	Prep	3510C			324204	03/04/20 11:59	T1L	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324261	03/05/20 19:28	TL1	TAL SEA

Client Sample ID: Trip Blank

Lab Sample ID: 580-93047-3

Date Collected: 02/25/20 00:01

Matrix: Water

Date Received: 02/26/20 15:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	323947	02/28/20 20:32	CJ	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-18-21

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Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93047-1

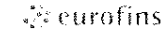
Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-93047-1	E Water Inf-022520	Water	02/25/20 08:40	02/26/20 15:30	
580-93047-2	D Water Inf-022520	Water	02/25/20 17:42	02/26/20 15:30	
580-93047-3	Trip Blank	Water	02/25/20 00:01	02/26/20 15:30	

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Eurofins TestAmerica, Seattle

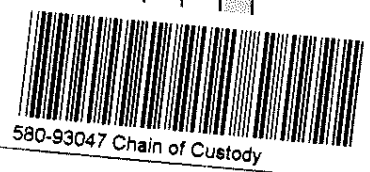
5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record



Environment Testing
Instrumentation

Client Information		Sampler: <i>Sasha Williams</i>		Lab PM: Cruz, Sheri L		Carrier Tracking No(s):		COC No: 580-37733-12071.1									
Client Contact: Dottie Metcalf		Phone:		E-Mail: sheri.cruz@testamericainc.com				Page: Page 1 of 1									
Company: Geosyntec Consultants, Inc.				Analysis Requested						Job #:							
Address: 520 Pike Street Suite 2600		Due Date Requested:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 8260D VOAs full list 8270E - (MOD) RCRA list Semivolatiles 200.8 As, Cd, Cr, Cu, Pb, Ni, Zn 200.7 As, Cd, Cr, Cu, Pb, Ni, Zn SM5310_TOC_B - TOC NMTPH_Dx - Northwest - DRO/RRO NMTPH_Gx		Total Number of Containers		Preservation Codes:									
City: Seattle		TAT Requested (days): <i>Standard</i>						A - HCL B - NaOH C - Zn Ac D - Nitric E - NaHSC F - MeOH G - Amchlor H - Ascorbic I - Ice J - DI Water K - EDTA L - EDA		Loc: 580 93047							
State, Zip: WA, 98101		PO #: Purchase Order Requested						Other:		pri 4-5 Z - other (specify)							
Phone: 206-496-1463(Tel)		WO #: <i>PNR0697/03</i>															
Email: dmetcalf@lindenburger@geosyntec.com		Project #: 58014826															
Project Name: Lilyblad Site Remediation		SSOW#:															
Site: GW Influent System																	
Sample Identification		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)	8260D VOAs full list	8270E - (MOD) RCRA list Semivolatiles	200.8 As, Cd, Cr, Cu, Pb, Ni, Zn	200.7 As, Cd, Cr, Cu, Pb, Ni, Zn	SM5310_TOC_B - TOC	NMTPH_Dx - Northwest - DRO/RRO	NMTPH_Gx	Total Number of Containers	Special Instructions/Note:	
				Preservation Code:													
<i>E Water Inf-022520</i>		<i>2/25/20</i>	<i>8:40AM</i>	<i>G</i>	Water				<i>X</i>	<i>X</i>							
<i>D Water Inf-022520</i>		<i>2/25/20</i>	<i>17:42</i>	<i>G</i>	Water				<i>X</i>	<i>X</i>							
					Water												
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					Water												
Therm ID: <i>A1</i>		Cooler Dsc: <i>LB</i>	Packing: <i>Box</i>	Cust. Seal: Yes <i>X</i> No	Blue Ice: <i>Yes</i> , Dry, None	Cor: <i>1-0</i>	Uncl. <i>7</i>	FedEx:	UPS:	Lab Cour:	Other: <i>CD</i>						
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)											
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months											
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:											
Empty Kit Relinquished by:				Date:		Time:		Method of Shipment:									
Relinquished by: <i>Sasha Williams</i>				Date/Time: <i>2/26/20/3:30AM</i>		Company: <i>Geosyntec</i>		Received by: <i>[Signature]</i>				Date/Time: <i>2/26/20 1530</i>		Company: <i>Tased</i>			
Relinquished by:				Date/Time:		Company:		Received by:				Date/Time:		Company:			
Relinquished by:				Date/Time:		Company:		Received by:				Date/Time:		Company:			
Custody Seals Intact: A Yes A No		Custody Seal No.:		Page 33 of 34		Cooler Temperature(s) °C and Other Remarks:						3/23/2020					



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Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-93047-1

Login Number: 93047

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	Received Trip Blank(s) not listed on COC.
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 <math><6\text{mm}</math> (1/4").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

Eurofins TestAmerica, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-93205-1
Client Project/Site: Lilyblad Site Remediation

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
3/26/2020 4:15:38 PM
Kristine Allen, Client Service Manager
(253)248-4970
kristine.allen@testamericainc.com

Designee for
Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

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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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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Job ID: 580-93205-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-93205-1

Comments

No additional comments.

Receipt

The samples were received on 3/4/2020 2:51 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0° C.

GC/MS VOA

Method 8260D: The following samples were reanalyzed due to quality control failures in the initial analysis: Test4Inf3-030420 (580-93205-2), Pos tr/s-030420 (580-93205-3) and Trip Blank-030420 (580-93205-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Methods 8270E: The CCVIS 580-325432/3 recovered outside of control limits, low-biased, for Benzoic acid and 4-Nitrophenol. These analytes have been identified as poor-performing analytes when analyzed using this method; re-analysis was not performed. In addition, CCVIS 580-325432/3 recovered outside control limits, high-biased, for several analytes. These analytes were not detected in associated client samples; therefore, the data is reported.

Methods 8270E: Diethyl phthalate was detected in the method blank greater than the method detection limit but less than the reporting limit.

Methods 8270E: The LCS 580-324265/2-A and/or LCSD 580-324265/3-A recovered outside of control limits, high biased for N-Nitrosodi-n-propylamine, Carbazole, Isophorone. These analytes were not detected in associated client samples; therefore, the data is reported.

Methods 8270E: The LCS 580-324265/2-A and/or LCSD 580-324265/3-A recovered outside of control limits, low biased for Benzoic acid, 4-Nitrophenol, Pentachlorophenol. These analytes have been identified as poor-performing analytes when analyzed using this method; re-analysis was not performed. Results for these analytes have been qualified and reported. In addition, the RPD exceeded the control limits for 4-Nitrophenol, 4-Nitroaniline.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-325444 recovered above the upper control limit for Hexachlorobutadiene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: Test4Inf2-030220 (580-93205-1), Test4Inf3-030420 (580-93205-2) and (CCVIS 580-325444/3).

Method 8270E: The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Pentachlorophenol, N-Nitrosodi-n-propylamine and Carbazole. These analytes may have a %D >60% if the average %D of all the analytes in the continuing calibration verification (CCV) is 30%. (CCVIS 580-325444/3).

Method 8270E: The following samples were diluted due to the nature of the sample matrix: Test4Inf2-030220 (580-93205-1) and Test4Inf3-030420 (580-93205-2). Elevated reporting limits (RLs) are provided.

Method 8270E: The following samples required a dilution due to the nature of the sample matrix: Test4Inf2-030220 (580-93205-1) and Test4Inf3-030420 (580-93205-2). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Job ID: 580-93205-1 (Continued)

Laboratory: Eurofins TestAmerica, Seattle (Continued)

Method NWTPH-Gx: The following samples contained an atypical hydrocarbon pattern when compared to laboratory standards used for calibration. Test4Inf2-030220 (580-93205-1), Test4Inf3-030420 (580-93205-2) and Pos tr/s-030420 (580-93205-3)

Method NWTPH-Gx: The following sample(s) was collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The sample was analyzed within the 7-day holding time specified for unpreserved samples: Test4Inf3-030420 (580-93205-2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA

Method NWTPH-Dx: (CCVRT 580-324594/3) recovers outside drift limits for o-Terphenyl surrogate. The CCVRT and associated samples recover within control limits; therefore, the data is reported.

Method NWTPH-Dx: Surrogate recovery for the following sample was outside control limits: Test4Inf3-030420 (580-93205-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

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.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Qualifiers

GC/MS 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.

GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
*1	LCS/LCSD 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 recovery exceeds control limits

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate recovery exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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 Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf2-030220

Lab Sample ID: 580-93205-1

Date Collected: 03/02/20 15:42

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/09/20 18:14	1
Chloromethane	ND		20	5.4	ug/L			03/09/20 18:14	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/09/20 18:14	1
Bromomethane	ND		6.0	1.1	ug/L			03/09/20 18:14	1
Chloroethane	1.5	J	5.0	1.1	ug/L			03/09/20 18:14	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/09/20 18:14	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/09/20 18:14	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/09/20 18:14	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/09/20 18:14	1
1,1-Dichloroethane	1.4	J	2.0	0.22	ug/L			03/09/20 18:14	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/09/20 18:14	1
cis-1,2-Dichloroethene	7.5		3.0	0.69	ug/L			03/09/20 18:14	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/09/20 18:14	1
Chloroform	ND		5.0	0.50	ug/L			03/09/20 18:14	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/09/20 18:14	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/09/20 18:14	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/09/20 18:14	1
Benzene	ND		3.0	0.53	ug/L			03/09/20 18:14	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/09/20 18:14	1
Trichloroethene	ND		3.0	0.85	ug/L			03/09/20 18:14	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/09/20 18:14	1
Dibromomethane	ND		2.0	0.34	ug/L			03/09/20 18:14	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/09/20 18:14	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/09/20 18:14	1
Toluene	ND		2.0	0.39	ug/L			03/09/20 18:14	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/09/20 18:14	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/09/20 18:14	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/09/20 18:14	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/09/20 18:14	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/09/20 18:14	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/09/20 18:14	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/09/20 18:14	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/09/20 18:14	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/09/20 18:14	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/09/20 18:14	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/09/20 18:14	1
o-Xylene	ND		2.0	0.39	ug/L			03/09/20 18:14	1
Styrene	ND		5.0	1.0	ug/L			03/09/20 18:14	1
Bromoform	ND		3.0	0.56	ug/L			03/09/20 18:14	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/09/20 18:14	1
Bromobenzene	ND		2.0	0.43	ug/L			03/09/20 18:14	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/09/20 18:14	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/09/20 18:14	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/09/20 18:14	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/09/20 18:14	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/09/20 18:14	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/09/20 18:14	1
1,2,4-Trimethylbenzene	0.77	J	3.0	0.61	ug/L			03/09/20 18:14	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/09/20 18:14	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf2-030220

Lab Sample ID: 580-93205-1

Date Collected: 03/02/20 15:42

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/09/20 18:14	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/09/20 18:14	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/09/20 18:14	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/09/20 18:14	1
1,2-Dichlorobenzene	0.59	J	2.0	0.46	ug/L			03/09/20 18:14	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/09/20 18:14	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/09/20 18:14	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/09/20 18:14	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/09/20 18:14	1
Naphthalene	ND		4.0	0.93	ug/L			03/09/20 18:14	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/09/20 18:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120					03/09/20 18:14	1
4-Bromofluorobenzene (Surr)	97		80 - 120					03/09/20 18:14	1
Dibromofluoromethane (Surr)	105		80 - 120					03/09/20 18:14	1
Trifluorotoluene (Surr)	103		80 - 120					03/09/20 18:14	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 126					03/09/20 18:14	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		800	72	ug/L		03/05/20 10:28	03/24/20 12:07	200
Bis(2-chloroethyl)ether	ND		120	6.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
2-Chlorophenol	ND		200	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
1,3-Dichlorobenzene	ND		80	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
1,4-Dichlorobenzene	ND		80	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzyl alcohol	ND		1000	260	ug/L		03/05/20 10:28	03/24/20 12:07	200
1,2-Dichlorobenzene	ND		120	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
2-Methylphenol	ND		120	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
3 & 4 Methylphenol	ND		160	6.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
N-Nitrosodi-n-propylamine	ND	*	120	12	ug/L		03/05/20 10:28	03/24/20 12:07	200
Hexachloroethane	ND		200	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
Nitrobenzene	ND		200	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Isophorone	ND		80	20	ug/L		03/05/20 10:28	03/24/20 12:07	200
2-Nitrophenol	ND		200	30	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,4-Dimethylphenol	ND		800	32	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzoic acid	ND	*	800	140	ug/L		03/05/20 10:28	03/24/20 12:07	200
Bis(2-chloroethoxy)methane	ND		120	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,4-Dichlorophenol	ND		800	40	ug/L		03/05/20 10:28	03/24/20 12:07	200
1,2,4-Trichlorobenzene	ND		80	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Naphthalene	ND		80	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
4-Chloroaniline	ND		2000	120	ug/L		03/05/20 10:28	03/24/20 12:07	200
Hexachlorobutadiene	ND		200	12	ug/L		03/05/20 10:28	03/24/20 12:07	200
4-Chloro-3-methylphenol	ND		120	26	ug/L		03/05/20 10:28	03/24/20 12:07	200
2-Methylnaphthalene	ND		80	6.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Hexachlorocyclopentadiene	ND		1000	20	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,4,6-Trichlorophenol	ND		120	20	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,4,5-Trichlorophenol	ND		80	20	ug/L		03/05/20 10:28	03/24/20 12:07	200
2-Chloronaphthalene	ND		200	6.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
2-Nitroaniline	ND		120	20	ug/L		03/05/20 10:28	03/24/20 12:07	200

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf2-030220

Lab Sample ID: 580-93205-1

Date Collected: 03/02/20 15:42

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dimethyl phthalate	ND		120	12	ug/L		03/05/20 10:28	03/24/20 12:07	200
Acenaphthylene	ND		200	12	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,6-Dinitrotoluene	ND		120	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
3-Nitroaniline	ND		600	32	ug/L		03/05/20 10:28	03/24/20 12:07	200
Acenaphthene	ND		80	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,4-Dinitrophenol	ND		1000	320	ug/L		03/05/20 10:28	03/24/20 12:07	200
4-Nitrophenol	ND	*	3000	340	ug/L		03/05/20 10:28	03/24/20 12:07	200
Dibenzofuran	ND		80	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
2,4-Dinitrotoluene	ND		200	20	ug/L		03/05/20 10:28	03/24/20 12:07	200
Diethyl phthalate	ND		2400	30	ug/L		03/05/20 10:28	03/24/20 12:07	200
4-Chlorophenyl phenyl ether	ND		120	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
Fluorene	ND		400	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
4-Nitroaniline	ND		400	42	ug/L		03/05/20 10:28	03/24/20 12:07	200
4,6-Dinitro-2-methylphenol	ND		1000	52	ug/L		03/05/20 10:28	03/24/20 12:07	200
N-Nitrosodiphenylamine	ND		3000	14	ug/L		03/05/20 10:28	03/24/20 12:07	200
4-Bromophenyl phenyl ether	ND		120	12	ug/L		03/05/20 10:28	03/24/20 12:07	200
Hexachlorobenzene	ND		120	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Pentachlorophenol	ND	*	2000	100	ug/L		03/05/20 10:28	03/24/20 12:07	200
Phenanthrene	ND		200	6.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Anthracene	ND		3000	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
Di-n-butyl phthalate	ND		600	88	ug/L		03/05/20 10:28	03/24/20 12:07	200
Fluoranthene	ND		600	12	ug/L		03/05/20 10:28	03/24/20 12:07	200
Pyrene	ND		400	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Butyl benzyl phthalate	ND		2000	190	ug/L		03/05/20 10:28	03/24/20 12:07	200
3,3'-Dichlorobenzidine	ND		3000	120	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzo[a]anthracene	ND		200	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
Chrysene	ND		120	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Bis(2-ethylhexyl) phthalate	ND		3000	170	ug/L		03/05/20 10:28	03/24/20 12:07	200
Di-n-octyl phthalate	ND		200	26	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzo[a]pyrene	ND		200	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Indeno[1,2,3-cd]pyrene	ND		200	26	ug/L		03/05/20 10:28	03/24/20 12:07	200
Dibenz(a,h)anthracene	ND		120	14	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzo[g,h,i]perylene	ND		200	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Carbazole	ND	*	120	20	ug/L		03/05/20 10:28	03/24/20 12:07	200
1-Methylnaphthalene	ND		200	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzo[b]fluoranthene	ND		200	8.0	ug/L		03/05/20 10:28	03/24/20 12:07	200
Benzo[k]fluoranthene	ND		200	10	ug/L		03/05/20 10:28	03/24/20 12:07	200
bis(chloroisopropyl) ether	ND		120	12	ug/L		03/05/20 10:28	03/24/20 12:07	200

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	0	X	20 - 110	03/05/20 10:28	03/24/20 12:07	200
Phenol-d5 (Surr)	0	X	10 - 115	03/05/20 10:28	03/24/20 12:07	200
Nitrobenzene-d5 (Surr)	94		40 - 110	03/05/20 10:28	03/24/20 12:07	200
2-Fluorobiphenyl	45	X	50 - 110	03/05/20 10:28	03/24/20 12:07	200
2,4,6-Tribromophenol (Surr)	0	X	40 - 125	03/05/20 10:28	03/24/20 12:07	200
Terphenyl-d14 (Surr)	133		50 - 135	03/05/20 10:28	03/24/20 12:07	200

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.46		0.25	0.10	mg/L			03/09/20 20:03	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf2-030220

Lab Sample ID: 580-93205-1

Date Collected: 03/02/20 15:42

Matrix: Water

Date Received: 03/04/20 14:51

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		50 - 150		03/09/20 20:03	1
Trifluorotoluene (Surr)	79		50 - 150		03/09/20 20:03	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	20		0.11	0.065	mg/L		03/10/20 10:00	03/11/20 02:32	1
Motor Oil (>C24-C36)	6.5		0.35	0.096	mg/L		03/10/20 10:00	03/11/20 02:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	65		50 - 150	03/10/20 10:00	03/11/20 02:32	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf3-030420

Lab Sample ID: 580-93205-2

Date Collected: 03/04/20 13:00

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/11/20 21:54	1
Chloromethane	ND		20	5.4	ug/L			03/11/20 21:54	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/11/20 21:54	1
Bromomethane	ND		6.0	1.1	ug/L			03/11/20 21:54	1
Chloroethane	ND		5.0	1.1	ug/L			03/11/20 21:54	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/11/20 21:54	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/11/20 21:54	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/11/20 21:54	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/11/20 21:54	1
1,1-Dichloroethane	1.0	J	2.0	0.22	ug/L			03/11/20 21:54	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/11/20 21:54	1
cis-1,2-Dichloroethene	6.2		3.0	0.69	ug/L			03/11/20 21:54	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/11/20 21:54	1
Chloroform	ND		5.0	0.50	ug/L			03/11/20 21:54	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/11/20 21:54	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/11/20 21:54	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/11/20 21:54	1
Benzene	ND		3.0	0.53	ug/L			03/11/20 21:54	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/11/20 21:54	1
Trichloroethene	ND		3.0	0.85	ug/L			03/11/20 21:54	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/11/20 21:54	1
Dibromomethane	ND		2.0	0.34	ug/L			03/11/20 21:54	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/11/20 21:54	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/11/20 21:54	1
Toluene	ND		2.0	0.39	ug/L			03/11/20 21:54	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/11/20 21:54	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/11/20 21:54	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/11/20 21:54	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/11/20 21:54	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/11/20 21:54	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/11/20 21:54	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/11/20 21:54	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/11/20 21:54	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/11/20 21:54	1
o-Xylene	ND		2.0	0.39	ug/L			03/11/20 21:54	1
Styrene	ND		5.0	1.0	ug/L			03/11/20 21:54	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/11/20 21:54	1
Bromobenzene	ND		2.0	0.43	ug/L			03/11/20 21:54	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/11/20 21:54	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/11/20 21:54	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/11/20 21:54	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/11/20 21:54	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/11/20 21:54	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/11/20 21:54	1
1,2,4-Trimethylbenzene	0.79	J	3.0	0.61	ug/L			03/11/20 21:54	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/11/20 21:54	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/11/20 21:54	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/11/20 21:54	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/11/20 21:54	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf3-030420

Lab Sample ID: 580-93205-2

Date Collected: 03/04/20 13:00

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		3.0	0.44	ug/L			03/11/20 21:54	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/11/20 21:54	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/11/20 21:54	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/11/20 21:54	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/11/20 21:54	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/11/20 21:54	1
Naphthalene	ND		4.0	0.93	ug/L			03/11/20 21:54	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/11/20 21:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120		03/11/20 21:54	1
4-Bromofluorobenzene (Surr)	98		80 - 120		03/11/20 21:54	1
Dibromofluoromethane (Surr)	103		80 - 120		03/11/20 21:54	1
Trifluorotoluene (Surr)	101		80 - 120		03/11/20 21:54	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		03/11/20 21:54	1

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/12/20 22:16	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/12/20 22:16	1
Bromoform	ND		3.0	0.56	ug/L			03/12/20 22:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		03/12/20 22:16	1
4-Bromofluorobenzene (Surr)	96		80 - 120		03/12/20 22:16	1
Dibromofluoromethane (Surr)	100		80 - 120		03/12/20 22:16	1
Trifluorotoluene (Surr)	101		80 - 120		03/12/20 22:16	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126		03/12/20 22:16	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		760	68	ug/L		03/05/20 10:28	03/24/20 12:30	200
Bis(2-chloroethyl)ether	ND		110	5.7	ug/L		03/05/20 10:28	03/24/20 12:30	200
2-Chlorophenol	ND		190	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
1,3-Dichlorobenzene	ND		76	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
1,4-Dichlorobenzene	ND		76	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzyl alcohol	ND		950	240	ug/L		03/05/20 10:28	03/24/20 12:30	200
1,2-Dichlorobenzene	ND		110	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
2-Methylphenol	ND		110	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
3 & 4 Methylphenol	ND		150	5.7	ug/L		03/05/20 10:28	03/24/20 12:30	200
N-Nitrosodi-n-propylamine	ND *		110	11	ug/L		03/05/20 10:28	03/24/20 12:30	200
Hexachloroethane	ND		190	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
Nitrobenzene	ND		190	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Isophorone	ND		76	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
2-Nitrophenol	ND		190	29	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,4-Dimethylphenol	ND		760	30	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzoic acid	ND *		760	130	ug/L		03/05/20 10:28	03/24/20 12:30	200
Bis(2-chloroethoxy)methane	ND		110	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,4-Dichlorophenol	ND		760	38	ug/L		03/05/20 10:28	03/24/20 12:30	200
1,2,4-Trichlorobenzene	ND		76	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf3-030420

Lab Sample ID: 580-93205-2

Date Collected: 03/04/20 13:00

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		76	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
4-Chloroaniline	ND		1900	110	ug/L		03/05/20 10:28	03/24/20 12:30	200
Hexachlorobutadiene	ND		190	11	ug/L		03/05/20 10:28	03/24/20 12:30	200
4-Chloro-3-methylphenol	ND		110	25	ug/L		03/05/20 10:28	03/24/20 12:30	200
2-Methylnaphthalene	ND		76	5.7	ug/L		03/05/20 10:28	03/24/20 12:30	200
Hexachlorocyclopentadiene	ND		950	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,4,6-Trichlorophenol	ND		110	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,4,5-Trichlorophenol	ND		76	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
2-Chloronaphthalene	ND		190	5.7	ug/L		03/05/20 10:28	03/24/20 12:30	200
2-Nitroaniline	ND		110	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
Dimethyl phthalate	ND		110	11	ug/L		03/05/20 10:28	03/24/20 12:30	200
Acenaphthylene	ND		190	11	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,6-Dinitrotoluene	ND		110	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
3-Nitroaniline	ND		570	30	ug/L		03/05/20 10:28	03/24/20 12:30	200
Acenaphthene	ND		76	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,4-Dinitrophenol	ND		950	300	ug/L		03/05/20 10:28	03/24/20 12:30	200
4-Nitrophenol	ND *		2900	320	ug/L		03/05/20 10:28	03/24/20 12:30	200
Dibenzofuran	ND		76	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
2,4-Dinitrotoluene	ND		190	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
Diethyl phthalate	ND		2300	29	ug/L		03/05/20 10:28	03/24/20 12:30	200
4-Chlorophenyl phenyl ether	ND		110	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
Fluorene	ND		380	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
4-Nitroaniline	ND		380	40	ug/L		03/05/20 10:28	03/24/20 12:30	200
4,6-Dinitro-2-methylphenol	ND		950	49	ug/L		03/05/20 10:28	03/24/20 12:30	200
N-Nitrosodiphenylamine	ND		2900	13	ug/L		03/05/20 10:28	03/24/20 12:30	200
4-Bromophenyl phenyl ether	ND		110	11	ug/L		03/05/20 10:28	03/24/20 12:30	200
Hexachlorobenzene	ND		110	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Pentachlorophenol	ND *		1900	97	ug/L		03/05/20 10:28	03/24/20 12:30	200
Phenanthrene	ND		190	5.7	ug/L		03/05/20 10:28	03/24/20 12:30	200
Anthracene	ND		2900	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
Di-n-butyl phthalate	ND		570	84	ug/L		03/05/20 10:28	03/24/20 12:30	200
Fluoranthene	ND		570	11	ug/L		03/05/20 10:28	03/24/20 12:30	200
Pyrene	ND		380	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Butyl benzyl phthalate	ND		1900	180	ug/L		03/05/20 10:28	03/24/20 12:30	200
3,3'-Dichlorobenzidine	ND		2900	120	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzo[a]anthracene	ND		190	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
Chrysene	ND		110	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Bis(2-ethylhexyl) phthalate	ND		2900	170	ug/L		03/05/20 10:28	03/24/20 12:30	200
Di-n-octyl phthalate	ND		190	25	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzo[a]pyrene	ND		190	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Indeno[1,2,3-cd]pyrene	ND		190	25	ug/L		03/05/20 10:28	03/24/20 12:30	200
Dibenz(a,h)anthracene	ND		110	13	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzo[g,h,i]perylene	ND		190	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Carbazole	ND *		110	19	ug/L		03/05/20 10:28	03/24/20 12:30	200
1-Methylnaphthalene	ND		190	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzo[b]fluoranthene	ND		190	7.6	ug/L		03/05/20 10:28	03/24/20 12:30	200
Benzo[k]fluoranthene	ND		190	9.5	ug/L		03/05/20 10:28	03/24/20 12:30	200
bis(chloroisopropyl) ether	ND		110	11	ug/L		03/05/20 10:28	03/24/20 12:30	200

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf3-030420

Lab Sample ID: 580-93205-2

Date Collected: 03/04/20 13:00

Matrix: Water

Date Received: 03/04/20 14:51

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	0	X	20 - 110	03/05/20 10:28	03/24/20 12:30	200
Phenol-d5 (Surr)	0	X	10 - 115	03/05/20 10:28	03/24/20 12:30	200
Nitrobenzene-d5 (Surr)	138	X	40 - 110	03/05/20 10:28	03/24/20 12:30	200
2-Fluorobiphenyl	32	X	50 - 110	03/05/20 10:28	03/24/20 12:30	200
2,4,6-Tribromophenol (Surr)	0	X	40 - 125	03/05/20 10:28	03/24/20 12:30	200
Terphenyl-d14 (Surr)	147	X	50 - 135	03/05/20 10:28	03/24/20 12:30	200

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.75		0.25	0.10	mg/L			03/09/20 20:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		50 - 150		03/09/20 20:27	1
Trifluorotoluene (Surr)	102		50 - 150		03/09/20 20:27	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	DV	Qual	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	25		J-		0.11	0.067	mg/L		03/12/20 11:41	03/13/20 16:25	1
Motor Oil (>C24-C36)	8.9		J-		0.36	0.10	mg/L		03/12/20 11:41	03/13/20 16:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	5	X	50 - 150	03/12/20 11:41	03/13/20 16:25	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Pos tr/s-030420

Lab Sample ID: 580-93205-3

Date Collected: 03/04/20 13:15

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/11/20 22:21	1
Chloromethane	ND		20	5.4	ug/L			03/11/20 22:21	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/11/20 22:21	1
Bromomethane	ND		6.0	1.1	ug/L			03/11/20 22:21	1
Chloroethane	ND		5.0	1.1	ug/L			03/11/20 22:21	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/11/20 22:21	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/11/20 22:21	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/11/20 22:21	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/11/20 22:21	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/11/20 22:21	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/11/20 22:21	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			03/11/20 22:21	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/11/20 22:21	1
Chloroform	ND		5.0	0.50	ug/L			03/11/20 22:21	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/11/20 22:21	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/11/20 22:21	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/11/20 22:21	1
Benzene	ND		3.0	0.53	ug/L			03/11/20 22:21	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/11/20 22:21	1
Trichloroethene	ND		3.0	0.85	ug/L			03/11/20 22:21	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/11/20 22:21	1
Dibromomethane	ND		2.0	0.34	ug/L			03/11/20 22:21	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/11/20 22:21	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/11/20 22:21	1
Toluene	ND		2.0	0.39	ug/L			03/11/20 22:21	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/11/20 22:21	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/11/20 22:21	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/11/20 22:21	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/11/20 22:21	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/11/20 22:21	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/11/20 22:21	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/11/20 22:21	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/11/20 22:21	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/11/20 22:21	1
o-Xylene	ND		2.0	0.39	ug/L			03/11/20 22:21	1
Styrene	ND		5.0	1.0	ug/L			03/11/20 22:21	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/11/20 22:21	1
Bromobenzene	ND		2.0	0.43	ug/L			03/11/20 22:21	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/11/20 22:21	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/11/20 22:21	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/11/20 22:21	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/11/20 22:21	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/11/20 22:21	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/11/20 22:21	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			03/11/20 22:21	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/11/20 22:21	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/11/20 22:21	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/11/20 22:21	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/11/20 22:21	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Pos tr/s-030420

Lab Sample ID: 580-93205-3

Date Collected: 03/04/20 13:15

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		3.0	0.44	ug/L			03/11/20 22:21	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/11/20 22:21	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/11/20 22:21	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/11/20 22:21	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/11/20 22:21	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/11/20 22:21	1
Naphthalene	ND		4.0	0.93	ug/L			03/11/20 22:21	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/11/20 22:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		03/11/20 22:21	1
4-Bromofluorobenzene (Surr)	98		80 - 120		03/11/20 22:21	1
Dibromofluoromethane (Surr)	102		80 - 120		03/11/20 22:21	1
Trifluorotoluene (Surr)	101		80 - 120		03/11/20 22:21	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 126		03/11/20 22:21	1

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/12/20 22:43	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/12/20 22:43	1
Bromoform	ND		3.0	0.56	ug/L			03/12/20 22:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		03/12/20 22:43	1
4-Bromofluorobenzene (Surr)	97		80 - 120		03/12/20 22:43	1
Dibromofluoromethane (Surr)	100		80 - 120		03/12/20 22:43	1
Trifluorotoluene (Surr)	100		80 - 120		03/12/20 22:43	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126		03/12/20 22:43	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.52		0.25	0.10	mg/L			03/09/20 20:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150		03/09/20 20:51	1
Trifluorotoluene (Surr)	75		50 - 150		03/09/20 20:51	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	24		0.11	0.066	mg/L		03/12/20 11:41	03/13/20 16:45	1
Motor Oil (>C24-C36)	8.0		0.35	0.097	mg/L		03/12/20 11:41	03/13/20 16:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	89		50 - 150	03/12/20 11:41	03/13/20 16:45	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Trip Blank-030420

Lab Sample ID: 580-93205-4

Date Collected: 03/04/20 13:00

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/11/20 14:13	1
Chloromethane	ND		20	5.4	ug/L			03/11/20 14:13	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/11/20 14:13	1
Bromomethane	ND		6.0	1.1	ug/L			03/11/20 14:13	1
Chloroethane	ND		5.0	1.1	ug/L			03/11/20 14:13	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/11/20 14:13	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/11/20 14:13	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/11/20 14:13	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/11/20 14:13	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/11/20 14:13	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/11/20 14:13	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			03/11/20 14:13	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/11/20 14:13	1
Chloroform	ND		5.0	0.50	ug/L			03/11/20 14:13	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/11/20 14:13	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/11/20 14:13	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/11/20 14:13	1
Benzene	ND		3.0	0.53	ug/L			03/11/20 14:13	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/11/20 14:13	1
Trichloroethene	ND		3.0	0.85	ug/L			03/11/20 14:13	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/11/20 14:13	1
Dibromomethane	ND		2.0	0.34	ug/L			03/11/20 14:13	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/11/20 14:13	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/11/20 14:13	1
Toluene	ND		2.0	0.39	ug/L			03/11/20 14:13	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/11/20 14:13	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/11/20 14:13	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/11/20 14:13	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/11/20 14:13	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/11/20 14:13	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/11/20 14:13	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/11/20 14:13	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/11/20 14:13	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/11/20 14:13	1
o-Xylene	ND		2.0	0.39	ug/L			03/11/20 14:13	1
Styrene	ND		5.0	1.0	ug/L			03/11/20 14:13	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/11/20 14:13	1
Bromobenzene	ND		2.0	0.43	ug/L			03/11/20 14:13	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/11/20 14:13	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/11/20 14:13	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/11/20 14:13	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/11/20 14:13	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/11/20 14:13	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/11/20 14:13	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			03/11/20 14:13	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/11/20 14:13	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/11/20 14:13	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/11/20 14:13	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/11/20 14:13	1

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Trip Blank-030420

Lab Sample ID: 580-93205-4

Date Collected: 03/04/20 13:00

Matrix: Water

Date Received: 03/04/20 14:51

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		3.0	0.44	ug/L			03/11/20 14:13	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/11/20 14:13	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/11/20 14:13	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/11/20 14:13	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/11/20 14:13	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/11/20 14:13	1
Naphthalene	ND		4.0	0.93	ug/L			03/11/20 14:13	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/11/20 14:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120		03/11/20 14:13	1
4-Bromofluorobenzene (Surr)	94		80 - 120		03/11/20 14:13	1
Dibromofluoromethane (Surr)	103		80 - 120		03/11/20 14:13	1
Trifluorotoluene (Surr)	102		80 - 120		03/11/20 14:13	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		03/11/20 14:13	1

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/12/20 15:30	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/12/20 15:30	1
Bromoform	ND		3.0	0.56	ug/L			03/12/20 15:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120		03/12/20 15:30	1
4-Bromofluorobenzene (Surr)	93		80 - 120		03/12/20 15:30	1
Dibromofluoromethane (Surr)	99		80 - 120		03/12/20 15:30	1
Trifluorotoluene (Surr)	101		80 - 120		03/12/20 15:30	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		03/12/20 15:30	1

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-324577/7
Matrix: Water
Analysis Batch: 324577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/09/20 15:04	1
Chloromethane	ND		20	5.4	ug/L			03/09/20 15:04	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/09/20 15:04	1
Bromomethane	ND		6.0	1.1	ug/L			03/09/20 15:04	1
Chloroethane	ND		5.0	1.1	ug/L			03/09/20 15:04	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/09/20 15:04	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/09/20 15:04	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/09/20 15:04	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/09/20 15:04	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/09/20 15:04	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/09/20 15:04	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			03/09/20 15:04	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/09/20 15:04	1
Chloroform	ND		5.0	0.50	ug/L			03/09/20 15:04	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/09/20 15:04	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/09/20 15:04	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/09/20 15:04	1
Benzene	ND		3.0	0.53	ug/L			03/09/20 15:04	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/09/20 15:04	1
Trichloroethene	ND		3.0	0.85	ug/L			03/09/20 15:04	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/09/20 15:04	1
Dibromomethane	ND		2.0	0.34	ug/L			03/09/20 15:04	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/09/20 15:04	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/09/20 15:04	1
Toluene	ND		2.0	0.39	ug/L			03/09/20 15:04	1
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/09/20 15:04	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/09/20 15:04	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/09/20 15:04	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/09/20 15:04	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/09/20 15:04	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/09/20 15:04	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/09/20 15:04	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/09/20 15:04	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/09/20 15:04	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/09/20 15:04	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/09/20 15:04	1
o-Xylene	ND		2.0	0.39	ug/L			03/09/20 15:04	1
Styrene	ND		5.0	1.0	ug/L			03/09/20 15:04	1
Bromoform	ND		3.0	0.56	ug/L			03/09/20 15:04	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/09/20 15:04	1
Bromobenzene	ND		2.0	0.43	ug/L			03/09/20 15:04	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/09/20 15:04	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/09/20 15:04	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/09/20 15:04	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/09/20 15:04	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/09/20 15:04	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/09/20 15:04	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			03/09/20 15:04	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-324577/7
Matrix: Water
Analysis Batch: 324577

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/09/20 15:04	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/09/20 15:04	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/09/20 15:04	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/09/20 15:04	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/09/20 15:04	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/09/20 15:04	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/09/20 15:04	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/09/20 15:04	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/09/20 15:04	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/09/20 15:04	1
Naphthalene	ND		4.0	0.93	ug/L			03/09/20 15:04	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/09/20 15:04	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120		03/09/20 15:04	1
4-Bromofluorobenzene (Surr)	93		80 - 120		03/09/20 15:04	1
Dibromofluoromethane (Surr)	103		80 - 120		03/09/20 15:04	1
Trifluorotoluene (Surr)	104		80 - 120		03/09/20 15:04	1
1,2-Dichloroethane-d4 (Surr)	106		80 - 126		03/09/20 15:04	1

Lab Sample ID: LCS 580-324577/4
Matrix: Water
Analysis Batch: 324577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	10.0	9.32	J	ug/L		93	20 - 150
Chloromethane	10.0	9.44	J	ug/L		94	52 - 135
Vinyl chloride	10.0	9.68		ug/L		97	65 - 130
Bromomethane	10.0	9.21		ug/L		92	66 - 125
Chloroethane	10.0	9.78		ug/L		98	65 - 132
Trichlorofluoromethane	10.0	9.82		ug/L		98	64 - 136
1,1-Dichloroethene	10.0	9.73		ug/L		97	70 - 129
Methylene Chloride	10.0	9.03		ug/L		90	77 - 125
trans-1,2-Dichloroethene	10.0	9.62		ug/L		96	77 - 124
1,1-Dichloroethane	10.0	9.69		ug/L		97	70 - 129
2,2-Dichloropropane	10.0	9.12		ug/L		91	62 - 140
cis-1,2-Dichloroethene	10.0	9.59		ug/L		96	76 - 129
Bromochloromethane	10.0	9.58		ug/L		96	78 - 120
Chloroform	10.0	9.71		ug/L		97	73 - 127
1,1,1-Trichloroethane	10.0	9.88		ug/L		99	74 - 130
Carbon tetrachloride	10.0	9.83		ug/L		98	72 - 129
1,1-Dichloropropene	10.0	9.98		ug/L		100	80 - 120
Benzene	10.0	9.70		ug/L		97	75 - 121
1,2-Dichloroethane	10.0	9.12		ug/L		91	76 - 131
Trichloroethene	10.0	9.87		ug/L		99	70 - 120
1,2-Dichloropropane	10.0	9.78		ug/L		98	72 - 126
Dibromomethane	10.0	9.43		ug/L		94	80 - 120
Bromodichloromethane	10.0	9.64		ug/L		96	75 - 124

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-324577/4

Matrix: Water

Analysis Batch: 324577

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,3-Dichloropropene	10.0	9.48		ug/L		95	77 - 120
Toluene	10.0	9.78		ug/L		98	80 - 120
trans-1,3-Dichloropropene	10.0	9.28		ug/L		93	80 - 122
1,1,2-Trichloroethane	10.0	9.56		ug/L		96	80 - 121
Tetrachloroethene	10.0	10.2		ug/L		102	76 - 120
1,3-Dichloropropane	10.0	10.0		ug/L		100	79 - 120
Dibromochloromethane	10.0	9.75		ug/L		98	71 - 120
1,2-Dibromoethane	10.0	9.30		ug/L		93	79 - 120
Chlorobenzene	10.0	9.94		ug/L		99	80 - 120
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120
1,1,1,2-Tetrachloroethane	10.0	9.95		ug/L		99	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.94		ug/L		99	74 - 124
m-Xylene & p-Xylene	10.0	9.91		ug/L		99	80 - 120
o-Xylene	10.0	9.83		ug/L		98	80 - 120
Styrene	10.0	9.72		ug/L		97	76 - 121
Bromoform	10.0	9.24		ug/L		92	61 - 132
Isopropylbenzene	10.0	9.98		ug/L		100	75 - 120
Bromobenzene	10.0	9.89		ug/L		99	80 - 120
N-Propylbenzene	10.0	10.4		ug/L		104	80 - 120
1,2,3-Trichloropropane	10.0	9.86		ug/L		99	76 - 124
2-Chlorotoluene	10.0	9.99		ug/L		100	80 - 120
1,3,5-Trimethylbenzene	10.0	10.4		ug/L		104	80 - 120
4-Chlorotoluene	10.0	10.0		ug/L		100	80 - 120
t-Butylbenzene	10.0	10.3		ug/L		103	80 - 121
1,2,4-Trimethylbenzene	10.0	10.4		ug/L		104	80 - 120
sec-Butylbenzene	10.0	10.5		ug/L		105	78 - 120
1,3-Dichlorobenzene	10.0	9.87		ug/L		99	80 - 120
4-Isopropyltoluene	10.0	10.5		ug/L		105	77 - 120
1,4-Dichlorobenzene	10.0	9.70		ug/L		97	80 - 120
n-Butylbenzene	10.0	10.4		ug/L		104	78 - 120
1,2-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	9.61	J	ug/L		96	65 - 125
1,2,4-Trichlorobenzene	10.0	10.1		ug/L		101	57 - 140
1,2,3-Trichlorobenzene	10.0	10.4		ug/L		104	23 - 150
Hexachlorobutadiene	10.0	10.3		ug/L		103	74 - 125
Naphthalene	10.0	10.0		ug/L		100	44 - 144
Methyl tert-butyl ether	10.0	9.18		ug/L		92	72 - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120
Trifluorotoluene (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 126

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-324577/5
Matrix: Water
Analysis Batch: 324577

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
Dichlorodifluoromethane	10.0	9.39	J	ug/L		94	20 - 150	1	35
Chloromethane	10.0	8.96	J	ug/L		90	52 - 135	5	23
Vinyl chloride	10.0	9.51		ug/L		95	65 - 130	2	28
Bromomethane	10.0	9.42		ug/L		94	66 - 125	2	27
Chloroethane	10.0	9.37		ug/L		94	65 - 132	4	35
Trichlorofluoromethane	10.0	9.83		ug/L		98	64 - 136	0	27
1,1-Dichloroethene	10.0	9.95		ug/L		100	70 - 129	2	27
Methylene Chloride	10.0	9.42		ug/L		94	77 - 125	4	18
trans-1,2-Dichloroethene	10.0	9.82		ug/L		98	77 - 124	2	21
1,1-Dichloroethane	10.0	9.78		ug/L		98	70 - 129	1	26
2,2-Dichloropropane	10.0	9.92		ug/L		99	62 - 140	8	23
cis-1,2-Dichloroethene	10.0	9.56		ug/L		96	76 - 129	0	15
Bromochloromethane	10.0	9.82		ug/L		98	78 - 120	2	20
Chloroform	10.0	9.66		ug/L		97	73 - 127	1	22
1,1,1-Trichloroethane	10.0	10.2		ug/L		102	74 - 130	3	18
Carbon tetrachloride	10.0	10.1		ug/L		101	72 - 129	3	19
1,1-Dichloropropene	10.0	9.88		ug/L		99	80 - 120	1	14
Benzene	10.0	9.85		ug/L		99	75 - 121	2	14
1,2-Dichloroethane	10.0	9.21		ug/L		92	76 - 131	1	18
Trichloroethene	10.0	9.67		ug/L		97	70 - 120	2	21
1,2-Dichloropropane	10.0	9.65		ug/L		96	72 - 126	1	26
Dibromomethane	10.0	9.74		ug/L		97	80 - 120	3	22
Bromodichloromethane	10.0	9.69		ug/L		97	75 - 124	1	22
cis-1,3-Dichloropropene	10.0	9.60		ug/L		96	77 - 120	1	20
Toluene	10.0	9.56		ug/L		96	80 - 120	2	19
trans-1,3-Dichloropropene	10.0	9.21		ug/L		92	80 - 122	1	25
1,1,2-Trichloroethane	10.0	9.32		ug/L		93	80 - 121	3	21
Tetrachloroethene	10.0	10.4		ug/L		104	76 - 120	2	20
1,3-Dichloropropane	10.0	9.93		ug/L		99	79 - 120	1	26
Dibromochloromethane	10.0	9.71		ug/L		97	71 - 120	0	24
1,2-Dibromoethane	10.0	9.53		ug/L		95	79 - 120	2	20
Chlorobenzene	10.0	9.77		ug/L		98	80 - 120	2	15
Ethylbenzene	10.0	9.73		ug/L		97	80 - 120	3	14
1,1,1,2-Tetrachloroethane	10.0	9.84		ug/L		98	79 - 120	1	20
1,1,2,2-Tetrachloroethane	10.0	9.57		ug/L		96	74 - 124	4	18
m-Xylene & p-Xylene	10.0	9.70		ug/L		97	80 - 120	2	14
o-Xylene	10.0	9.60		ug/L		96	80 - 120	2	16
Styrene	10.0	9.59		ug/L		96	76 - 121	1	16
Bromoform	10.0	9.57		ug/L		96	61 - 132	4	20
Isopropylbenzene	10.0	9.79		ug/L		98	75 - 120	2	20
Bromobenzene	10.0	9.54		ug/L		95	80 - 120	4	13
N-Propylbenzene	10.0	9.81		ug/L		98	80 - 120	6	13
1,2,3-Trichloropropane	10.0	9.80		ug/L		98	76 - 124	1	30
2-Chlorotoluene	10.0	9.73		ug/L		97	80 - 120	3	15
1,3,5-Trimethylbenzene	10.0	9.90		ug/L		99	80 - 120	5	14
4-Chlorotoluene	10.0	9.74		ug/L		97	80 - 120	3	14
t-Butylbenzene	10.0	9.79		ug/L		98	80 - 121	6	14
1,2,4-Trimethylbenzene	10.0	9.90		ug/L		99	80 - 120	5	16

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-324577/5
Matrix: Water
Analysis Batch: 324577

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
sec-Butylbenzene	10.0	10.1		ug/L		101	78 - 120	4	15
1,3-Dichlorobenzene	10.0	9.42		ug/L		94	80 - 120	5	14
4-Isopropyltoluene	10.0	9.97		ug/L		100	77 - 120	5	13
1,4-Dichlorobenzene	10.0	9.70		ug/L		97	80 - 120	0	17
n-Butylbenzene	10.0	10.0		ug/L		100	78 - 120	4	14
1,2-Dichlorobenzene	10.0	9.86		ug/L		99	80 - 120	2	15
1,2-Dibromo-3-Chloropropane	10.0	10.6		ug/L		106	65 - 125	10	27
1,2,4-Trichlorobenzene	10.0	9.87		ug/L		99	57 - 140	2	27
1,2,3-Trichlorobenzene	10.0	10.3		ug/L		103	23 - 150	1	35
Hexachlorobutadiene	10.0	10.1		ug/L		101	74 - 125	2	22
Naphthalene	10.0	9.83		ug/L		98	44 - 144	2	31
Methyl tert-butyl ether	10.0	9.62		ug/L		96	72 - 130	5	18

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
Trifluorotoluene (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 126

Lab Sample ID: MB 580-324644/7
Matrix: Water
Analysis Batch: 324644

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		10	2.3	ug/L			03/11/20 13:46	1
Chloromethane	ND		20	5.4	ug/L			03/11/20 13:46	1
Vinyl chloride	ND		1.0	0.22	ug/L			03/11/20 13:46	1
Bromomethane	ND		6.0	1.1	ug/L			03/11/20 13:46	1
Chloroethane	ND		5.0	1.1	ug/L			03/11/20 13:46	1
Trichlorofluoromethane	ND		3.0	0.63	ug/L			03/11/20 13:46	1
1,1-Dichloroethene	ND		4.0	0.78	ug/L			03/11/20 13:46	1
Methylene Chloride	ND		5.0	1.4	ug/L			03/11/20 13:46	1
trans-1,2-Dichloroethene	ND		3.0	0.39	ug/L			03/11/20 13:46	1
1,1-Dichloroethane	ND		2.0	0.22	ug/L			03/11/20 13:46	1
2,2-Dichloropropane	ND		3.0	0.32	ug/L			03/11/20 13:46	1
cis-1,2-Dichloroethene	ND		3.0	0.69	ug/L			03/11/20 13:46	1
Bromochloromethane	ND		2.0	0.29	ug/L			03/11/20 13:46	1
Chloroform	ND		5.0	0.50	ug/L			03/11/20 13:46	1
1,1,1-Trichloroethane	ND		3.0	0.39	ug/L			03/11/20 13:46	1
Carbon tetrachloride	ND		3.0	0.30	ug/L			03/11/20 13:46	1
1,1-Dichloropropene	ND		3.0	0.29	ug/L			03/11/20 13:46	1
Benzene	ND		3.0	0.53	ug/L			03/11/20 13:46	1
1,2-Dichloroethane	ND		2.0	0.53	ug/L			03/11/20 13:46	1
Trichloroethene	ND		3.0	0.85	ug/L			03/11/20 13:46	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			03/11/20 13:46	1
Dibromomethane	ND		2.0	0.34	ug/L			03/11/20 13:46	1
Bromodichloromethane	ND		2.0	0.14	ug/L			03/11/20 13:46	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-324644/7
Matrix: Water
Analysis Batch: 324644

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			03/11/20 13:46	1
Toluene	ND		2.0	0.39	ug/L			03/11/20 13:46	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			03/11/20 13:46	1
Tetrachloroethene	ND		3.0	0.41	ug/L			03/11/20 13:46	1
1,3-Dichloropropane	ND		2.0	0.35	ug/L			03/11/20 13:46	1
1,2-Dibromoethane	ND		2.0	0.40	ug/L			03/11/20 13:46	1
Chlorobenzene	ND		2.0	0.44	ug/L			03/11/20 13:46	1
Ethylbenzene	ND		3.0	0.50	ug/L			03/11/20 13:46	1
1,1,1,2-Tetrachloroethane	ND		2.0	0.18	ug/L			03/11/20 13:46	1
1,1,2,2-Tetrachloroethane	ND		3.0	0.52	ug/L			03/11/20 13:46	1
m-Xylene & p-Xylene	ND		3.0	0.75	ug/L			03/11/20 13:46	1
o-Xylene	ND		2.0	0.39	ug/L			03/11/20 13:46	1
Styrene	ND		5.0	1.0	ug/L			03/11/20 13:46	1
Isopropylbenzene	ND		2.0	0.51	ug/L			03/11/20 13:46	1
Bromobenzene	ND		2.0	0.43	ug/L			03/11/20 13:46	1
N-Propylbenzene	ND		3.0	0.50	ug/L			03/11/20 13:46	1
1,2,3-Trichloropropane	ND		2.0	0.41	ug/L			03/11/20 13:46	1
2-Chlorotoluene	ND		3.0	0.51	ug/L			03/11/20 13:46	1
1,3,5-Trimethylbenzene	ND		3.0	0.55	ug/L			03/11/20 13:46	1
4-Chlorotoluene	ND		2.0	0.51	ug/L			03/11/20 13:46	1
t-Butylbenzene	ND		3.0	0.58	ug/L			03/11/20 13:46	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			03/11/20 13:46	1
sec-Butylbenzene	ND		3.0	0.49	ug/L			03/11/20 13:46	1
1,3-Dichlorobenzene	ND		2.0	0.18	ug/L			03/11/20 13:46	1
4-Isopropyltoluene	ND		3.0	0.28	ug/L			03/11/20 13:46	1
1,4-Dichlorobenzene	ND		4.0	0.98	ug/L			03/11/20 13:46	1
n-Butylbenzene	ND		3.0	0.44	ug/L			03/11/20 13:46	1
1,2-Dichlorobenzene	ND		2.0	0.46	ug/L			03/11/20 13:46	1
1,2-Dibromo-3-Chloropropane	ND		10	1.8	ug/L			03/11/20 13:46	1
1,2,4-Trichlorobenzene	ND		2.0	0.33	ug/L			03/11/20 13:46	1
1,2,3-Trichlorobenzene	ND		5.0	1.1	ug/L			03/11/20 13:46	1
Hexachlorobutadiene	ND		6.0	0.79	ug/L			03/11/20 13:46	1
Naphthalene	ND		4.0	0.93	ug/L			03/11/20 13:46	1
Methyl tert-butyl ether	ND		2.0	0.44	ug/L			03/11/20 13:46	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		03/11/20 13:46	1
4-Bromofluorobenzene (Surr)	94		80 - 120		03/11/20 13:46	1
Dibromofluoromethane (Surr)	101		80 - 120		03/11/20 13:46	1
Trifluorotoluene (Surr)	103		80 - 120		03/11/20 13:46	1
1,2-Dichloroethane-d4 (Surr)	107		80 - 126		03/11/20 13:46	1

Lab Sample ID: LCS 580-324644/4
Matrix: Water
Analysis Batch: 324644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	10.0	8.04	J	ug/L		80	20 - 150

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-324644/4
Matrix: Water
Analysis Batch: 324644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	10.0	8.78	J	ug/L		88	52 - 135
Vinyl chloride	10.0	8.82		ug/L		88	65 - 130
Bromomethane	10.0	8.66		ug/L		87	66 - 125
Chloroethane	10.0	8.81		ug/L		88	65 - 132
Trichlorofluoromethane	10.0	9.22		ug/L		92	64 - 136
1,1-Dichloroethene	10.0	10.0		ug/L		100	70 - 129
Methylene Chloride	10.0	9.48		ug/L		95	77 - 125
trans-1,2-Dichloroethene	10.0	9.69		ug/L		97	77 - 124
1,1-Dichloroethane	10.0	10.1		ug/L		101	70 - 129
2,2-Dichloropropane	10.0	10.2		ug/L		102	62 - 140
cis-1,2-Dichloroethene	10.0	9.99		ug/L		100	76 - 129
Bromochloromethane	10.0	10.2		ug/L		102	78 - 120
Chloroform	10.0	10.2		ug/L		102	73 - 127
1,1,1-Trichloroethane	10.0	10.1		ug/L		101	74 - 130
Carbon tetrachloride	10.0	9.56		ug/L		96	72 - 129
1,1-Dichloropropene	10.0	10.3		ug/L		103	80 - 120
Benzene	10.0	10.1		ug/L		101	75 - 121
1,2-Dichloroethane	10.0	10.2		ug/L		102	76 - 131
Trichloroethene	10.0	10.1		ug/L		101	70 - 120
1,2-Dichloropropane	10.0	10.0		ug/L		100	72 - 126
Dibromomethane	10.0	10.1		ug/L		101	80 - 120
Bromodichloromethane	10.0	8.74		ug/L		87	75 - 124
cis-1,3-Dichloropropene	10.0	8.43		ug/L		84	77 - 120
Toluene	10.0	9.94		ug/L		99	80 - 120
1,1,2-Trichloroethane	10.0	10.1		ug/L		101	80 - 121
Tetrachloroethene	10.0	9.94		ug/L		99	76 - 120
1,3-Dichloropropane	10.0	10.6		ug/L		106	79 - 120
1,2-Dibromoethane	10.0	10.4		ug/L		104	79 - 120
Chlorobenzene	10.0	10.1		ug/L		101	80 - 120
Ethylbenzene	10.0	10.4		ug/L		104	80 - 120
1,1,1,2-Tetrachloroethane	10.0	9.93		ug/L		99	79 - 120
1,1,1,2,2-Tetrachloroethane	10.0	11.0		ug/L		110	74 - 124
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	80 - 120
o-Xylene	10.0	10.4		ug/L		104	80 - 120
Styrene	10.0	10.7		ug/L		107	76 - 121
Isopropylbenzene	10.0	10.4		ug/L		104	75 - 120
Bromobenzene	10.0	10.6		ug/L		106	80 - 120
N-Propylbenzene	10.0	10.7		ug/L		107	80 - 120
1,2,3-Trichloropropane	10.0	10.8		ug/L		108	76 - 124
2-Chlorotoluene	10.0	10.5		ug/L		105	80 - 120
1,3,5-Trimethylbenzene	10.0	10.8		ug/L		108	80 - 120
4-Chlorotoluene	10.0	10.8		ug/L		108	80 - 120
t-Butylbenzene	10.0	10.5		ug/L		105	80 - 121
1,2,4-Trimethylbenzene	10.0	10.8		ug/L		108	80 - 120
sec-Butylbenzene	10.0	10.7		ug/L		107	78 - 120
1,3-Dichlorobenzene	10.0	10.6		ug/L		106	80 - 120
4-Isopropyltoluene	10.0	10.6		ug/L		106	77 - 120
1,4-Dichlorobenzene	10.0	10.4		ug/L		104	80 - 120
n-Butylbenzene	10.0	10.5		ug/L		105	78 - 120

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-324644/4
Matrix: Water
Analysis Batch: 324644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichlorobenzene	10.0	10.6		ug/L		106	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	8.29	J	ug/L		83	65 - 125
1,2,4-Trichlorobenzene	10.0	10.6		ug/L		106	57 - 140
1,2,3-Trichlorobenzene	10.0	10.8		ug/L		108	23 - 150
Hexachlorobutadiene	10.0	10.1		ug/L		101	74 - 125
Naphthalene	10.0	10.6		ug/L		106	44 - 144
Methyl tert-butyl ether	10.0	10.2		ug/L		102	72 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Trifluorotoluene (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 126

Lab Sample ID: LCSD 580-324644/5
Matrix: Water
Analysis Batch: 324644

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
Dichlorodifluoromethane	10.0	7.83	J	ug/L		78	20 - 150	3	35
Chloromethane	10.0	8.54	J	ug/L		85	52 - 135	3	23
Vinyl chloride	10.0	8.70		ug/L		87	65 - 130	1	28
Bromomethane	10.0	8.75		ug/L		88	66 - 125	1	27
Chloroethane	10.0	8.89		ug/L		89	65 - 132	1	35
Trichlorofluoromethane	10.0	9.23		ug/L		92	64 - 136	0	27
1,1-Dichloroethene	10.0	10.0		ug/L		100	70 - 129	0	27
Methylene Chloride	10.0	9.70		ug/L		97	77 - 125	2	18
trans-1,2-Dichloroethene	10.0	9.74		ug/L		97	77 - 124	1	21
1,1-Dichloroethane	10.0	10.1		ug/L		101	70 - 129	0	26
2,2-Dichloropropane	10.0	10.1		ug/L		101	62 - 140	1	23
cis-1,2-Dichloroethene	10.0	9.88		ug/L		99	76 - 129	1	15
Bromochloromethane	10.0	10.0		ug/L		100	78 - 120	2	20
Chloroform	10.0	10.1		ug/L		101	73 - 127	1	22
1,1,1-Trichloroethane	10.0	9.98		ug/L		100	74 - 130	1	18
Carbon tetrachloride	10.0	9.42		ug/L		94	72 - 129	1	19
1,1-Dichloropropene	10.0	10.1		ug/L		101	80 - 120	2	14
Benzene	10.0	9.93		ug/L		99	75 - 121	1	14
1,2-Dichloroethane	10.0	9.76		ug/L		98	76 - 131	4	18
Trichloroethene	10.0	10.1		ug/L		101	70 - 120	1	21
1,2-Dichloropropane	10.0	10.2		ug/L		102	72 - 126	2	26
Dibromomethane	10.0	10.2		ug/L		102	80 - 120	1	22
Bromodichloromethane	10.0	8.78		ug/L		88	75 - 124	0	22
cis-1,3-Dichloropropene	10.0	8.45		ug/L		84	77 - 120	0	20
Toluene	10.0	10.1		ug/L		101	80 - 120	1	19
1,1,2-Trichloroethane	10.0	10.3		ug/L		103	80 - 121	2	21
Tetrachloroethene	10.0	10.2		ug/L		102	76 - 120	3	20
1,3-Dichloropropane	10.0	10.9		ug/L		109	79 - 120	3	26

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-324644/5
Matrix: Water
Analysis Batch: 324644

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
1,2-Dibromoethane	10.0	10.4		ug/L		104	79 - 120	1	20
Chlorobenzene	10.0	10.3		ug/L		103	80 - 120	2	15
Ethylbenzene	10.0	10.6		ug/L		106	80 - 120	2	14
1,1,1,2-Tetrachloroethane	10.0	9.68		ug/L		97	79 - 120	3	20
1,1,1,2-Tetrachloroethane	10.0	11.2		ug/L		112	74 - 124	3	18
m-Xylene & p-Xylene	10.0	10.5		ug/L		105	80 - 120	2	14
o-Xylene	10.0	10.6		ug/L		106	80 - 120	2	16
Styrene	10.0	10.6		ug/L		106	76 - 121	0	16
Isopropylbenzene	10.0	10.5		ug/L		105	75 - 120	1	20
Bromobenzene	10.0	10.5		ug/L		105	80 - 120	0	13
N-Propylbenzene	10.0	10.6		ug/L		106	80 - 120	1	13
1,2,3-Trichloropropane	10.0	11.4		ug/L		114	76 - 124	5	30
2-Chlorotoluene	10.0	10.5		ug/L		105	80 - 120	0	15
1,3,5-Trimethylbenzene	10.0	10.8		ug/L		108	80 - 120	0	14
4-Chlorotoluene	10.0	10.8		ug/L		108	80 - 120	0	14
t-Butylbenzene	10.0	10.5		ug/L		105	80 - 121	0	14
1,2,4-Trimethylbenzene	10.0	10.8		ug/L		108	80 - 120	0	16
sec-Butylbenzene	10.0	10.5		ug/L		105	78 - 120	2	15
1,3-Dichlorobenzene	10.0	10.5		ug/L		105	80 - 120	1	14
4-Isopropyltoluene	10.0	10.5		ug/L		105	77 - 120	1	13
1,4-Dichlorobenzene	10.0	10.6		ug/L		106	80 - 120	1	17
n-Butylbenzene	10.0	10.5		ug/L		105	78 - 120	0	14
1,2-Dichlorobenzene	10.0	10.7		ug/L		107	80 - 120	0	15
1,2-Dibromo-3-Chloropropane	10.0	8.46	J	ug/L		85	65 - 125	2	27
1,2,4-Trichlorobenzene	10.0	10.3		ug/L		103	57 - 140	3	27
1,2,3-Trichlorobenzene	10.0	10.4		ug/L		104	23 - 150	3	35
Hexachlorobutadiene	10.0	9.81		ug/L		98	74 - 125	3	22
Naphthalene	10.0	10.7		ug/L		107	44 - 144	0	31
Methyl tert-butyl ether	10.0	10.4		ug/L		104	72 - 130	2	18

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	101		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
Trifluorotoluene (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

Lab Sample ID: MB 580-324723/7
Matrix: Water
Analysis Batch: 324723

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		1.0	0.16	ug/L			03/12/20 15:03	1
Dibromochloromethane	ND		2.0	0.50	ug/L			03/12/20 15:03	1
Bromoform	ND		3.0	0.56	ug/L			03/12/20 15:03	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		03/12/20 15:03	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-324723/7
Matrix: Water
Analysis Batch: 324723

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	93		80 - 120		03/12/20 15:03	1
Dibromofluoromethane (Surr)	101		80 - 120		03/12/20 15:03	1
Trifluorotoluene (Surr)	101		80 - 120		03/12/20 15:03	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 126		03/12/20 15:03	1

Lab Sample ID: LCS 580-324723/4
Matrix: Water
Analysis Batch: 324723

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dibromochloromethane	10.0	10.1		ug/L		101	71 - 120
Bromoform	10.0	8.45		ug/L		84	61 - 132

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120
Trifluorotoluene (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

Lab Sample ID: LCSD 580-324723/5
Matrix: Water
Analysis Batch: 324723

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
Dibromochloromethane	10.0	9.50		ug/L		95	71 - 120	6	24
Bromoform	10.0	8.43		ug/L		84	61 - 132	0	20

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Trifluorotoluene (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	101		80 - 126

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-324265/1-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324265

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Phenol	ND		4.0	0.36	ug/L		03/05/20 10:28	03/23/20 18:49	1
Bis(2-chloroethyl)ether	ND		0.60	0.030	ug/L		03/05/20 10:28	03/23/20 18:49	1
2-Chlorophenol	ND		1.0	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324265/1-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324265

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzyl alcohol	ND		5.0	1.3	ug/L		03/05/20 10:28	03/23/20 18:49	1
1,2-Dichlorobenzene	ND		0.60	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
2-Methylphenol	ND		0.60	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
3 & 4 Methylphenol	ND		0.80	0.030	ug/L		03/05/20 10:28	03/23/20 18:49	1
N-Nitrosodi-n-propylamine	ND		0.60	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1
Hexachloroethane	ND		1.0	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
Nitrobenzene	ND		1.0	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Isophorone	ND		0.40	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
2-Nitrophenol	ND		1.0	0.15	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzoic acid	ND		4.0	0.70	ug/L		03/05/20 10:28	03/23/20 18:49	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,4-Dichlorophenol	ND		4.0	0.20	ug/L		03/05/20 10:28	03/23/20 18:49	1
1,2,4-Trichlorobenzene	ND		0.40	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Naphthalene	ND		0.40	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
4-Chloroaniline	ND		10	0.59	ug/L		03/05/20 10:28	03/23/20 18:49	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		03/05/20 10:28	03/23/20 18:49	1
2-Methylnaphthalene	ND		0.40	0.030	ug/L		03/05/20 10:28	03/23/20 18:49	1
Hexachlorocyclopentadiene	ND		5.0	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
2-Chloronaphthalene	ND		1.0	0.030	ug/L		03/05/20 10:28	03/23/20 18:49	1
2-Nitroaniline	ND		0.60	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1
Acenaphthylene	ND		1.0	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,6-Dinitrotoluene	ND		0.60	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
3-Nitroaniline	ND		3.0	0.16	ug/L		03/05/20 10:28	03/23/20 18:49	1
Acenaphthene	ND		0.40	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		03/05/20 10:28	03/23/20 18:49	1
4-Nitrophenol	ND		15	1.7	ug/L		03/05/20 10:28	03/23/20 18:49	1
Dibenzofuran	ND		0.40	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
Diethyl phthalate	0.171	J	12	0.15	ug/L		03/05/20 10:28	03/23/20 18:49	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
Fluorene	ND		2.0	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
4-Nitroaniline	ND		2.0	0.21	ug/L		03/05/20 10:28	03/23/20 18:49	1
4,6-Dinitro-2-methylphenol	ND		5.0	0.26	ug/L		03/05/20 10:28	03/23/20 18:49	1
N-Nitrosodiphenylamine	ND		15	0.070	ug/L		03/05/20 10:28	03/23/20 18:49	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Pentachlorophenol	ND		10	0.51	ug/L		03/05/20 10:28	03/23/20 18:49	1
Phenanthrene	ND		1.0	0.030	ug/L		03/05/20 10:28	03/23/20 18:49	1
Anthracene	ND		15	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
Di-n-butyl phthalate	ND		3.0	0.44	ug/L		03/05/20 10:28	03/23/20 18:49	1
Fluoranthene	ND		3.0	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1
Pyrene	ND		2.0	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Butyl benzyl phthalate	ND		10	0.93	ug/L		03/05/20 10:28	03/23/20 18:49	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-324265/1-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324265

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3,3'-Dichlorobenzidine	ND		15	0.62	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzo[a]anthracene	ND		1.0	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
Chrysene	ND		0.60	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Bis(2-ethylhexyl) phthalate	ND		15	0.87	ug/L		03/05/20 10:28	03/23/20 18:49	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzo[a]pyrene	ND		1.0	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.13	ug/L		03/05/20 10:28	03/23/20 18:49	1
Dibenz(a,h)anthracene	ND		0.60	0.070	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzo[g,h,i]perylene	ND		1.0	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Carbazole	ND		0.60	0.10	ug/L		03/05/20 10:28	03/23/20 18:49	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzo[b]fluoranthene	ND		1.0	0.040	ug/L		03/05/20 10:28	03/23/20 18:49	1
Benzo[k]fluoranthene	ND		1.0	0.050	ug/L		03/05/20 10:28	03/23/20 18:49	1
bis(chloroisopropyl) ether	ND		0.60	0.060	ug/L		03/05/20 10:28	03/23/20 18:49	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	38		20 - 110	03/05/20 10:28	03/23/20 18:49	1
Phenol-d5 (Surr)	29		10 - 115	03/05/20 10:28	03/23/20 18:49	1
Nitrobenzene-d5 (Surr)	100		40 - 110	03/05/20 10:28	03/23/20 18:49	1
2-Fluorobiphenyl	89		50 - 110	03/05/20 10:28	03/23/20 18:49	1
2,4,6-Tribromophenol (Surr)	61		40 - 125	03/05/20 10:28	03/23/20 18:49	1
Terphenyl-d14 (Surr)	107		50 - 135	03/05/20 10:28	03/23/20 18:49	1

Lab Sample ID: LCS 580-324265/2-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324265

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Phenol	2.00	0.678	J	ug/L		34	30 - 130
Bis(2-chloroethyl)ether	2.00	1.76		ug/L		88	55 - 125
2-Chlorophenol	2.00	1.95		ug/L		97	57 - 125
1,3-Dichlorobenzene	2.00	1.46		ug/L		73	40 - 125
1,4-Dichlorobenzene	2.00	1.40		ug/L		70	40 - 125
Benzyl alcohol	2.00	ND		ug/L		43	41 - 144
1,2-Dichlorobenzene	2.00	1.52		ug/L		76	44 - 125
2-Methylphenol	2.00	1.59		ug/L		79	60 - 130
3 & 4 Methylphenol	2.00	1.41		ug/L		71	56 - 130
N-Nitrosodi-n-propylamine	2.00	2.47	*	ug/L		124	60 - 120
Hexachloroethane	2.00	1.56		ug/L		78	30 - 125
Nitrobenzene	2.00	2.50		ug/L		125	62 - 125
Isophorone	2.00	2.44		ug/L		122	64 - 125
2-Nitrophenol	2.00	1.66		ug/L		83	55 - 140
2,4-Dimethylphenol	2.00	1.91	J	ug/L		96	30 - 135
Benzoic acid	4.00	ND	*	ug/L		0	20 - 144
Bis(2-chloroethoxy)methane	2.00	1.97		ug/L		98	59 - 125
2,4-Dichlorophenol	2.00	1.75	J	ug/L		88	50 - 140
1,2,4-Trichlorobenzene	2.00	1.60		ug/L		80	40 - 125
Naphthalene	2.00	1.73		ug/L		87	56 - 125

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324265/2-A

Matrix: Water

Analysis Batch: 325432

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 324265

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Chloroaniline	2.00	1.67	J	ug/L		84	20 - 150
Hexachlorobutadiene	2.00	1.58		ug/L		79	25 - 125
4-Chloro-3-methylphenol	2.00	1.44		ug/L		72	65 - 145
2-Methylnaphthalene	2.00	1.81		ug/L		90	56 - 125
Hexachlorocyclopentadiene	2.00	1.36	J	ug/L		68	20 - 125
2,4,6-Trichlorophenol	2.00	1.76		ug/L		88	55 - 140
2,4,5-Trichlorophenol	2.00	1.57		ug/L		79	66 - 130
2-Chloronaphthalene	2.00	1.76		ug/L		88	55 - 125
2-Nitroaniline	2.00	1.73		ug/L		87	52 - 140
Dimethyl phthalate	2.00	2.01		ug/L		100	65 - 155
Acenaphthylene	2.00	1.86		ug/L		93	62 - 125
2,6-Dinitrotoluene	2.00	1.95		ug/L		98	67 - 134
3-Nitroaniline	2.00	2.04	J	ug/L		102	22 - 124
Acenaphthene	2.00	1.71		ug/L		86	63 - 125
2,4-Dinitrophenol	4.00	2.83	J	ug/L		71	24 - 146
4-Nitrophenol	4.00	ND	*	ug/L		22	25 - 153
Dibenzofuran	2.00	1.77		ug/L		89	60 - 125
2,4-Dinitrotoluene	2.00	1.97		ug/L		99	73 - 126
Diethyl phthalate	2.00	2.06	J	ug/L		103	60 - 150
4-Chlorophenyl phenyl ether	2.00	1.93		ug/L		97	59 - 125
Fluorene	2.00	1.86	J	ug/L		93	69 - 125
4-Nitroaniline	2.00	1.42	J	ug/L		71	49 - 125
4,6-Dinitro-2-methylphenol	4.00	3.08	J	ug/L		77	50 - 136
N-Nitrosodiphenylamine	2.00	2.09	J	ug/L		105	40 - 135
4-Bromophenyl phenyl ether	2.00	1.99		ug/L		100	62 - 132
Hexachlorobenzene	2.00	2.14		ug/L		107	61 - 125
Pentachlorophenol	4.00	ND	*	ug/L		9	20 - 145
Phenanthrene	2.00	1.98		ug/L		99	70 - 125
Anthracene	2.00	2.16	J	ug/L		108	50 - 125
Di-n-butyl phthalate	2.00	2.30	J	ug/L		115	55 - 167
Fluoranthene	2.00	2.17	J	ug/L		109	70 - 145
Pyrene	2.00	2.20		ug/L		110	70 - 133
Butyl benzyl phthalate	2.00	2.11	J	ug/L		105	60 - 167
3,3'-Dichlorobenzidine	4.00	5.34	J	ug/L		134	20 - 175
Benzo[a]anthracene	2.00	2.12		ug/L		106	65 - 125
Chrysene	2.00	1.97		ug/L		99	70 - 125
Bis(2-ethylhexyl) phthalate	2.00	1.89	J	ug/L		94	70 - 185
Di-n-octyl phthalate	2.00	2.09		ug/L		104	55 - 150
Benzo[a]pyrene	2.00	2.06		ug/L		103	45 - 125
Indeno[1,2,3-cd]pyrene	2.00	2.38		ug/L		119	70 - 136
Dibenz(a,h)anthracene	2.00	2.32		ug/L		116	69 - 154
Benzo[g,h,i]perylene	2.00	2.38		ug/L		119	65 - 153
Carbazole	2.00	3.85	*	ug/L		193	75 - 142
1-Methylnaphthalene	2.00	1.86		ug/L		93	54 - 125
Benzo[b]fluoranthene	2.00	2.12		ug/L		106	70 - 129
Benzo[k]fluoranthene	2.00	1.87		ug/L		94	70 - 123
bis(chloroisopropyl) ether	2.00	1.97		ug/L		98	44 - 130

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-324265/2-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324265

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
2-Fluorophenol (Surr)	33		20 - 110
Phenol-d5 (Surr)	30		10 - 115
Nitrobenzene-d5 (Surr)	106		40 - 110
2-Fluorobiphenyl	81		50 - 110
2,4,6-Tribromophenol (Surr)	90		40 - 125
Terphenyl-d14 (Surr)	101		50 - 135

Lab Sample ID: LCSD 580-324265/3-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324265

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phenol	2.00	0.746	J	ug/L		37	30 - 130	9	30
Bis(2-chloroethyl)ether	2.00	1.90		ug/L		95	55 - 125	8	30
2-Chlorophenol	2.00	1.95		ug/L		98	57 - 125	0	30
1,3-Dichlorobenzene	2.00	1.49		ug/L		75	40 - 125	2	30
1,4-Dichlorobenzene	2.00	1.55		ug/L		77	40 - 125	10	30
Benzyl alcohol	2.00	ND		ug/L		43	41 - 144	2	30
1,2-Dichlorobenzene	2.00	1.56		ug/L		78	44 - 125	3	30
2-Methylphenol	2.00	1.58		ug/L		79	60 - 130	0	30
3 & 4 Methylphenol	2.00	1.31		ug/L		66	56 - 130	7	30
N-Nitrosodi-n-propylamine	2.00	2.64	*	ug/L		132	60 - 120	6	30
Hexachloroethane	2.00	1.60		ug/L		80	30 - 125	3	30
Nitrobenzene	2.00	2.44		ug/L		122	62 - 125	2	30
Isophorone	2.00	2.53	*	ug/L		126	64 - 125	4	30
2-Nitrophenol	2.00	1.66		ug/L		83	55 - 140	0	30
2,4-Dimethylphenol	2.00	1.94	J	ug/L		97	30 - 135	2	30
Benzoic acid	4.00	ND	*	ug/L		0	20 - 144	NC	30
Bis(2-chloroethoxy)methane	2.00	2.08		ug/L		104	59 - 125	5	30
2,4-Dichlorophenol	2.00	1.80	J	ug/L		90	50 - 140	3	30
1,2,4-Trichlorobenzene	2.00	1.62		ug/L		81	40 - 125	1	30
Naphthalene	2.00	1.70		ug/L		85	56 - 125	1	30
4-Chloroaniline	2.00	1.68	J	ug/L		84	20 - 150	0	30
Hexachlorobutadiene	2.00	1.65		ug/L		83	25 - 125	4	30
4-Chloro-3-methylphenol	2.00	1.86		ug/L		93	65 - 145	26	30
2-Methylnaphthalene	2.00	1.69		ug/L		84	56 - 125	7	30
Hexachlorocyclopentadiene	2.00	1.51	J	ug/L		76	20 - 125	11	30
2,4,6-Trichlorophenol	2.00	1.93		ug/L		97	55 - 140	9	30
2,4,5-Trichlorophenol	2.00	1.95		ug/L		98	66 - 130	21	30
2-Chloronaphthalene	2.00	1.83		ug/L		91	55 - 125	4	30
2-Nitroaniline	2.00	1.83		ug/L		91	52 - 140	5	30
Dimethyl phthalate	2.00	2.19		ug/L		110	65 - 155	9	30
Acenaphthylene	2.00	1.98		ug/L		99	62 - 125	6	30
2,6-Dinitrotoluene	2.00	2.15		ug/L		107	67 - 134	9	30
3-Nitroaniline	2.00	1.96	J	ug/L		98	22 - 124	4	30
Acenaphthene	2.00	1.86		ug/L		93	63 - 125	8	30
2,4-Dinitrophenol	4.00	2.26	J	ug/L		57	24 - 146	22	30
4-Nitrophenol	4.00	ND	*1	ug/L		42	25 - 153	65	30

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-324265/3-A
Matrix: Water
Analysis Batch: 325432

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324265

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dibenzofuran	2.00	1.89		ug/L		95	60 - 125	7	30
2,4-Dinitrotoluene	2.00	2.16		ug/L		108	73 - 126	9	30
Diethyl phthalate	2.00	2.27	J	ug/L		114	60 - 150	10	30
4-Chlorophenyl phenyl ether	2.00	2.03		ug/L		102	59 - 125	5	30
Fluorene	2.00	2.02		ug/L		101	69 - 125	8	30
4-Nitroaniline	2.00	2.13	*1	ug/L		107	49 - 125	40	30
4,6-Dinitro-2-methylphenol	4.00	3.19	J	ug/L		80	50 - 136	3	30
N-Nitrosodiphenylamine	2.00	2.24	J	ug/L		112	40 - 135	7	30
4-Bromophenyl phenyl ether	2.00	2.17		ug/L		109	62 - 132	8	30
Hexachlorobenzene	2.00	2.30		ug/L		115	61 - 125	7	30
Pentachlorophenol	4.00	ND	*	ug/L		11	20 - 145	24	30
Phenanthrene	2.00	2.14		ug/L		107	70 - 125	8	30
Anthracene	2.00	2.30	J	ug/L		115	50 - 125	6	30
Di-n-butyl phthalate	2.00	2.50	J	ug/L		125	55 - 167	8	30
Fluoranthene	2.00	2.41	J	ug/L		121	70 - 145	10	30
Pyrene	2.00	2.44		ug/L		122	70 - 133	10	30
Butyl benzyl phthalate	2.00	2.18	J	ug/L		109	60 - 167	3	30
3,3'-Dichlorobenzidine	4.00	5.30	J	ug/L		132	20 - 175	1	30
Benzo[a]anthracene	2.00	2.07		ug/L		103	65 - 125	3	30
Chrysene	2.00	1.95		ug/L		97	70 - 125	1	30
Bis(2-ethylhexyl) phthalate	2.00	1.84	J	ug/L		92	70 - 185	2	30
Di-n-octyl phthalate	2.00	1.99		ug/L		99	55 - 150	5	30
Benzo[a]pyrene	2.00	1.94		ug/L		97	45 - 125	6	30
Indeno[1,2,3-cd]pyrene	2.00	2.14		ug/L		107	70 - 136	11	30
Dibenz(a,h)anthracene	2.00	2.22		ug/L		111	69 - 154	5	30
Benzo[g,h,i]perylene	2.00	2.27		ug/L		114	65 - 153	5	30
Carbazole	2.00	4.45	*	ug/L		222	75 - 142	14	30
1-Methylnaphthalene	2.00	1.74		ug/L		87	54 - 125	7	30
Benzo[b]fluoranthene	2.00	2.02		ug/L		101	70 - 129	5	30
Benzo[k]fluoranthene	2.00	1.76		ug/L		88	70 - 123	6	30
bis(chloroisopropyl) ether	2.00	2.11		ug/L		105	44 - 130	7	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Fluorophenol (Surr)	47		20 - 110
Phenol-d5 (Surr)	27		10 - 115
Nitrobenzene-d5 (Surr)	100		40 - 110
2-Fluorobiphenyl	85		50 - 110
2,4,6-Tribromophenol (Surr)	98		40 - 125
Terphenyl-d14 (Surr)	103		50 - 135

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-324511/7
Matrix: Water
Analysis Batch: 324511

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			03/09/20 18:02	1

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: MB 580-324511/7
Matrix: Water
Analysis Batch: 324511

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		50 - 150		03/09/20 18:02	1
Trifluorotoluene (Surr)	91		50 - 150		03/09/20 18:02	1

Lab Sample ID: LCS 580-324511/8
Matrix: Water
Analysis Batch: 324511

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	1.00	0.995		mg/L		99	79 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	107		50 - 150
Trifluorotoluene (Surr)	114		50 - 150

Lab Sample ID: LCSD 580-324511/9
Matrix: Water
Analysis Batch: 324511

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
Gasoline	1.00	0.958		mg/L		96	79 - 120	4	10

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		50 - 150
Trifluorotoluene (Surr)	92		50 - 150

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-324532/1-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324532

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		03/10/20 10:00	03/10/20 21:09	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		03/10/20 10:00	03/10/20 21:09	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	66		50 - 150	03/10/20 10:00	03/10/20 21:09	1

Lab Sample ID: LCS 580-324532/2-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324532

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	2.00	1.47		mg/L		74	50 - 120
Motor Oil (>C24-C36)	2.00	1.63		mg/L		82	64 - 120

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCS 580-324532/2-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324532

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	68		50 - 150

Lab Sample ID: LCSD 580-324532/3-A
Matrix: Water
Analysis Batch: 324594

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324532

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		Limit
							Limits	RPD	
#2 Diesel (C10-C24)	2.00	1.38		mg/L		69	50 - 120	6	26
Motor Oil (>C24-C36)	2.00	1.56		mg/L		78	64 - 120	4	24

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	65		50 - 150

Lab Sample ID: MB 580-324729/1-A
Matrix: Water
Analysis Batch: 324834

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 324729

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		03/12/20 11:41	03/13/20 14:24	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		03/12/20 11:41	03/13/20 14:24	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
<i>o</i> -Terphenyl	77		50 - 150	03/12/20 11:41	03/13/20 14:24	1

Lab Sample ID: LCS 580-324729/2-A
Matrix: Water
Analysis Batch: 324834

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 324729

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec.		Limit
							Limits	RPD	
#2 Diesel (C10-C24)	2.00	1.47		mg/L		74	50 - 120		
Motor Oil (>C24-C36)	2.00	1.68		mg/L		84	64 - 120		

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	69		50 - 150

Lab Sample ID: LCSD 580-324729/3-A
Matrix: Water
Analysis Batch: 324834

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 324729

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec.		Limit
							Limits	RPD	
#2 Diesel (C10-C24)	2.00	1.79		mg/L		90	50 - 120	20	26
Motor Oil (>C24-C36)	2.00	1.88		mg/L		94	64 - 120	11	24

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	76		50 - 150

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Client Sample ID: Test4Inf2-030220

Date Collected: 03/02/20 15:42

Date Received: 03/04/20 14:51

Lab Sample ID: 580-93205-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324577	03/09/20 18:14	CJB	TAL SEA
Total/NA	Prep	3510C			324265	03/05/20 10:28	T1L	TAL SEA
Total/NA	Analysis	8270E		200	325444	03/24/20 12:07	JKM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	324511	03/09/20 20:03	DCV	TAL SEA
Total/NA	Prep	3510C			324532	03/10/20 10:00	T1L	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324594	03/11/20 02:32	JCM	TAL SEA

Client Sample ID: Test4Inf3-030420

Date Collected: 03/04/20 13:00

Date Received: 03/04/20 14:51

Lab Sample ID: 580-93205-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324644	03/11/20 21:54	T1W	TAL SEA
Total/NA	Analysis	8260D	RA	1	324723	03/12/20 22:16	TL1	TAL SEA
Total/NA	Prep	3510C			324265	03/05/20 10:28	T1L	TAL SEA
Total/NA	Analysis	8270E		200	325444	03/24/20 12:30	JKM	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	324511	03/09/20 20:27	DCV	TAL SEA
Total/NA	Prep	3510C			324729	03/12/20 11:41	S1S	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324834	03/13/20 16:25	JCM	TAL SEA

Client Sample ID: Pos tr/s-030420

Date Collected: 03/04/20 13:15

Date Received: 03/04/20 14:51

Lab Sample ID: 580-93205-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324644	03/11/20 22:21	T1W	TAL SEA
Total/NA	Analysis	8260D	RA	1	324723	03/12/20 22:43	TL1	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	324511	03/09/20 20:51	DCV	TAL SEA
Total/NA	Prep	3510C			324729	03/12/20 11:41	S1S	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	324834	03/13/20 16:45	JCM	TAL SEA

Client Sample ID: Trip Blank-030420

Date Collected: 03/04/20 13:00

Date Received: 03/04/20 14:51

Lab Sample ID: 580-93205-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	324644	03/11/20 14:13	T1W	TAL SEA
Total/NA	Analysis	8260D	RA	1	324723	03/12/20 15:30	TL1	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-18-21

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Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-93205-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-93205-1	Test4Inf2-030220	Water	03/02/20 15:42	03/04/20 14:51	
580-93205-2	Test4Inf3-030420	Water	03/04/20 13:00	03/04/20 14:51	
580-93205-3	Pos tr/s-030420	Water	03/04/20 13:15	03/04/20 14:51	
580-93205-4	Trip Blank-030420	Water	03/04/20 13:00	03/04/20 14:51	

- 1
- 2
- 3
- 4
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- 6
- 7
- 8
- 9
- 10
- 11

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-93205-1

Login Number: 93205

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Hobbs, Kenneth F

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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	False	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



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LABORATORY REPORT

March 25, 2020

Melissa Asher
Geosyntec Consultants
1111 Broadway 6th Floor
Oakland, CA 94607

RE: Lilyblad / PNR0697/03

Dear Melissa:

Enclosed are the results of the samples submitted to our laboratory on March 9, 2020. For your reference, these analyses have been assigned our service request number P2001332.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 1:50 pm, Mar 25, 2020

Sue Anderson
Project Manager



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Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Geosyntec Consultants
Project: Lilyblad / PNR0697/03

Service Request No: P2001332

CASE NARRATIVE

The samples were received intact under chain of custody on March 9, 2020 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Total Petroleum Hydrocarbons as Gasoline Analysis

The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline per modified EPA Method TO-3 using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TPHG_TO3. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP accreditation.

Volatile Organic Compound Analysis

The samples were also analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

Samples Post GAC-022420 (P2001332-002), Pre GAC-022620 (P2001332-004) and Pre GAC 022820 (P2001332-005) required dilution due to the presence of elevated levels of non-target analytes as background components. The reporting limits have been adjusted accordingly.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.1 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1776326
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-007
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413- 19-10
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA01627201 9-10
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Geosyntec Consultants
 Project ID: Lilyblad / PNR0697/03

Service Request: P2001332

Date Received: 3/9/2020
 Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-3 Modified - TPHG Can	
								TO-15 - VOC Cans	
Pre GAC-022420	P2001332-001	Air	2/24/2020	13:21	1BV18690	-0.30	5.23	X	X
Post GAC-022420	P2001332-002	Air	2/24/2020	14:03	1BV18700	-0.04	5.37	X	X
Pre GAC-022520	P2001332-003	Air	2/25/2020	15:08	1BV18691	0.64	5.45	X	X
Pre GAC-022620	P2001332-004	Air	2/26/2020	15:02	1BV18694	-0.37	5.99	X	X
Pre GAC-022820	P2001332-005	Air	2/28/2020	09:50	1BV18693	-0.87	5.45	X	X
Mid GAC-030320	P2001332-006	Air	3/3/2020	15:25	1BV18754	-0.50	5.85	X	X
Pre GAC-030220	P2001332-007	Air	3/2/2020	16:21	1BV18692	-0.35	5.87	X	X



Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
 Simi Valley, California 93065
 Phone (805) 526-7161

Company Name & Address (Reporting Information) Geosynlec 520 Pike St, Suite 2600 Seattle, WA 98101		Project Name Lilyblad		Requested Turnaround Time in Business Days (Surcharges) please circle 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard		ALS Project No. P200 1332	
Project Manager Melissa Asher		Project Number PNR0697/03		ALS Contact: Kate Kaneko		Analysis Method SI-OT	
Phone (206) 496-1449		P.O. # / Billing Information same as reporting		Flow Controller ID (Bar code # - FC #) Sasha Williams		Comments e.g. Actual Preservative or specific instructions G-H-T	
Email Address for Result Reporting masher@geosynlec.com		Sampler (Print & Sign) Sasha Williams		Canister ID (Bar code # - AC, SC, etc.) 2010033853		Sample Volume 1L	
Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Comments
Pre GAC-022420	1	2/24/20	13:21	-21.36	-3	1L	
Post GAC-022420	2	2/24/20	14:03	-30.99	-3	1L	
Pre GAC-022520	3	2/25/20	15:08	-28.96	-3	1L	
Pre GAC-022620	4	2/26/20	15:02	-30.68	-3	1L	
Pre GAC-022820	5	2/28/20	9:50	-30.60	-3	1L	
Mid GAC-030320	6	3/3/20	15:25	-30.15	-3	1L	
Pre GAC-030220	7	3/2/20	16:21	-30.58	-3	1L	
S-V 3-5-20							
Report Tier Levels - please select Tier I - Results (Default if not specified) _____ Tier II (Results + QC Summaries) <input checked="" type="checkbox"/> _____ Tier III (Results + QC & Calibration Summaries) _____ Tier IV (Data Validation Package) 10% Surcharge _____							
Relinquished by: (Signature) [Signature]		Date: 3-5-20 Time: 13:04		Received by: (Signature) [Signature]		Date: 3-5-20 Time: 13:04	
Relinquished by: (Signature) [Signature]		Date: 3/5/20 Time: 13:30		Received by: (Signature) FedEx		Date: 3-9-20 Time: 0930	
Chain of Custody Seal (Circle) INTACT <input checked="" type="radio"/> BROKEN <input type="radio"/> ABSENT <input type="radio"/>				Project Requirements (MRLs, QAPP) _____			
EDD required <input checked="" type="radio"/> Yes <input type="radio"/> No				Units: _____			
Project Requirements (MRLs, QAPP) _____				Project Requirements (MRLs, QAPP) _____			

**ALS Environmental
Sample Acceptance Check Form**

Client: Geosyntec Consultants

Work order: P2001332

Project: Lilyblad / PNR0697/03

Sample(s) received on: 3/9/20

Date opened: 3/9/20

by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | Yes | No | N/A |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8 Were custody seals on outside of cooler/Box/Container? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 Do containers have appropriate preservation , according to method/SOP or Client specified information? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Is there a client indication that the submitted samples are pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials checked for presence/absence of air bubbles? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10 Tubes: Are the tubes capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11 Badges: Are the badges properly capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2001332-001.01	1.0 L Bottle-Vac™					
P2001332-002.01	1.0 L Bottle-Vac™					
P2001332-003.01	1.0 L Bottle-Vac™					
P2001332-004.01	1.0 L Bottle-Vac™					
P2001332-005.01	1.0 L Bottle-Vac™					
P2001332-006.01	1.0 L Bottle-Vac™					
P2001332-007.01	1.0 L Bottle-Vac™					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Geosyntec Consultants
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332

Total Petroleum Hydrocarbons (TPH) as Gasoline

Test Code: EPA TO-3 Modified
 Instrument ID: HP 5890 II/GC21/FID
 Analyst: Gilbert Gutierrez
 Sampling Media: 1.0 L Bottle-Vac™(s)
 Test Notes:

Date(s) Collected: 2/24 - 3/3/20
 Date Received: 3/9/20
 Date Analyzed: 3/11/20

Client Sample ID	ALS Sample ID	Container	Injection	Result	MRL	Result	MRL	Data
		Dilution	Volume					
Pre GAC-022420	P2001332-001	1.38	1.0	ND	25	ND	7.1	
Post GAC-022420	P2001332-002	1.37	1.0	ND	25	ND	7.0	
Pre GAC-022520	P2001332-003	1.31	1.0	110	24	30	6.7	
Pre GAC-022620	P2001332-004	1.44	1.0	250	26	71	7.4	
Pre GAC-022820	P2001332-005	1.46	1.0	ND	26	ND	7.5	
Mid GAC-030320	P2001332-006	1.45	1.0	ND	26	ND	7.4	
Pre GAC-030220	P2001332-007	1.43	1.0	61	26	17	7.3	
Method Blank	P200311-MB	1.00	1.0	ND	18	ND	5.1	

Parts Per Million results are based on a Molecular Weight of 86.18.

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
ALS Sample ID: P200311-LCS

Test Code: EPA TO-3 Modified
Instrument ID: HP 5890 II/GC21/FID
Analyst: Gilbert Gutierrez
Sampling Media: 1.0 L Bottle-Vac™
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/11/20
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount mg/m ³	Result mg/m ³	% Recovery	ALS Acceptance Limits	Data Qualifier
TPH as Gasoline	7,190	7,560	105	89-124	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022420
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-001

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18690

Date Collected: 2/24/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.075 Liter(s)

Initial Pressure (psig): -0.30 Final Pressure (psig): 5.23

Container Dilution Factor: 1.38

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	9.8	ND	2.0	
74-87-3	Chloromethane	ND	9.8	ND	4.7	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	9.8	ND	1.4	
75-01-4	Vinyl Chloride	62	9.9	24	3.9	
106-99-0	1,3-Butadiene	ND	9.8	ND	4.4	
74-83-9	Bromomethane	ND	9.9	ND	2.6	
75-00-3	Chloroethane	220	9.9	85	3.8	
64-17-5	Ethanol	ND	96	ND	51	
67-64-1	Acetone	ND	98	ND	41	
75-69-4	Trichlorofluoromethane	ND	9.8	ND	1.7	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	39	ND	16	
75-35-4	1,1-Dichloroethene	ND	9.9	ND	2.5	
75-09-2	Methylene Chloride	ND	9.8	ND	2.8	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	9.9	ND	3.2	
76-13-1	Trichlorotrifluoroethane	ND	9.9	ND	1.3	
75-15-0	Carbon Disulfide	ND	20	ND	6.5	
156-60-5	trans-1,2-Dichloroethene	ND	9.9	ND	2.5	
75-34-3	1,1-Dichloroethane	110	10	28	2.5	
1634-04-4	Methyl tert-Butyl Ether	ND	9.9	ND	2.8	
78-93-3	2-Butanone (MEK)	ND	20	ND	6.9	
156-59-2	cis-1,2-Dichloroethene	550	9.8	140	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022420
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-001

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18690

Date Collected: 2/24/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.075 Liter(s)

Initial Pressure (psig): -0.30 Final Pressure (psig): 5.23

Container Dilution Factor: 1.38

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	15	9.9	4.4	2.8	
67-66-3	Chloroform	ND	9.9	ND	2.0	
109-99-9	Tetrahydrofuran (THF)	ND	10	ND	3.4	
107-06-2	1,2-Dichloroethane	ND	9.9	ND	2.5	
71-55-6	1,1,1-Trichloroethane	220	9.9	40	1.8	
71-43-2	Benzene	38	9.8	12	3.1	
56-23-5	Carbon Tetrachloride	ND	9.8	ND	1.6	
110-82-7	Cyclohexane	22	20	6.4	5.9	
78-87-5	1,2-Dichloropropane	ND	9.9	ND	2.2	
75-27-4	Bromodichloromethane	ND	9.9	ND	1.5	
79-01-6	Trichloroethene	34	9.9	6.2	1.8	
123-91-1	1,4-Dioxane	ND	9.9	ND	2.8	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	9.9	ND	2.1	
142-82-5	n-Heptane	10	9.9	2.5	2.4	
10061-01-5	cis-1,3-Dichloropropene	ND	9.6	ND	2.1	
108-10-1	4-Methyl-2-pentanone	ND	9.8	ND	2.4	
10061-02-6	trans-1,3-Dichloropropene	ND	9.8	ND	2.1	
79-00-5	1,1,2-Trichloroethane	ND	9.9	ND	1.8	
108-88-3	Toluene	280	9.9	76	2.6	
591-78-6	2-Hexanone	ND	9.9	ND	2.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022420
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-001

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18690

Date Collected: 2/24/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.075 Liter(s)

Initial Pressure (psig): -0.30 Final Pressure (psig): 5.23

Container Dilution Factor: 1.38

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	9.9	ND	1.2	
106-93-4	1,2-Dibromoethane	ND	9.9	ND	1.3	
127-18-4	Tetrachloroethene	37	9.6	5.5	1.4	
108-90-7	Chlorobenzene	1,500	9.9	320	2.2	
100-41-4	Ethylbenzene	57	9.9	13	2.3	
179601-23-1	m,p-Xylenes	330	20	77	4.7	
75-25-2	Bromoform	ND	9.9	ND	0.96	
100-42-5	Styrene	ND	9.8	ND	2.3	
95-47-6	o-Xylene	200	9.9	47	2.3	
79-34-5	1,1,2,2-Tetrachloroethane	ND	9.9	ND	1.4	
98-82-8	Cumene	25	9.9	5.1	2.0	
103-65-1	n-Propylbenzene	39	9.9	7.9	2.0	
622-96-8	4-Ethyltoluene	15	9.9	3.0	2.0	
108-67-8	1,3,5-Trimethylbenzene	54	9.8	11	2.0	
95-63-6	1,2,4-Trimethylbenzene	160	9.9	34	2.0	
100-44-7	Benzyl Chloride	ND	20	ND	3.9	
541-73-1	1,3-Dichlorobenzene	11	9.9	1.9	1.7	
106-46-7	1,4-Dichlorobenzene	84	9.9	14	1.7	
95-50-1	1,2-Dichlorobenzene	94	9.9	16	1.7	
120-82-1	1,2,4-Trichlorobenzene	ND	9.9	ND	1.3	
87-68-3	Hexachlorobutadiene	ND	9.8	ND	0.91	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Post GAC-022420
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-002

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18700

Date Collected: 2/24/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.040 Liter(s)

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.37

Container Dilution Factor: 1.37

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	18	ND	3.7	
74-87-3	Chloromethane	ND	18	ND	8.8	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	18	ND	2.6	
75-01-4	Vinyl Chloride	ND	18	ND	7.2	
106-99-0	1,3-Butadiene	ND	18	ND	8.2	
74-83-9	Bromomethane	ND	18	ND	4.8	
75-00-3	Chloroethane	ND	18	ND	7.0	
64-17-5	Ethanol	ND	180	ND	95	
67-64-1	Acetone	ND	180	ND	76	
75-69-4	Trichlorofluoromethane	ND	18	ND	3.2	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	72	ND	29	
75-35-4	1,1-Dichloroethene	ND	18	ND	4.7	
75-09-2	Methylene Chloride	ND	18	ND	5.2	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	18	ND	5.9	
76-13-1	Trichlorotrifluoroethane	ND	18	ND	2.4	
75-15-0	Carbon Disulfide	ND	38	ND	12	
156-60-5	trans-1,2-Dichloroethene	ND	18	ND	4.7	
75-34-3	1,1-Dichloroethane	ND	19	ND	4.7	
1634-04-4	Methyl tert-Butyl Ether	ND	18	ND	5.1	
78-93-3	2-Butanone (MEK)	ND	38	ND	13	
156-59-2	cis-1,2-Dichloroethene	ND	18	ND	4.6	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Post GAC-022420
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-002

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18700

Date Collected: 2/24/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.040 Liter(s)

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.37

Container Dilution Factor: 1.37

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	ND	18	ND	5.2	
67-66-3	Chloroform	ND	18	ND	3.8	
109-99-9	Tetrahydrofuran (THF)	ND	19	ND	6.4	
107-06-2	1,2-Dichloroethane	ND	18	ND	4.6	
71-55-6	1,1,1-Trichloroethane	ND	18	ND	3.4	
71-43-2	Benzene	58	18	18	5.7	
56-23-5	Carbon Tetrachloride	ND	18	ND	2.9	
110-82-7	Cyclohexane	ND	38	ND	11	
78-87-5	1,2-Dichloropropane	ND	18	ND	4.0	
75-27-4	Bromodichloromethane	ND	18	ND	2.8	
79-01-6	Trichloroethene	ND	18	ND	3.4	
123-91-1	1,4-Dioxane	ND	18	ND	5.1	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	18	ND	4.0	
142-82-5	n-Heptane	ND	18	ND	4.5	
10061-01-5	cis-1,3-Dichloropropene	ND	18	ND	3.9	
108-10-1	4-Methyl-2-pentanone	ND	18	ND	4.4	
10061-02-6	trans-1,3-Dichloropropene	ND	18	ND	4.0	
79-00-5	1,1,2-Trichloroethane	ND	18	ND	3.4	
108-88-3	Toluene	ND	18	ND	4.9	
591-78-6	2-Hexanone	ND	18	ND	4.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Post GAC-022420
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-002

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18700

Date Collected: 2/24/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.040 Liter(s)

Initial Pressure (psig): -0.04 Final Pressure (psig): 5.37

Container Dilution Factor: 1.37

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	18	ND	2.2	
106-93-4	1,2-Dibromoethane	ND	18	ND	2.4	
127-18-4	Tetrachloroethene	ND	18	ND	2.6	
108-90-7	Chlorobenzene	ND	18	ND	4.0	
100-41-4	Ethylbenzene	ND	18	ND	4.3	
179601-23-1	m,p-Xylenes	ND	38	ND	8.7	
75-25-2	Bromoform	ND	18	ND	1.8	
100-42-5	Styrene	ND	18	ND	4.3	
95-47-6	o-Xylene	ND	18	ND	4.3	
79-34-5	1,1,2,2-Tetrachloroethane	ND	18	ND	2.7	
98-82-8	Cumene	67	18	14	3.8	
103-65-1	n-Propylbenzene	ND	18	ND	3.8	
622-96-8	4-Ethyltoluene	ND	18	ND	3.8	
108-67-8	1,3,5-Trimethylbenzene	ND	18	ND	3.7	
95-63-6	1,2,4-Trimethylbenzene	ND	18	ND	3.8	
100-44-7	Benzyl Chloride	ND	38	ND	7.3	
541-73-1	1,3-Dichlorobenzene	ND	18	ND	3.1	
106-46-7	1,4-Dichlorobenzene	ND	18	ND	3.1	
95-50-1	1,2-Dichlorobenzene	ND	18	ND	3.1	
120-82-1	1,2,4-Trichlorobenzene	ND	18	ND	2.5	
87-68-3	Hexachlorobutadiene	ND	18	ND	1.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022520
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-003

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18691

Date Collected: 2/25/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.050 Liter(s)

Initial Pressure (psig): 0.64 Final Pressure (psig): 5.45

Container Dilution Factor: 1.31

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	14	ND	2.8	
74-87-3	Chloromethane	ND	14	ND	6.7	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	14	ND	2.0	
75-01-4	Vinyl Chloride	270	14	100	5.5	
106-99-0	1,3-Butadiene	ND	14	ND	6.3	
74-83-9	Bromomethane	ND	14	ND	3.6	
75-00-3	Chloroethane	130	14	50	5.4	
64-17-5	Ethanol	ND	140	ND	72	
67-64-1	Acetone	210	140	87	58	
75-69-4	Trichlorofluoromethane	ND	14	ND	2.5	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	55	ND	22	
75-35-4	1,1-Dichloroethene	27	14	6.7	3.6	
75-09-2	Methylene Chloride	ND	14	ND	4.0	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	14	ND	4.5	
76-13-1	Trichlorotrifluoroethane	ND	14	ND	1.8	
75-15-0	Carbon Disulfide	ND	29	ND	9.3	
156-60-5	trans-1,2-Dichloroethene	15	14	3.8	3.6	
75-34-3	1,1-Dichloroethane	340	14	84	3.6	
1634-04-4	Methyl tert-Butyl Ether	ND	14	ND	3.9	
78-93-3	2-Butanone (MEK)	100	29	35	9.8	
156-59-2	cis-1,2-Dichloroethene	2,800	14	700	3.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022520
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-003

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18691

Date Collected: 2/25/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.050 Liter(s)

Initial Pressure (psig): 0.64 Final Pressure (psig): 5.45

Container Dilution Factor: 1.31

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	110	14	30	4.0	
67-66-3	Chloroform	ND	14	ND	2.9	
109-99-9	Tetrahydrofuran (THF)	21	14	7.1	4.9	
107-06-2	1,2-Dichloroethane	ND	14	ND	3.5	
71-55-6	1,1,1-Trichloroethane	780	14	140	2.6	
71-43-2	Benzene	40	14	13	4.3	
56-23-5	Carbon Tetrachloride	ND	14	ND	2.2	
110-82-7	Cyclohexane	55	29	16	8.4	
78-87-5	1,2-Dichloropropane	ND	14	ND	3.1	
75-27-4	Bromodichloromethane	ND	14	ND	2.1	
79-01-6	Trichloroethene	200	14	38	2.6	
123-91-1	1,4-Dioxane	ND	14	ND	3.9	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	14	ND	3.0	
142-82-5	n-Heptane	39	14	9.6	3.5	
10061-01-5	cis-1,3-Dichloropropene	ND	14	ND	3.0	
108-10-1	4-Methyl-2-pentanone	ND	14	ND	3.4	
10061-02-6	trans-1,3-Dichloropropene	ND	14	ND	3.1	
79-00-5	1,1,2-Trichloroethane	ND	14	ND	2.6	
108-88-3	Toluene	990	14	260	3.8	
591-78-6	2-Hexanone	ND	14	ND	3.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022520
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-003

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18691

Date Collected: 2/25/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.050 Liter(s)

Initial Pressure (psig): 0.64 Final Pressure (psig): 5.45

Container Dilution Factor: 1.31

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	14	ND	1.7	
106-93-4	1,2-Dibromoethane	ND	14	ND	1.8	
127-18-4	Tetrachloroethene	1,600	14	240	2.0	
108-90-7	Chlorobenzene	530	14	120	3.1	
100-41-4	Ethylbenzene	92	14	21	3.3	
179601-23-1	m,p-Xylenes	440	29	100	6.6	
75-25-2	Bromoform	ND	14	ND	1.4	
100-42-5	Styrene	ND	14	ND	3.3	
95-47-6	o-Xylene	220	14	51	3.3	
79-34-5	1,1,2,2-Tetrachloroethane	ND	14	ND	2.1	
98-82-8	Cumene	36	14	7.3	2.9	
103-65-1	n-Propylbenzene	74	14	15	2.9	
622-96-8	4-Ethyltoluene	30	14	6.1	2.9	
108-67-8	1,3,5-Trimethylbenzene	170	14	34	2.8	
95-63-6	1,2,4-Trimethylbenzene	390	14	80	2.9	
100-44-7	Benzyl Chloride	ND	29	ND	5.6	
541-73-1	1,3-Dichlorobenzene	14	14	2.4	2.4	
106-46-7	1,4-Dichlorobenzene	84	14	14	2.4	
95-50-1	1,2-Dichlorobenzene	180	14	30	2.4	
120-82-1	1,2,4-Trichlorobenzene	ND	14	ND	1.9	
87-68-3	Hexachlorobutadiene	ND	14	ND	1.3	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022620
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-004

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18694

Date Collected: 2/26/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.050 Liter(s)

Initial Pressure (psig): -0.37 Final Pressure (psig): 5.99

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	15	ND	3.1	
74-87-3	Chloromethane	ND	15	ND	7.4	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	15	ND	2.2	
75-01-4	Vinyl Chloride	250	16	99	6.1	
106-99-0	1,3-Butadiene	ND	15	ND	6.9	
74-83-9	Bromomethane	ND	16	ND	4.0	
75-00-3	Chloroethane	870	16	330	5.9	
64-17-5	Ethanol	ND	150	ND	80	
67-64-1	Acetone	ND	150	ND	64	
75-69-4	Trichlorofluoromethane	ND	15	ND	2.7	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	60	ND	25	
75-35-4	1,1-Dichloroethene	ND	16	ND	3.9	
75-09-2	Methylene Chloride	ND	15	ND	4.4	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	16	ND	5.0	
76-13-1	Trichlorotrifluoroethane	ND	16	ND	2.0	
75-15-0	Carbon Disulfide	ND	32	ND	10	
156-60-5	trans-1,2-Dichloroethene	18	16	4.5	3.9	
75-34-3	1,1-Dichloroethane	360	16	88	3.9	
1634-04-4	Methyl tert-Butyl Ether	ND	16	ND	4.3	
78-93-3	2-Butanone (MEK)	140	32	47	11	
156-59-2	cis-1,2-Dichloroethene	700	15	180	3.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022620
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-004

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18694

Date Collected: 2/26/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.050 Liter(s)

Initial Pressure (psig): -0.37 Final Pressure (psig): 5.99

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	56	16	16	4.4	
67-66-3	Chloroform	ND	16	ND	3.2	
109-99-9	Tetrahydrofuran (THF)	54	16	18	5.4	
107-06-2	1,2-Dichloroethane	ND	16	ND	3.8	
71-55-6	1,1,1-Trichloroethane	43	16	8.0	2.9	
71-43-2	Benzene	24	15	7.6	4.8	
56-23-5	Carbon Tetrachloride	ND	15	ND	2.4	
110-82-7	Cyclohexane	ND	32	ND	9.2	
78-87-5	1,2-Dichloropropane	ND	16	ND	3.4	
75-27-4	Bromodichloromethane	ND	16	ND	2.3	
79-01-6	Trichloroethene	20	16	3.8	2.9	
123-91-1	1,4-Dioxane	ND	16	ND	4.3	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	16	ND	3.3	
142-82-5	n-Heptane	39	16	9.4	3.8	
10061-01-5	cis-1,3-Dichloropropene	ND	15	ND	3.3	
108-10-1	4-Methyl-2-pentanone	ND	15	ND	3.7	
10061-02-6	trans-1,3-Dichloropropene	ND	15	ND	3.4	
79-00-5	1,1,2-Trichloroethane	ND	16	ND	2.9	
108-88-3	Toluene	79	16	21	4.1	
591-78-6	2-Hexanone	26	16	6.4	3.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022620
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-004

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18694

Date Collected: 2/26/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.050 Liter(s)

Initial Pressure (psig): -0.37 Final Pressure (psig): 5.99

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	16	ND	1.8	
106-93-4	1,2-Dibromoethane	ND	16	ND	2.0	
127-18-4	Tetrachloroethene	30	15	4.5	2.2	
108-90-7	Chlorobenzene	70	16	15	3.4	
100-41-4	Ethylbenzene	27	16	6.3	3.6	
179601-23-1	m,p-Xylenes	33	32	7.5	7.3	
75-25-2	Bromoform	ND	16	ND	1.5	
100-42-5	Styrene	ND	15	ND	3.6	
95-47-6	o-Xylene	21	16	4.8	3.6	
79-34-5	1,1,2,2-Tetrachloroethane	ND	16	ND	2.3	
98-82-8	Cumene	25	16	5.0	3.2	
103-65-1	n-Propylbenzene	47	16	9.6	3.2	
622-96-8	4-Ethyltoluene	ND	16	ND	3.2	
108-67-8	1,3,5-Trimethylbenzene	25	15	5.1	3.1	
95-63-6	1,2,4-Trimethylbenzene	120	16	24	3.2	
100-44-7	Benzyl Chloride	ND	32	ND	6.1	
541-73-1	1,3-Dichlorobenzene	ND	16	ND	2.6	
106-46-7	1,4-Dichlorobenzene	25	16	4.2	2.6	
95-50-1	1,2-Dichlorobenzene	50	16	8.2	2.6	
120-82-1	1,2,4-Trichlorobenzene	ND	16	ND	2.1	
87-68-3	Hexachlorobutadiene	ND	15	ND	1.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022820
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-005

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18693

Date Collected: 2/28/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.87 Final Pressure (psig): 5.45

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	7.7	ND	1.6	
74-87-3	Chloromethane	ND	7.7	ND	3.7	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	7.7	ND	1.1	
75-01-4	Vinyl Chloride	99	7.9	39	3.1	
106-99-0	1,3-Butadiene	ND	7.7	ND	3.5	
74-83-9	Bromomethane	ND	7.9	ND	2.0	
75-00-3	Chloroethane	340	7.9	130	3.0	
64-17-5	Ethanol	ND	76	ND	40	
67-64-1	Acetone	ND	77	ND	33	
75-69-4	Trichlorofluoromethane	ND	7.7	ND	1.4	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	31	ND	12	
75-35-4	1,1-Dichloroethene	ND	7.9	ND	2.0	
75-09-2	Methylene Chloride	ND	7.7	ND	2.2	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	7.9	ND	2.5	
76-13-1	Trichlorotrifluoroethane	ND	7.9	ND	1.0	
75-15-0	Carbon Disulfide	ND	16	ND	5.2	
156-60-5	trans-1,2-Dichloroethene	8.0	7.9	2.0	2.0	
75-34-3	1,1-Dichloroethane	160	8.0	41	2.0	
1634-04-4	Methyl tert-Butyl Ether	ND	7.9	ND	2.2	
78-93-3	2-Butanone (MEK)	250	16	83	5.4	
156-59-2	cis-1,2-Dichloroethene	650	7.7	160	2.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022820
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-005

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18693

Date Collected: 2/28/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.87 Final Pressure (psig): 5.45

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	12	7.9	3.3	2.2	
67-66-3	Chloroform	ND	7.9	ND	1.6	
109-99-9	Tetrahydrofuran (THF)	ND	8.0	ND	2.7	
107-06-2	1,2-Dichloroethane	ND	7.9	ND	1.9	
71-55-6	1,1,1-Trichloroethane	63	7.9	12	1.4	
71-43-2	Benzene	22	7.7	6.9	2.4	
56-23-5	Carbon Tetrachloride	ND	7.7	ND	1.2	
110-82-7	Cyclohexane	ND	16	ND	4.7	
78-87-5	1,2-Dichloropropane	ND	7.9	ND	1.7	
75-27-4	Bromodichloromethane	ND	7.9	ND	1.2	
79-01-6	Trichloroethene	10	7.9	1.9	1.5	
123-91-1	1,4-Dioxane	ND	7.9	ND	2.2	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	7.9	ND	1.7	
142-82-5	n-Heptane	10	7.9	2.5	1.9	
10061-01-5	cis-1,3-Dichloropropene	ND	7.6	ND	1.7	
108-10-1	4-Methyl-2-pentanone	ND	7.7	ND	1.9	
10061-02-6	trans-1,3-Dichloropropene	ND	7.7	ND	1.7	
79-00-5	1,1,2-Trichloroethane	ND	7.9	ND	1.4	
108-88-3	Toluene	55	7.9	15	2.1	
591-78-6	2-Hexanone	31	7.9	7.5	1.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-022820
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-005

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18693

Date Collected: 2/28/20
 Date Received: 3/9/20
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.87 Final Pressure (psig): 5.45

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	7.9	ND	0.93	
106-93-4	1,2-Dibromoethane	ND	7.9	ND	1.0	
127-18-4	Tetrachloroethene	14	7.6	2.1	1.1	
108-90-7	Chlorobenzene	310	7.9	68	1.7	
100-41-4	Ethylbenzene	22	7.9	5.1	1.8	
179601-23-1	m,p-Xylenes	100	16	24	3.7	
75-25-2	Bromoform	ND	7.9	ND	0.76	
100-42-5	Styrene	ND	7.7	ND	1.8	
95-47-6	o-Xylene	87	7.9	20	1.8	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.9	ND	1.1	
98-82-8	Cumene	13	7.9	2.7	1.6	
103-65-1	n-Propylbenzene	23	7.9	4.7	1.6	
622-96-8	4-Ethyltoluene	ND	7.9	ND	1.6	
108-67-8	1,3,5-Trimethylbenzene	21	7.7	4.3	1.6	
95-63-6	1,2,4-Trimethylbenzene	61	7.9	12	1.6	
100-44-7	Benzyl Chloride	ND	16	ND	3.1	
541-73-1	1,3-Dichlorobenzene	ND	7.9	ND	1.3	
106-46-7	1,4-Dichlorobenzene	17	7.9	2.9	1.3	
95-50-1	1,2-Dichlorobenzene	26	7.9	4.4	1.3	
120-82-1	1,2,4-Trichlorobenzene	ND	7.9	ND	1.1	
87-68-3	Hexachlorobutadiene	ND	7.7	ND	0.73	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Mid GAC-030320
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-006

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Simon Cao
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18754

Date Collected: 3/3/20
 Date Received: 3/9/20
 Date Analyzed: 3/25/20
 Volume(s) Analyzed: 0.352 Liter(s)

Initial Pressure (psig): -0.50 Final Pressure (psig): 5.85

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	2.3	2.2	0.46	0.44	
74-87-3	Chloromethane	ND	2.2	ND	1.1	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	2.2	ND	0.31	
75-01-4	Vinyl Chloride	35	2.2	14	0.87	
106-99-0	1,3-Butadiene	ND	2.2	ND	0.99	
74-83-9	Bromomethane	ND	2.2	ND	0.57	
75-00-3	Chloroethane	120	2.2	46	0.84	
64-17-5	Ethanol	ND	21	ND	11	
67-64-1	Acetone	ND	22	ND	9.2	
75-69-4	Trichlorofluoromethane	ND	2.2	ND	0.39	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	8.7	ND	3.5	
75-35-4	1,1-Dichloroethene	ND	2.2	ND	0.56	
75-09-2	Methylene Chloride	ND	2.2	ND	0.63	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	2.2	ND	0.71	
76-13-1	Trichlorotrifluoroethane	ND	2.2	ND	0.29	
75-15-0	Carbon Disulfide	ND	4.5	ND	1.5	
156-60-5	trans-1,2-Dichloroethene	ND	2.2	ND	0.56	
75-34-3	1,1-Dichloroethane	60	2.3	15	0.56	
1634-04-4	Methyl tert-Butyl Ether	ND	2.2	ND	0.62	
78-93-3	2-Butanone (MEK)	ND	4.5	ND	1.5	
156-59-2	cis-1,2-Dichloroethene	150	2.2	37	0.55	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Mid GAC-030320
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-006

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Simon Cao
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18754

Date Collected: 3/3/20
 Date Received: 3/9/20
 Date Analyzed: 3/25/20
 Volume(s) Analyzed: 0.352 Liter(s)

Initial Pressure (psig): -0.50 Final Pressure (psig): 5.85

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	8.3	2.2	2.4	0.63	
67-66-3	Chloroform	ND	2.2	ND	0.46	
109-99-9	Tetrahydrofuran (THF)	18	2.3	6.3	0.77	
107-06-2	1,2-Dichloroethane	ND	2.2	ND	0.55	
71-55-6	1,1,1-Trichloroethane	25	2.2	4.6	0.41	
71-43-2	Benzene	ND	2.2	ND	0.68	
56-23-5	Carbon Tetrachloride	ND	2.2	ND	0.35	
110-82-7	Cyclohexane	ND	4.5	ND	1.3	
78-87-5	1,2-Dichloropropane	ND	2.2	ND	0.48	
75-27-4	Bromodichloromethane	ND	2.2	ND	0.33	
79-01-6	Trichloroethene	ND	2.2	ND	0.41	
123-91-1	1,4-Dioxane	ND	2.2	ND	0.62	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	2.2	ND	0.48	
142-82-5	n-Heptane	3.7	2.2	0.91	0.54	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	ND	0.47	
108-10-1	4-Methyl-2-pentanone	ND	2.2	ND	0.53	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	ND	0.48	
79-00-5	1,1,2-Trichloroethane	ND	2.2	ND	0.41	
108-88-3	Toluene	ND	2.2	ND	0.59	
591-78-6	2-Hexanone	ND	2.2	ND	0.54	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Mid GAC-030320
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-006

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Simon Cao
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18754

Date Collected: 3/3/20
 Date Received: 3/9/20
 Date Analyzed: 3/25/20
 Volume(s) Analyzed: 0.352 Liter(s)

Initial Pressure (psig): -0.50 Final Pressure (psig): 5.85

Container Dilution Factor: 1.45

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	2.2	ND	0.26	
106-93-4	1,2-Dibromoethane	ND	2.2	ND	0.29	
127-18-4	Tetrachloroethene	ND	2.1	ND	0.32	
108-90-7	Chlorobenzene	ND	2.2	ND	0.48	
100-41-4	Ethylbenzene	ND	2.2	ND	0.51	
179601-23-1	m,p-Xylenes	ND	4.5	ND	1.0	
75-25-2	Bromoform	ND	2.2	ND	0.22	
100-42-5	Styrene	ND	2.2	ND	0.51	
95-47-6	o-Xylene	ND	2.2	ND	0.51	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	ND	0.32	
98-82-8	Cumene	ND	2.2	ND	0.45	
103-65-1	n-Propylbenzene	ND	2.2	ND	0.45	
622-96-8	4-Ethyltoluene	ND	2.2	ND	0.45	
108-67-8	1,3,5-Trimethylbenzene	ND	2.2	ND	0.44	
95-63-6	1,2,4-Trimethylbenzene	ND	2.2	ND	0.45	
100-44-7	Benzyl Chloride	ND	4.5	ND	0.88	
541-73-1	1,3-Dichlorobenzene	ND	2.2	ND	0.37	
106-46-7	1,4-Dichlorobenzene	ND	2.2	ND	0.37	
95-50-1	1,2-Dichlorobenzene	ND	2.2	ND	0.37	
120-82-1	1,2,4-Trichlorobenzene	ND	2.2	ND	0.30	
87-68-3	Hexachlorobutadiene	ND	2.2	ND	0.20	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-030220
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-007

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Simon Cao
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18692

Date Collected: 3/2/20
 Date Received: 3/9/20
 Date Analyzed: 3/25/20
 Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.35 Final Pressure (psig): 5.87

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	7.6	ND	1.5	
74-87-3	Chloromethane	ND	7.6	ND	3.7	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	7.6	ND	1.1	
75-01-4	Vinyl Chloride	140	7.7	56	3.0	
106-99-0	1,3-Butadiene	ND	7.6	ND	3.4	
74-83-9	Bromomethane	ND	7.7	ND	2.0	
75-00-3	Chloroethane	500	7.7	190	2.9	
64-17-5	Ethanol	100	74	55	39	
67-64-1	Acetone	290	76	120	32	
75-69-4	Trichlorofluoromethane	ND	7.6	ND	1.3	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	30	ND	12	
75-35-4	1,1-Dichloroethene	ND	7.7	ND	1.9	
75-09-2	Methylene Chloride	ND	7.6	ND	2.2	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	7.7	ND	2.5	
76-13-1	Trichlorotrifluoroethane	ND	7.7	ND	1.0	
75-15-0	Carbon Disulfide	ND	16	ND	5.1	
156-60-5	trans-1,2-Dichloroethene	12	7.7	3.1	1.9	
75-34-3	1,1-Dichloroethane	270	7.9	67	1.9	
1634-04-4	Methyl tert-Butyl Ether	ND	7.7	ND	2.1	
78-93-3	2-Butanone (MEK)	1,100	16	360	5.3	
156-59-2	cis-1,2-Dichloroethene	1,100	7.6	270	1.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Pre GAC-030220
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P2001332-007

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Simon Cao
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:
 Container ID: 1BV18692

Date Collected: 3/2/20
 Date Received: 3/9/20
 Date Analyzed: 3/25/20
 Volume(s) Analyzed: 0.10 Liter(s)

Initial Pressure (psig): -0.35 Final Pressure (psig): 5.87

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	15	7.7	4.3	2.2	
67-66-3	Chloroform	ND	7.7	ND	1.6	
109-99-9	Tetrahydrofuran (THF)	ND	7.9	ND	2.7	
107-06-2	1,2-Dichloroethane	ND	7.7	ND	1.9	
71-55-6	1,1,1-Trichloroethane	110	7.7	19	1.4	
71-43-2	Benzene	16	7.6	5.0	2.4	
56-23-5	Carbon Tetrachloride	ND	7.6	ND	1.2	
110-82-7	Cyclohexane	ND	16	ND	4.6	
78-87-5	1,2-Dichloropropane	ND	7.7	ND	1.7	
75-27-4	Bromodichloromethane	ND	7.7	ND	1.2	
79-01-6	Trichloroethene	13	7.7	2.3	1.4	
123-91-1	1,4-Dioxane	ND	7.7	ND	2.1	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	7.7	ND	1.7	
142-82-5	n-Heptane	14	7.7	3.3	1.9	
10061-01-5	cis-1,3-Dichloropropene	ND	7.4	ND	1.6	
108-10-1	4-Methyl-2-pentanone	ND	7.6	ND	1.9	
10061-02-6	trans-1,3-Dichloropropene	ND	7.6	ND	1.7	
79-00-5	1,1,2-Trichloroethane	ND	7.7	ND	1.4	
108-88-3	Toluene	61	7.7	16	2.0	
591-78-6	2-Hexanone	81	7.7	20	1.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants

Client Sample ID: Pre GAC-030220

Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332

ALS Sample ID: P2001332-007

Test Code: EPA TO-15 Modified

Date Collected: 3/2/20

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 3/9/20

Analyst: Simon Cao

Date Analyzed: 3/25/20

Sample Type: 1.0 L Bottle-Vac™

Volume(s) Analyzed: 0.10 Liter(s)

Test Notes:

Container ID: 1BV18692

Initial Pressure (psig): -0.35 Final Pressure (psig): 5.87

Container Dilution Factor: 1.43

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	7.7	ND	0.91	
106-93-4	1,2-Dibromoethane	ND	7.7	ND	1.0	
127-18-4	Tetrachloroethene	16	7.4	2.4	1.1	
108-90-7	Chlorobenzene	40	7.7	8.8	1.7	
100-41-4	Ethylbenzene	17	7.7	3.9	1.8	
179601-23-1	m,p-Xylenes	24	16	5.6	3.6	
75-25-2	Bromoform	ND	7.7	ND	0.75	
100-42-5	Styrene	ND	7.6	ND	1.8	
95-47-6	o-Xylene	15	7.7	3.3	1.8	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.7	ND	1.1	
98-82-8	Cumene	22	7.7	4.5	1.6	
103-65-1	n-Propylbenzene	41	7.7	8.4	1.6	
622-96-8	4-Ethyltoluene	8.2	7.7	1.7	1.6	
108-67-8	1,3,5-Trimethylbenzene	28	7.6	5.8	1.5	
95-63-6	1,2,4-Trimethylbenzene	91	7.7	18	1.6	
100-44-7	Benzyl Chloride	ND	16	ND	3.0	
541-73-1	1,3-Dichlorobenzene	ND	7.7	ND	1.3	
106-46-7	1,4-Dichlorobenzene	16	7.7	2.6	1.3	
95-50-1	1,2-Dichlorobenzene	29	7.7	4.9	1.3	
120-82-1	1,2,4-Trichlorobenzene	ND	7.7	ND	1.0	
87-68-3	Hexachlorobutadiene	ND	7.6	ND	0.71	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-MB

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.53	ND	0.11	
74-87-3	Chloromethane	ND	0.53	ND	0.26	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.53	ND	0.076	
75-01-4	Vinyl Chloride	ND	0.54	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.53	ND	0.24	
74-83-9	Bromomethane	ND	0.54	ND	0.14	
75-00-3	Chloroethane	ND	0.54	ND	0.20	
64-17-5	Ethanol	ND	5.2	ND	2.8	
67-64-1	Acetone	ND	5.3	ND	2.2	
75-69-4	Trichlorofluoromethane	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	ND	0.85	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.53	ND	0.15	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.54	ND	0.17	
76-13-1	Trichlorotrifluoroethane	ND	0.54	ND	0.070	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.54	ND	0.14	
75-34-3	1,1-Dichloroethane	ND	0.55	ND	0.14	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
78-93-3	2-Butanone (MEK)	ND	1.1	ND	0.37	
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-MB

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.55	ND	0.19	
107-06-2	1,2-Dichloroethane	ND	0.54	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	ND	0.53	ND	0.17	
56-23-5	Carbon Tetrachloride	ND	0.53	ND	0.084	
110-82-7	Cyclohexane	ND	1.1	ND	0.32	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.54	ND	0.081	
79-01-6	Trichloroethene	ND	0.54	ND	0.10	
123-91-1	1,4-Dioxane	ND	0.54	ND	0.15	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	0.54	ND	0.12	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.52	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	ND	0.54	ND	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-MB

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
127-18-4	Tetrachloroethene	ND	0.52	ND	0.077	
108-90-7	Chlorobenzene	ND	0.54	ND	0.12	
100-41-4	Ethylbenzene	ND	0.54	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.54	ND	0.052	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.54	ND	0.12	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.54	ND	0.079	
98-82-8	Cumene	ND	0.54	ND	0.11	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.54	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.54	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
120-82-1	1,2,4-Trichlorobenzene	ND	0.54	ND	0.073	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-MB

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Lusine Hakobyan
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.53	ND	0.11	
74-87-3	Chloromethane	ND	0.53	ND	0.26	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.53	ND	0.076	
75-01-4	Vinyl Chloride	ND	0.54	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.53	ND	0.24	
74-83-9	Bromomethane	ND	0.54	ND	0.14	
75-00-3	Chloroethane	ND	0.54	ND	0.20	
64-17-5	Ethanol	ND	5.2	ND	2.8	
67-64-1	Acetone	ND	5.3	ND	2.2	
75-69-4	Trichlorofluoromethane	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	ND	0.85	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.53	ND	0.15	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.54	ND	0.17	
76-13-1	Trichlorotrifluoroethane	ND	0.54	ND	0.070	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.54	ND	0.14	
75-34-3	1,1-Dichloroethane	ND	0.55	ND	0.14	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
78-93-3	2-Butanone (MEK)	ND	1.1	ND	0.37	
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-MB

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Lusine Hakobyan
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.55	ND	0.19	
107-06-2	1,2-Dichloroethane	ND	0.54	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	ND	0.53	ND	0.17	
56-23-5	Carbon Tetrachloride	ND	0.53	ND	0.084	
110-82-7	Cyclohexane	ND	1.1	ND	0.32	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.54	ND	0.081	
79-01-6	Trichloroethene	ND	0.54	ND	0.10	
123-91-1	1,4-Dioxane	ND	0.54	ND	0.15	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	ND	0.54	ND	0.12	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.52	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	ND	0.54	ND	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Method Blank
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-MB

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Lusine Hakobyan
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 1.00 Liter(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
127-18-4	Tetrachloroethene	ND	0.52	ND	0.077	
108-90-7	Chlorobenzene	ND	0.54	ND	0.12	
100-41-4	Ethylbenzene	ND	0.54	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.54	ND	0.052	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.54	ND	0.12	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.54	ND	0.079	
98-82-8	Cumene	ND	0.54	ND	0.11	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.54	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.54	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
120-82-1	1,2,4-Trichlorobenzene	ND	0.54	ND	0.073	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

Client: Geosyntec Consultants
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Lusine Hakobyan/Wida Ang
 Sample Type: 1.0 L Bottle-Vac™(s)
 Test Notes:

Date(s) Collected: 2/24 - 3/3/20
 Date(s) Received: 3/9/20
 Date(s) Analyzed: 3/24 - 3/25/20

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P200324-MB	103	96	104	70-130	
Method Blank	P200324-MB	103	100	109	70-130	
Lab Control Sample	P200324-LCS	97	100	108	70-130	
Lab Control Sample	P200324-LCS	99	100	110	70-130	
Pre GAC-022420	P2001332-001	94	99	106	70-130	
Post GAC-022420	P2001332-002	95	100	106	70-130	
Pre GAC-022520	P2001332-003	93	99	105	70-130	
Pre GAC-022620	P2001332-004	93	100	106	70-130	
Pre GAC-022820	P2001332-005	94	101	107	70-130	
Mid GAC-030320	P2001332-006	98	101	109	70-130	
Pre GAC-030220	P2001332-007	97	101	109	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-LCS

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	185	88	64-115	
74-87-3	Chloromethane	212	175	83	49-127	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	178	86	65-114	
75-01-4	Vinyl Chloride	212	184	87	61-129	
106-99-0	1,3-Butadiene	212	207	98	54-140	
74-83-9	Bromomethane	212	196	92	68-120	
75-00-3	Chloroethane	214	182	85	63-123	
64-17-5	Ethanol	1,060	780	74	49-134	
67-64-1	Acetone	1,070	855	80	56-125	
75-69-4	Trichlorofluoromethane	212	189	89	64-115	
67-63-0	2-Propanol (Isopropyl Alcohol)	422	375	89	57-133	
75-35-4	1,1-Dichloroethene	214	196	92	67-115	
75-09-2	Methylene Chloride	210	186	89	68-114	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	214	176	82	55-139	
76-13-1	Trichlorotrifluoroethane	216	192	89	65-115	
75-15-0	Carbon Disulfide	212	169	80	68-113	
156-60-5	trans-1,2-Dichloroethene	214	203	95	65-122	
75-34-3	1,1-Dichloroethane	212	186	88	63-118	
1634-04-4	Methyl tert-Butyl Ether	214	137	64	57-131	
78-93-3	2-Butanone (MEK)	212	201	95	67-123	
156-59-2	cis-1,2-Dichloroethene	212	193	91	64-120	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-LCS

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
110-54-3	n-Hexane	216	183	85	58-125	
67-66-3	Chloroform	214	193	90	65-114	
109-99-9	Tetrahydrofuran (THF)	220	193	88	65-115	
107-06-2	1,2-Dichloroethane	214	195	91	59-119	
71-55-6	1,1,1-Trichloroethane	214	203	95	66-115	
71-43-2	Benzene	210	177	84	66-109	
56-23-5	Carbon Tetrachloride	208	197	95	66-119	
110-82-7	Cyclohexane	422	379	90	67-117	
78-87-5	1,2-Dichloropropane	214	190	89	66-119	
75-27-4	Bromodichloromethane	218	203	93	71-119	
79-01-6	Trichloroethene	216	204	94	70-114	
123-91-1	1,4-Dioxane	216	221	102	71-117	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	214	184	86	61-122	
142-82-5	n-Heptane	214	195	91	66-119	
10061-01-5	cis-1,3-Dichloropropene	214	208	97	72-125	
108-10-1	4-Methyl-2-pentanone	212	200	94	68-130	
10061-02-6	trans-1,3-Dichloropropene	212	209	99	71-132	
79-00-5	1,1,2-Trichloroethane	214	204	95	70-117	
108-88-3	Toluene	212	194	92	67-113	
591-78-6	2-Hexanone	216	199	92	62-135	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
 Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-LCS

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13
 Analyst: Wida Ang
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
124-48-1	Dibromochloromethane	214	218	102	73-126	
106-93-4	1,2-Dibromoethane	214	216	101	71-122	
127-18-4	Tetrachloroethene	208	199	96	64-120	
108-90-7	Chlorobenzene	214	194	91	65-116	
100-41-4	Ethylbenzene	212	203	96	65-117	
179601-23-1	m,p-Xylenes	426	397	93	64-121	
75-25-2	Bromoform	214	229	107	72-130	
100-42-5	Styrene	212	222	105	72-126	
95-47-6	o-Xylene	214	202	94	64-120	
79-34-5	1,1,2,2-Tetrachloroethane	214	202	94	66-122	
98-82-8	Cumene	214	201	94	64-121	
103-65-1	n-Propylbenzene	214	204	95	65-123	
622-96-8	4-Ethyltoluene	210	197	94	71-126	
108-67-8	1,3,5-Trimethylbenzene	212	199	94	65-120	
95-63-6	1,2,4-Trimethylbenzene	212	205	97	63-129	
100-44-7	Benzyl Chloride	214	227	106	66-138	
541-73-1	1,3-Dichlorobenzene	214	209	98	65-127	
106-46-7	1,4-Dichlorobenzene	214	208	97	65-125	
95-50-1	1,2-Dichlorobenzene	214	209	98	67-128	
120-82-1	1,2,4-Trichlorobenzene	216	234	108	62-140	
87-68-3	Hexachlorobutadiene	214	209	98	57-129	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
 Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-LCS

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Lusine Hakobyan
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	204	97	64-115	
74-87-3	Chloromethane	212	177	83	49-127	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	206	198	96	65-114	
75-01-4	Vinyl Chloride	212	193	91	61-129	
106-99-0	1,3-Butadiene	212	199	94	54-140	
74-83-9	Bromomethane	212	192	91	68-120	
75-00-3	Chloroethane	214	181	85	63-123	
64-17-5	Ethanol	1,060	841	79	49-134	
67-64-1	Acetone	1,070	905	85	56-125	
75-69-4	Trichlorofluoromethane	212	211	100	64-115	
67-63-0	2-Propanol (Isopropyl Alcohol)	422	392	93	57-133	
75-35-4	1,1-Dichloroethene	214	212	99	67-115	
75-09-2	Methylene Chloride	210	200	95	68-114	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	214	182	85	55-139	
76-13-1	Trichlorotrifluoroethane	216	216	100	65-115	
75-15-0	Carbon Disulfide	212	200	94	68-113	
156-60-5	trans-1,2-Dichloroethene	214	221	103	65-122	
75-34-3	1,1-Dichloroethane	212	193	91	63-118	
1634-04-4	Methyl tert-Butyl Ether	214	218	102	57-131	
78-93-3	2-Butanone (MEK)	212	203	96	67-123	
156-59-2	cis-1,2-Dichloroethene	212	207	98	64-120	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-LCS

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Lusine Hakobyan
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
110-54-3	n-Hexane	216	188	87	58-125	
67-66-3	Chloroform	214	211	99	65-114	
109-99-9	Tetrahydrofuran (THF)	220	211	96	65-115	
107-06-2	1,2-Dichloroethane	214	216	101	59-119	
71-55-6	1,1,1-Trichloroethane	214	230	107	66-115	
71-43-2	Benzene	210	196	93	66-109	
56-23-5	Carbon Tetrachloride	208	222	107	66-119	
110-82-7	Cyclohexane	422	404	96	67-117	
78-87-5	1,2-Dichloropropane	214	202	94	66-119	
75-27-4	Bromodichloromethane	218	220	101	71-119	
79-01-6	Trichloroethene	216	220	102	70-114	
123-91-1	1,4-Dioxane	216	224	104	71-117	
540-84-1	2,2,4-Trimethylpentane (Isooctane)	214	193	90	61-122	
142-82-5	n-Heptane	214	206	96	66-119	
10061-01-5	cis-1,3-Dichloropropene	214	241	113	72-125	
108-10-1	4-Methyl-2-pentanone	212	210	99	68-130	
10061-02-6	trans-1,3-Dichloropropene	212	234	110	71-132	
79-00-5	1,1,2-Trichloroethane	214	218	102	70-117	
108-88-3	Toluene	212	210	99	67-113	
591-78-6	2-Hexanone	216	215	100	62-135	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
 Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

Client: Geosyntec Consultants
Client Sample ID: Lab Control Sample
Client Project ID: Lilyblad / PNR0697/03

ALS Project ID: P2001332
 ALS Sample ID: P200324-LCS

Test Code: EPA TO-15 Modified
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9
 Analyst: Lusine Hakobyan
 Sample Type: 1.0 L Bottle-Vac™
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/24/20
 Volume(s) Analyzed: 0.125 Liter(s)

CAS #	Compound	Spike Amount µg/m ³	Result µg/m ³	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
124-48-1	Dibromochloromethane	214	241	113	73-126	
106-93-4	1,2-Dibromoethane	214	239	112	71-122	
127-18-4	Tetrachloroethene	208	223	107	64-120	
108-90-7	Chlorobenzene	214	214	100	65-116	
100-41-4	Ethylbenzene	212	223	105	65-117	
179601-23-1	m,p-Xylenes	426	447	105	64-121	
75-25-2	Bromoform	214	259	121	72-130	
100-42-5	Styrene	212	250	118	72-126	
95-47-6	o-Xylene	214	221	103	64-120	
79-34-5	1,1,2,2-Tetrachloroethane	214	214	100	66-122	
98-82-8	Cumene	214	221	103	64-121	
103-65-1	n-Propylbenzene	214	222	104	65-123	
622-96-8	4-Ethyltoluene	210	228	109	71-126	
108-67-8	1,3,5-Trimethylbenzene	212	223	105	65-120	
95-63-6	1,2,4-Trimethylbenzene	212	232	109	63-129	
100-44-7	Benzyl Chloride	214	260	121	66-138	
541-73-1	1,3-Dichlorobenzene	214	257	120	65-127	
106-46-7	1,4-Dichlorobenzene	214	261	122	65-125	
95-50-1	1,2-Dichlorobenzene	214	247	115	67-128	
120-82-1	1,2,4-Trichlorobenzene	216	264	122	62-140	
87-68-3	Hexachlorobutadiene	214	242	113	57-129	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
 Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

APPENDIX E

Bio-Sparge Pilot Study Summary

Washington State Department of Ecology
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Appendix E

Bio-Sparge

Field Test Summary

**Former Lilyblad Site,
Tacoma, Washington**

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ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
bgs	below ground surface
CO ₂	carbon dioxide
COC	contaminant of concern
CUL	cleanup level
DO	dissolved oxygen
DPE	dual-phase extraction
Ecology	Washington State Department of Ecology
ft	feet
L	liter
MTCA	Model Toxics Control Act
Lilyblad	Lilyblad Petroleum Inc.
mg/L	milligrams per liter
mV	millivolts
ORP	oxidative reduction potential
ppm	parts per million
psi	pounds per square inch
QAPP	Quality Assurance Project Plan
PID	photoionization detector
RCRA	Resource Conservation and Recovery Act
ROI	radius of influence
scfm	standard cubic feet per minute
s.u.	standard units
SVOCs	semi-volatile organic compounds
TPH	total petroleum hydrocarbons
VOCs	volatile organic compounds
wc	water column

1. INTRODUCTION

1.1 Site Background

The former Lilyblad Petroleum Inc. (Lilyblad) site is located at 2244 Port of Tacoma Road in Tacoma, Washington, and consists of the Lilyblad Property and adjacent properties that have been affected by historical releases from the Lilyblad facility (the Site), as shown in Figure 1. Lilyblad began operation in 1972 as a distributor of gasoline, diesel, solvents, and packaged petroleum products. In 1981, Lilyblad notified the Washington State Department of Ecology (Ecology) of its waste management activities, applied for an Ecology Resource Conservation and Recovery Act (RCRA) permit, and was granted interim status. By November 1994, Ecology received authorization for RCRA corrective action and notified Lilyblad it would proceed with corrective action via the Model Toxics Control Act (MTCA) process, and in 1995, an agreed Order was signed for the facility (Ecology, 1995).

In 2003, a supplemental remedial investigation was conducted by CH2M Hill, and in 2009, a full-scale dual-phase extraction (DPE) system was installed along with piping for nutrient injections into the ground (CH2M Hill, 2004 and PSCAA 2009). The nutrient injection lines were not used until April 2021 when the existing piping was utilized to inject air into the ground as part of a bio-sparge pilot study.

1.2 Test Objectives and Scope

The bio-sparge pilot study was conducted from 20 April to 3 June 2021, with sampling conducted prior to system startup on 15 April 2021 and for two weeks following system shutdown, ending on 18 June 2021. The bio-sparge pilot study was designed to observe the following:

- Efficacy of bio-sparge at increasing dissolved oxygen (DO) and creating positive oxidation reduction potential (ORP) concentrations in the groundwater;
- Effectiveness of bio-sparge at reducing Site contaminants of concern (COCs) in the groundwater;
- Duration DO remains elevated in the groundwater following system shutdown;
- Estimation of the observed radius of influence (ROI) associated with the bio-sparge injections;
- Impact bio-sparge has on the generation of subsurface vapors that could be a risk to indoor air quality; and
- Differences in well efficiencies between the existing DPE wells and newly installed injection wells.

2. BIO-SPARGE TEST IMPLEMENTATION

2.1 Preparation Activities

2.1.1 Background Conditions

Prior to the bio-sparge system startup, the following data were collected as a baseline comparison to pilot and post pilot test data:

- Carbon dioxide (CO₂) flux data using passive E-Flux Fossil Fuel Trap™ cartridge samplers, deployed at eight locations;
- Field water quality data and laboratory analytical data for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH) from the six pilot injection wells;
- Water quality data from nine monitoring wells near the bio-sparge injection wells; and
- Pressure and vapor concentration data from six vapor pins installed adjacent to RW-47-D and GS-01.

2.1.2 System Installation

Prior to system startup, three new injection wells were installed and three DPE wells were modified with k-packers for bio-sparge injection. Well locations were chosen based on proximity to monitoring wells, surrounding contaminant plume concentrations, and knowledge of well condition based on previous DPE testing. Figure 2 displays the location of injection wells.

The following actions were performed as part of the bio-sparge system installation:

Redevelopment of three DPE wells (RW-12-G, RW-19-G, and RW-47D);

Installation of well packers in redeveloped DPE wells to cover the upper section of the well screen and force air to be injected into the bottom 2 feet of the well screen;

Installation of three new injection wells GS-01, GS-02, GS-03, to depths of 10 feet (ft) below ground surface (bgs) and screened between 8 and 10 ft bgs;

Connection of the six wells to existing nutrient lines;

Installation of pressure gauges and flow controllers at each individual well head;

Installation of blower and manifold to existing nutrient lines with pulsing equipment; and

Installation of vapor pins at distances of 3, 6, and 9 ft from GS-01 and RW-47-D.

Figure 3 shows the piping and instrumentation design (P&ID) drawing for the constructed bio-sparge system.

2.2 Bio-Sparge Testing

The following section summarizes bio-sparge pilot test activities. The bio-sparge pilot test operated for 45 days from 20 April 2021 to 3 June 2021. During this time, atmospheric air was compressed and injected into the six injection wells (three newly installed wells and three modified DPE wells).

2.2.1 Pulsing Rate

Three different pulsing rates were implemented during the pilot study to evaluate and maximize air injection and minimize the generation preferential pathways.

- Between 21 April and 1 May 2021, air injection was cycled on for nine minutes and off for one minute simultaneously at all six injection wells.
- Between 1 May and 11 May 2021, air injection was cycled on for 15 minutes and off for 5 minutes. The pulsing rate was staggered so that one or two wells pulsed off at a time while air was injected into the remaining wells.
- Between 11 May and 25 May 2021, air injection was cycled on for 50 minutes and off for 5 minutes. The pulsing rate was staggered across the injection wells.
- Between 25 May and 3 June 2021, air injection was cycled on for 15 minutes and off for 5 minutes. The pulsing rate was staggered across the injection wells. The system was pulsed at this rate to observe if the positive trend in ORP would return.

2.2.2 System Maintenance

The bio-sparge system and injection wells were monitored periodically for maintenance issues. Maintenance activities conducted during the pilot test included:

- Adjusting valves and flow controllers to maintain pressure and flow of air to the injection wells;
- Evaluating and re-inflating of k-packers in DPE wells, as necessary, to maintain an airtight seal;
- Removal of the 3-ft and 9-ft DPE vapor pins at RW-47-D after they became clogged or loose; and
- Installation of four additional vapor pins: VP-GS-02-6; VP-GS-03-6; VP-BG1; and VP-BG2 to collect additional sub-slab vapor data.

2.3 Data Collection

Data collected during the tests are provided in Attachment 1. Data collected include manual depth to water and water quality readings from monitoring and injection wells, flow data from injection wells, pressure data from injection wells and vapor pins, vapor composition data from vapor pins

and monitoring wells, injection well groundwater VOC/SVOC and TPH concentrations, bio-spargage system operational data, and system operating hours.

2.3.1 Bio-Sparge System Data

Bio-spargage system data were collected daily for the first week of pilot operation and twice weekly for the remainder of the pilot test. Data collected during the bio-spargage system operation are listed in Table 1 and include blower operating hours, system pressure after the blower, and blower temperature.

2.3.2 Injection Well Performance Data

Injection well performance data were collected daily for the first week of pilot operation and twice weekly for the remainder of the pilot test. Performance data included operating pressures, flow rates, pulsing rate, and the k-packer pressures in modified DPE wells. K-packers were re-inflated by field staff, as needed, to maintain pressure between 90 and 95 pounds per square inch (psi). The minimum design pressure for injection was 2.2 psi and the design flow rate was 3 to 25 standard cubic feet per minute (scfm). Field staff adjusted flow controllers installed at each well head to the desired range. Table 2 shows injection well pressure, flow rate, and pulse rate data collected during the pilot study. Figure 4 shows a graph of injection well flow and pressure data.

2.3.3 Monitoring Well Data

Monitoring well vapor and water quality data were collected daily for the first week of pilot operation and twice weekly for the remainder of the pilot study. Water quality data monitored included DO, pH, and ORP. Vapor data collected included VOC concentration, methane, oxygen, carbon monoxide, CO₂, and hydrogen sulfide. Depth to groundwater readings were collected manually with a water level meter; water quality data were collected with a Hannah[®] down-well meter. Vapor composition data were collected from the top of the well casing with MiniRAE 3000 PID[®], GEM[™] 1000, and RKI GX2012 meters from monitoring wells close to injection locations. Table 3 shows the monitoring well data collected during the pilot study.

2.3.4 Vapor Pin Data

Three vapor pins were installed at distances of 3, 6, and 9 ft from RW-47-D (VP-DPE3, VP-DPE6, and VP-DPE9 respectively) and GS-01 (VP-IW3, VP-IW6, and VP-IW9 respectively). Pressure data were collected with a Zephyr II Data Logger[®]. Vapor data collected included VOC concentration, methane, oxygen, carbon monoxide, CO₂, and hydrogen sulfide and were collected with MiniRAE 3000 PID[®], GEM[™] 1000, and RKI GX2012 meters. Data were collected daily for the first week of operation and twice weekly for the remainder of the pilot study. Zephyr III Digital micromanometer[®] pressure data loggers were initially installed on vapor pins located 3 ft from the injection location and set up to collect minute by minute pressure data. On 6 May, the pressure data logger at the 3-ft vapor pin near RW-47-D (VP-DPE3) was moved to the 6-ft vapor pin (VP-

DPE6) as a result of clogging observed at VP-DPE3. On 11 May, the pressure data logger at the 3-ft vapor pin near GS-01 (VP-IW3) was moved to the 9-ft vapor pin (VP-IW9) to evaluate the radius of influencer observed in the vadose zone.

2.3.5 Groundwater Sampling Data

Prior to the bio-sparge pilot test and again one day after system shutdown, a total of six groundwater samples and one duplicate were collected and analyzed for COCs. Groundwater was purged using low-flow sampling methods until stabilization of water quality parameters occurred¹. Samples were stored on ice and delivered the same day to the laboratory following laboratory procedures. All purge water was stored in labeled drums on site.

2.3.6 Work Plan Deviations

The following section explains deviations from the Work Plan for Biosparge Pilot Test (Geosyntec, 2021). These deviations included DO sensor calibration, CO₂ data collection, and pilot study duration.

The bio-sparge work plan stated that the water quality meter would be calibrated daily for DO, pH, and ORP. The pH and ORP sensors were calibrated at the beginning of each day of data collection. The DO sensor was calibrated on 19 and 22 April 2021 and on 3 June 2021 prior to system shutdown. On 3 June 2021, the DO sensor required a film change and cleaning before successful calibration. A replacement sensor was ordered and used beginning on 9 June 2021. The DO sensor was then calibrated for the remaining days of post-bio-sparge data collection.

The Work Plan stated that CO₂ baseline and pilot data collection would occur at vapor pins and monitoring wells. Due to an error in rental equipment procurement, CO₂ data collection did not occur until halfway through the pilot study (14 May 2021). When it was discovered that CO₂ data were not being collected, as stated in the work plan, a new meter was obtained.

The bio-sparge work plan stated that the system would operate for four weeks. Based on Ecology's request, the duration of the pilot study was extended by two weeks to further evaluate trends and collect CO₂ flux data during system operation. CO₂ flux data was used to estimate fossil fuel degradation rates as a result of the bio-sparge operations. CO₂ flux sampling and data analysis are discussed in Appendix C, Sections 2 and 3, respectively.

¹ Geosyntec water quality stability parameters are less than a 20% change for turbidity, 0.6 mg/L change for DO, 0.2 change for pH, 6% change for specific conductivity, and 20 mV for ORP over a 9 minute interval.

3. RESULTS

3.1 Bio-Sparge System

The bio-sparge system operated with no shutdowns for the duration of the pilot test and with no major maintenance issues. Maintenance included adjusting flow controllers to the injection wells, replacement of vapor pins, and re-inflation of k-packers in the DPE wells. K-packers in DPE wells had to be re-inflated regularly to keep them in place and allow for an airtight seal.

Three different pulsing rates were tested during the pilot test: 9 minutes on and 1 minute off, 15 minutes on and 5 minutes off, and 50 minutes on with 5 minutes off. Each pulsing rate was used for approximately two weeks. During the system operation water quality, vapor data, injection pressures, and flow rates were monitored for signs of breakthrough or preferential pathway formation. Breakthrough was not observed during the 9-minute or 15-minute pulsing rates. When the pulsing rate was adjusted to 50 minutes, the ORP trend in all monitoring wells reversed from a positive trend to a negative trend, which suggested that preferential pathways were created (See Figure 5). The pulsing rate was adjusted back to a 15-minute pulsing rate to evaluate if ORP would increase again; however, a change in trend was not observed.

Design flow rates were initially met and sustained in all injection wells for the duration of the pilot test. Injection well flow rates ranged from 4 to 9 scfm. The design pressure was initially met in GS-02 and RW-12G, but not in wells RW-47-D, RW-19-G, GS-01, and GS-03. RW-47-D and RW-19-G had high flow rates, but no buildup of pressure. For the retrofitted DPE wells, this was believed to be due to preferential pathway formation due to the construction of the DPE wells and/or previous operations. GS-01 and GS-03 initially had pressures of 1 psi. The low pressure in GS-03 may have been a result of the shared line with RW-47-D, which had a higher flow rate and no pressure. It is unclear why GS-01 had a low initial pressure. Both GS-01 and GS-03 achieved design pressure by the third day of operation. DPE wells RW-47-D and RW-19-G both achieved design pressure by the eighth day of operation. For the remainder of the pilot test, injection wells remained within the range of desired pressure and flow rates.

3.2 Monitoring Wells

3.2.1 Water quality parameters

Figure 5 shows the change in ORP and pH in the monitoring wells throughout the pilot study. Between system start on 20 April and 11 May 2021, ORP exhibited an increasing trend. ORP observed prior to system startup ranged from -68.2 to 22.2 millivolts (mV) and increased to 46.4 to 83.5 mV by 11 May 2021. After 11 May 2021, this trend reversed and ORP decreased to a range of -71 to -2.4 by 3 June. The negative trend in ORP corresponded with changing the pulsing rate of the system from 15 minutes on and 5 minutes off to a longer pulsing rate of 50 minutes on and 5 minutes off. The change in ORP trend at monitoring wells was believed to be due to development of preferential pathway formation (a result of the increased pulsing frequency). After changing the

system back to a shorter pulsing rate on 25 May 2021, there was a slight increase in ORP, but overall ORP continued to decrease. Following system shutoff, ORP in all monitoring wells increased to a range of 172 to 246 mV before beginning to decrease slightly 15 days after shutdown.

Baseline DO readings were 0 milligrams per liter (mg/L) in the majority of monitoring wells and ranged from 0 to 2.4 mg/L. Monitoring well DO readings were recorded as 0 mg/L between 20 April and 3 June 2021; however, data collected between 23 April and 28 May 2021 are suspected to be lower than actual concentrations due to sensor and calibration issues. On 3 June, monitoring wells near the bio-sparge DPE wells had DO concentrations of 0.3 to 1.02 mg/L and monitoring wells near new bio-sparge wells had DO concentrations of 0.17 to 0.95 mg/L. DO appeared to increase in all monitoring wells with the exception of AGI-14, which was 15 ft from GS-03 and had a higher baseline DO of 2.4 mg/L.

Over the period of pilot operation, pH increased in all monitoring wells. Before system start, pH in monitoring wells ranged from 5.5 to 6.7. On the last day of system operation, pH in monitoring wells ranged from 6.6 to 7.9. When water quality data were collected five days following shutdown, pH had decreased in all monitoring wells to a range similar to baseline conditions (5.8 to 6.9).

In summary, DO and pH values were higher after the six weeks of bio-sparge operation compared to before the bio-sparge operation. ORP increased at the beginning of the pilot study and increased after the system was shut down. The observed changes are suggestive that the bio-sparge pilot study did have an impact on groundwater in surrounding monitoring wells.

3.2.2 Sub-slab vapor results

Table 3 summarizes the vapor sampling results for the monitoring wells used during the pilot study. Background CO₂ readings were collected from wells expected to be outside of the influence of the bio-sparge system on 18 May 2021. These background data ranged from 0.1 to 0.9%. Bio-sparge CO₂ data collection began on 14 May 2021. During initial data collection, CO₂ concentrations ranged from 0 to 3.4% in most wells, with the exception of a CO₂ concentration of 15.5% observed in monitoring well B-29. During the longer pulsing rate of 50 minutes on and 5 minutes off between 14 and 25 May 2021, CO₂ concentrations were elevated in wells CDM-20, CDM-21, CDM-18, SP-06, and AGI-14. CDM-20 ranged between 0.9 and 6.6% CO₂ and is 160 ft from injection well GS-02. CDM-21 ranged between 0.2 and 3.4% and is 70 ft from GS-02. CDM-18 ranged from 0 to 1% and is 18 ft from injection GS-01. SP-06 was the only monitoring well near a modified DPE injection well (8 ft from RW-47-D) and ranged from 0.3 to 0.6% CO₂. After the pulsing rate was changed to 15 minutes on and 5 minutes off, CO₂ concentrations in monitoring wells reduced to background levels between 0 and 0.4%, with the exception of B-29, which had elevated values of 4.0 to 16.2% during the pilot test and reduced to 8.4% after the pilot test.

Monitoring well CO₂ increases were the most significant near new injection wells, with the largest increases observed in wells 70 and 160 ft from GS-01 and GS-02. One well within 8 ft of a modified DPE injection well experienced a slight increase in CO₂ concentration.

3.3 Vapor Pins

Prior to system start-up, vapor pins installed adjacent to RW-47-D and GS-01 had volatile organic carbon (VOC) vapor concentration of 0 parts per million (ppm), methane concentrations of 0 ppm, hydrogen sulfide concentrations of 0 to 0.5 ppm, and oxygen concentrations of 20.9 to 21.8%. Background CO₂ concentrations collected from vapor pins believed to be outside of the radius of influence and unaffected by bio-spargage injections on 18 May 2021 ranged from 0.1 to 0.9%. Vapor pin field data is summarized in Table 4.

During the pilot test, elevated CO₂ concentrations were observed in the vapor pins 3 ft and 6 ft from RW-47-D with concentrations reaching as high as 1.1% at 3 feet (VP-DPE3) and 0.7% at 6 ft (VP-DPE6). Following system shutdown, CO₂ concentrations observed in the 3-ft vapor pin reduced to baseline values, but the concentrations in the 6-ft vapor pin increased to 2%. Thirteen days after shutdown. CO₂ trends were not observed in the 9-ft vapor pin, as this vapor pin became clogged and had no flow. CO₂ concentrations in vapor pins near GS-01 did not increase above background levels throughout the study. Observed CO₂ concentrations ranged from 0 to 0.2%. Figure 6 graphs vapor pin CO₂ data collected during the pilot test.

Pressure data loggers installed at GS-01 were able to observe small but regular pressure responses to the pulsing bio-spargage system at the 3-ft (VP-IW3) and 9-ft (VP-IW9) vapor pins. These pressure increases were approximately 0.02 in water column (wc) while the system was pulsing and consistently corresponded with pulsing rates. Vapor pins near DPE well RW-47-D did not show regular pressure influence correlating with pulsing rates; however, did show trends correlating with the hottest time of the day and are suspected to be resultant of the overlaying asphalt heating up and cooling down.

3.4 Groundwater Analytical Results

Results of the injection well groundwater sampling and analysis are provided in the following sections.

3.4.1 Pre-Pilot Injection Well Sampling Results

Baseline groundwater sampling of injection wells was conducted on 15 April 2021. The results of the baseline sampling are summarized in Table 5. In general, the wells had low DO concentrations, neutral pH, and low to negative ORP. DO concentrations ranged from 0 mg/L in two modified DPE wells (RW-12-G and RW-19-G), 0.0 mg/L in GS-02, and 0.10 mg/L in GS-01 and GS-03, respectively. Modified DPE well RW-47-D was the only injection well with an elevated baseline DO concentration (8.66 mg/L). Figure 7 presents the change in ORP observed at the bio-spargage

injection locations prior to system startup and then after system shutdown. ORP ranged from -114 to -76 mV in modified DPE wells and 45 to 50 in newly constructed wells. In all injection wells, pH ranged from 6.22 to 7.15 standard units (s.u.).

Pre-pilot laboratory results showed that wells RW-12-G, RW-19-G, RW-47-D, GS-01, and GS-03 exceeded the cleanup level (CUL) for motor oil and #2 diesel. GS-02 had motor oil and #2 diesel detections, but did not exceed the CUL. Additionally, RW-12-G exceeded the CUL for gasoline. Wells RW-19-G, RW-47-D, GS-02, and GS-03 had gasoline detections but did not exceed the CUL. Wells RW-47-D and GS-03 exceeded the CUL for 1,4-dichlorobenzene. In addition, RW-12-G exceeded the CUL for vinyl chloride and GS-02 exceeded the CUL for pentachlorophenol.

3.4.2 Post-Pilot Injection Well Sampling Results

During post-pilot groundwater sampling on 4 June 2021, the injection wells in general had higher DO concentrations, more acidic pH, and higher ORP than pre-pilot test concentrations. DO concentrations ranged from the lowest in GS-02 of 1.18 mg/L to 8.32 mg/L in RW-12-G. ORP ranged from 180 to 395 mV in modified DPE wells and 332 to 391 mV in newly constructed wells. RW-12-G had a pH more basic than baseline of 8.03. All other injection wells were more acidic than baseline with pH ranging from 2.75 to 5.1.

Post-pilot laboratory results showed that all wells had reduced gasoline concentrations to levels below the CUL. Concentrations of motor oil were reduced in all wells, with RW-19-G, RW-47-D, and GS-03 being reduced to below the CUL. Concentrations of #2 diesel were reduced in wells RW-12-G, RW-19-G, and GS-03 and increased in RW-47-D, GS-01, and GS-02. One explanation for increases in diesel concentrations is that diesel is a byproduct of motor oil. As bacteria break down motor oil, they initially create more diesel-length carbon chains prior to full reduction. Wells RW-47-D and GS-03 were reduced to below the CUL for 1,4-dichlorobenzene. RW-12-G was reduced to below the CUL for vinyl chloride, and GS-02 was reduced to below the CUL for pentachlorophenol.

The reduction of VOCs, SVOCs, and petroleum hydrocarbons indicate that volatilization and/or biological breakdown of COCs occurred in the groundwater at the injection wells.

3.4.3 Monitoring Well Sampling Results

Historic quarterly and annual groundwater sampling results for monitoring wells AGI-19, SP-06, CDM-17, AGI-07, AGI-45, B-25, and MW-01 show a decreasing trend in concentration of Site COCs². Figures 8A through 8E display historical vinyl chloride, 1,4-dichlorobenzene, gasoline, and motor oil data for these wells.

² Monitoring wells analyzed here were chosen based on proximity to pilot study injection wells and availability of historical groundwater concentration data.

Each monitoring well is below the CUL for 1,4-dichlorobenzene, except for B-25 and SP-06 (Figure 8A). Both B-25 and SP-06 concentrations reduced during the pilot bio-sparge study. B-25, which is believed to be outside the influence of the pilot study, reduced from 21 µg/L in December 2020 to 14 µg/L in June 2021. SP-06, which is approximately 8 feet from RW-47-D, reduced from 60 µg/L in December 2020 to 19 µg/L in June 2021. Concentration data from April 2016 to June 2021 show a historic decreasing trend in 1,4-dichlorobenzene concentrations in B-25. Concentration data for SP-06 is only available from March 2020.

Each monitoring well was below the CUL for vinyl chloride, except for CDM-17. CDM-17, which is approximately 12 ft from GS-01, reduced from 37 µg/L in March 2020 to non-detect in June 2021 (Figure 8B). Historic data for CDM-17 before March 2020 was below the cleanup level.

Each monitoring wells was below the CUL for motor oil and #2 diesel, except for AGI-19, SP-06, CDM-17, and AGI-07 (Figures 8C and 8D). These monitoring wells did not show a consistent historic decreasing trend for motor oil and #2 diesel. After the pilot study, the four wells showed reduced concentrations for #2 diesel, and three of the four showed reduced concentrations for motor oil. Although AGI-07 did show a concentration reduction in motor oil and #2 diesel following the bio-sparge operation, the post-bio-sparge concentration remained within the range of historical concentrations observed at the well.

Each monitoring was below the CUL for gasoline, except for B-25 and SP-06 (Figure 8E). Concentration data from April 2016 to June 2021 show a historic decreasing trend in gasoline concentrations in B-25. B-25, which is believed to be outside the influence of the pilot study, reduced from 1100 µg/L in December 2020 to 620 µg/L in June 2021, which is below the CUL. SP-06, which is approximately 8 ft from RW-47-D, reduced from 3500 µg/L in December 2020 to 2800 µg/L in June 2021.

In summary, monitoring wells analyzed for vinyl chloride, 1,4-dichlorobenzene, gasoline, and motor oil saw reductions in concentrations after the pilot study or were already below the CUL. In some cases, these reductions were consistent with historical trends; however, at three of the wells (AGI-19, SP-06, and CDM-17), the reduction in COC concentration may be attributed to the bio-sparge pilot study. The monitoring wells that may have been impacted by bio-sparge ranged from 7 to 12 ft from an injection location.

3.4.4 Sample Quality Control/Quality Assurance

The 2009 Remedial Action Quality Assurance Project Plan (QAPP) Sections 12 and 13 were used following receipt of laboratory data (CH2M Hill, 2009). As part of the QAPP, a level-two validation was conducted that involved 100 percent of the data quality control summary being reviewed independently of the laboratory quality control. The laboratory data were reviewed based on the detection limits, precision, accuracy, and statistical completeness and identified as useable.

4. REFERENCES

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Standard Operating Procedures for the installation and extraction of VAPOR PIN[®]s is provided at their website, <http://www.vaporpin.com/wp-content/uploads/2016/09/Vapor-Pin-SOP-09-2016-Web.pdf>.

TABLES

Table 1
System Operation Data
 Lilyblad Cleanup Site, Tacoma, Washington

Date	Time	General			Notes
		System Operating (y/n)	Compressor hour meter (hrs)	Pressure after Blower (psi)	
4/20/2021	10:17	Y	6543.2		System start
4/20/2021	15:57	Y	6548.8		
4/21/2021	8:00	Y	6564.8	12	20 SCFM. Blower temp 85F. End of day 87F
4/22/2021	10:57	Y	6591.7	8.5	
4/22/2021	15:33	Y	6596.3	9	
4/23/2021	7:40	Y	6612.4	15	Blower Temp 97.3F hottest. Average 90F
4/26/2021	8:20	Y	6685.1	15	Blower Temp 74 F
4/28/2021	8:10	Y	6732.9	13	Blower Temp 74.7 F
5/4/2021	8:40	Y	6877.4	15	Blower Temp 77 F
5/6/2021	8:30	Y	6925.6	15	Blower Temp 78 F
5/11/2021	8:40	Y	7045.5	14	Blower Temp 79 F
5/14/2021	10:00	Y	7118.7	15	Blower Temp 83 F
5/17/2021	9:30	Y	7190.2	15	Blower Temp 78 F
5/20/2021	12:15	Y	7265	14	Blower Temp 81.5 F
5/25/2021	10:00	Y	7383.2	15	Blower Temp 80.3 F
5/27/2021	9:30	Y	7433.9	13	Blower Temp 83.5 F
5/28/2021	9:50	Y	7454.6	14	Blower Temp 78.9 F
6/1/2021	10:10	Y	7551	14	Blower Temp 81.3 F
6/3/2021	8:45	Y	7597.5	14	Blower Temp 83.5 F - Last day of operation (shutdown approximately 3 hours later)
6/9/2021	9:15	N	7603.2	0	system off

Notes

Monitoring well data collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 VOC concentration data collected with a photoionization detector, calibrated weekly.

Acronyms:

y/n - yes or no
 scfm - standard cubic feet per minute
 scf - standard cubic feet
 in wc - inches water column
 hrs - hours
 ppm - parts per million
 PID - Photoionization detector

Table 2
Injection Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID		RW-12-G				RW-19-G			RW-47-D			GS-01		GS-02		GS-03	
Date	Units Time	Pulse Rate	Pressure	Flow Rate	K-packer pressure	Pressure	Flow Rate	K-packer pressure	Pressure	Flow Rate	K-packer pressure	Pressure	Flow Rate	Pressure	Flow Rate	Pressure	Flow Rate
		min on/min off	psi	scfm	psi	psi	scfm	psi	psi	scfm	psi	psi	scfm	psi	scfm	psi	scfm
4/21/2021	13:40	9/1	3	6	93	0	6	90	0	0	90	1	6	3	6	2	10
4/21/2021	14:20	9/1	3	6	93	0	6	90	0	6	90	1	6	3	6	1	6
4/22/2021	12:04	9/1	2	8		0	6		0	9		1	6	3.5	6	2.6	4
4/23/2021	7:50	9/1	3	6	35/90	0	6	90	0	9	93	5	6	6	6	5	6
4/26/2021	8:30	9/1	2	6	30/90	0	6	83/90	0	6	85/90	5	6	3	6	3	6
4/28/2021	8:20	9/1	6	9	40/90	3	6	85/90	5	6	85/90	1	6	3.5	6	5	9
4/30/2021		9/1	3	6		3	6		4	6		2.5	6	3	6	3	9
5/4/2021	8:50	15/5	4	6	35/90	2.5	6	85/90	4	6	85/90	2.5	6	3	9	3	9
5/4/2021	15:05	15/5	3	7		4	6		-	-	-	2.5	6	-	-	-	-
5/4/2021	15:10	15/5	3	7		4	6		-	-	-	off	off	-	-	-	-
5/4/2021	15:15	15/5	off	off		off	off		-	-	-	2.5	6	-	-	-	-
5/4/2021	15:20	15/5	3	7		4	6		-	-	-	2.5	6	-	-	-	-
5/6/2021	8:55	15/5	2.5	8	45/90	off		80/90	4.5	6	80/92	2.5	6	3	6	3	9
5/6/2021	9:15	15/5	off				off		4.5	7				3	7	3	7.5
5/6/2021	9:20	15/5							off					3.5	7.5	off	
5/6/2021	9:25	15/5							4.5	7.5				off		3	7
5/6/2021	9:30	15/5							4.5	7		off		3.5	7	3	7
5/6/2021	9:35	15/5	off				off					2.5	6				
5/6/2021	9:40	15/5	3	7.5		2.5	6.5			off		2.5	6			off	
5/6/2021	9:45	15/5	3	7.5		2.5	5.5					2.5	6		off		
5/6/2021	9:50	15/5	2.5	7.5		2.5	6					off					
5/11/2021	9:00	15/5			40/90			80/90	off		85/92			3.5	7.5	off	
5/11/2021	9:05	15/5							2.5	9				off		3	6.5
5/11/2021	9:10	15/5							2.5	9				3	7	4	9
5/11/2021	9:15	15/5							2.5	9				3.5	7.5	4	9
5/11/2021	9:20	15/5							off					3.5	7.5	off	
5/11/2021	9:25	15/5	3	7		2.5	5.5					2.5	6				
5/11/2021	9:30	15/5	3	7		2.5	6					off					
5/11/2021	9:35	15/5	off			off						2.5	6.5				
5/11/2021	9:40	15/5	3.5	7		2.5	6					2.5	6.5				
5/12/2021		50/5	2	6.5	45/90	2.5	6	85/91	4	6	85/91	2	6.5	3	6.5	3	9
5/14/2021	10:15	50/5	5	6	40/90	3	6.5	85/90	4.5	6	87/90	2.5	7	3	6	3	8
5/17/2021	9:35	50/5	3.5	6	35/90	2.5	6	85/90	4.5	6.5	85/90	2.5	7.5	3	6	3	6.5
5/20/2021	12:05	50/5	4	6	30/90	4	6	80/90	4.5	6	85/90	2.5	7.5	3	7	3	7
5/25/2021	10:25	50/5	5.5	6	35/92	3	6	85/90	2.5	6	85/90	2.5	6.5	3	6.5	3	6.5
5/27/2021	9:35	15/5	4.5	7.5	45/90	4.5	6	80/90	5	6	85/90	2.5	8.5	3	6	3.5	7
5/28/2021	9:55	15/5	3	8.5	60/90	2.5	6	85/90	4.5	6	90/90	2.5	7	3.5	7	4	7.6
6/1/2021	10:20	15/5	3.5	8.5	40/90	2.5	6.5	80/90	4.5	6	85/90	2.5	6.5	3	6	3	6.5
6/3/2021	8:45	15/5	2.5	8	45/90	3	6	80/90	4	6	85/90	2.5	6.5	3	8	3.5	7
6/9/2021	12:00	off	0	0	off	0	0	off	0	0	off	0	0	0	0	0	0

Notes
 Monitoring well data collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data collected with a manometer.
 Dissolved oxygen and ORP collected before and after the pilot, collected using a Horiba U-50, calibrated daily and deconned between wells.
 RW-19-G pressure: on 5/11 there was audible bubbling

Acronyms:
 in wc - inches water column
 scfm - standard cubic feet per minute
 scf - standard cubic feet
 ft btoc - feet below top of casing
 mV - millivolts
 DO - dissolved oxygen
 ORP - Oxidative reduction potential

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/20/2021	4/21/2021	4/22/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/14/2021	5/17/2021
Sensor Depth													
CDM-20			7:25	10:00	12:47	10:00	10:00	10:50	10:30	11:30	11:03	11:55	10:50
Depth to Water	ft		3.58	4.61	3.64	3.77	3.6	3.67	3.72	3.72	3.71	3.74	3.78
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0	0	0	0	0
ORP	mV		26.7	-29.6	-21.2	-27.7	-22.1	40.4	-5.4	25.8	88.8	30.1	15.3
pH	s.u.		5.5	5.85	5.55	6.19	6.21	6.18	6.03	6.65	6.18	6.47	6.58
PID	ppm		14.1	5.8	64.9	48.7	92.2	96.5	186.5	70.7	121.5	67.8	124.3
CH ₄	% lcl		0	2	4	7	1	1	0	0	0	0	0
CH ₄	%		0	0.1	0.2	0.35	0.05	0.05	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0	0
CO	ppm		0	0	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.5	6.6
O ₂	%		20	20.9	20.9	20.9	12.2	12	18.9	20.9	20	20.9	19.3
CDM-18			7:45	10:00	12:58	10:00	10:00	10:50	10:30	11:30	11:00	11:55	10:50
Depth to Water	ft		3.73	3.67	3.71	3.71	3.68	3.78	3.81	3.81	3.88	3.92	3.92
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0	0	0	0	0
ORP	mV		22.8	-14.9	-41	-37.7	-27.2	42.3	-10.5	45.9	83.5	12.1	5
pH	s.u.		6.37	6.23	6.36	6.43	6.27	6.45	6.29	6.52	6.39	6.64	6.48
PID	ppm		0.5	0	3.2	3.8	0.3	0.1	0.6	0.4	0.1	0	0.2
CH ₄	% lcl		0	1	4	7	0	0	0	0	0	0	0
CH ₄	%		0	0.05	0.2	0.35	0	0	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0	0
CO	ppm		0	0	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.1	1
O ₂	%		20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	5/20/2021	5/25/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes	
Sensor Depth			shallow		13 ft										
CDM-20			14:30	11:05	11:05	11:00	12:15	11:20	12:06	11:30	11:40				
Depth to Water	ft		3.81	3.81	-	3.85	3.85	3.74	3.78	3.85	3.8	3.42	3.6		
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0.63	0.67	0.31	0.72	0.33		
ORP	mV		-11.6	-29.7	-26.4	-16.4	0.5	-26.7	-38.3	188.6	234.3	230.2	218.1		
pH	s.u.		6.81	6.92	6.59	6.9	6.57	7.11	7.85	6.56	6.59	6.46	6.44		
PID	ppm		0	0	-	108.6	0	122.4	90.5	13.9	14.3	41.8	247.7		
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0		
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0	0	-	0	0	0.5	0	0	0	0	0		
CO	ppm		0	0	-	0	0	0	0	0	0	0	0		
CO ₂	%		0.9	2.4	-	0.2	0.4	0	0.1	0.1	0.2	0.1	0.2		
O ₂	%		20.8	20.4	-	20.6	20.8	18.1	20.5	18.8	19.4	20.4	20.6		
CDM-18			14:30	11:05	11:05	11:00	12:15	11:20	12:06	11:30	11:40				
Depth to Water	ft		3.98	4		3.95	3.82	3.98	4.01	3.98	4.01	3.85	3.82		
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0.17	0.43	0.5	0.7	0.77		
ORP	mV		-10.8	-9.1	-9.2	-10.3	-5.3	-24.7	-28.8	193.1	235.2	244.2	213.7		
pH	s.u.		6.62	6.72	6.43	7.17	6.56	6.83	7.27	6.57	6.59	6.35	6.52		
PID	ppm		0	0	-	0	0	0	0.5	0	0	0.2	0.4		
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0		
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0		
CO	ppm		0	0	-	0	0	0	0	0	0	0	0		
CO ₂	%		0.6	0.1	-	0	0.1	0	0.1	0.2	0.1	0.2	0.2		
O ₂	%		20.9	19.8	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9		

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/20/2021	4/21/2021	4/22/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/14/2021	5/17/2021
CDM-17			7:30	10:08	13:07	10:00	10:00	10:50	10:30	11:40	11:00	11:55	10:50
Depth to Water	ft		3.8	3.72	3.78	3.7	3.73	3.82	3.88	3.91	3.94	3.96	3.96
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0	0	0	0	0
ORP	mV		29.1	28.7	6.2	-10.1	-29.9	55.3	-25.9	10.3	70.3	9.1	-5.9
pH	s.u.		6.37	6.66	6.59	6.67	6.66	6.71	6.75	6.91	6.83	7.01	7.05
PID	ppm		0.5	0.6	0.9	1.7	1	0	0	0	0	0	0
CH ₄	% lcl		0	1	4	7	0	0	0	0	0	0	0
CH ₄	%		0	0.05	0.2	0.35	0	0	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0	0
CO	ppm		0	0	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.1	0.1
O ₂	%		20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
P-1A			8:00	11:00	13:15	8:40	10:20	10:50	9:50	10:50	10:15	11:01	10:15
Depth to Water	ft		3.66	3.58	3.62	3.6	3.55	3.65	3.69	3.73	3.75	3.85	3.85
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0	0	0	0	0
ORP	mV		-18.4	-38.9	-76.9	-66.5	-26.1	-13.7	-67.4	-20.1	60.2	-4.2	38.5
pH	s.u.		6.02	6.43	6.3	6.55	6.02	6.73	6.54	6.59	6.75	6.89	6.51
PID	ppm		0	0	0	0.7	0	0.1	0.1	16.2	39.3	4.3	1.1
CH ₄	% lcl		0	1	4	5	0	0	0	0	0	0	0
CH ₄	%		0	0.05	0.2	0.25	0	0	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0	0
CO	ppm		0	0	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.2	0.3
O ₂	%		20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	5/20/2021	5/25/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes
CDM-17			14:50	11:05	11:05	11:15	12:35	11:20	12:30	11:30		11:40		
Depth to Water	ft		4.05	4.08	-	4.01	3.88	4.05	4.11	4.08	4.11	3.82	3.9	
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0.14	0.88	0.72	0.43	0.93	
ORP	mV		-24.3	-26.8	-24.9	-39.3	-17	-46.9	-35.6	192.2	231.2	240	204.7	
pH	s.u.		7.37	7.13	7.03	7.29	7.16	6.73	7.5	6.94	6.96	6.35	6.88	
PID	ppm		0	0	-	0	0	0	0.1	0	0	0.2	0.2	
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0	
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0	
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		0.1	0	-	0	0.1	0.1	0	0.1	0.1	0.2	0.2	
O ₂	%		20.9	20.9	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	
P-1A			12:40	11:05	11:05	10:20	10:48	9:05	11:33	10:11	10:40	10:45	10:40	
Depth to Water	ft		3.88	3.9	-	3.91	3.85	3.91	4.01	3.95	3.98	3.75	3.8	
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0.3	0.58	1.13	0.48	0.47	
ORP	mV		-32.3	-20.6	-25.8	-16.1	33.3	-34.3	-2.4	146.2	193.5	219.3	177.7	
pH	s.u.		6.24	6.35	6.47	6.49	6.64	7.06	6.85	6.8	6.73	6.33	6.72	
PID	ppm		0.6	0.3	-	4.9	5.7	0.9	1.1	3.7	1	2.4	5.5	
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0	
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0	
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		0.2	0.2	-	0.2	0.3	0.1	0.2	0.1	0.1	0.2	0.2	
O ₂	%		20.9	20.9	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/20/2021	4/21/2021	4/22/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/14/2021	5/17/2021
AGI-14			8:05	11:00	13:21	8:40	10:20	10:50	9:50	11:00	10:23	11:01	10:15
Depth to Water	ft		2.61	2.32	2.49	2.6	2.35	2.64	2.61	2.55	2.55	2.71	2.7
Dissolved Oxygen	mg/L		2.41	0	0	0	0	0	0	0	0	0	0
ORP	mV		-48.6	-50.1	-72.3	-86.4	-59.4	-35.3	-54.1	-42.5	36.9	-45.5	-10.5
pH	s.u.		6.32	6.69	6.45	6.66	6.58	6.76	6.45	6.59	6.56	6.86	6.8
PID	ppm		0	87	118.6	80.2	382.4	264.8	218.1	165.4	250.2	175.1	81.8
CH ₄	% lcl		0	0	4	3	0	0	0	0	0	0	0
CH ₄	%		0	0	0.2	0.15	0	0	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0	0
CO	ppm		0	0	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.1	0.6
O ₂	%		20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
B-29			8:16	11:30	13:29	9:10	10:36	10:30	10:05	11:13	10:30	11:15	10:30
Depth to Water	ft		3.11	3.01	2.97	3.11	3.1	3.45	3.2	3.15	3.35	3.33	3.25
Dissolved Oxygen	mg/L		0.31	0	0	0	0	0	0	0	0	0	0
ORP	mV		-68.2	-52.8	-108.6	-62.4	-52.6	4.5	-40.2	-6.3	67.9	-7.3	4.3
pH	s.u.		6.12		6.27	6.29	6.15	6.17	6.08	6.21	6.24	6.23	6.08
PID	ppm		0.1	0	0.2	0.2	0.1	0.1	0.2	0.1	0	0.4	0.2
CH ₄	% lcl		12	3	17	28	13	75	100	23%	100	52.4	100
CH ₄	%		0.6	0.15	0.85	1.4	0.65	3.75	5	0.0115	5	2.62	5
H ₂ S	ppm		1.5	2.5	0	2.5	4	5	2.5	2.5	3.5	1.5	3.5
CO	ppm		0	0	0	0	0	1	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	15.5	12.4
O ₂	%		18.8	19.8	17.1	13.3	13.5	13.5		16.5	14.3	11.9	15.5

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	5/20/2021	5/25/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes
AGI-14			12:40	11:05	11:05	10:30	10:48	9:05		10:11	10:40	10:45	10:40	
Depth to Water	ft		2.74	2.8		3.65	2.21	2.55	3.45	2.45	2.51	2.15	2.33	
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0.95	0.76	1.34	0.27	0.38	
ORP	mV		-44.8	-43.2	-58.6	-35.8	15.7	-59.4	-24.3	155.2	218.8	220.9	171.5	
pH	s.u.		6.8	6.39	6.54	6.77	6.79	7.11	7.04	6.54	6.45	6.47	6.66	
PID	ppm		126	163.9	-	155.7	107.4	194.2	174.2	6.6	53.0	8.6	42.9	
CH ₄	% lel		0	0		0	0	0	0	0	0	0	0	
CH ₄	%		0	0	0	0	0	0	0	0	0	0	0	
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		0.5	0.1	-	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.3	
O ₂	%		20.9	20.9	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	
B-29			12:57	11:05	11:05	10:30	10:48		11:55	10:40	11:10			
Depth to Water	ft		3.35	3.35	-	2.35	3.55	3.3	3.33	3.34	3.23	3.3	3.05	
Dissolved Oxygen	mg/L		0	0	0	0	0	0	1.02	0.65	0.29	0.5	0.63	
ORP	mV		-23.9	-35.4	-36	-19.4	20.8	-27.1	-71	191.6	58.1	233.7	222.6	
pH	s.u.		6.28	6.29	6.26	6.33	6.45	6.65	6.69	5.94	5.96	6.45	6.39	
PID	ppm		0	0.6	-	0.1	0	0.1	0.1	0.1	0.1	0.3	0.3	
CH ₄	% lel		100	100	100	100	100	100	100	100	100	100	100	
CH ₄	%		5	35.3	-	30	32	36	21.5	30	21	25	16	
H ₂ S	ppm		3.5	25	-	2	0.5	0.5	3.5	0.5	2.5	3.5	2.5	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		16.2	15.8	-	4	12.5	3	4.2	3.2	0.1	3.4	8.4	
O ₂	%		15.4	15.3	-	17.7	11.8	9.2	15.6	11.6	11.5	15.5	16.5	

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/20/2021	4/21/2021	4/22/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/14/2021	5/17/2021
SP-06			8:24	11:30	13:40	2:87	10:36	10:30	10:05	11:13	10:30	11:15	10:30
Depth to Water	ft		3.34	3.2	3.1		4.01	2.91	3.52	3.49	3.61	3.12	3.55
Dissolved Oxygen	mg/L		0.31	0	0	0	0	0	0	0	0	0	0
ORP	mV		2.9	-42.4	-69.2	-43.9	-36	31.5	-35.4	-5.5	46.4	-7.4	14.5
pH	s.u.		5.91	5.97	6.09	6.11	6.02	5.86	5.71	5.95	6.32	6.06	5.9
PID	ppm		0	0	0.3	0.2	0.1	0	0.2	0.6	0	0.6	0.5
CH ₄	% lcl		1	1	4	5	0	0	0	0	0	0	0
CH ₄	%		0.05	0.05	0.2	0.25	0	0	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0.5	0
CO	ppm		0	0	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.3	0.6
O ₂	%		20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9
SP-04			8:32	11:30	13:50	9:10	10:54	10:30	10:05		10:30	11:15	10:30
Depth to Water	ft		3.05	2.68	2.85	4.25	3.95	2.98	3.05	-	3.1	3.09	3.1
Dissolved Oxygen	mg/L		0.91	0	0	0	0	0	0	-	0	0	0
ORP	mV		22.2	13.6	-32.8	-12.3	-27.5	47.1	-4.3	-	68.9	10.3	4.5
pH	s.u.		5.85	6.47	6.27	6.41	6.57	6.75	6.43	-	7.48	6.75	6.58
PID	ppm		0	0	0	0	0	0	0	-	0	0.1	0
CH ₄	% lcl		0	2	4	5	0	0	0	-	0	0	0
CH ₄	%		0	0.1	0.2	0.25	0	0	0	-	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	-	0	0	0
CO	ppm		0	0	0	0	0	0	0	-	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0	0.1
O ₂	%		20.9	20.9	20.9	20.9	20.9	20.9	20.9	-	20.9	20.9	20.9

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	5/20/2021	5/25/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes
SP-06			12:57	11:05	11:05	10:40	10:48			10:33	11:10			
Depth to Water	ft		3.37	3.61	-	3.55	3.35	3.22	3.41	3.41	3.35	3.13	3.12	
Dissolved Oxygen	mg/L		0	0	0	0	0	0	1.31	0.99	0.45	1.06	0.61	
ORP	mV		-23.2	-39.9	-40.5	-25.1	5.8	-38.3	-11.2	178.3	66.4	244	216.5	
pH	s.u.		6.36	6.02	5.87	6.07	6.76	6.46	6.61	5.76	5.80	6.1	5.95	
PID	ppm		0	0.4	-	0.7	0	0	0.5	0.7	1.1	1.1	2.5	
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0	
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0	
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0.5	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		0.4	0.6	-	0.1	0.2	0.1	0.1	0.2	0.4	0.1	0.7	
O ₂	%		20.9	20.9	-	20.9	20.9	20.9	20.9	20.9	20.2	19.3	19.4	
SP-04			13:15	11:05	11:05	10:40	10:48				11:10			
Depth to Water	ft		3.15	3.12	-	3.1	3.75	2.85	3.1	2.95	2.99	2.7	3.73	5/6 - Well inaccessible due to truel
Dissolved Oxygen	mg/L		0	0	-	0	0	0	0.66	1.27	0.18	0.56	0.79	
ORP	mV		-17.8	-28.8	-24.3	-41.3	-10.5	-75.7	-54	58.8	36.6	212.5	187.4	
pH	s.u.		7.17	6.97	6.59	7.15	7.55	7.42	7.47	5.99	6.30	6.21	7.12	
PID	ppm		0	0	-	0	0	0	0	0	0	0	0	
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0	
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0	
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		0.1	0.1	-	0.1	0.1	0	0.1	0.1	0.1	0.1	0.2	
O ₂	%		20.9	20.9	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/20/2021	4/21/2021	4/22/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/14/2021	5/17/2021
CDM-21			8:45	11:15	14:00	9:30	10:54	10:30	10:25	11:25	11:00	11:30	10:46
Depth to Water	ft		3.16	3	3.06	3.16	3.05	3.06	3.18	3.13	3.18	3.21	3.25
Dissolved Oxygen	mg/L		0.02	0	0	0	0	0	0	0	0	0	0
ORP	mV		-35.6	-45	-75.4	-45.9	-45.7	19	-35.8	-1.9	60.5	-3.8	-4.5
pH	s.u.		6.17	6.39	6.45	6.4	6.52	6.55	6.52	6.76	7.12	6.71	6.41
PID	ppm		0	2.2	0	0	0	0	0	0	0	0	0
CH ₄	% lcl		14	2	7	5	0	0	0	0	0	0	0
CH ₄	%		0.7	0.1	0.35	0.25	0	0	0	0	0	0	0
H ₂ S	ppm		0	0	0	0	0	0	0	0	0	0	0
CO	ppm		0	3	0	0	0	0	0	0	0	0	0
CO ₂	%		-	-	-	-	-	-	-	-	-	0.2	3.4
O ₂	%		17.4	18.7	15	13.7	16.4	16.5	18.5	16.4	19	17.4	16

Table 3
Monitoring Well Field Data
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	5/20/2021	5/25/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes
CDM-21			14:26	11:05	11:05	10:55	10:48	11:15	12:00	11:20	11:45		11:15	
Depth to Water	ft		3.23	3.3		3.13	3.05	3.09	3.06	3.11	3.15	2.83	3.91	
Dissolved Oxygen	mg/L		0	0	0	0	0	0	0.65	1.56	0.26	0.42	0.76	
ORP	mV		-54.4	-51.3	-48.2	-49.5	-33.4	-60.1	-19.5	19.7	243.8	225.4	245.6	
pH	s.u.		7.36	6.45	6.5	7.3	7.1	7.68	7.1	6.68	6.74	6.69	6.09	
PID	ppm		0	0	-	0	0	0	0	0.1	0.1	0.3	0.1	
CH ₄	% lel		0	0	-	0	0	0	0	0	0	0	0	
CH ₄	%		0	0	-	0	0	0	0	0	0	0	0	
H ₂ S	ppm		0	0	-	0	0	0	0	0	0	0	0.5	
CO	ppm		0	0	-	0	0	0	0	0	0	0	0	
CO ₂	%		2.7	0.1	-	1.7	0.1	0.1	0.1	0.2	0.2	0.2	0.2	
O ₂	%		19.1	10.6		11.1	15.8	3	3.7	10.3	11.5	12.3	15.8	

Notes

Depth to water collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP collected using a Hanna water quality meter, calibrated daily and deconned between wells.
 VOC concentration data collected with a photoionization detector, calibrated weekly.
 Vapor composition data collected with a GEM, calibrated weekly.

Acronyms

ft - feet
 mg/L - milligrams per liter
 mV - millivolts
 ORP - Oxidative reduction potential
 ppm - parts per million
 s.u. - standard units
 VOCs - Volatile organic compounds

Table 4
Vapor Pin Field Data
Biosparge Pilot Test
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/19/2021	4/21/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/12/2021	5/14/2021	5/17/2021	5/20/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes	
VP-DPE3																									
Pressure	in wc		0	-	-0.003	0	0	0.001	0.028	0.001	0.042	0.031	0.003	0.002	0.001	0	0	0	0	-	-	-	-	5/12- New vapor pin installed	
VOCs	ppm		0	-	0	low flow	low flow	low flow	low flow	low flow	2.5	3.1	0	0	0	0	0	0	0.6	0.2	0.2	0.2	0.2	5/14- Vapor pin clogged, moved by NT	
CH ₄	% lel		0	-	low flow	low flow	low flow	low flow	low flow	low flow	0	0	0	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0.5	-	low flow	low flow	low flow	low flow	low flow	low flow	0	0	0	0.5	0	0	0	0	0	0	0	0	0		
CO	ppm		6	-	low flow	low flow	low flow	low flow	low flow	low flow	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	low flow	low flow	low flow	low flow	low flow	low flow	-	1.3	1.1	1.1	0.8	1	0.6	0.4	0.9	0.1	0.1	0.1	0.7		
O ₂	%		21.3	-	low flow	low flow	low flow	low flow	low flow	low flow	20	20.1	19.4	19.6	20.9	20.9	20.9	20.9	20.5	19.2	19.8	20.3	19.3		
VP-DPE6																									
Pressure	in wc		0	-	0.002	0	0.001	0	0.001	1.225	0.004	0	low flow	0	0.001	0.001	0	0	0.001	-	-	-	-	5/16- data logger switched to vp6 at 10:00	
VOCs	ppm		0	-	0.8	0	0	0	0	0	0	0	low flow	0	0	0	0	0	0.2	0.8	1.1	0.9	0.9		
CH ₄	% lel		0	-	8	0	0	0	0	0	0	0	low flow	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0.5	-	0	0.5	0	0	0.5	0	0	0.5	low flow	0	0.5	0.5	0	0	0.5	0	0	0	0.5		
CO	ppm		0	-	0	0	0	0	0	0	0	0	low flow	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	0.7	low flow	0.5	0.4	0.5	0.7	0.6	0.5	1.4	1.6	2	1.6		
O ₂	%		20.9	-	18.6	20.2	18.3	20.6	20.8	low flow	low flow	19.4	low flow	20.6	20.9	20.9	20.9	20.9	20.7	18.4	20.3	17.2	17.4		
VP-DPE9																									
Pressure	in wc		0	-	-0.007	0	-45	0	0	0	0	low flow	-	-	-	-	-	-	-	-	-	-	-	5/14- No flow at vapor pin. Vapor Pin moved by NT	
VOCs	ppm		0	-	0.9	0.3	0	low flow	low flow	low flow	low flow	low flow	-	-	-	-	-	-	-	-	-	-	-		
CH ₄	% lel		0	-	low flow	low flow	low flow	low flow	low flow	low flow	low flow	low flow	-	-	-	-	-	-	-	-	-	-	-		
H ₂ S	ppm		0	-	low flow	low flow	low flow	low flow	low flow	low flow	low flow	low flow	-	-	-	-	-	-	-	-	-	-	-		
CO	ppm		1	-	low flow	low flow	low flow	low flow	low flow	low flow	low flow	low flow	-	-	-	-	-	-	-	-	-	-	-		
O ₂	%		21.3	-	low flow	low flow	low flow	low flow	low flow	low flow	low flow	low flow	-	-	-	-	-	-	-	-	-	-	-		
VP-IW3																									
Pressure	in wc		0	-	0.013	0.862	0.02	0.15	0.098	0.031	0.035	0.031	0.018	0.018	0.016	0.135	0.03	0.013	0.022	-	-	-	-		
VOCs	ppm		0	-	0	0	0	0.1	0	0	0	0	0.1	0	0	0	0	0	0.1	0	0.1	0.1	0.2		
CH ₄	% lel		0	-	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0.5	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO	ppm		0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	0	0.1	0	0.1	0	0.1	0.1	0.1	0.1	0.1	0.2	0.1		
O ₂	%		21.8	-	20.9	20.9	20.9	20.9	20.9	20.9	0	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9		
VP-IW6																									
Pressure	in wc		0	-	0.008	-0.49	0	0.006	0	0	0	0	0.016	0.014	0	0.008	0	0	0	-	-	-	-		
VOCs	ppm		0	-	0.3	0	0	0	0	0	0	0	0.1	0	0	0	0	0.1	0.1	0	0.1	0.1	0.1		
CH ₄	% lel		0	-	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO	ppm		0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	0	0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2		
O ₂	%		21.5	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9		

Table 4
Vapor Pin Field Data
Biosparge Pilot Test
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/19/2021	4/21/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/12/2021	5/14/2021	5/17/2021	5/20/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes	
VP-1W9																									
Pressure	in wc		0	-	0.011	0.007	0.005	0.027	0	0	0	0.013	0.017	0.014	0.015	0.046	0.011	0.011	0.012	-	-	-	-		
VOCs	ppm		0	-	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0.1	0	0	0	0.1	0.1		
CH ₄	% lel		0	-	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		0.5	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO	ppm		0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	0	0.2	0.1	0	0.1	0.2	0	0	0.1	0.1	0.1	0.1		
O ₂	%		21.3	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9		
VP-CO2-01 Collected once per week																									
Pressure	in wc		-	0.006	0.014	0.45	0.005	0.051	0.004	0.001	0.009	0.009	0.004	0.003	0	0.063	0.018	0.002	0.002	-	-	-	-		
VOCs	ppm		-	-	-	-	-	0	0	0	0	0.1	0	0	0	0	0	0.2	0.2	0	0.1	0	0		
CH ₄	% lel		-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		-	-	-	-	-	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0		
CO	ppm		-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0		
O ₂	%		-	-	-	-	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9		
VP-CO2-03 Collected once per week																									
													13:30						13:20						
Pressure	in wc		-	0.003	-0.008	0	0	0.002	0	0	0	0.001	0.001	0	0	0	0.001	0	0.001	-	-	-	-		
VOCs	ppm		-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CH ₄	% lel		-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
H ₂ S	ppm		-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO	ppm		-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	0	0.1	0	0	0.1	0	0	0	0	0.2	0.2	0.2	0.1	
O ₂	%		-	-	-	-	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9		
VP-CO2-05 Collected once per week																									
Pressure	in wc		-	-0.002	0.17	0.003	0.001	0	0	0.002	0.002	0	0	0	0	0.002	0	0	0.002	-	-	-	-		
VOCs	ppm		-	-	-	-	-	17.6	0	0	0	0	0	9.7	0	6	0	0	7.1	0.7	0.2	0.3	0.1	5/4- low flow alarm after PID read	
CH ₄	%		-	-	-	-	-	low flow	0	0	0	0	0	0	0	0	0	0	0	10.1	6	0	14.4		
H ₂ S	ppm		-	-	-	-	-	low flow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO	ppm		-	-	-	-	-	low flow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
CO ₂	%		-	-	-	-	-	-	-	-	-	2	1.5	1.1	0.9	0	1	1.1	1.7	4.1	0	4.2	6.9		
O ₂	%		-	-	-	-	-	low flow	20.9	20.9	20.9	20.9	20.9	19.6	19.8	18.7	20.8	20.8	18.5	9.8	18.4	20.9	18.6		
VP-CO2-07																									
Pressure	in wc		-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5/4- Vapor pin installed loose	
VOCs	ppm		-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CH ₄	% lel		-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
H ₂ S	ppm		-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
CO	ppm		-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
O ₂	%		-	-	-	-	-	20.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Table 4
Vapor Pin Field Data
Biosparge Pilot Test
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	4/19/2021	4/21/2021	4/23/2021	4/26/2021	4/28/2021	5/4/2021	5/6/2021	5/11/2021	5/12/2021	5/14/2021	5/17/2021	5/20/2021	5/25/2021	5/27/2021	5/28/2021	6/1/2021	6/3/2021	6/9/2021	6/11/2021	6/16/2021	6/18/2021	Notes		
VPGS-02-6'																										
13:15																										
Pressure	in wc		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0.012	0.003	0	-	-	-	-			
VOCs	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0.1	0	0	0	0	0.1	0.1			
CH ₄	% lel		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
H ₂ S	ppm		-	-	-	-	-	-	-	-	-	0.5	0	0.5	0	0	0	0	0	0	0	0	0			
CO	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
CO ₂	%		-	-	-	-	-	-	-	-	-	0	0.1	0.1	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.2	0		
O ₂	%		-	-	-	-	-	-	-	-	-	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9	20.9			
VPGS-03-6'																										
Pressure	in wc		-	-	-	-	-	-	-	-	-	0	0	0	0.001	0	0	0	0	-	-	-	-			
VOCs	ppm		-	-	-	-	-	-	-	-	-	0	0	23.3	0	0	0	0	3.4	0.6	0.7	1.2	1.8			
CH ₄	% lel		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
H ₂ S	ppm		-	-	-	-	-	-	-	-	-	1	0	0	0	0	0	0	0	0	0	0	0.5			
CO	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
CO ₂	%		-	-	-	-	-	-	-	-	-	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.2	0.1			
O ₂	%		-	-	-	-	-	-	-	-	-	20.9	20.9	20.8	20.9	20.9	20.9	20.9	20.9	20.9	20.5	20.9	20.9			
VP-BG1																										
Pressure	in wc		-	-	-	-	-	-	-	-	-	0	0.003	0	0	0	0	0	0	-	-	-	-			
VOCs	ppm		-	-	-	-	-	-	-	-	-	0	0	15.9	0	0	0	0	8.3	1.7	1.6	1.6	0.5			
CH ₄	% lel		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
H ₂ S	ppm		-	-	-	-	-	-	-	-	-	1	0	0	0	0	0	0.5	0.5	0	0	0	0.5			
CO	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
CO ₂	%		-	-	-	-	-	-	-	-	-	2.3	3.2	2.9	1.4	1.8	3	2.4	2.4	1.5	1.5	0.6	0.7			
O ₂	%		-	-	-	-	-	-	-	-	-	18.9	16.3	17.9	18.9	18.5	15.5	16.9	17.5	20.5	20.5	18.7	20.5			
VP-BG2																										
Pressure	in wc		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	-	-	-	-			
VOCs	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0.3	0.2	0.1	0.1	0.2			
CH ₄	% lel		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
H ₂ S	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0.5			
CO	ppm		-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0			
CO ₂	%		-	-	-	-	-	-	-	-	-	4.3	3.7	3.8	2.5	2.4	3	2.1	1.8	0.3	1	1	0.5			
O ₂	%		-	-	-	-	-	-	-	-	-	16.5	20	17.8	17.6	17.6	19.9	19.8	19.2	20.9	19.6	20.1	20.5			

Notes

Monitoring well data collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.

Pressure data collected with a manometer.

VOC concentration data collected with a photoionization detector, calibrated weekly.

Vapor composition data collected with a GEM 5000, calibrated weekly.

Acronyms:

in wc - inches water column

ppm - parts per million

VOCs - Volatile organic compounds

Table 5
Injection Well Analytical Data
Lilyblad Cleanup Site, Tacoma, Washington

	Units	CAS Number	CUL	RW-12-G		RW-19-G		RW-47-D			
				4/15/2021 9:45	6/4/2021 9:52	4/15/2021 10:30	6/4/2021 10:40	4/15/2021 12:30	6/4/2021 12:20		
Field Parameters											
Dissolved Oxygen	mg/L	-	-	0.003	8.320	0.00	1.220	8.66	5.810		
pH	s.u.	-	-	7.15	8.03	6.22	3.26	6.27	3.26		
Conductivity	ms/cm	-	-	2.37	3.062	0.885	2.967	0.599	2.212		
Oxidation Reduction Potential	mV	-	-	-114	180	-76	394.6	-77	213.7		
Turbidity	NTU	-	-	40.5	4.1	18.3	20.8	55.1	22.6		
Temperature	C	-	-	9.64	13.6	12.11	16.0	12.95	16.1		
Volatile Organic Compounds Method 8260D											
1,1-Dichloroethane	µg/L	75-34-3	52000	3	<0.22 U	0.61	J	<0.22 U	<4.4 U	<4.4 U	
1,2,4-Trimethylbenzene	µg/L	95-63-6	26000	<0.61 U	<0.61 U	1.7	J	<0.61 U	38	J	<12 U
1,2-Dichlorobenzene	µg/L	95-50-1	-	2.1	<0.46 U	<0.46 U	J	<0.46 U	20	J	<9.2 U
1,3,5-Trimethylbenzene	µg/L	108-67-8	-	<0.55 U	<0.55 U	0.63	J	<0.55 U	12	J	<11 U
1,3-Dichlorobenzene	µg/L	541-73-1	-	<0.48 U	<0.48 U	<0.48 U	J	<0.48 U	<9.6 U	J	<9.6 U
1,4-Dichlorobenzene	µg/L	106-46-7	4.86	2.6	<0.46 U	<0.46 U	J	<0.46 U	12	J	<9.2 U
Benzene	µg/L	71-43-2	22.7	2.2	<0.24 U	<0.24 U	J	<0.24 U	<4.8 U	J	<4.8 U
Chlorobenzene	µg/L	108-90-7	-	<0.44 U	<0.44 U	<0.44 U	J	<0.44 U	37	J	<8.8 U
Chloroethane	µg/L	75-00-3	-	9.2	1.9	14	J	<0.35 U	<7.0 U	J	<7.0 U
Chloroform	µg/L	67-66-3	-	<0.26 U	<0.26 U	<0.26 U	J	<0.26 U	<5.2 U	J	<5.2 U
Cis-1,2-Dichloroethene	µg/L	156-59-2	5200	7	<0.35 U	0.44	J	<0.35 U	<7.0 U	J	<7.0 U
Cumene	µg/L	98-82-8	-	0.61	J	<0.44 U	J	<0.44 U	<8.8 U	J	<8.8 U
Ethylbenzene	µg/L	100-41-4	6910	0.52	J	<0.5 U	J	<0.5 U	<10.0 U	J	<10.0 U
m,p-Xylene	µg/L	179601-23-1	-	<0.53 U	<0.53 U	<0.53 U	J	<0.53 U	<11.0 U	J	<11.0 U
Naphthalene	µg/L	91-20-3	4940	<0.93 U	<0.93 U	<0.93 U	J	<0.93 U	<19.0 U	J	<19.0 U
n-Butylbenzene	µg/L	104-51-8	-	<0.44 U	<0.44 U	<0.44 U	J	<0.44 U	<8.8 U	J	<8.8 U
n-Propylbenzene	µg/L	103-65-1	-	<0.5 U	<0.5 U	<0.5 U	J	<0.5 U	<10.0 U	J	<10.0 U
o-Xylene	µg/L	95-47-6	-	0.42	J	<0.39 U	J	<0.39 U	12	J	<7.8 U
p-Isopropyltoluene	µg/L	99-87-6	-	<0.28 U	<0.28 U	<0.28 U	J	<0.28 U	<5.6 U	J	<5.6 U
Sec-Butylbenzene	µg/L	135-98-8	-	<0.49 U	<0.49 U	<0.49 U	J	<0.49 U	<9.8 U	J	<9.8 U
Tert-Butylbenzene	µg/L	98-06-6	-	<0.58 U	<0.58 U	<0.58 U	J	<0.58 U	<12.0 U	J	<12.0 U
Tetrachloroethene	µg/L	127-18-4	3.3	<0.41 U	<0.41 U	<0.41 U	J	<0.41 U	<8.2 U	J	<8.2 U
Toluene	µg/L	108-88-3	15000	<0.39 U	<0.39 U	0.57	J	<0.39 U	<7.8 U	J	<7.8 U
Trans-1,2-Dichloroethene	µg/L	156-60-5	-	0.84	J	<0.39 U	J	<0.39 U	<7.8 U	J	<7.8 U
Trichloroethene	µg/L	79-01-6	30	0.51	J	<0.26 U	J	<0.26 U	<5.2 U	J	<5.2 U
Vinyl Chloride	µg/L	75-01-4	2.4	3.7	<0.22 U	0.23	J	<0.22 U	<4.4 U	J	<4.4 U
Semivolatile Organic Compounds Method 8270E											
1,2-Dichlorobenzene		95-50-1	-	1.2	J	<0.048 U	J	<0.048 U	1.6	J	2.1
1,3-Dichlorobenzene		541-73-1	-	<0.38 U	J	<0.039 U	J	<0.038 U	1.5	J	0.11
1,4-Dichlorobenzene		106-46-7	4.86	1.5	J	<0.039 U	J	<0.038 U	1.1	J	1.1
1-Methylnaphthalene		90-12-0	-	<0.48 U	J	<0.048 U	J	<0.048 U	1.3	J	0.18
2,4-Dimethylphenol		105-67-9	-	<1.5 U	J	<0.15 U	J	<0.15 U	<0.77 U	J	<0.15 U
2,6-Dinitrotoluene		606-20-2	-	<4.8 U	J	<0.096 U	J	<0.096 U	<0.48 U	J	<4.8 U
2-Methylnaphthalene		91-57-6	22.5	<0.58 U	J	<0.058 U	J	<0.057 U	1.4	J	0.22
2-Nitrophenol		88-75-5	-	<0.67 U	J	<0.067 U	J	<0.067 U	<0.34 U	J	<0.067 U
Acenaphthene		83-32-9	-	<2.4 U	J	<0.048 U	J	<0.048 U	<0.24 U	J	<2.4 U
Benzoic Acid		65-85-0	-	<1.3 U	J	<1.3 U	J	<1.3 U	<6.4 U	J	<1.3 U
Benzyl Alcohol		100-51-6	-	<1.7 U	J	<0.17 U	J	<0.17 U	<0.86 U	J	<0.17 U
Butyl benzyl phthalate		85-68-7	-	<2.6 U	J	0.33	J	<1.3 U	<1.3 U	J	<0.26 U
Dibutyl phthalate		84-74-2	-	<1.8 U	J	1.1	J	<0.91 U	<0.91 U	J	1.3
Diethyl phthalate		84-66-2	-	<7.2 U	J	<1.4 U	J	0.54	J	<0.72 U	<7.2 U
Fluorene		86-73-7	-	<2.4 U	J	<0.048 U	J	<0.048 U	<0.24 U	J	<2.4 U
Isophorone		78-59-1	-	<0.96 U	J	<0.096 U	J	<0.096 U	<0.48 U	J	<0.096 U
m,p-Cresol (2:1 ratio)		15831-10-4	-	<0.96 U	J	<0.096 U	J	<0.096 U	<0.48 U	J	<0.096 U
Naphthalene		91-20-3	4940	<1.5 U	J	<0.15 U	J	<0.15 U	3.9	J	0.43
o-Cresol		95-48-7	-	<0.48 U	J	<0.048 U	J	<0.048 U	0.97	J	<0.048 U
Pentachlorophenol		87-86-5	3	<0.54 U	J	<0.17 U	J	<0.52 U	0.49	J	<1.7 U
Phenol		108-95-2	-	<3.5 U	J	<0.35 U	J	<0.34 U	<1.7 U	J	0.91
Volatile Petroleum Products											
NWTPH-Gx											
Gasoline	mg/L	86290-81-5	1	1.5	<0.1 U	0.74	<0.1 U	0.88	0.12		
Semivolatile Petroleum Products											
NWTPH-Dx											
#2 Diesel	mg/L	68476-34-6	1	24	3.1	7.4	2.1	4.1	4.2		
Motor Oil	mg/L		1	16	1.4	3.8	0.47	2.6	0.76		

Table 5
Injection Well Analytical Data
Lilyblad Cleanup Site, Tacoma, Washington

				RW-47-D DUP		GS-01		GS-02		GS-03	
	Units	CAS Number	CUL	4/15/2021 12:30	6/4/2021 12:20	4/15/2021 14:45	6/4/2021 14:35	4/15/2021 13:45	6/4/2021 13:50	4/15/2021 11:30	6/4/2021 11:03
Field Parameters											
Dissolved Oxygen	mg/L	-	-	-	5.810	0.13	4.93	0.00	1.18	0.07	1.82
pH	s.u.	-	-	-	3.26	6.67	4.43	6.79	2.75	6.50	3.47
Conductivity	ms/cm	-	-	-	2.212	0.748	3.409	0.374	9.189	1.00	6.598
Oxidation Reduction Potential	mV	-	-	-	213.7	50	333.7	49	391.3	45	332.0
Turbidity	NTU	-	-	-	22.6	13.1	12.2	23.8	50.3	3.7	18.5
Temperature	C	-	-	-	16.1	13.95	16.9	13.51	17.9	13.39	18.8
Volatile Organic Compounds Method 8260D											
1,1-Dichloroethane	µg/L	75-34-3	52000	<4.4	U	<4.4	U	<0.22	U	<0.22	U
1,2,4-Trimethylbenzene	µg/L	95-63-6	26000	40	J	23	J	<0.61	U	<0.61	U
1,2-Dichlorobenzene	µg/L	95-50-1	-	20	J	<9.2	U	<0.46	U	<0.46	U
1,3,5-Trimethylbenzene	µg/L	108-67-8	-	13	J	<11	U	<0.55	U	<0.55	U
1,3-Dichlorobenzene	µg/L	541-73-1	-	<9.6	U	<9.6	U	<0.48	U	<0.48	U
1,4-Dichlorobenzene	µg/L	106-46-7	4.86	13	J	9.6	J	<0.46	U	<0.46	U
Benzene	µg/L	71-43-2	22.7	<4.8	U	7.5	J	<0.24	U	<0.24	U
Chlorobenzene	µg/L	108-90-7	-	40	J	<8.8	U	<0.44	U	8.6	J
Chloroethane	µg/L	75-00-3	-	<7	U	<7	U	<0.35	U	<0.35	U
Chloroform	µg/L	67-66-3	-	<5.2	U	<5.2	U	<0.26	U	0.39	J
Cis-1,2-Dichloroethane	µg/L	156-59-2	5200	<7	U	<7	U	<0.35	U	0.4	J
Cumene	µg/L	98-82-8	-	<8.8	U	<8.8	U	<0.44	U	5.2	J
Ethylbenzene	µg/L	100-41-4	6910	<10	U	62	J	<0.5	U	<0.5	U
m, p-Xylene	µg/L	179601-23-1	-	<11	U	150	J	<0.53	U	<0.53	U
Naphthalene	µg/L	91-20-3	4940	<19	U	270	J	<0.93	U	<0.93	U
n-Butylbenzene	µg/L	104-51-8	-	<8.8	U	<8.8	U	<0.44	U	2.9	J
n-Propylbenzene	µg/L	103-65-1	-	<10	U	<10	U	<0.5	U	12	J
o-Xylene	µg/L	95-47-6	-	12	J	64	J	<0.39	U	<0.39	U
p-Isopropyltoluene	µg/L	99-87-6	-	<5.6	U	9.6	J	<0.28	U	<0.28	U
Sec-Butylbenzene	µg/L	135-98-8	-	<9.8	U	<9.8	U	<0.49	U	6	J
Tert-Butylbenzene	µg/L	98-06-6	-	<12	U	<12	U	<0.58	U	1.1	J
Tetrachloroethene	µg/L	127-18-4	3.3	<8.2	U	<8.2	U	<0.41	U	0.95	J
Toluene	µg/L	108-88-3	15000	<7.8	U	140	J	<0.39	U	<0.39	U
Trans-1,2-Dichloroethene	µg/L	156-60-5	-	<7.8	U	<7.8	U	<0.39	U	<0.39	U
Trichloroethene	µg/L	79-01-6	30	<5.2	U	<5.2	U	<0.26	U	<0.26	U
Vinyl Chloride	µg/L	75-01-4	2.4	<4.4	U	<4.4	U	<0.22	U	0.48	J
Semivolatile Organic Compounds Method 8270E											
1,2-Dichlorobenzene		95-50-1	-	13	J	1.6	J	<0.24	U	<0.047	U
1,3-Dichlorobenzene		541-73-1	-	1.2	J	0.091	J	<0.19	U	<0.038	U
1,4-Dichlorobenzene		106-46-7	4.86	7.8	J	0.86	J	<0.19	U	<0.038	U
1-Methylnaphthalene		90-12-0	-	1.1	J	0.2	J	<0.24	U	<0.047	U
2,4-Dimethylphenol		105-67-9	-	<0.78	U	<0.15	U	<0.77	U	<0.15	U
2,6-Dinitrotoluene		606-20-2	-	<0.49	U	<4.8	U	<0.48	U	0.77	J
2-Methylnaphthalene		91-57-6	22.5	1.2	J	0.22	J	<0.29	U	<0.057	U
2-Nitrophenol		88-75-5	-	<0.34	U	0.77	J	<0.34	U	<0.067	U
Acenaphthene		83-32-9	-	<0.24	U	<2.4	U	<0.24	U	<0.048	U
Benzoic Acid		65-85-0	-	<6.5	U	<1.3	U	<6.4	U	1.4	J
Benzyl Alcohol		100-51-6	-	<0.87	U	<0.17	U	<0.87	U	<0.17	U
Butyl benzyl phthalate		85-68-7	-	5.7	J	<0.26	U	<1.3	U	0.26	J
Dibutyl phthalate		84-74-2	-	<0.92	U	2	J	<0.91	U	2.3	J
Diethyl phthalate		84-66-2	-	<0.73	U	<7.2	U	<0.72	U	<0.14	U
Fluorene		86-73-7	-	<0.24	U	<2.4	U	<0.24	U	<0.047	U
Isophorone		78-59-1	-	<0.49	U	<0.096	U	<0.48	U	<0.096	U
m,p-Cresol (2:1 ratio)		15831-10-4	-	<0.49	U	<0.096	U	<0.48	U	<0.096	U
Naphthalene		91-20-3	4940	3.1	J	0.48	J	<0.77	U	<0.15	U
o-Cresol		95-48-7	-	<0.24	U	0.41	J	<0.24	U	<0.047	U
Pentachlorophenol		87-86-5	3	0.52	J	<1.7	U	0.62	J	<0.17	U
Phenol		108-95-2	-	<1.7	U	1	J	<1.7	U	<0.34	U
Volatile Petroleum Products											
NWTPH-Gx											
Gasoline	mg/L	86290-81-5	1	0.8	J	<0.1	U	<0.1	U	<0.1	U
Semivolatile Petroleum Products											
NWTPH-Dx											
#2 Diesel	mg/L	68476-34-6	1	4	J	4.9	J	1.5	J	2.7	J
Motor Oil	mg/L		1	2.6	J	0.72	J	1.3	J	1.1	J

Notes
 Bolded values indicate a detection.
 Highlighted values are above the Site clean up level.
 J- Estimated value. The analyte was present but less than reporting limit
 B- The same analyte is found in the associated blank
 U- The analyte is not detected above the detection limit

FIGURES



Legend

- *— Fence
- +— Rail Line
- Road
- Tax Lot
- ▭ Building
- Tank

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
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Site Map
 2244 Port of Tacoma Road,
 Tacoma, Washington

Geosyntec
 consultants

PNR0697 May 2020

Figure
1



Legend

- New Biosparge Well
- CO₂ Microcosm with Co-Located Vapor Pin
- Vapor Pin Location
- (with red border) Retrofitted DPE wells
- Pilot Study and Groundwater Monitoring Well
- ⊕ Groundwater Monitoring Well
- TPH as Gasoline > 1mg/l (GW CUL)
- Vinyl Chloride > 2.4 µg/l (GW CUL)
- 1,4-Dichlorobenzene > 4.86µg/l (GW CUL)
- #2 Diesel > 1mg/l (GW CUL)
- Motor Oil > 1mg/l (GW CUL)

Notes:
 CUL = Clean-up Level
 GW = Groundwater
 µg/l = micrograms per liter
 mg/l = milligrams per liter

Injection Locations

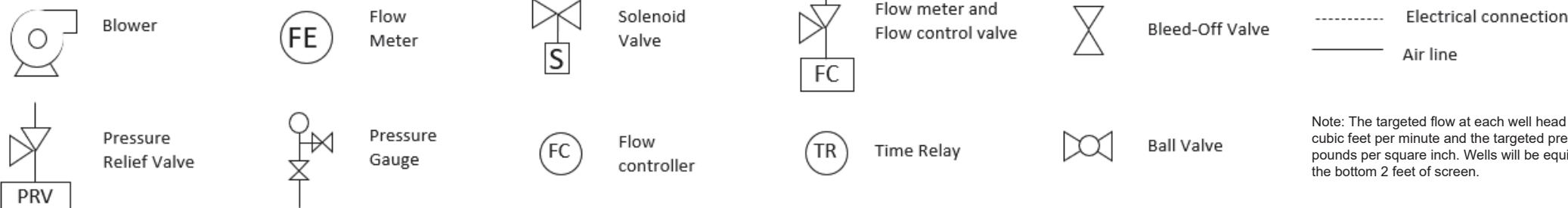
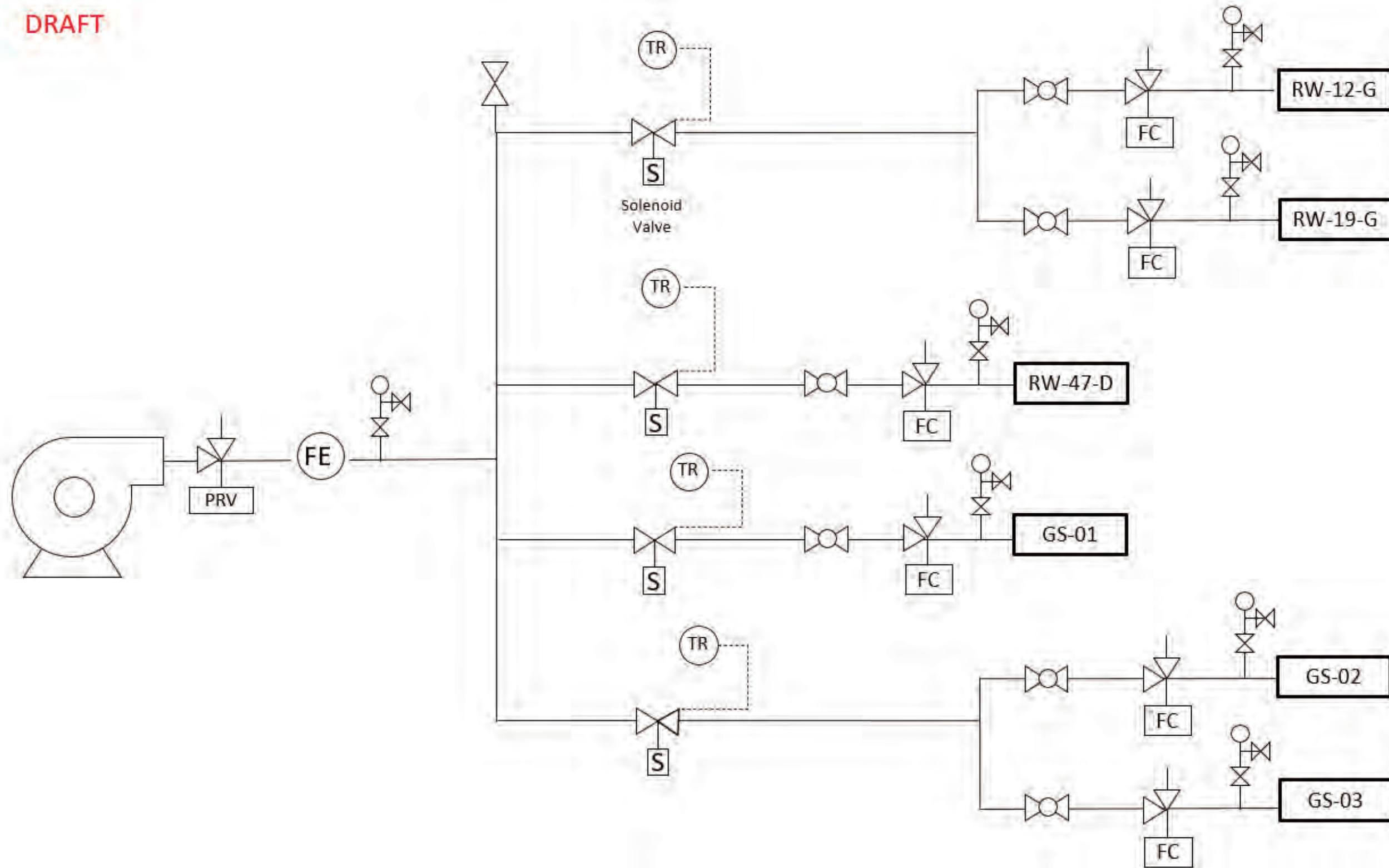
2244 Port of Tacoma Road,
Tacoma, Washington

Geosyntec
consultants

PNR0697 September 2021

Figure
2

DRAFT



Note: The targeted flow at each well head will be 5 to 10 standard cubic feet per minute and the targeted pressure will be 15 to 20 pounds per square inch. Wells will be equipped with packers to target the bottom 2 feet of screen.

Process and Instrumentation Diagram

2244 Port of Tacoma Road,
Tacoma, Washington

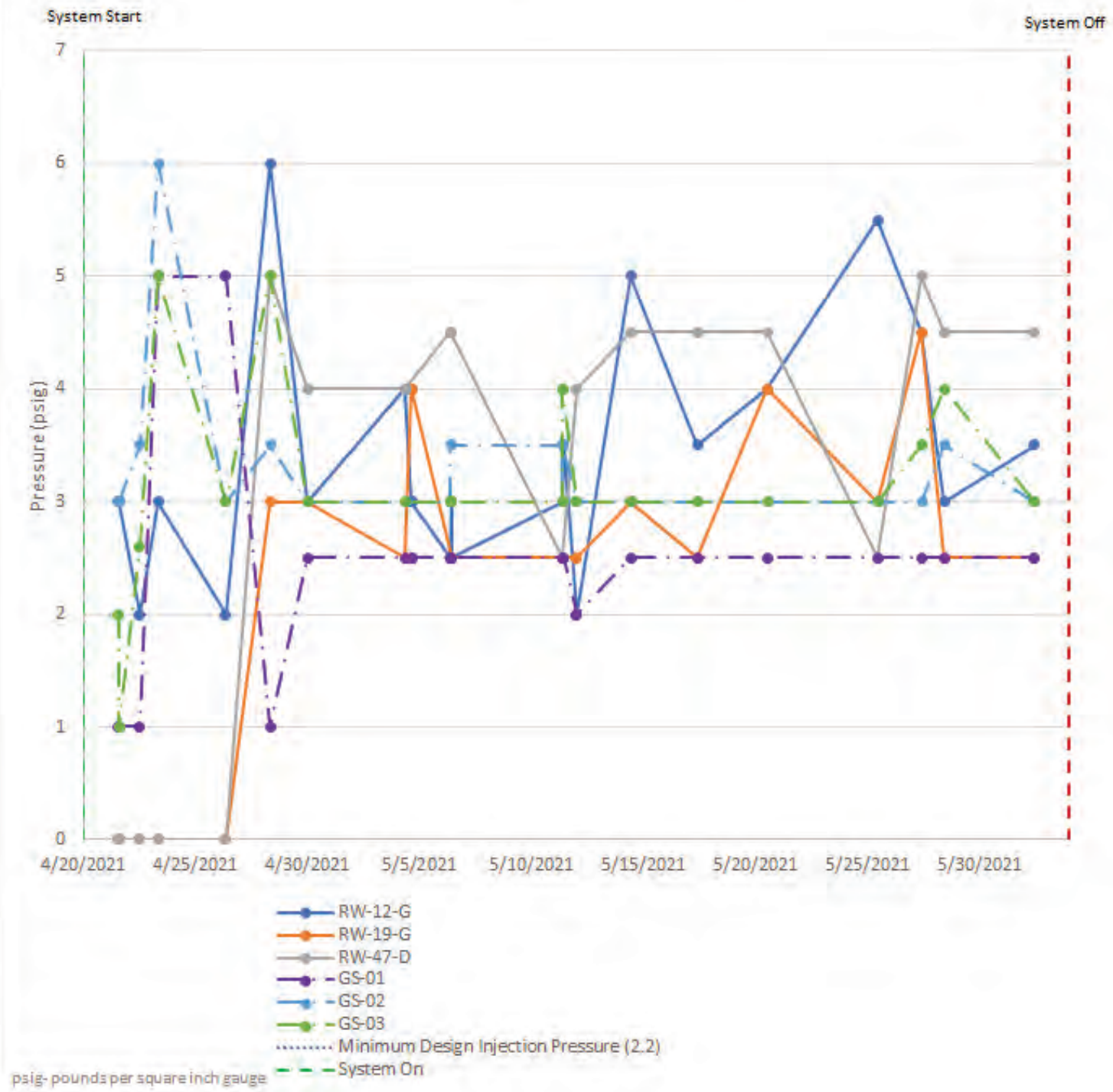
Geosyntec
consultants

Figure
3

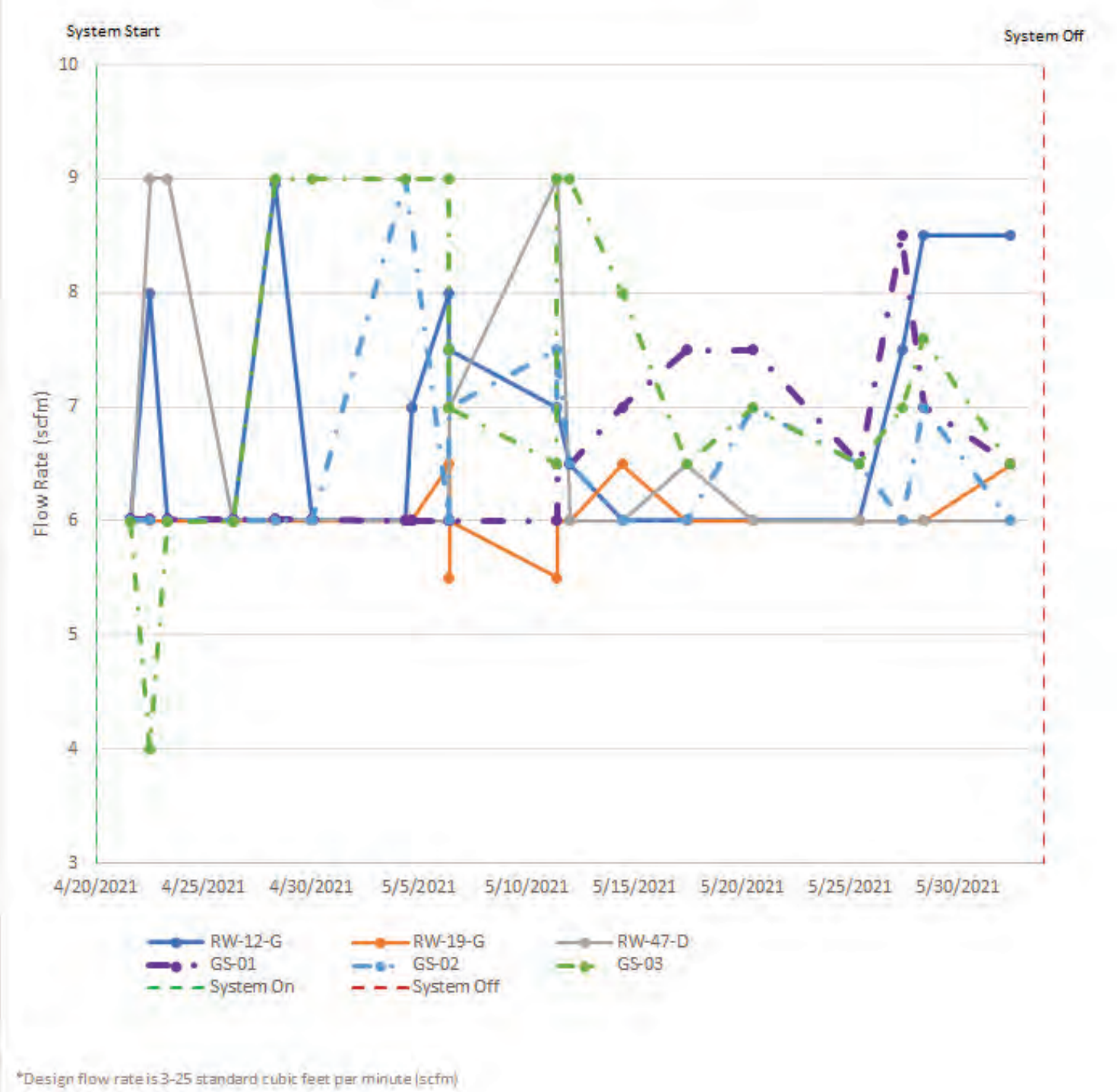
PNR0697

September 2021

Biosparge Injection Well Pressures Former Lilyblad Site, Tacoma WA



Biosparge Injection Well Flows Former Lilyblad Site, Tacoma WA



Flow and Pressure Data

2244 Port of Tacoma Road,
Tacoma, Washington



Figure

4

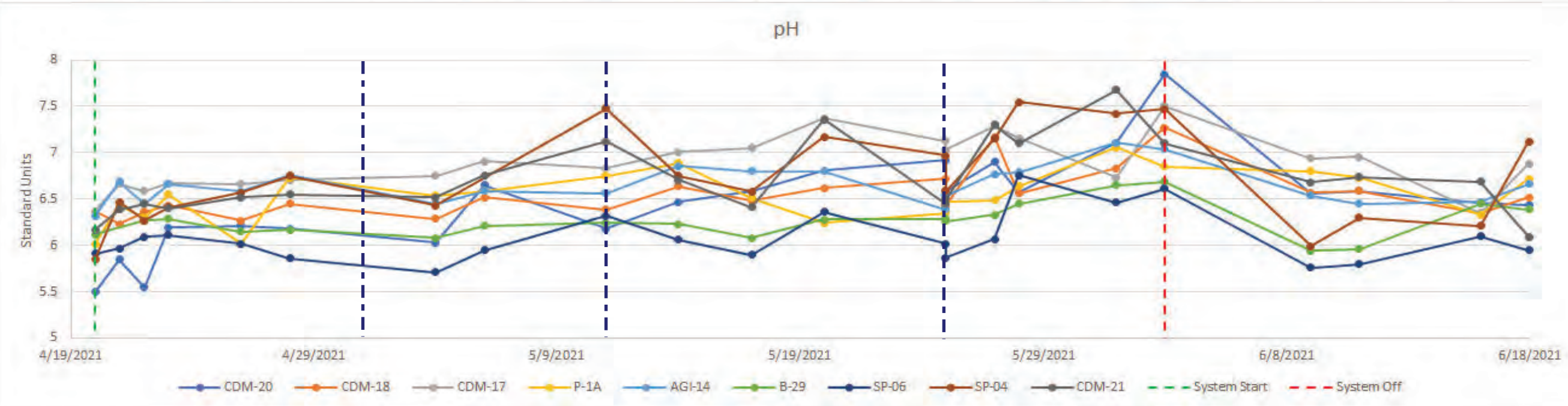
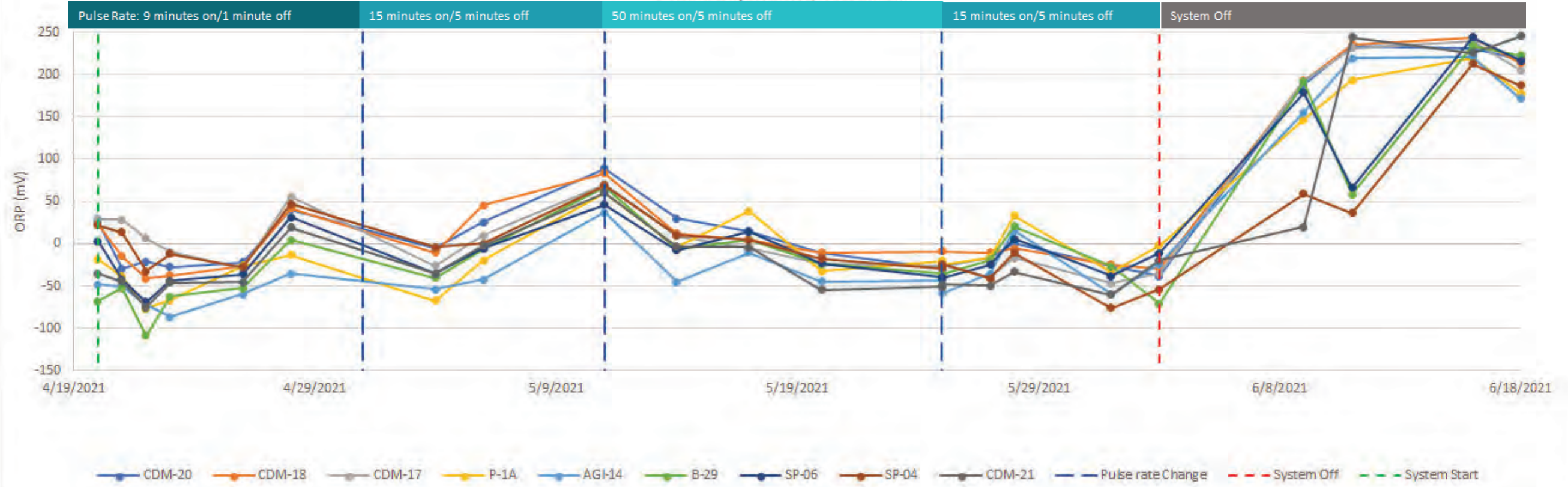
PNR0697

September 2021

Note: The targeted flow at each well head will be 5 to 10 standard cubic feet per minute and the targeted pressure will be 15 to 20 pounds per square inch. Wells will be equipped with packers to target the bottom 2 feet of screen.

ORP at Monitoring Wells

Former Lilyblad Site, Tacoma WA



Note: The targeted flow at each well head will be 5 to 10 standard cubic feet per minute and the targeted pressure will be 15 to 20 pounds per square inch. Wells will be equipped with packers to target the bottom 2 feet of screen.

Groundwater ORP and pH Readings

2244 Port of Tacoma Road, Tacoma, Washington

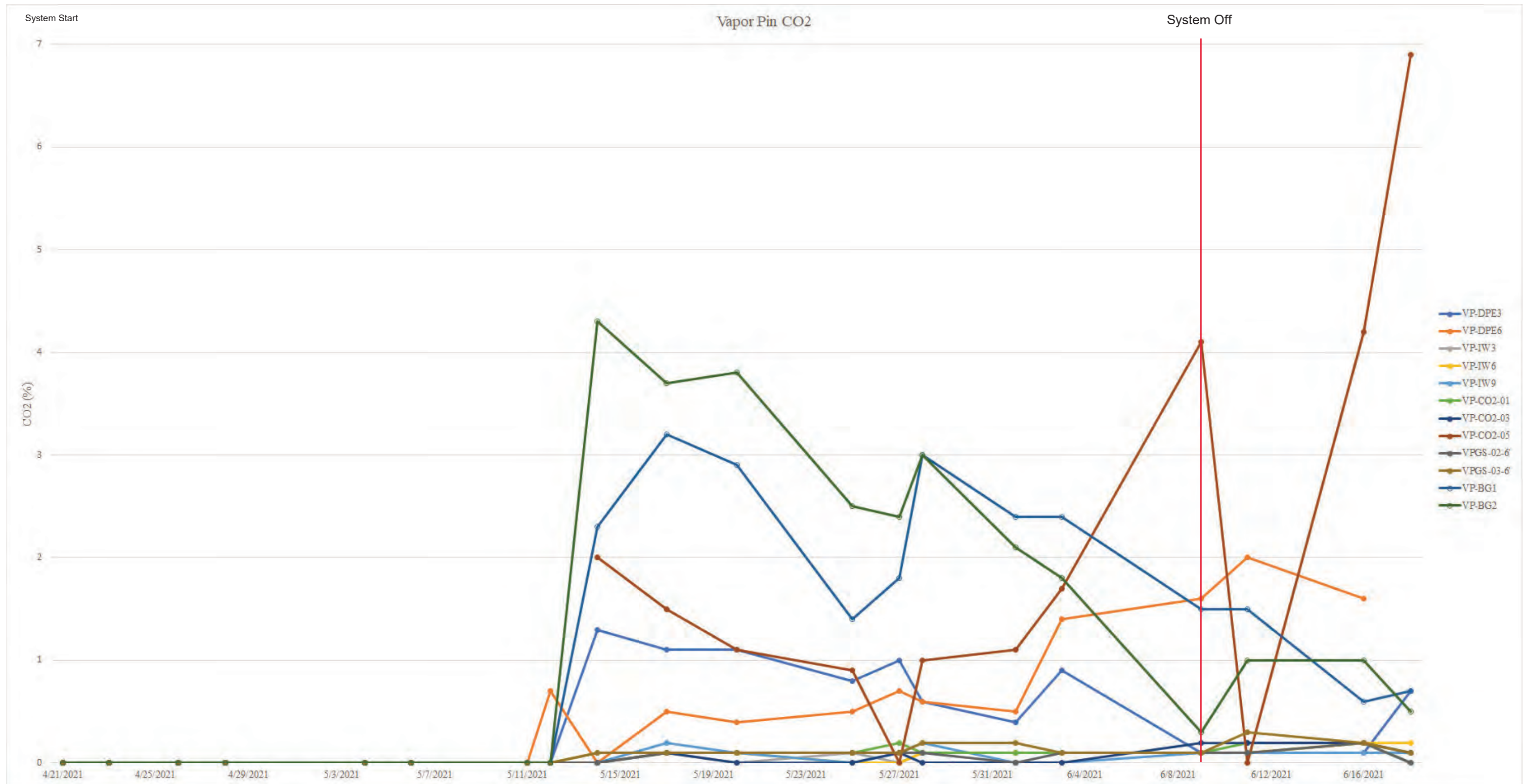


Figure

5

PNR0697

August 2021



Note: The targeted flow at each well head will be 5 to 10 standard cubic feet per minute and the targeted pressure will be 15 to 20 pounds per square inch. Wells will be equipped with packers to target the bottom 2 feet of screen.

Vapor Pin CO₂ Readings

2244 Port of Tacoma Road, Tacoma, Washington



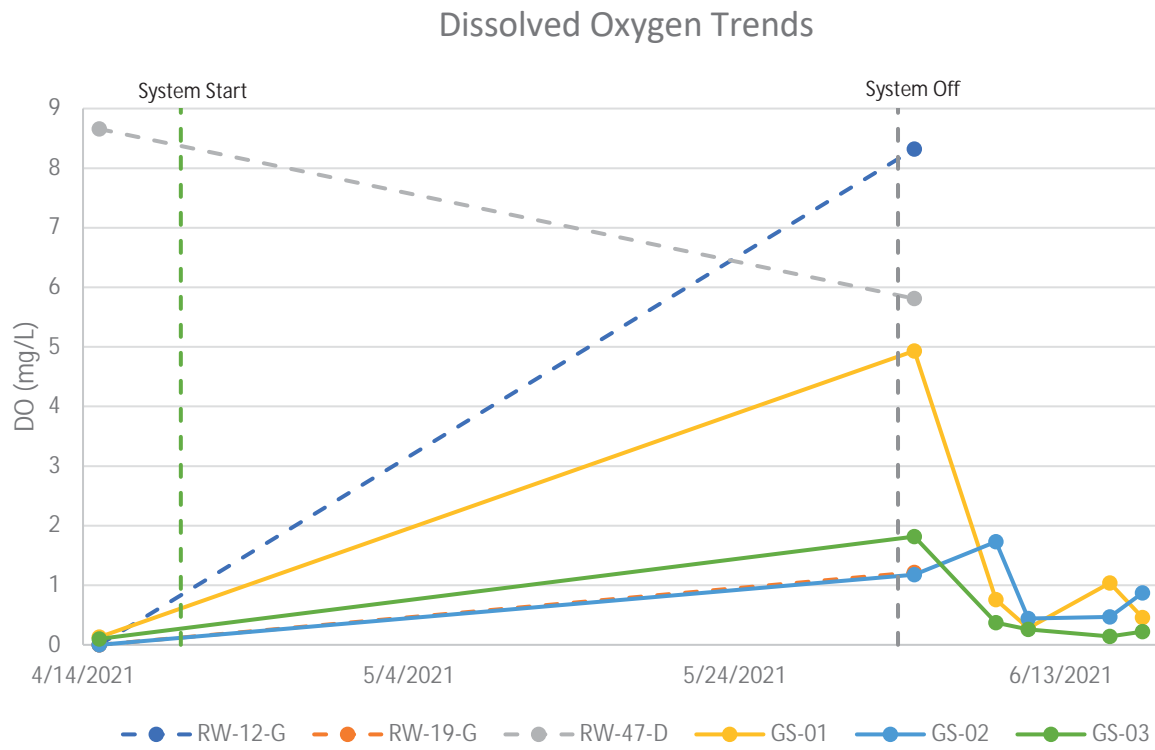
Figure

6

PNR0697

February 2022

Figure 7



Notes:

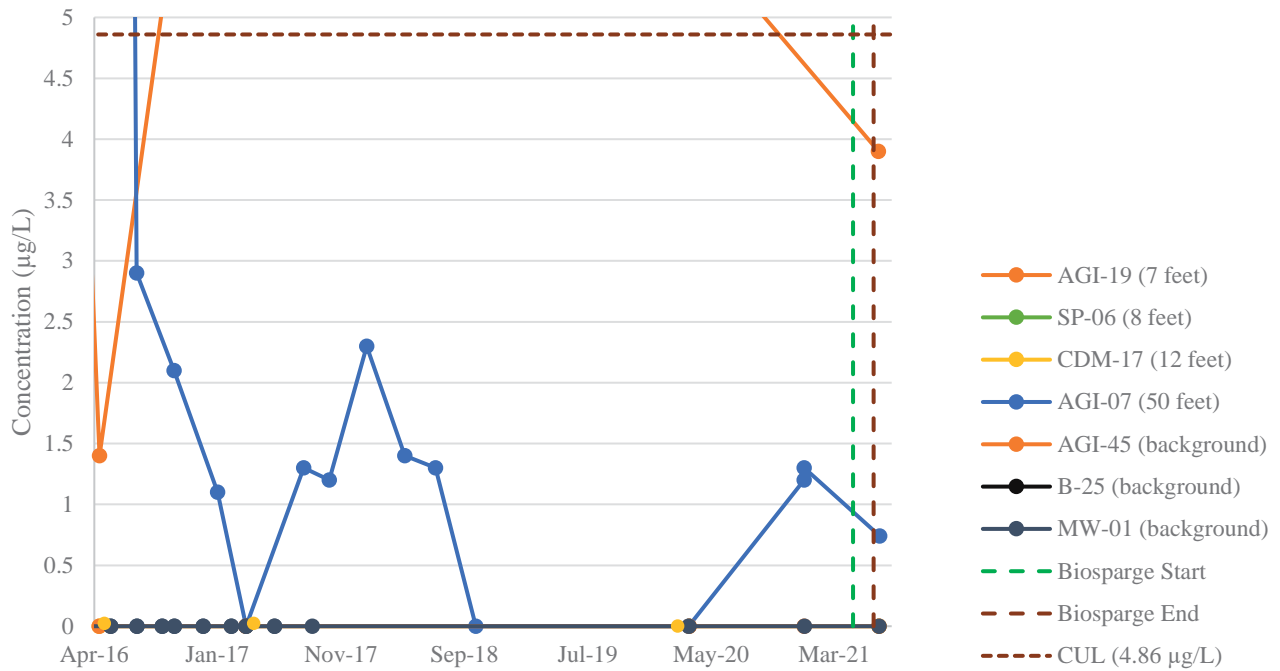
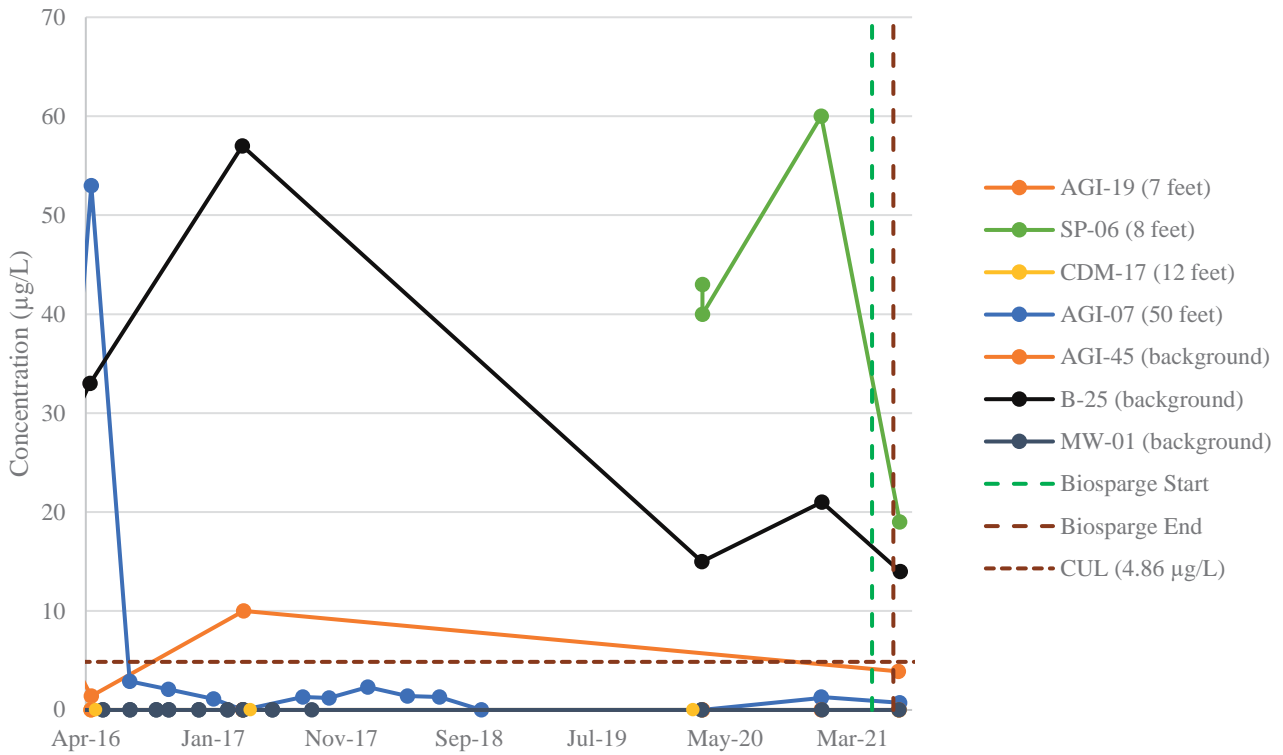
- 1. Dashed lines are DPE wells and solid lines are newly installed injection wells.
- 2. Data on 4/15 collected with Horiba U-52 during groundwater sampling.
- 3. Data on 6/4 collected with YSI ProDSS during groundwater sampling.
- 4. Data collected with Hanna down-well sensor from new injection wells after 6/4. Hanna readings not collected from DPE wells due to k-packers.

DO - Dissolved Oxygen
DPE - dual phase extraction
mg/L - milligrams per liter

Figure 8A

Historical Monitoring Well Analytical Data

1,4-Dichlorobenzene



Notes:

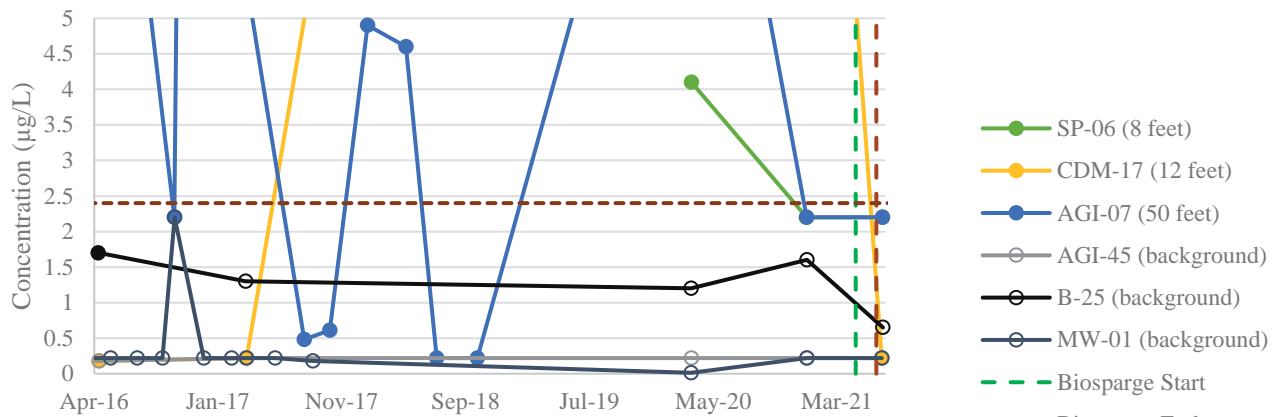
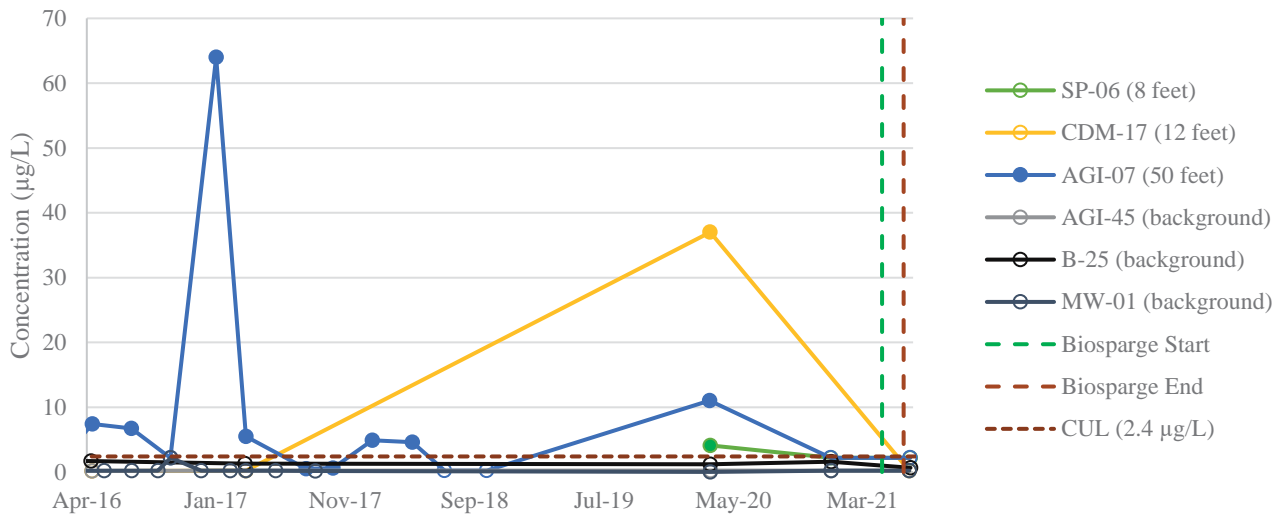
1. Analyzed by EPA method 8270
2. Non-detects are noted with an unfilled marker at the detection limit value.

µg/L- micrograms per liter
 CUL- cleanup level

Figure 8B

Historical Monitoring Well Analytical Data

Vinyl Chloride



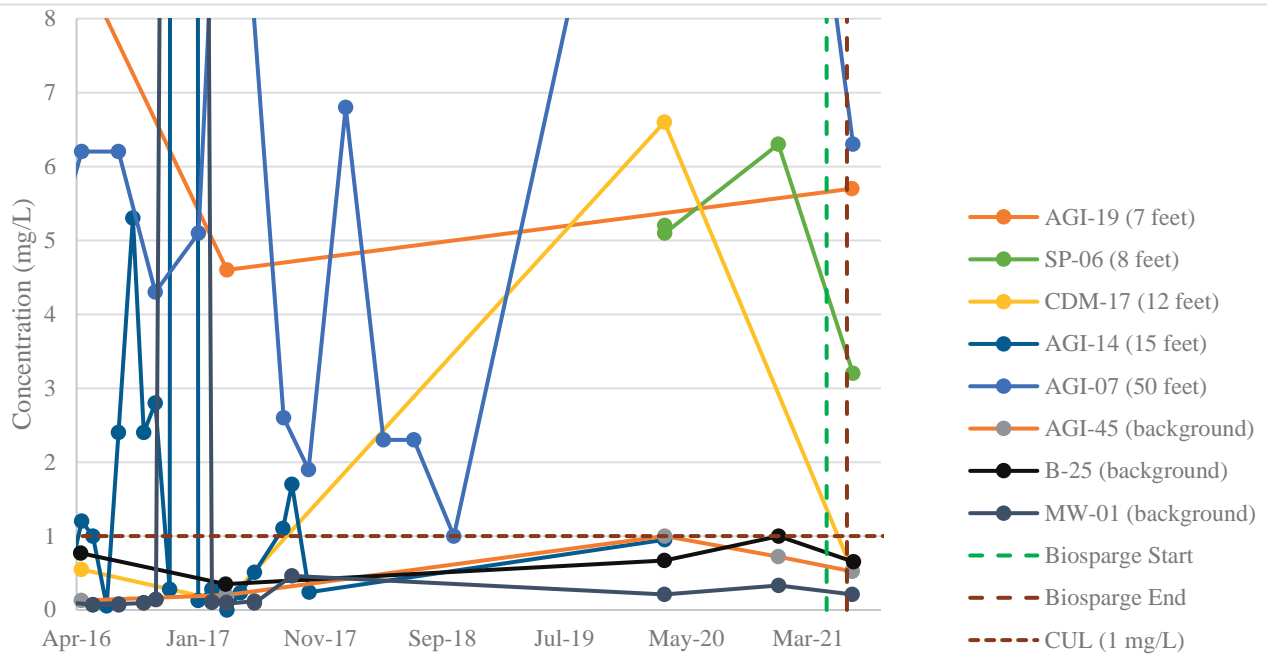
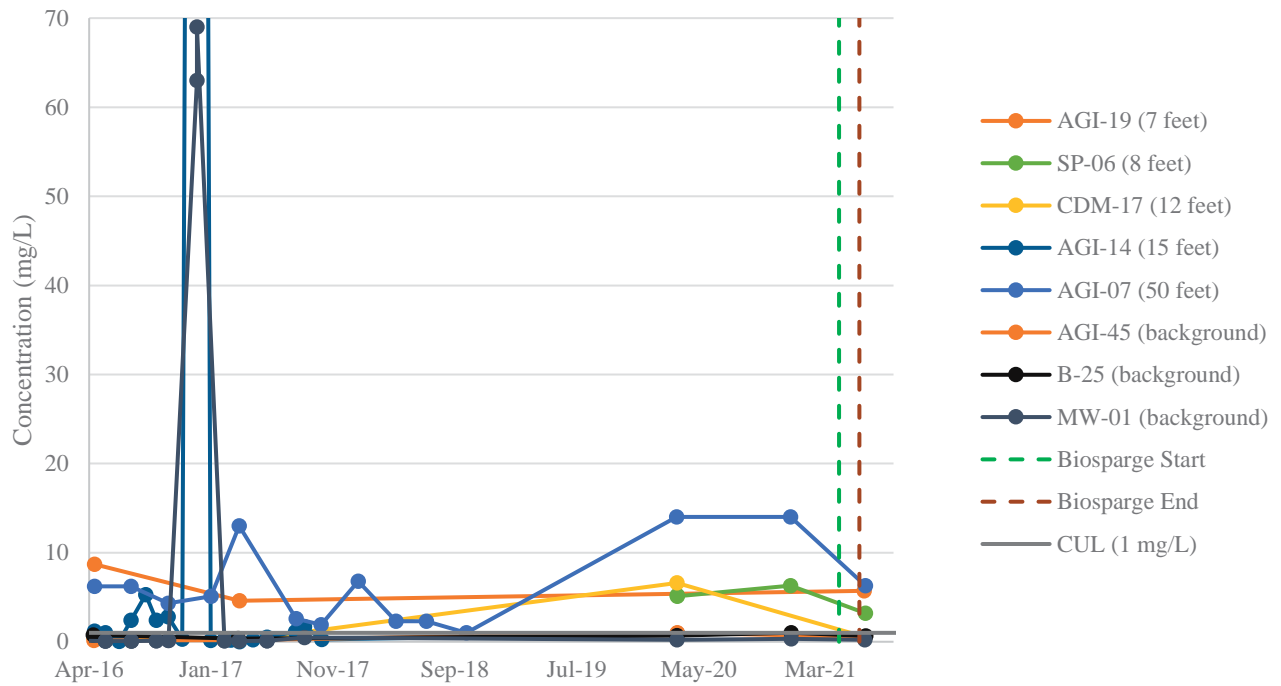
Notes:

1. Analyzed by EPA method 8260B
2. Non-detects are noted with an unfilled marker at the detection limit value.

µg/L- micrograms per liter
 CUL- cleanup level

Historical Monitoring Well Analytical Data

Motor Oil



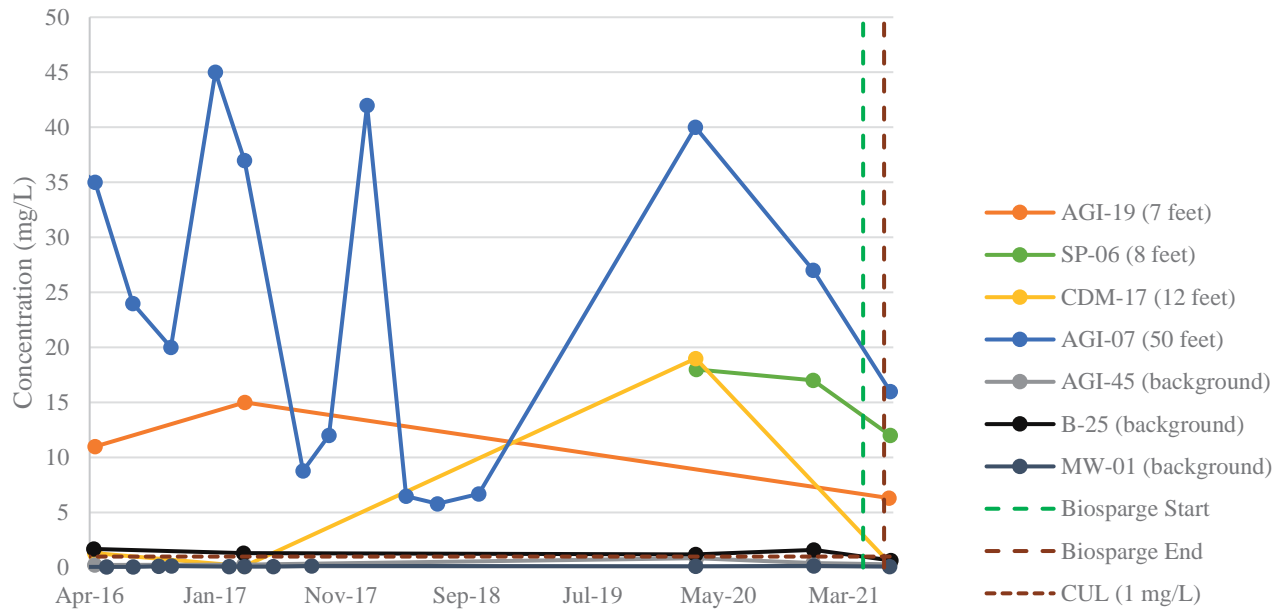
Notes:

1. Analyzed by method NWTPH-Dx
2. Non-detects are noted with an unfilled marker at the detection limit value.

mg/L- milligrams per liter
 CUL- cleanup level

Historical Monitoring Well Analytical Data

#2 Diesel



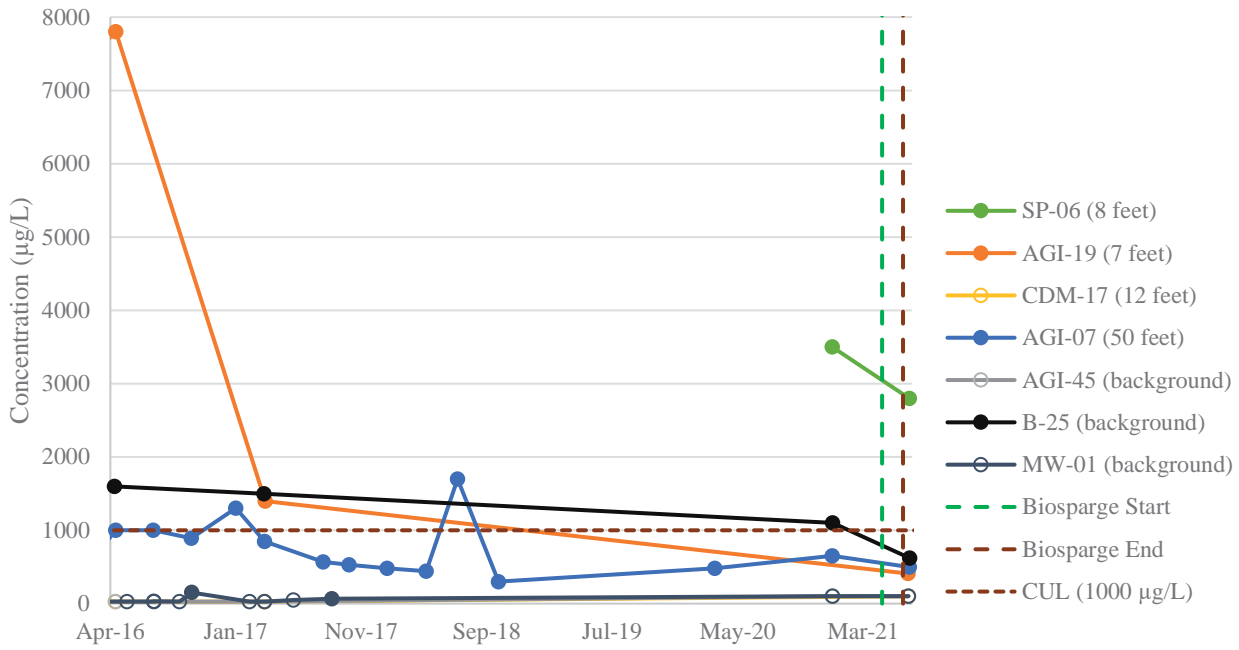
Notes:

1. Analyzed by method NWTPH-Dx
2. Non-detects are noted with an unfilled marker at the detection limit value.

mg/L- milligrams per liter
 CUL- cleanup level

Figure 8E
Historical Monitoring Well Analytical Data

TPH as Gasoline



Notes:

1. Analyzed by method NWTPH-Gx
2. Non-detects are noted with an unfilled marker at the detection limit value.

µg/L- micrograms per liter
CUL- cleanup level

ATTACHMENT 1

Field Data Collected

aniel Tardocki Lilyblad 04-21-2021 DFR

0710 Arrive at field location, Sign-in
0720 Check status of blower. Appears to be functioning properly
Zephyrr near remediation trailer shut off losing wt 0350 on 04/21/21
Zephyrr near drum, storage off at 0750 pm. All on charger.

--- -- 0740 Begin calibration for well checks --- --

↳ pH: 7 / 7.05 17.59°C
 4 / 4.11 17.77°C
 10 / 9.92 17.88°C

↳ conductivity:
1409 umho/cm @ 25°C
cut #: FEI 18780-1

1669 us/cm cal. point

0800 cal. complete Basin ~~test~~ System checks
0815 Call with Frank to verify procedure for checking well packers. Start computer to upload logger data.
→ windows update. Move toward packers first.

0830 Export loggers. ∴ troubleshooting connection to computer

0925 Check packer pressure at RW-47-D
pressure at 80 psi added compressed air to 90 psi

0934 RW-~~116~~¹¹⁹ packer is at 75 psi filled to 90 psi

0940 RW-126 packer is at 43 psi, filled to 93 psi

Noted pressure gauge is reading false reading at 20 psi - Replace

0950 Returned air compressor basin

1000 Begin monitoring well parameter collection. Multisys closed, clear

1015 Fire drill. ∴ pause. brief visit with Frank for clarification

1030 850F blower temperature. Temp readings twice per day

1200 Finish well parameters update Sasha/Frank. Take lunch

1230 Begin on vapor parameters

Nathaniel Tandecki

Lilyblad

04-21-2021 DFR

- 1240 call to clarify the newly created table 1 B.
- 1245 confirmation that VP-IW# are near remediation shed and VP-DPE# are next to RW-47-D. Instructed to place Zephyr loggers back into service. Begin vapor parameters
- 1400 Begin balancing of the blower : wells
↳ Ended up getting all to sit at 6 SCFM.
- 1430 Begin to pull post balance vapor parameters
- 1510 Collect extra carbon vapor parameters VP-CO₂-#
- 1525 Electrical power run to pressure logger / setup
With logger parameters taken every 1 minute labeled: dpevd04 in zephyr
- 1540 Electrical ran for pressure logger ~~at~~ VP-IW3.
- 1610 Notify Frank / Luke / Sasha
↳ possible zephyr II for additional pressure read
- 1630 site cleaned : every thing on the charger. Blower at 85° F still
- 1645 Depart field location.
- 1700 Organize notes : finish final details

- Loose Ends:

- Contact Frank about naming of vapor parameters
- FEI to bring new zephyr
- Teflon caps
- 1-10 psi pressure gauges
- 5 gas not pulling vacuum at DPE = 9'

Table 1C
Injection Well Field Data Collection
 Lilyblod Cleanup Site, Tacoma, Washington

Highest 6 psi
 after 9 psi leak RW-19-G at 0

Well ID	Units	Date								Notes
		Time	Time							
RW-12-G										
Pressure	psi		3	3						
Flow Rate	scfm		6	6						
Pulse Rate	-		-	-						
K-packer pressure	psi		93	93						
DO	mg/L									
ORP	mV									
RW-19-G										
Pressure	in wc		0	0						
Flow Rate	scfm		6	6						Noted bubbling
Pulse Rate	-		-	-						
K-packer pressure	psi		90	90						
DO	mg/L									
ORP	mV									
RW-47-D										
Pressure	in wc		0	0						
Flow Rate	scfm		0	6						
Pulse Rate	-		-	-						
K-packer pressure	psi		90	90						
DO	mg/L									
ORP	mV									

Table 1C
Injection Well Field Data Collection
 Lilyblud Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Before Site Turn In	After Pilot Test															Notes
GS-01		Time	04-21-21 1330	04-21-21 1420															
Pressure	mwc		1	1															
Flow Rate	scfm		6	6															
Pulse Rate			-	-															
GS-02																			
Pressure	mwc		3	3															
Flow Rate	scfm		6	6															
Pulse Rate																			
GS-03																			
Pressure	psi		2	1															
Flow Rate	scfm		10	6															
Pulse Rate			9 min/10 sec																

Notes:
 Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen (DO) readings and water table data collected using a Horiba T-1011 or similar equipment, read/recorded daily and documented here on this table.

Acronyms:
 mwc - inches water column
 scfm - standard cubic feet per minute
 scf - standard cubic feet
 Bases - feet below top of casing
 mV - millivolts
 DO - dissolved oxygen
 DRP - Dissolved Reduction Potential

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

pre-balance ⑥ SCFM
 post-balance


Well ID	Units	Date	Time							Notes
VP-DPE3										
Pressure	in wc		04-21-20	4-21-20						
				1440						
Pressure	in wc		-0.002	-0.004						
VOCs	ppm		0.0	0.0						
CH ₄	% lel		1	1						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9						
VP-DPE6										
Pressure	in wc		0.01	-0.002						 gas filling not sufficient vacuum
VOCs	ppm		0.2	0.4						
CH ₄	% lel		1	2						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		11.1	11.7						
VP-DPE9										
Pressure	in wc		0.005	0.005						5 gas filling to pull sufficient vacuum
VOCs	ppm		0.8	0.8						
CH ₄	% lel		1	1						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9						

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

By remediation
 transfer
 Before Fine After
 test balance

Well ID	Units	Date Time	04-21-01	04-21-01								Notes
VP-1W3												
Pressure	in wc		0.005									
VOCs	ppm		1.4	0.5								
CH ₄	% lcl		1	1								
H ₂ S	ppm		0.5	0.0								
CO	ppm		0	0								
O ₂	%		20.9	20.9								
VP-1W6												
Pressure	in wc		0.01									
VOCs	ppm		1.6	1.5								
CH ₄	% lcl		0	1								
H ₂ S	ppm		0.5	0								
CO	ppm		0	0								
O ₂	%		20.9	20.9								
VP-1W9												
Pressure	in wc		0.009									
VOCs	ppm		0.4	0.2								
CH ₄	% lcl		1	0								
H ₂ S	ppm		0	0								
CO	ppm		0	0								
O ₂	%		20.9	20.9								
VP-C02-01	Collected once per week		15:40									
Pressure	in wc			+0.006								
VP-C02-03	Collected once per week		15:45									
Pressure	in wc			15.003								
VP-C02-05	Collected once per week											

15:00 -0.002

Table 1A
 Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time																	Notes
P-1A																			
Depth to Water	ft		04-21-21																
			- 1100																
Depth to Water	ft		3.58																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-38.9																
pH	s.u.		6.43																
PID	ppm		0.0																
CH ₄	% lcf		1																
H ₂ S	ppm		0.0																
CO	ppm		0																
O ₂	%		20.9																
AGI-14																			
Depth to Water	ft		2.32																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-50.1																
pH	s.u.		6.69																
PID	ppm		87.0																
CH ₄	% lcf		0																
H ₂ S	ppm		0.0																
CO	ppm		0																
O ₂	%		20.9																

Table 1A
Monitoring Well Field Data Collection
City of Tacoma Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes	
		Time								
CDM-20			04-21-20							
		1000								
Depth to Water	ft		4.61							
Dissolved Oxygen	mg/L		0.0							
ORP	mV		-29.6							
pH	unit		5.85							
PID	ppm		5.8							
CH ₄	% vol		2							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
CDM-19										
Depth to Water	ft		3.67							
Dissolved Oxygen	mg/L		0.00							
ORP	mV		-14.9							
pH	unit		6.23							
PID	ppm		0.0							
CH ₄	% vol		1.0							
H ₂ S	ppm		0.0							
CO	ppm		0							
O ₂	%		20.9							
CDM-17										
		1008								
Depth to Water	ft		3.72							
Dissolved Oxygen	mg/L		0.0							
ORP	mV		28.7							
pH	unit		6.66							
PID	ppm		0.6							
CH ₄	% vol		17.							
H ₂ S	ppm		0.0							
CO	ppm		0							
O ₂	%		20.9							

Table 1A
Monitoring Well Field Data Collection
Lilyblat Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time																		Notes
B-29																				
Depth to Water	ft		3.01																	
Dissolved Oxygen	mg/L		0.0																	
ORP	mV		-52.8																	
pH	s.u.		0.0																	
PID	ppm		0.0																	
CH ₄	% lcl		3																	
H ₂ S	ppm		2.5																	
CO	ppm		0																	
O ₂	%		19.8																	
SP-06																				
Depth to Water	ft		3.2																	
Dissolved Oxygen	mg/L		0.0																	
ORP	mV		-42.4																	
pH	s.u.		5.97																	
PID	ppm		0.0																	
CH ₄	% lcl		1																	
H ₂ S	ppm		0																	
CO	ppm		0																	
O ₂	%		20.9																	
SP-04																				
Depth to Water	ft		2.68																	
Dissolved Oxygen	mg/L		0.0																	
ORP	mV		13.6																	
pH	s.u.		6.47																	
PID	ppm		0.0																	
CH ₄	% lcl		2																	
H ₂ S	ppm		0																	
CO	ppm		0																	
O ₂	%		20.9																	

Table 1A
 Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
CDM-21		04-21-20								
		115								
Depth to Water	ft	3.00								
Dissolved Oxygen	mg/L	00								
ORP	mV	-45								
pH	s.u.	6.39								
PHD	ppm	2.2								
CH ₄	% lcl	2								
H ₂ S	ppm	0								
CO	ppm	3								
O ₂	%	18.71								

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff
- Depth to water to be collected using a water level indicator and deconned between wells
- Dissolved oxygen and ORP to be collected using a Florida 11-50 or similar equipment, calibrated daily and deconned between wells
- VOC concentration data will be collected with a photoionization detector, calibrated weekly
- Vapor concentration data will be collected with a multi-gas meter or similar instrument, calibrated weekly

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

METER CALIBRATION FORM

Geosyntec Consultants
520 Pike Street, Suite 2600
Seattle, WA 98101
Phone: 206-496-1450

Project Name: Littled Biosphere Date: 4/22/21 Page 1 of 1
 Project Number: PNR0697 Primary Activities: _____
 Field Personnel: Sasha Williams
 Recorded By: Sasha Williams
 Weather: Cloudy 55°F

Initial Calibration Completed at: _____ (time) _____
 Final Calibration Check Completed at: _____ (time) _____

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	18.40	17.60	17.80
	instrument reading	3.40	6.94	9.75
	should read/calibrated to	4.0	7.0	10.0
final	temp. (°C)			
	instrument reading			

specific conductance calibration		standard (µS / cm)	
initial	instrument reading		
	should read/calibrated to		
final	instrument reading		

ORP calibration		Zobell solution (+231 mv Zobell reads)	
initial	instrument reading		
final	instrument reading		

dissolved oxygen calibration		100%	0%
initial	temp. (°C)	14.63	
	instrument reading	95.4	
	should read/calibrated to	100.0	
final	temp. (°C)		
	instrument reading		

turbidity		
initial	instrument reading	
final	instrument reading	

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental, condition, problems)

Probe SN: K3455404

Firmware: v1.01

T.C.
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

4/22/21

GS-01		1131											
Pressure	PSI in-wc	1											
Flow Rate	scfm	6											
Flow Total	scf												
Pulse Rate		9/1											
Injection Depth	ft btoc												
DO	mg/L												
ORP	mV												
GS-02													
Pressure	in wc	54.0-35											
Flow Rate	scfm	5.6											
Flow Total	scf												
Pulse Rate		9/1											
Injection Depth	ft btoc												
DO	mg/L												
ORP	mV												
GS-03		1204											
Pressure	PSI in-wc	2.6											
Flow Rate	scfm	4.0											
Flow Total	scf												
Pulse Rate		9/1											
Injection Depth	ft btoc												
DO	mg/L												
ORP	mV												

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Pressure data will likely be collected with a manometer or similar instrument.
- Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.

Acronyms:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft btoc - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	4/19/21 1430	4/22/21 1145								Notes
VP-DPE3												
* Pressure	in wc		0.0	0.019								
VOCs	ppm		0.0	0.0								
Methane	% lcl		0.0	4								
Hydrogen Sulfide	ppm		0.5	0.0								
Carbon Dioxide	ppm		0.0	0								
Oxygen	%		21.823	20.9								
VP-DPE6												
Pressure	in wc		0.0	0.010								
VOCs	ppm		0.0	1.6								
Methane	% lcl		0.0	4								
Hydrogen Sulfide	ppm		0.5	0.0								
Carbon Dioxide	ppm		0.0	0								
Oxygen	%		20.9	19.8								
VP-DPE9												
Pressure	in wc		0.0	0.019								
VOCs	ppm		0.0	0.1								
Methane	% lcl		0.0	4								
Hydrogen Sulfide	ppm		0.0	0.6								
Carbon Dioxide	ppm		1.0	0								
Oxygen	%		21.3	20.9								

Base reading on manometer is -4 in wc

2
Collection

T B
Vapor Pin Field Data Collection
Biosparge Pilot Test
Lilyblad Cleanup Site, Tacoma, Washington

		4/19/21	4/20/21	4/22/21						
		1430	1135	1120						
VP-IW3										
Pressure	in wc	0	0	0.019						
VOCs	ppm	0.0	0.0	0.3						
Methane	ppm %	0.0	2.0/1.0	4						
Hydrogen Sulfide	ppm %	0.5	0.0	0.0						
Carbon Dioxide	ppm %	0.0	0.0	0.0						
Oxygen	%	21.8	20.9	20.9						
VP-IW6										
Pressure	in wc	0.0	0.0	0.008						
VOCs	ppm	0.0	0.0	2.9						
Methane	%	0.0	2.0/1.0	3						
Hydrogen Sulfide	%	0.0	0.0	0						
Carbon Dioxide	%	0.0	0.0	0.0						
Oxygen	%	21.5	20.9	20.9						
VP-IW9										
Pressure	in wc	0.0	0.0	0.009						
VOCs	ppm	0.0	0.0	1.4						
Methane	%	0.0	2.0/1.0	3						
Hydrogen Sulfide	%	0.5	0.0	0.0						
Carbon Dioxide	%	0.0	0.0	0						
Oxygen	%	21.3	20.9	20.9						

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column
 ppm - parts per million
 VOCs - Volatile organic compounds

Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date		Notes
		Time		
CDM-20		4/20/21	4/22/21	
Depth to Water	ft	0725	1247	
Dissolved Oxygen	mg/L	3.88	3.64	
ORP	mV	0.0	0.00	
pH	s.u.	26.7	-21.2	
PID	ppm	5.50	5.55	
CH ₄	ppm	14.1	64.9	
H ₂ S	ppm	0.0	4.0	
CO ₂	ppm	0.0	0.0	
O ₂	%	0.0	0	
CDM-18		4/20/21	4/22/21	
Depth to Water	ft	0745	1253	
Dissolved Oxygen	mg/L	3.73	3.71	
ORP	mV	0.0	0.00	
pH	s.u.	22.8	-41	
PID	ppm	sw 0.5637	6.86	
CH ₄	% lel	sw 0.05	3.2	
H ₂ S	ppm	0.0	4.0	
CO ₂	ppm	0.0	0.0	
O ₂	%	0.0	0	
CDM-17		4/20/21	4/22/21	
Depth to Water	ft	730	1307	
Dissolved Oxygen	mg/L	3.80	3.78	
ORP	mV	0.0	0.0	
pH	s.u.	29.1	6.2	
PID	ppm	6.35	6.54	
CH ₄	% lel	0.0	0.9	
H ₂ S	ppm	0.0	4	
CO ₂	ppm	0.0	0	
O ₂	%	0.0	0	
P-1A		4/20/21	4/22/21	
Depth to Water	ft	20.9	20.9	

PIA

8:00 1315

Depth to Water	ft		3.66	3.62						
Dissolved Oxygen	mg/L		0.0	0.0						
ORP	mV		-18.4	-76.9						
pH	s.u.		6.02	6.30						
PID	ppm		0.0	0						
CH ₄ % lel	ppm		0.0	4.0						
H ₂ S	ppm		0.0	0						
CO ₂	ppm		0.0	0.0						
O ₂	%		20.9	20.9						
AGI-14			8:05	1321						
Depth to Water	ft		2.61	2.49						
Dissolved Oxygen	mg/L		2.41	0.0						
ORP	mV		-48.6	-72.3						
pH	s.u.		6.32	6.45						
PID	ppm		0.0	118.6						
CH ₄ % lel	ppm		0.0	4						
H ₂ S	ppm		0.0	0						
CO ₂	ppm		0.0	0						
O ₂	%		20.9	20.0						

T
A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

B-29		0816	1329						
Depth to Water	ft	3.11	2.97						
Dissolved Oxygen	mg/L	0.31	0.0						
ORP	mV	-68.2	-108.6						
pH	s.u.	6.12	6.27						
PID	ppm	0.1	0.2						
CH ₄	% kl	12 12	17						
H ₂ S	ppm	1.5	0						
CO ₂	ppm	0.0	0						
O ₂	%	18.8	17.1						
SP-06		0824	1340						
Depth to Water	ft	3.34	3.1						
Dissolved Oxygen	mg/L	0.31	0.0						
ORP	mV	2.9	-69.2						
pH	s.u.	5.91	6.09						
PID	ppm	0.0	0.3						
CH ₄	%	1	4						
H ₂ S	%	0.0	0						
CO ₂	%	0.0	0.0						
O ₂	%	20.9	20.9						
SP-04		0832	1350						
Depth to Water	ft	3.05	2.85						
Dissolved Oxygen	mg/L	0.91	0.0						
ORP	mV	22.2	-32.8						
pH	s.u.	5.85	6.27						
PID	ppm	0.0	0.0						
CH ₄	%	0.0	4.0						
H ₂ S	%	0.0	0						
CO ₂	%	0.0	0						
O ₂	%	20.9	20.9						
CDM-21		0845	1406						
Depth to Water	ft	3.16	3.06						
Dissolved Oxygen	mg/L	0.02	0.0						

T
A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

ORP	mV	-35.6	-75.4						
pH	s.u.	6.17	6.45						
PID	ppm	0.6	0						
CH ₄	%	14	7.0						
H ₂ S	%	0.0	0						
CO ₂	%	0.0	0						
O ₂	%	17.4	15.0						

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Depth to water to be collected using a water level indicator and deconned between wells.
- Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
- VOC concentration data will be collected with a photoionization detector, calibrated weekly.
- Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

PROJECT No.: Lily Blad

DATE: 04-23-2021

PROJECT NAME: _____

CHECKED BY: _____

DESIGNED BY: N. Tandecki

PAGE 1 OF 1

0700 Arrive at project site : ~~at~~ check in

0715 UNLOCK remediation shed unpack new tables, chairs, cart. Check site for ecology

0730 Noticed GSol logger was not connected to power

0740 system checks

0800 Well system checks : inflate packets

0820 calibrate HANA

0840 Calibration complete begin well parameters

~ 1030 Begin vapor pin parameters

1200 Call to Luke regarding status of the site. Call to Sashy regarding the rental equipment. Start logger / weatherized.

1230 site locked up. Depart site to pick up pressure gauges

1300 End field day

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

DRAFT

Well ID	Units	Date	Time								Notes
CDM-20											
Depth to Water	ft	4-23-21	1000	3.77							
Dissolved Oxygen	mg/L			0.0							
ORP	mV			-27.7							
pH	s.u.			6.19							
PID	ppm			48.7							
CH ₄	% lel			7*							
H ₂ S	ppm			0							
CO	ppm			0							
O ₂	%			20.9							
CDM-18											
Depth to Water	ft			3.71							
Dissolved Oxygen	mg/L			0.0							
ORP	mV			-37.7							
pH	s.u.			6.43							
PID	ppm			3.8							
CH ₄	% lel			7.1*							
H ₂ S	ppm			0							
CO	ppm			0							
O ₂	%			20.9							
CDM-17											
Depth to Water	ft			3.70							
Dissolved Oxygen	mg/L			0.0							
ORP	mV			-10.1							
pH	s.u.			6.67							
PID	ppm			17							
CH ₄	% lel			7*							
H ₂ S	ppm			0							
CO	ppm			0							
O ₂	%			20.9							

Table 1A
Monitoring Well Field Data Collection
 Ellyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
P-1A										
Depth to Water	ft	04/23/21	3.60							
Dissolved Oxygen	mg/L	0840	0.0							
ORP	mV		-66.5							
pH	s.u.		6.55							
PID	ppm		0.7							
CH ₄	% lcl		5							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
AGI-14										
Depth to Water	ft		2.60							
Dissolved Oxygen	mg/L		0.0							
ORP	mV		-86.4							
pH	s.u.		6.66							
PID	ppm		80.2							
CH ₄	% lcl		3							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
B-29										
Depth to Water	ft	3.11								
Dissolved Oxygen	mg/L	0.0								
ORP	mV	-62.4								
pH	s.u.	6.29								
PID	ppm	0.2								
CH ₄	% lel	2.8								
H ₂ S	ppm	2.5								
CO	ppm	0								
O ₂	%	13.3								
SP-06										
Depth to Water	ft	2.87								
Dissolved Oxygen	mg/L	0.0								
ORP	mV	-43.9								
pH	s.u.	6.11								
PID	ppm	0.2								
CH ₄	% lel	5.4								
H ₂ S	ppm	0								
CO	ppm	0								
O ₂	%	20.9								
SP-04										
Depth to Water	ft	4.25								
Dissolved Oxygen	mg/L	0.0								
ORP	mV	-17.3								
pH	s.u.	6.41								
PID	ppm	0.0								
CH ₄	% lel	5.4								
H ₂ S	ppm	0								
CO	ppm	0								
O ₂	%	20.9								

Table 1
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time								Notes
CDM-21		02-23-21	0930								
Depth to Water	ft		3.16								
Dissolved Oxygen	mg/L		0.00								
ORP	mV		-45.9								
pH	s.u.		6.40								
PID	ppm		0.0								
CH ₄	% lcl		5.0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		13.7								

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Depth to water to be collected using a water level indicator and deconned between wells.
- Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
- VOC concentration data will be collected with a photoionization detector, calibrated weekly.
- Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

GEM-5000

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
VP-DPE3										
Pressure	in wc		-0.003							
VOCs	ppm		0.0							
CH ₄	% lel		Low Flow							NO suction from protection
H ₂ S	ppm		Low Flow							
CO	ppm		Low Flow							
O ₂	%		Low Flow							
VP-DPE6										
Pressure	in wc		0.002							
VOCs	ppm		0.8							
CH ₄	% lel		8							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		18.6							
VP-DPE9										
Pressure	in wc		-0.007							
VOCs	ppm		0.9							
CH ₄	% lel		Low Flow							NO suction from multis
H ₂ S	ppm		...							
CO	ppm		...							
O ₂	%		...							

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lalyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time							Notes
		04-23-21	1040							
VP-IW3										
Pressure	in wc		0.43							
VOCs	ppm		0.0							
CH ₄	% lel		7.0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		19.9 20.9							
VP-IW6										
Pressure	in wc		0.08							
VOCs	ppm		0.3							
CH ₄	% lel		7.0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW9										
Pressure	in wc		0.011							
VOCs	ppm		0.0							
CH ₄	% lel		7.0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-CO2-01 Collected once per week										
Pressure	in wc		0.014							
VP-CO2-03 Collected once per week										
Pressure	in wc		-0.008							

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
VP-CO2-05	Collected once per week	04-23-21								
Pressure	in wc	0.170								

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

in wc - inches water column
 ppm - parts per million
 VOCs - Volatile organic compounds

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time									Notes
RW-12-G											
			0750								
Pressure	psi in-wc		3								
Flow Rate	scfm		6								
Pulse Rate			9 / 1 min								
K-packer pressure	psi		35/90								Bubbling stop after packer pressure
DO	mg/L										
ORP	mV										
RW-19-G											
			0755								
Pressure	psi in-wc		0								Bubbling
Flow Rate	scfm		6								
Pulse Rate			1/1								
K-packer pressure	psi		90								
DO	mg/L										
ORP	mV										
RW-47-D											
Pressure	psi in-wc		0								
Flow Rate	scfm		9								
Pulse Rate			9/1								
K-packer pressure	psi		93								
DO	mg/L										
ORP	mV										

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes
GS-01										
			0745							
Pressure	psi in wc		5 psi							
Flow Rate	scfm		6							
Pulse Rate			9/1							
DO	mg/L									
ORP	mV									
GS-02										
Pressure	in wc		6							Added label
Flow Rate	scfm		6							
Pulse Rate			9/1							
DO	mg/L									
ORP	mV									
GS-03										
Pressure	psi in wc		5							
Flow Rate	scfm		6							
Pulse Rate			9/1							
DO	mg/L									
ORP	mV									

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff
 Pressure data will likely be collected with a manometer or similar instrument
 Dissolved oxygen and ORP to be before and after the pilot, collected using a Höniba U-50, or similar equipment, calibrated daily and deconned between wells

Acronyms

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft btoe - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

**Geosyntec Consultants
Water Quality Instrument Calibration Form**

Project/Site: _____ Project #: _____ Field Personnel: N. Tandrecki

Water Quality Meter - Model/Serial #						Turbidimeter - Model/Serial #							
Dissolved Oxygen	DEP SOP	Date	Time	Temp (°C)	Saturation (mg/L) ¹	Reading (mg/L)	Reading (%)	Pass or Fail	0.1 - 10 NTU	Date	Reading (NTU)	Pass or Fail	
	FT 1500								Std ___ NTU				
	Acceptance Criteria: $\pm 0.3 \text{ mg/L}$								Acceptance Criteria: $\pm 10\%$				
	CAL ICV CCV								P F	CAL ICV CCV			P F
	CAL ICV CCV								P F	CAL ICV CCV			P F
Specific Conductance	DEP SOP	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail	11 - 40 NTU	Date	Reading (NTU)	Pass or Fail	
	FT 1200								Std ___ NTU				
	Acceptance Criteria: $\pm 5\%$								Acceptance Criteria: $\pm 8\%$				
	CAL ICV CCV	04/23/21	0830	1409	FEI-187	021337		1716	P F	CAL ICV CCV			P F
	CAL ICV CCV								P F	CAL ICV CCV			P F
pH	DEP SOP	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail	41 - 100 NTU	Date	Reading (NTU)	Pass or Fail	
	FT 1100								Std ___ NTU				
	Acceptance Criteria: $\pm 0.2 \text{ SU}$								Acceptance Criteria: $\pm 6.5\%$				
	CAL ICV CCV	10	04/23	0820	4.0	FEI 11510	01/21/23	4.03	P F	CAL ICV CCV			P F
	CAL ICV CCV	7	04/23	0820	7.0	FEI 11510	03/01/23	6.96	P F	CAL ICV CCV			P F
ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail	>100 NTU	Date	Reading (NTU)	Pass or Fail	
									Std ___ NTU				
	Geosyntec Acceptance Criteria: $\pm 5\%$								Acceptance Criteria: $\pm 5\%$				
	CAL ICV CCV								P F	CAL ICV CCV			P F
	CAL ICV CCV								P F	CAL ICV CCV			P F

1. See Table FS 2200-2 on the back of this form
 CAL - Initial Calibration
 ICV - Initial Calibration Verification
 CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration
 Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)
 Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e. pH > 7)
 If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "Z" qualifier

Comments: _____



Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
RW-12-G										
Pressure	in. wc		2 psi							
Flow Rate	scfm		6							
Pulse Rate			9/1							
K-packer pressure	psi		30/90							
DO	mg/L		-							
ORP	mV		-							
RW-19-G										
Pressure	in wc		0							
Flow Rate	scfm		6							
Pulse Rate			9/1							
K-packer pressure	psi		83/90							
DO	mg/L		-							
ORP	mV		-							
RW-47-D										
Pressure	in wc		0							Found that the soil is bubbling. Turned off flows
Flow Rate	scfm		6							
Pulse Rate			9/1							
K-packer pressure	psi		85/90							
DO	mg/L									
ORP	mV									

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
GS-01										
Pressure	in wc		5							
Flow Rate	scfm		6							
Pulse Rate			9/1							
DO	mg/l		-							
ORP	mV		-							
GS-02										
Pressure	in wc		3							
Flow Rate	scfm		6							
Pulse Rate			9/1							
DO	mg/l		-							
ORP	mV		-							
GS-03										
Pressure	in wc		3							
Flow Rate	scfm		6							
Pulse Rate			9/1							
DO	mg/l		-							
ORP	mV		-							

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff

Pressure data will likely be collected with a manometer or similar instrument.

Dissolved oxygen and ORP to be collected before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.

Acronyms:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft btoe - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Table IA
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time																		Notes
CDM-20																					
Depth to Water	ft		04-26-21	1000																	
Dissolved Oxygen	mg/L				3.60																
ORP	mV				0.0																
pH	s.u.				-22.1																
PID	ppm				6.21																
CH ₄	% lcl				92.2																
H ₂ S	ppm				1																
CO	ppm				0																
O ₂	%				0																
CDM-18																					
Depth to Water	ft				3.68																
Dissolved Oxygen	mg/L				0.0																
ORP	mV				-27.2																
pH	s.u.				6.27																
PID	ppm				0.3																
CH ₄	% lcl				0																
H ₂ S	ppm				0																
CO	ppm				0																
O ₂	%				20.9																
CDM-17																					
Depth to Water	ft				3.73																
Dissolved Oxygen	mg/L				0.0																
ORP	mV				-29.9																
pH	s.u.				6.66																
PID	ppm				1.0																
CH ₄	% lcl				0																
H ₂ S	ppm				0																
CO	ppm				0																
O ₂	%				20.9																

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time																Notes
SP-06 SP-06																			
Depth to Water	ft		04-26-21	1036															
Dissolved Oxygen	mg/L				4.01														
ORP	mV				1.0														
pH	s.u.				-36														
PID	ppm				6.02														
CH ₄	% lcl				0.1														
H ₂ S	ppm				0														
CO	ppm				0														
O ₂	%				20.9														
B-29 B-29																			
Depth to Water	ft				3.10														
Dissolved Oxygen	mg/L				0.0														
ORP	mV				-52.6														
pH	s.u.				6.15														
PID	ppm				0.1														
CH ₄	% lcl				13														
H ₂ S	ppm				4.0														
CO	ppm				0														
O ₂	%				13.5														
SP-04																			
Depth to Water	ft				3.95														
Dissolved Oxygen	mg/L				0.00														
ORP	mV				-27.5														
pH	s.u.				6.57														
PID	ppm				0														
CH ₄	% lcl				0														
H ₂ S	ppm				0														
CO	ppm				0														
O ₂	%				20.7														

Table IA
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time									Notes
CDM-21											
Depth to Water	ft		3.05								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		-45.7								
pH	s.u.		6.52								
PID	ppm		0								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		16.41								

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

ft - feet
 mg/L - milligrams per liter
 mV - millivolts
 ORP - Oxidative reduction potential
 ppm - parts per million
 s.u. - standard units
 VOCs - Volatile organic compounds

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	04-26-21 13 ⁰⁰							Notes
VP-IW3										
Pressure	in wc		0.862							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW6										
Pressure	in wc		-0.490							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW9										
Pressure	in wc		0.007							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-CO2-01 Collected once per week										
Pressure	n wc		0.450							
VP-CO2-03 Collected once per week										
Pressure	n wc		0.00							
VP-CO2-05 Collected once per week										
			0.003							

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time																Notes
VP-DPE3																			
Pressure	in wc		0.000																
VOCs	ppm		-																PID Flow stops
CH ₄	% lel		-																No flow
H ₂ S	ppm		-																
CO	ppm		-																
O ₂	%		-																
VP-DPE6																			
Pressure	in wc		0.000																
VOCs	ppm		0.0																
CH ₄	% lel		0																
H ₂ S	ppm		0.5																
CO	ppm		0																
O ₂	%		20.2																
VP-DPE9																			
Pressure	in wc		0.000																
VOCs	ppm		0.3																PID Flow stops
CH ₄	% lel		-																Fail to flow
H ₂ S	ppm		-																
CO	ppm		-																
O ₂	%		-																

Turning of 47-D results in GS-03 gain from 3 psi to 4 psi and 9 scfm to 12 scfm

**Geosyntec Consultants
Water Quality Instrument Calibration Form**

Project/Site: _____ Project #: _____ Field Personnel: _____

Water Quality Meter - Model/Serial #								Turbidimeter - Model/Serial #						
Dissolved Oxygen	DEP SOP	Date	Time	Temp (°C)	Saturation (mg/L)	Reading (mg/L)	Reading (%)	Pass or Fail	0.1 - 10 NTU	Date	Reading (NTU)	Pass or Fail		
	FT 1500								Std					
	Acceptance Criteria: ± 0.2 mg/L								Acceptance Criteria: $\pm 10\%$					
	CAL ICV CCV								P	F	CAL ICV CCV		P	F
	CAL ICV CCV								P	F	CAL ICV CCV		P	F
Specific Conductance	DEP SOP	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail	11 - 40 NTU	Date	Reading (NTU)	Pass or Fail		
	FT 1200								Std					
	Acceptance Criteria: $\pm 5\%$								Acceptance Criteria: $\pm 8\%$					
	CAL ICV CCV	04/26/21	0940	1409			02/23/21	1785	D	F	CAL ICV CCV		P	F
	CAL ICV CCV								P	F	CAL ICV CCV		P	F
pH	DEP SOP	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail	41 - 100 NTU	Date	Reading (NTU)	Pass or Fail		
	FT 1100								Std					
	Acceptance Criteria: ± 0.2 SU								Acceptance Criteria: $\pm 6.5\%$					
	CAL ICV CCV	04/26/21	0911	7.00			2-01-22	6.95	D	F	CAL ICV CCV		P	F
	CAL ICV CCV	04/26/21	0930	4.00			03/21/21	4.11	D	F	CAL ICV CCV		P	F
ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail	>100 NTU	Date	Reading (NTU)	Pass or Fail		
									Std					
	Geosyntec Acceptance Criteria: $\pm 5\%$								Acceptance Criteria: $\pm 5\%$					
	CAL ICV CCV	04/26/21	0940	220			09/18/21	227.2	D	F	CAL ICV CCV		P	F
	CAL ICV CCV								P	F	CAL ICV CCV		P	F

Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen membrane Changed? Yes No

1. See Table FS 2200-2 on the back of this form

CAL - Initial Calibration
ICV - Initial Calibration Verification
CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e. pH > 7)

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments: _____



PROJECT No.:

DATE: 04.26.2021

PROJECT NAME: Lilyblad

CHECKED BY:

DESIGNED BY: N. Tandock

PAGE 1 OF

- 0700 Early morning notes scanned and sent to office staff.
- 0745 Arrival at Lilyblad site. Check-in
- 0815 System checks. Blower is operating appropriately. Noted bubbling at 47-D that is visible in the soil. Call to check in with Luke regarding what to do with the DPE well.
- 0900 Calibrate 5-gas, Hana, PID. FEI arrival onsite. No new 5-gas. ORP calibration solution arrives via the mail.
- 1000 Check Wells groundwater parameters. Test shutting of 47-D. 65-03 flow/pressure increases.
- 1100 Finish up wells. Begin on vapor wells.
- 1130 Start on VP-IW# wells. Zephyr III is still logging.
- 1150 VP-DPE# wells appear to be clogged. Possibly from the rainfall(?). Dead-heading the blower on both the Multi-gas & the PID. Reached out to Sasha/Luke regarding what to do. Luke recommended waiting till the biosparge call at 1400.
- 1200 Pressure gauge swap out at RW-19G. Pressure to row at 2.5 psi from 0 psi.
- 1220 Depart to pick-up pressure gauges at Paramount. Still have not arrived will pick-up on next Lilyblad day.
- 1240 Depart to Tacoma office to scan notes.
- 1400 Biosparge call.

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes	
		Time									
RW-12-G											
Pressure	in wc		2 ps'	3/6 ⁺							04/29/21 Pressure [*]
Flow Rate	scfm		6	9							up to 6 scfm
Pulse Rate			9/1	9/1							Filling pulse to 9GPM
K-packer pressure	psi		30/90	40/90							
DO	mg/L		-	-							
ORP	mV		-	-							
RW-19-G											
Pressure	in wc		0	3							
Flow Rate	scfm		6	6							
Pulse Rate			9/1	9/1							
K-packer pressure	psi		83/90	85/90							
DO	mg/L		-	-							
ORP	mV		-	-							
RW-47-D											
Pressure	in wc		0	5							Found that the
Flow Rate	scfm		6	6							soil is bubbling.
Pulse Rate			9/1	9/1							Turned OFF stroke
K-packer pressure	psi		85/90	85/90							
DO	mg/L										
ORP	mV										

04/28/21
 STOPPED
 bubbling
 built pressure

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes
		Time	04-16-21	04-28-21					
GS-01									
Pressure	in wc		5	1					
Flow Rate	scfm		6	6					
Pulse Rate			9/1	9/1					
DO	mg/L		-	-					
ORP	mV		-	-					
GS-02									
Pressure	in wc		3	3.5					
Flow Rate	scfm		6	6					
Pulse Rate			9/1	9/1					
DO	mg/L		-	-					
ORP	mV		-	-					
GS-03									
Pressure	in wc		3	5					
Flow Rate	scfm		6	9					
Pulse Rate			9/1	9/1					
DO	mg/L		-	-					
ORP	mV		-	-					

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff
- Pressure data will likely be collected with a manometer or similar instrument
- Dissolved oxygen and ORP to before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and decontaminated between wells.

Acronyms

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft b/c - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	04-26-21	04/28/21							Notes
		Time	1000	1056							
CDM-20											
Depth to Water	ft		3.60	3.67							
Dissolved Oxygen	mg/L		0.0	0.0							
ORP	mV		-22.1	40.4							
pH	s.u.		6.21	6.18							
PID	ppm		92.2	96.5							
CH ₄	% lcl		1	1							
H ₂ S	ppm		0	0							
CO	ppm		0	0							
O ₂	%		12.2	12.0							
CDM-18											
Depth to Water	ft		3.68	3.78							
Dissolved Oxygen	mg/L		0.0	0.0							
ORP	mV		-27.2	42.3							
pH	s.u.		6.27	6.45							
PID	ppm		0.3	0.1							
CH ₄	% lcl		0	0							
H ₂ S	ppm		0	0							
CO	ppm		0	0							
O ₂	%		20.9	20.9							
CDM-17											
Depth to Water	ft		3.73	3.82							
Dissolved Oxygen	mg/L		0.0	0.00							
ORP	mV		-29.9	55.3							
pH	s.u.		6.66	6.71							
PID	ppm		1.0	0.0							
CH ₄	% lcl		0	0							
H ₂ S	ppm		0	0							
CO	ppm		0	0							
O ₂	%		20.9	20.9							

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
P-1A										
Depth to Water	ft		3.55	3.65						
Dissolved Oxygen	mg/L		0	0.0						
ORP	mV		-26.1	-13.7						
pH	s.u.		6.02	6.73						
PID	ppm		0	0.1						
CH ₄	% lel		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9						
AGI-14										
Depth to Water	ft		2.35	2.64						
Dissolved Oxygen	mg/L		0	0						
ORP	mV		-59.4	-35.3						
pH	s.u.		6.58	6.76						
PID	ppm		382.4	264.8						
CH ₄	% lel		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9						

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	04-26-21	04-28-21									Notes
		Time	1036	1030									
SP-06													
Depth to Water	ft		4.01	2.91									
Dissolved Oxygen	mg/L		0.0	0.0									
ORP	mV		-36	31.5									
pH	s.u.		6.02	5.86									
PID	ppm		0.1	0.0									
CH ₄	% lcl		0	0									
H ₂ S	ppm		0	0									
CO	ppm		0	0									
O ₂	%		20.9	20.9									
B-29													
Depth to Water	ft		3.10	3.45									
Dissolved Oxygen	mg/L		0.0	0.0									
ORP	mV		-52.6	4.5									
pH	s.u.		6.15	6.17									
PID	ppm		0.1	0.1									
CH ₄	% lcl		13%	75%									
H ₂ S	ppm		40	50									
CO	ppm		0	10									
O ₂	%		13.5	13.5									
SP-04													
Depth to Water	ft		3.95	2.98									
Dissolved Oxygen	mg/L		0.00	0.00									
ORP	mV		-27.5	47.1									
pH	s.u.		6.57	6.75									
PID	ppm		0	0									
CH ₄	% lcl		0	0									
H ₂ S	ppm		0	0									
CO	ppm		0	0									
O ₂	%		20.9	20.9									

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	04/26/21	04/28/21						Notes
		Time	1100	1050						
CDM-21										
Depth to Water	ft		3.05	3.06						
Dissolved Oxygen	mg/L		0.0	0.0						
ORP	mV		-45.7	19.0						
pH	s.u.		6.52	6.55						
PID	ppm		0	0						
CH ₄	% lel		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		16.41	16.5						

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilybird Cleanup Site, Tacoma, Washington

Well ID	Units	Date	04-26-21	04-28-21						Notes
		Time	11:53	12:15						
VP-DPE3										
Pressure	m wc		0.000	0.000						PID flow stops No flow
VOCs	ppm		-	-						
CH ₄	% lel		-	-						
H ₂ S	ppm		-	-						
CO	ppm		-	-						
O ₂	%		-	-						
VP-DPE6										
Pressure	m wc		0.000	0.001						
VOCs	ppm		0.0	0.0						
CH ₄	% lel		0	0						
H ₂ S	ppm		0.5	0						
CO	ppm		0	0						
O ₂	%		20.2	18.3						
VP-DPE9										
Pressure	m wc		0.000	-0.450						PID flow stops Fail to flow
VOCs	ppm		03	0.0						
CH ₄	% lel		-	-						
H ₂ S	ppm		-	-						
CO	ppm		-	-						
O ₂	%		-	-						

Turning of 47-D results in GS-03 gains from 3 psi to 4 psi and 9 scfm to 12 scfm

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	04-26-21	04-28-21						Notes
		Time	1:30							
VP-1W3										
1.17										
Pressure	in wc		0.862	0.020						
VOCs	ppm		0.0	0.0						
CH ₄	% lel		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9						
VP-1W6										
1105										
Pressure	in wc		-0.490	0.00						
VOCs	ppm		0.0	0.0						
CH ₄	% lel		0	0.0						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9	1					
VP-1W9										
1110										
Pressure	in wc		0.007	0.005						
VOCs	ppm		0.0	0.0						
CH ₄	% lel		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0						
O ₂	%		20.9	20.9						
VP-CO2-01 Collected once per week										
Pressure	in wc		0.450	0.005						
VP-CO2-03 Collected once per week										
Pressure	in wc		0.00	0.000						
VP-CO2-05 Collected once per week										
0.003 - 0.001										

**Geosyntec Consultants
Water Quality Instrument Calibration Form**

Project/Site: _____ Project #: _____ Field Personnel: _____

Water Quality Meter - Model/Serial #									Turbidimeter - Model/Serial #			
Dissolved Oxygen	DEP SOP FT 1600	Date	Time	Temp (°C)	Saturation (mg/L) ¹	Reading (mg/L)	Reading (%)	Pass or Fail	0.1 - 10 NTU Std ___ NTU	Date	Reading (NTU)	Pass or Fail
Acceptance Criteria: ± 0.3 mg/L									Acceptance Criteria: $\pm 10\%$			
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail	11 - 40 NTU Std ___ NTU	Date	Reading (NTU)	Pass or Fail
Acceptance Criteria: $\pm 5\%$									Acceptance Criteria: $\pm 8\%$			
CAL ICV CCV		04/26/11	0940	1409			0212371 1785	(B) F	CAL ICV CCV			P F
CAL ICV CCV		04/28/11	0911	1409			0212371 1809	(B) F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail	41 - 100 NTU Std ___ NTU	Date	Reading (NTU)	Pass or Fail
Acceptance Criteria: ± 0.2 SU									Acceptance Criteria: $\pm 6.5\%$			
CAL ICV CCV		04/26/11	0911	7.00		2-01-12	6.95	(B) F	CAL ICV CCV			P F
CAL ICV CCV		04/26/11	0930	4.00		03/21/12	4.11	(B) F	CAL ICV CCV			P F
CAL ICV CCV		04/28/11	0918	7.00		03-01-11	7.06	(B) F	CAL ICV CCV			P F
CAL ICV CCV		04/28/11	0940	4.00		03-02-11	4.16	(B) F	CAL ICV CCV			P F
CAL ICV CCV		04/28/11	0945	10.00		02-23-11	9.80	(B) F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail	>100 NTU Std ___ NTU	Date	Reading (NTU)	Pass or Fail
Geosyntec Acceptance Criteria: $\pm 5\%$									Acceptance Criteria: $\pm 5\%$			
CAL ICV CCV		04/26/11	0940	220		09/18/11	227.2	(B) F	CAL ICV CCV			P F
CAL ICV CCV		04/28/11	0915	220			200.2	(B) F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F

Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen membrane Changed? Yes No

1. See Table FS 2200-2 on the back of this form.

CAL - Initial Calibration
 ICV - Initial Calibration Verification
 CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration
 Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)
 Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7, add a third calibration point if needed (i.e. pH > 7)
 If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments: _____



PROJECT No. _____

DATE: 04/28/21

PROJECT NAME: Lilyblad

CHECKED BY: _____

DESIGNED BY: N. Tandeci

PAGE 1 OF 1

0700 Tear off air compressor fittings. Make part inventory to grab at GWTP for vapor pins.

0740 Arrival at Lilyblad

0800 System checks.

- Noted 12 K-packer low again at ~30 psi. Filled to 90 psi, pressure went up to 6 psi from 3 psi.

- GS-47 pressure gauge surge. Soil has stopped bubbling and looks like a dry silt layer.

0900 Begin calibrating PID/multigas/Hanna

- 0940 Begin well parameters

1100 Start on IW vapor parameters

1130 Pick-up new pressure gauge! install on GS-01. pressure now at 2.5

1200 Begin troubleshooting vapor pins at DPE wells.

- Used vacuum pump

- Blew compressed air

- tube brushes

Was not able to get any change on the low flow issue for the PID: multigas

1230 call with Luke. Discussed 20 minute on and 5 minutes off

1300 Begin troubleshooting zephyr 3.

1430 Data finally extracted!!!

1445 Re-deploy loggers

1500 Lock-up depart for Tacoma office to scan notes / send logger data / Note

1540 Depart Tacoma Office

Project Name: Lilyblad Project Number: PNR0697/05/2A Page 1 of 1
 Date: 4/15/21 Location: 2244 POT. Rd. Logged By: Rose Bier
 Weather Conditions: 70°F, Sunny
 Tailgate Safety Meeting Time: 0820 Contractor: -

Personnel: Name	Company	Time In	Time Out
<u>Rose Bier</u>	<u>Geosyntec</u>	<u>0820</u>	<u>1545</u>
<u>Sasha Williams</u>	<u>Geosyntec</u>	<u>0800</u>	<u>1230</u>

Time	Activities
<u>0820</u>	<u>Located wells; prepped equipment</u>
<u>0900</u>	<u>Started purging RW-12-G, sampled @ 0945</u>
<u>1005</u>	<u>started purging RW-19-G, sampled @ 1030</u>
<u>1110</u>	<u>started purging GS-03, sampled @ 1130</u>
<u>1207</u>	<u>started purging RW-47-D, sampled @ 1230, duplicate taken @ 1230.</u>
<u>1320</u>	<u>started purging GS-02, sampled @ 1345</u>
<u>1415</u>	<u>started purging GS-01, sampled @ 1445</u>
<u>1500</u>	<u>Packed equipment; transferred IDW water to drums w/in treatment system fencing</u>
<u>1545</u>	<u>Rose B. mob off-site, delivered samples to Test America, Fife.</u>
<u>RB</u>	

Copy to: _____ Total Hrs.: 7.5 onsite Signature: Cherry in

Project No: <u>PNR0697</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u>4/15/21</u>
Site Location: <u>2244 POT RD</u>		Depth to Water (DTW)(ft): <u>6.18</u>	Measurements Referenced to: <u>TOC</u>
Well ID: <u>RW-12-G</u>	Total Well Depth (ft): <u>10.05</u>	OVM (ppm) = <u>0915</u>	<u>RB</u>
Screen Interval (ft): <u>4-10.05</u>	Well Diameter (Inch): <u>4</u>	Casing Volume: <u>0.84 gal</u>	<u>2.5 gal</u>
Pump Placement (ft): <u>9</u>	DTW After Purge (ft): <u>6.68</u>	3 Casing Volumes: <u>2.5 gal</u>	<u>7.5 gal</u>
Sampler(s): <u>Bier</u>	<u>start purge @ 0900</u>	<u>RB</u>	<u>0915</u>

Purging Equipment:

- Disposable Bailer
 Electric Submersible Pump
 Bladder Pump

Sampling Equipment:

- Disposable Bailer
 Dedicated Tubing
 Other: peristaltic

Well Diameter (Inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: Horiba 4-52

- Low-Flow/Micro Purging
 Purge at least 3 well volumes

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (μ S/cm)	ORP (mv)	Temp. ($^{\circ}$ C or $^{\circ}$ F)	Rate (ml/min)	Total Volume
—	—	(\pm 10%)	(\pm 0.3)	(\pm 0.1)	(\pm 3%)	(\pm 10mV)	—	—	—
0910		42.8	0.52	8.64	2.35	-115	9.67	300	3000
0912	6.65	40.9	0.13	7.84	2.35	-115	9.66	125	3250
0914	6.65	41.6	0.11	7.55	2.35	-113	9.65	125	3500
0916	6.68	40.2	0.01	7.22	2.36	-113	9.65	125	3750
0918	6.68	40.4	0.0	7.12	2.37	-114	9.64	125	4000
0920	6.68	40.8	0.0	7.12	2.37	-114	9.64	125	4250

Notes: sample @ 0945

Total Gallons Purged: 1.2 gal

Presence of Sheen in groundwater sample (yes/no): Y

Sample ID and Analysis: 041521-RD-RW-12-G

Duplicate Sample: N

Equipment Blank: N

Field Blank: N

Groundwater Purging and
Sampling Log

Project No: PNR0697 Task No: 05/2A Project Name: Lilyblad Date: 4/15/21
 Site Location: 2244 POT Rd. Depth to Water (DTW)(ft): 6.51 Measurements Referenced to: TOC
 Well ID: RW-19-G Total Well Depth (ft): 10.35 OVM (ppm) =
 Screen Interval (ft): 4-10.35 Well Diameter (Inch): 4" Casing Volume: 2.5 gal
 Pump Placement (ft): 9 DTW After Purge (ft): 6.71 3 Casing Volumes: 7.5 gal
 Sampler(s): BICR start purge @ 1005

- Purging Equipment: Sampling Equipment:
 Disposable Bailer Disposable Bailer
 Electric Submersible Pump Dedicated Tubing
 Bladder Pump Other: PERISTALTIC

Well Diameter (Inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.489

- Type of Water Quality Meter Used: HORIBA U-52
 Low-Flow/Micro Purging
 Purge at least 3 well volumes

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (<u>ms/cm</u>) (µS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
—	—	(+ 10%)	(+ 0.3)	(± 0.1)	(+ 3%)	(± 10mV)	—	—	—
1010	6.70	30.9	0.57	6.54	0.918	-69	12.01	200	1000
1016	6.71	19.3	0.00	6.25	0.895	-73	12.06	200	2200
1018	6.71	18.5	0.00	6.23	0.889	-75	12.09	200	2600
1020	6.71	18.3	0.00	6.22	0.886	-76	12.11	200	2800
1022	6.71	18.2	0.00	6.21	0.881	-77	12.13	200	3000

Notes: sampled @ 1030

Total Gallons Purged: 0.80 gal
 Presence of Sheen in groundwater sample (yes/no): Y
 Sample ID and Analysis: 04/521-RB-RW-19-G
 Duplicate Sample: N
 Equipment Blank: N
 Field Blank: N

Project No: <u>PNR0697</u>		Task No: <u>05/2A</u>		Project Name: <u>Lilyblad</u>		Date: <u>4 15 121</u>	
Site Location: <u>2244 POT rd.</u>				Depth to Water (DTW)(ft): <u>5.70</u>		Measurements Referenced to: <u>TOC</u>	
Well ID: <u>G5-03</u>		Total Well Depth (ft): <u>10 ft</u>		OVM (ppm) =			
Screen Interval (ft): <u>8-10</u>		Well Diameter (Inch): <u>2"</u>		Casing Volume: <u>0.86 gal</u>			
Pump Placement (ft): <u>9</u>		DTW After Purge (ft): <u>8.5</u>		3 Casing Volumes: <u>2.5 gal</u>			
Sampler(s): <u>Bior</u>		START purge @ <u>1110</u>					

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: PERISTALTIC

Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: HORIBA U-52

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

ms/cm

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs) (+ 10%)	DO (mg/l) (+ 0.3)	pH (units) (+ 0.1)	Spec. Cond. (μ S/cm) (+ 3%)	ORP (mv) (+ 10mV)	Temp. ($^{\circ}$ C or $^{\circ}$ F)	Rate (ml/min)	Total Volume
1115	8.3	5.4	0.0	6.52	1.04	50	13.20	200.00	1000
1118	8.4	4.7	0.0	6.59	1.03	46	13.21	200.00	1600
1120	8.4	4.0	0.0	6.57	1.01	44	13.32	200.00	2000
1122	8.4	3.9	0.0	6.53	1.00	45	13.39	200.0	2400
1124	8.5	3.7	0.0	6.52	1.00	45	13.39	200.0	2800
1126	8.5	3.6	0.2	6.46	1.01	46	13.40	200.0	3200

Notes: sample @ 1130

Total Gallons Purged: 0.85 gallons

Presence of Sheen in groundwater sample (yes/no): N

Sample ID and Analysis: 041521-RB-G5-03

Duplicate Sample: N ~~041521-RB-G5-03~~

Equipment Blank: N

Field Blank: N

Project No: <u>PNR0697</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u>4 15 12</u>
Site Location: <u>2244 POT Rd.</u>		Depth to Water (DTW)(ft): <u>2.95 ft</u>	Measurements Referenced to: <u>TOC</u>
Well ID: <u>RW-47-D</u>	Total Well Depth (ft): <u>10.35</u>	OVM (ppm) =	
Screen Interval (ft): <u>5-10.35</u>	Well Diameter (Inch): <u>4"</u>	Casing Volume: <u>3.5</u>	
Pump Placement (ft): <u>9</u>	DTW After Purge (ft): <u>3.16</u>	3 Casing Volumes: <u>10.5</u>	
Sampler(s): <u>Bier</u> <u>purge start at 1207</u>			

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: Peristaltic

Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: Horiba U-52

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

ms/cm

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (µS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
—	—	(± 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	—	—	—
1215	3.15	57.8	9.27	6.30	0.608	-73	12.49	300	2400
1218	3.15	56.0	9.04	6.29	0.607	-74	12.61	200	3000
1220	3.15	56.5	8.97	6.28	0.608	-74	12.83	200	3400
1222	3.15	55.0	8.75	6.28	0.591	-79	12.99	200	3800
1224	3.16	54.4	8.25	6.25	0.599	-78	13.04	200	4200

Notes: sampled @ 1230

Total Gallons Purged: 1.1 gal

Presence of Sheen in groundwater sample (yes/no): N

Sample ID and Analysis: 041521 - RB - RW - 47 - D

Duplicate Sample: Y 041521 - RB - RW - 47 - D - DUP

Equipment Blank: N

Field Blank: N

**Groundwater Purging and
Sampling Log**

Project No: <u>PNR0697</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u>4/15/12</u>
Site Location: <u>2244 POT Rd.</u> Depth to Water (DTW)(ft): <u>5.82</u> Measurements Referenced to: <u>TOC</u>			
Well ID: <u>G5-02</u>	Total Well Depth (ft): <u>10</u>	OVM (ppm) =	
Screen Interval (ft): <u>8-10</u>	Well Diameter (inch): <u>2"</u>	Casing Volume: <u>0.68 gall</u>	
Pump Placement (ft): <u>9</u>	DTW After Purge (ft): <u>7.29</u>	3 Casing Volumes: <u>2.04 gall</u>	
Sampler(s): <u>Bier</u>	purge start @ <u>1320</u>		

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: Peristaltic

Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: Horiba U-82

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec.Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
—	—	(+ 10%)	(+ 0.3)	(+ 0.1)	(+ 3%)	(+ 10mV)	—	—	—
1325	7.15	17.9	0.20	6.65	0.430	63	14.95	200	1000
1330	7.18	29.7	0.09	6.76	0.409	58	13.89	200	2000
1332	7.20	22.9	0.00	6.79	0.376	51	13.56	200	2400
1334	7.24	23.7	0.00	6.79	0.373	49	13.57	200	2800
1336	7.29	24.9	0.0	6.80	0.372	46	13.40	200	3200

Notes: sampled @ 1345

Total Gallons Purged: 0.84 gal

Presence of Sheen in groundwater sample (yes/no): N

Sample ID and Analysis: 041521-RB-G5-02

Duplicate Sample: N

Equipment Blank: N

Field Blank: N

Project No: PNR0697 Task No: 05/2A Project Name: Lilyblad Date: 4/15/21
 Site Location: 2244 POT Rd. Depth to Water (DTW)(ft): 5.85 Measurements Referenced to: TOC
 Well ID: GS-01 Total Well Depth (ft): 10 OVM (ppm) =
 Screen Interval (ft): 8-10 Well Diameter (inch): 2" Casing Volume: 0.67 gal
 Pump Placement (ft): 9 DTW After Purge (ft): 7.31 3 Casing Volumes: 2.01 gal
 Sampler(s): Bior Purge start @ 1415

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: Peristaltic

Volume of Schedule 40 PVC Pipe	
Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: Horiba U-52

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
—	—	(± 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	—	—	—
1425	7.22	14.4	1.19	6.91	0.678	49	13.91	200	2000
1427	7.23	14.6	0.54	6.85	0.675	50	13.70	200	2400
1430	7.26	15.3	0.39	6.81	0.674	52	13.70	200	3000
1434	7.29	13.1	0.19	6.74	0.688	52	13.68	200	3800
1436	7.29	13.4	0.15	6.67	0.740	51	13.92	200	4200
1438	7.29	12.9	0.13	6.67	0.748	51	13.94	200	4600
1440	7.31	12.0	0.10	6.68	0.757	49	13.98	200	5000

Notes: sample @ 1445

Total Gallons Purged: 1.32 gal
 Presence of Sheen in groundwater sample (yes/no): N
 Sample ID and Analysis: 041521-RB-GS-01
 Duplicate Sample: N
 Equipment Blank: N
 Field Blank: N

Chain of Custody Record

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Regulatory Program: DW NPDES RCRA Other:

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact		Project Manager: Luke Smith		Site Contact: Frank Rorie		Date: 4/15/21		COC No:	
Geosyntec Consultants		Email: Luke.smith@geosyntec.com		Lab Contact:		Carrier:		of COCs	
520 Pike Street #2600		Tel/Fax:						TALS Project #:	
Seattle, WA 98101		Analysis Turnaround Time						Sampler:	
(206) 496-1450 Phone		<input type="checkbox"/> CALENDAR DAYS <input checked="" type="checkbox"/> WORKING DAYS						For Lab Use Only:	
(xxx) xxx-xxxx FAX		TAT if different from Below						Walk-in Client:	
Project Name: Lilyblad Biosparge Pilot		<input type="checkbox"/> 2 weeks						Lab Sampling:	
Site: Lilyblad Tacoma		<input type="checkbox"/> 1 week						Job / SDG No.:	
P O #		<input type="checkbox"/> 2 days							
		<input type="checkbox"/> 1 day							

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs by #2600	VOCs by #270E	TPH by MWTPH-GX	TPH by MWTPH-Dx	Sample Specific Notes:
DATE-INITIAL-WELL LABEL												
041521-RB-RW-12-G	4/15/21	0945	G	W	10			X	X	X	X	(2) 250 mL are unprocessed
041521-RB-RW-19-G	4/15/21	1030	G	W	10			X	X	X	X	"
041521-RB-GS-03	4/15/21	1130	G	W	10			X	X	X	X	"
041521-RB-RW-47-D	4/15/21	1230	G	W	10			X	X	X	X	"
041521-RB-GS-02	4/15/21	1345	G	W	10			X	X	X	X	" one vof broke
041521-RB-RW-47-D-Dup	4/15/21	1230	G	W	10			X	X	X	X	"
041521-RB-GS-01	4/15/21	1445	G	W	10			X	X	X	X	"
Trip Blank	4/15/21							X				

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown			

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.:	
Relinquished by: Rose BIER 1522 4/15/21	Company: Geosyntec	Date/Time: 4/15/21 1522	Received by:	Company:	Date/Time:		
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:		
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: <i>[Signature]</i>	Company: EFGS	Date/Time: 4/15/21 1522		

05.04.2021 Lilyblad DFR

- 0800 Arrival on-site
- 0815 unlock field location. Check status of the loggers. Still logging.
- 0820 Visitor check-in
- 0830 Begin system checks
- ~0900 System checks complete begin calibration
- ~0940 calibration complete, (PID, multigas, H₂)
- 1000 Begin well parameter checks
- ~1040 Begin vapor data collection
 - ↳ Addition of CO₂-07 vapor pin data
- 1100 IW-X vapor collection data
- 1135 Break
- 1145 Begin trying to clear vapor pins of debris/moisture
 - ↳ unsuccessful with clearing 6'19'
- 1200 VP-CO₂-05 PID vacuum died out after reading 17.6 VOC peak
- 1215 CO₂-007 vapor pin installed incorrectly
 - ↳ very loose and removed with very little force.
- 1230 call to Luke regarding site status
 - ↳ Primary objective to measure ambient at B-29 which has had high methane content
- ~ 1300 - Measure ambient conditions at B-29.
 - ↳ NO additional wells to check methane.
- ~ 1415 Download logger data
- 1500 Team meeting.
- 1505-1520 RW-12G/19 : GS-01 checking pressures every 5 minutes.
- 1540 Begin clearing up / locking up site. Leave site.
- 1605 Scanning notes / organizing materials

**Geosyntec Consultants
Water Quality Instrument Calibration Form**

Project/Site: _____ Project #: _____ Field Personnel: _____

Water Quality Meter - Model/Serial #							Turbidimeter - Model/Serial #					
Dissolved Oxygen	DEP SOP FT 1400	Date	Time	Temp (°C)	Saturation (mg/L) ¹	Reading (mg/L)	Reading (%)	Pass or Fail	0.1 - 10 NTU Std. _____ NTU	Date	Reading (NTU)	Pass or Fail
							Acceptance Criteria: ± 0.3 mg/L			Acceptance Criteria: $\pm 10\%$		
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail	11 - 40 NTU Std. _____ NTU	Date	Reading (NTU)	Pass or Fail
							Acceptance Criteria: $\pm 4.5\%$			Acceptance Criteria: $\pm 4.5\%$		
CAL	ICV	CCV	05/04/21	0940	1409	2022	1405	P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail	41 - 100 NTU Std. _____ NTU	Date	Reading (NTU)	Pass or Fail
							Acceptance Criteria: ± 0.2 SU			Acceptance Criteria: $\pm 4.5\%$		
CAL	ICV	CCV	05/04/21	0930	4	2022	4.75	P F	CAL	ICV	CCV	P F
CAL	ICV	CCV	05/04/21	0935	7	2022	7.17	P F	CAL	ICV	CCV	P F
CAL	ICV	CCV	05/18/21	0902	10	2022	9.83	P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
ORP	SOP WA	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail	>100 NTU Std. _____ NTU	Date	Reading (NTU)	Pass or Fail
							Geosyntec Acceptance Criteria: $\pm 4.5\%$			Acceptance Criteria: $\pm 4.5\%$		
CAL	ICV	CCV	05/04/21	0945	220	2022	230	P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F

Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen membrane Charged? Yes No

1. See Table FS 2200-2 on the back of this form. Comments: _____

CAL - Initial Calibration 2

ICV - Initial Calibration Verification

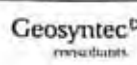
CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration.

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings ± 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable).

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7, and a third calibration point if needed (i.e. pH = 7).

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "Z" qualifier.



Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time																		Notes
P-1A																				
Depth to Water	ft		05/04/21																	
			0950																	
Dissolved Oxygen	mg/L			3.69																
ORP	mV			0.0																
pH	s.u.			-67.4																
PID	ppm			6.54																
CH ₄	% lcl			0.1																
H ₂ S	ppm			0																
CO	ppm			0																
O ₂	%			20.9																
AGI-14																				
Depth to Water	ft			2.61																
Dissolved Oxygen	mg/L			0.0																
ORP	mV			-54.1																
pH	s.u.			6.45																
PID	ppm			218.1																
CH ₄	% lcl			0																
H ₂ S	ppm			0																
CO	ppm			0																
O ₂	%			20.9																

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Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time																Notes
SP-06																			
Depth to Water	ft		3.52																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-35.4																
pH	s.u.		5.71																
PID	ppm		0.2																
CH ₄	% lcl		0																
H ₂ S	ppm		0																
CO	ppm		0																
O ₂	%		20.9																
SP-07																			
Depth to Water	ft		3.20																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-40.2																
pH	s.u.		6.08																
PID	ppm		0.2																
CH ₄	% lcl		100 ^(*)																
H ₂ S	ppm		2.5																
CO	ppm		0																
O ₂	%		0																
SP-04																			
Depth to Water	ft		3.05																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-4.3																
pH	s.u.		6.43																
PID	ppm		0																
CH ₄	% lcl		0																
H ₂ S	ppm		0																
CO	ppm		0																
O ₂	%		20.9																

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Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date								Notes
		Time								
CDM-21										
Depth to Water	ft	3.18								
Dissolved Oxygen	mg/L	0.0								
ORP	mV	-35.8								
pH	s.u.	6.52								
PID	ppm	0								
CH ₄	% let	0								
H ₂ S	ppm	0								
CO	ppm	0								
O ₂	%	18.5								

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Depth to water to be collected using a water level indicator and deconned between wells.
- Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
- VOC concentration data will be collected with a photoionization detector, calibrated weekly.
- Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time								Notes
VP-DPE3											
Pressure	in wc		0.001								
VOCs	ppm		-								
CH ₄	% lel		-								
H ₂ S	ppm		-								
CO	ppm		-								
O ₂	%		-								
VP-DPE6											
Pressure	in wc		0.000								
VOCs	ppm		0.0								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.6								
VP-DPE9											
Pressure	in wc		0.000								
VOCs	ppm		-								
CH ₄	% lel		-								
H ₂ S	ppm		-								
CO	ppm		-								
O ₂	%		-								

CO₂-007

Pressure 0.000

VOC 5.0

CH₄ 0

H₂S 0

CO 0

O₂ 20.1

vapor pin is installed loose

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes
		Time							
VP-1W3									
Pressure	in wc		0.150						
VOCs	ppm		0.1						
CH ₄	% lel		0						
H ₂ S	ppm		0						
CO	ppm		0						
O ₂	%		20.9						
VP-1W6									
Pressure	in wc		0.006						
VOCs	ppm		0.0						
CH ₄	% lel		0.0						
H ₂ S	ppm		0						
CO	ppm		0						
O ₂	%		20.9						
VP-1W9									
Pressure	in wc		0.027						
VOCs	ppm		0.0						
CH ₄	% lel		0						
H ₂ S	ppm		0						
CO	ppm		0						
O ₂	%		20.9						
VP-CO2-01		Collected once per week	VOC	H ₂ S	CH ₄	O ₂			
Pressure	in wc		0.051	0	0	0	20.9		
VP-CO2-03		Collected once per week	VOC	H ₂ S	CH ₄	O ₂			
Pressure	in wc		0.002	0	0	0	20.9		

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date									Notes	
		Time										
VP-CO2-05	Collected once per week	05-04-4	1102	VOL	MULTI-995							
Pressure	in wc	0.0	17.6	-								

Then vacuum is NO suction

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Pressure data will likely be collected with a manometer or similar instrument.
- VOC concentration data will be collected with a photoionization detector, calibrated weekly.
- Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

- in wc - inches water column
- ppm - parts per million
- VOCs - Volatile organic compounds

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	05/04/21	05/10/21	05/14/21	05/18/21	05/20/21				Notes
RW-12-G											
Pressure	in wc	115	4 psi	3	3	off-0	3				
Flow Rate	scfm		6	7	7	0	7				
Pulse Rate			20/5	20/5	-	-	-				
K-packer pressure	psi		35/90	-	-	-	-				
DO	mg/L		-	-	-	-	-				
ORP	mV		-	-	-	-	-				
RW-19-G											
Pressure	in wc		2.5	4	4	off-0	4				
Flow Rate	scfm		6	6	6	0	6				
Pulse Rate			20/5	20/5	20/5	-	-				
K-packer pressure	psi		86/90	-	-	-	-				
DO	mg/L		-	-	-	-	-				
ORP	mV		-	-	-	-	-				
RW-47-D											
Pressure	in wc		4								
Flow Rate	scfm		6								
Pulse Rate			20/5								
K-packer pressure	psi		85/90								
DO	mg/L		-								
ORP	mV		-								

Table 1C
 Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date		1510	1515	1520				Notes
		Time	Time							
GS-01										
Pressure	in wc		2.5	2.5	0 off	2.5	2.5			
Flow Rate	scfm		6	6	0	6	6			
Pulse Rate			2015	2015	2015	—	—			
DO	mg/L		—	—	—	—	—			
ORP	mV		—	—	—	—	—			
GS-02										
Pressure	in wc		3							
Flow Rate	scfm		9							
Pulse Rate			2015							
DO	mg/L									
ORP	mV									
GS-03										
Pressure	in wc		3							
Flow Rate	scfm		9							
Pulse Rate			2015							
DO	mg/L		—							
ORP	mV		—							

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen and ORP to be collected before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and decontaminated between wells.

Acronyms:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft btoe - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

05.06.2021 Lilyblad DFR

0900 Arrival on-site.

0815 UNLOCK remediation trailer / sign-in

0830 Begin system checks

0855 Check packer pressure wait till semis / forklift
out of way

0915 Begin system check with stagger pulsing

~ 1020 Begin calibration of PID, multi-gas, Hang

1050 Begin Well parameters

1200 Vapor parameters

~ 1310 extract logging data

1345 Redeploy loggers / check in w/ engineer

1415 Depart / scan notes at end of day

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: _____ Project #: _____ Field Personnel: N. Tondecki

Water Quality Meter - Model/Serial #										Turbidimeter - Model/Serial #			
Parameter	DEP SOP	Date	Time	Temp (°C)	Saturation (mg/L)¹	Reading (mg/L)	Reading (%)	Pass or Fail	0.1 - 10 NTU Std	Date	Reading (NTU)	Pass or Fail	
Dissolved Oxygen DEP SOP FT 1500										0.1 - 10 NTU			
Acceptance Criteria: ± 0.2 mg/L										Acceptance Criteria: $\pm 10\%$			
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
Specific Conductance DEP SOP FT 1200										11 - 40 NTU			
Acceptance Criteria: $\pm 5\%$										Acceptance Criteria: $\pm 5\%$			
CAL	ICV	CCV	05/06	1045	1409	2022	10.17	P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
pH DEP SOP FT 1100										41 - 100 NTU			
Acceptance Criteria: ± 0.2 SU										Acceptance Criteria: $\pm 6.5\%$			
CAL	ICV	CCV	05/06	1030	7	2022	7.08	P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV	05/06	1035	4	2022	4.16	P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV	05/06	1040	10	2022	9.58	P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
ORP SOP N/A										>100 NTU			
Geosyntec Acceptance Criteria: $\pm 5\%$										Acceptance Criteria: $\pm 5\%$			
CAL	ICV	CCV	05/06	1050	230	2022	214.8	P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	
CAL	ICV	CCV						P F	CAL	ICV	CCV	P F	

Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen membrane Changed? Yes No

1. See Table FB 2200.2 on the back of this form. Comments: _____

CAL - Initial Calibration ICV - Initial Calibration Verification CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during all calibration. Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings ± 0.1 mS/cm then the standard of 0.1 mS/cm is acceptable). Calibrate pH using at least two standards (pH 4 and 7) that bracket the range of expected sample readings. Always start with pH 7. Add a third calibration point if required (i.e., pH > 7). If parameter fails to calibrate within SOP acceptance criteria then several sample results with a "U" qualify.



Initial

Well ID	Units	Date Time	0835	0915	0920	0925	0930	0935	0940	0945	0950	Notes
RW-12-G												
Pressure	in wc		2.5					0	3	3	2.5	
Flow Rate	scfm		8	off				off	7.5	7.5	7.5	
Pulse Rate			20/S					-	-	-	-	
K-packer pressure	psi		45/90					-	-	-	-	
DO	mg/L		-					-	-	-	-	
ORP	mV		-					-	-	-	-	
RW-19-G												
Pressure	in wc		0					0.5	2.5	2.5	2.5	
Flow Rate	scfm		off	off				off	6.5	5.5	6.0	
Pulse Rate			20/S					-	-	-	-	
K-packer pressure	psi		80/90					-	-	-	-	
DO	mg/L		-					-	-	-	-	
ORP	mV		-					-	-	-	-	
RW-47-D												
Pressure	in wc		4.5	4.5	0	4.5	4.5					
Flow Rate	scfm		6	7	off=0	7.5	7.0		off			
Pulse Rate			20/S	20/S	20/S	20/S	20/S					
K-packer pressure	psi		80/12	-	-	-	-					
DO	mg/L		-	-	-	-	-					
ORP	mV		-	-	-	-	-					

Circuit # 1:
 circuit # 2:
 circuit # 3:
 circuit # 4:


Injection Well Test Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington



Well ID	Units	Date										Notes
		05/10/21	05/11/21	05/12/21	05/13/21	05/14/21	05/15/21	05/16/21	05/17/21	05/18/21	05/19/21	
GS-01												
Pressure	in wc	2.5						2.5	2.5	2.5	0	
Flow Rate	scfm	6					off	6	6	6	off-0	
Pulse Rate		2015						-	-	-	-	
DO	mg/L	-						-	-	-	-	
ORP	mV	-						-	-	-	-	
GS-02												
Pressure	in wc	3	3	3.5	1.0	3.5						
Flow Rate	scfm	6	7	7.5	off 0	7			off			
Pulse Rate		2015	2015	2015	2015	2015						
DO	mg/L	-	-	-	-	-						
ORP	mV	-	-	-	-	-						
GS-03												
Pressure	in wc	3	3	0	3	3						
Flow Rate	scfm	9	7.5	off	7	7		off				
Pulse Rate		2015	2015	2015	2015	2015						
DO	mg/L	-	-	-	-	-						
ORP	mV	-	-	-	-	-						

Notes
 Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen and ORP to be before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and decontaminated between wells.

- Acronyms:**
 in wc - inches water column
 scfm - standard cubic feet per minute
 scf - standard cubic feet
 ft bvac - feet below top of casing
 mV - millivolts
 DO - dissolved oxygen
 ORP - Oxidative reduction potential

1B
 Vapor Pin Filter Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

SynTec Consultants, Inc

Well ID	Units	Date Time								Notes
VP-DPE3										
Pressure	in wc		-0.028							
VOCs	ppm		—							
CH ₄	% lel		—							
H ₂ S	ppm		—							
CO	ppm		—							
O ₂	%		—							
VP-DPE6 → since out 10/21/21										
Pressure	in wc		0.001							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0.5							
CO	ppm		0							
O ₂	%		20.8							
VP-DPE9										
Pressure	in wc		0.000							
VOCs	ppm		—							
CH ₄	% lel		—							
H ₂ S	ppm		—							
CO	ppm		—							
O ₂	%		—							

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IB
 Vapor Pin Flow Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time							Notes
VP-IW3										
Pressure	in wc		0.098							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW6										
Pressure	in wc		0.000							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW9										
Pressure	in wc		0.000							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-CO2-01 Collected once per week										
				VOC	CH ₄	H ₂ S	CO	O ₂		
Pressure	in wc		0.004	0	0	0	0	20.9		
VP-CO2-03 Collected once per week										
Pressure	in wc		0.000	0	0	0	0	20.9		


 Vapor Pin Fra. Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date	Time							Notes
VP-CO2-05	Collected once per week	05/16/21	12:50							
		VOC CH ₄ H ₂ S CO O ₂								
Pressure	in wc	0.0	0.0	0	0	0	0	20.7		

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column
 ppm - parts per million
 VOCs - Volatile organic compounds

Scanned with CamScanner

Well ID	Units	Date Time									Notes
CDM-20											
Depth to Water	ft		3.72								
Dissolved Oxygen	mg/l.		0								
ORP	mV		25.8								
pH	u.u.		6.65								
PHD	ppm		70.7								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								
CDM-16											
Depth to Water	ft		3.81								
Dissolved Oxygen	mg/l.		0.0								
ORP	mV		45.9								
pH	u.u.		6.52								
PHD	ppm		0.4								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								
CDM-17											
Depth to Water	ft		3.91								
Dissolved Oxygen	mg/l.		0.0								
ORP	mV		10.3								
pH	u.u.		6.91								
PHD	ppm		0.0								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								

Well ID	Units	Date							Notes
		Time							
P-1A									
Depth to Water	ft		3.73						
Dissolved Oxygen	mg/L		0.0						
ORP	mV		-20.1						
pH	s.u.		6.59						
PID	ppm		16.2						
CH ₄	% lel		0						
H ₂ S	ppm		0						
CO	ppm		0						
O ₂	%		20.9						
AGI-14									
			1100						
Depth to Water	ft		2.55						
Dissolved Oxygen	mg/L		0.0						
ORP	mV		-42.5						
pH	s.u.		6.59						
PID	ppm		165.4						
CH ₄	% lel		0						
H ₂ S	ppm		0						
CO	ppm		0						
O ₂	%		20.9						

Well ID	Units	Date	Time																Notes
B-29																			
			05/06/21																
			1115																
Depth to Water	ft		3.15																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-6.3																
pH	s.u.		6.21																
PID	ppm		0.1																
CH ₄	% lcl		23 ^{ppm} /100 ^{lcl}																
H ₂ S	ppm		2.5																
CO	% Vol ppm		0																
O ₂	%		16.5																
SP-06																			
			3.49																
Depth to Water	ft		3.49																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-5.5																
pH	s.u.		5.95																
PID	ppm		0.6																
CH ₄	% lcl		0																
H ₂ S	ppm		0																
CO	ppm		0																
O ₂	%		20.9																
SP-04																			
Depth to Water	ft																		
Dissolved Oxygen	mg/L																		
ORP	mV																		
pH	s.u.																		
PID	ppm																		
CH ₄	% lcl																		
H ₂ S	ppm																		
CO	ppm																		
O ₂	%																		

Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Geosyntec Consultants, Inc.

Well ID	Units	Date							Notes
		Time							
CDM-21		05/06/21	1125						
Depth to Water	ft		3.13						
Dissolved Oxygen	mg/L		0.0						
ORP	mV		-1.9						
pH	s.u.		6.76						
PID	ppm		0.0						
CH ₄	% lsl		0						
H ₂ S	ppm		0						
CO	ppm		0						
O ₂	%		16.4						

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

PROJECT No.: Lily Blad

DATE: 05/11/21

PROJECT NAME:

CHECKED BY:

DESIGNED BY: N. Tandecki

PAGE 1 OF 1

- 0800 Arrival at site
- 0815 System checks / sign-in
- 0840 Well checks for pressures / flows
- 0950 Upload new programming logic
- 1000 Begin calibration (PID, multigas, Hana)
- 1020 Well parameter collection
- ~ 1140 ~~FF~~ Vapor pin parameter collection
- 1220 Logger Download. DPE - from 6' radius
- 1240 New orders to swap GS-01 vapor pin to 9' radius
- ~ 1315 Begin locking up site / check out / depart field location to scan field notes: submit purchase approval for rotorhammer for tomorrow's installation.

Table 2
System Operation Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Date	Time	General			Notes
		System Operating (y/n)	Compressor hour meter (hrs)	Pressure after Blower (in ^{wc} PSI)	
05.04.2001	0840	Y	6877.4	15	77°F blower temp
05.11.21	0840	Y	7045.5	14	79°F blower

Table IA
Monitoring Well Field Data Collection
Libbylad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time									Notes
CDM-20			1103								
Depth to Water	ft		3.71								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		88.8								
pH	s.u.		6.18								
PID	ppm		121.5								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0.0								
O ₂	%		20.0								
CDM-18											
Depth to Water	ft		3.88								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		83.5								
pH	s.u.		6.39								
PID	ppm		0.1								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								
CDM-17											
Depth to Water	ft		3.94								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		70.3								
pH	s.u.		6.83								
PID	ppm		0								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								

Table IA
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time																	Notes
P-1A			5/11																
			1015																
Depth to Water	ft		3.75																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		60.2																
pH	s.u.		6.75																
PID	ppm		31.3																
Cl ₂	% lcl		0																
H ₂ S	ppm		0																
CO	ppm		0																
O ₂	%		20.9																
AGI-14			1023																
			2.55																
Depth to Water	ft		2.55																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		36.9																
pH	s.u.		6.56																
PID	ppm		250.2																
Cl ₂	% lcl		0																
H ₂ S	ppm		0																
CO	ppm		0																
O ₂	%		20.9																

Table IA
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date									Notes
		Time									
B-29											
Depth to Water	ft		09/11/21								
			3.35								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		67.9								
pH	s.u.		6.24								
PID	ppm		0.0								
CH ₄	% lcl		100(4)								
H ₂ S	ppm		3.5								
CO	ppm		0								
O ₂	%		14.3								
SP-06											
			1030								
Depth to Water	ft		3.61								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		46.4								
pH	s.u.		6.32								
PID	ppm		0.0								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								
SP-04											
Depth to Water	ft		3.10								
Dissolved Oxygen	mg/L		0.0								
ORP	mV		68.9								
pH	s.u.		7.48								
PID	ppm		0.0								
CH ₄	% lcl		0								
H ₂ S	ppm		0								
CO	ppm		0								
O ₂	%		20.9								

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Table IA
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time																	Notes
CDM-21		05/11/14	1100																	
Depth to Water	ft		3.18																	
Dissolved Oxygen	mg/L		0.0																	
ORP	mV		60.5																	
pH	s.u.		7.12																	
PID	ppm		0.0																	
CH ₄	% lel		0																	
H ₂ S	ppm		0																	
CO	ppm		0																	
O ₂	%		19.0																	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

ft - feet
 mg/L - milligrams per liter
 mV - millivolts
 ORP - Oxidative reduction potential
 ppm - parts per million
 s.u. - standard units
 VOCs - Volatile organic compounds

Table IC
 Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	05/11/21 0900	0905	0910	0915	0920	0925	0930	0935	0940	Notes
RW-12-G												
Pressure	in wc							3	3	0	3.5	
Flow Rate	scfm							7	7	OFF-0	7	
Pulse Rate								15/5	15/5	15/5	15/5	
K-packer pressure	psi		40/90					-	-	-	-	
DO	mg/L		-					-	-	-	-	
ORP	mV		-					-	-	-	-	
RW-19-G												
Pressure	in wc							2.5	2.5	0	2.5	
Flow Rate	scfm							5.5	6.0	OFF-0	6.0	
Pulse Rate								15/5	15/5	15/5	15/5	
K-packer pressure	psi		80/90					-	-	-	-	Pushing up - 4.5 psi
DO	mg/L		-					-	-	-	-	
ORP	mV		-					-	-	-	-	
RW-47-D												
Pressure	in wc		OFF-0	2.5	2.5	2.5	OFF-0					
Flow Rate	scfm		OFF-0	9.0	9.0	9.0	OFF-0					
Pulse Rate			15/5	15/5	15/5	15/5	15/5	15/5				
K-packer pressure	psi		85/92	-	-	-	-					
DO	mg/L		-	-	-	-	-					
ORP	mV		-	-	-	-	-					

Table 1C
Injection Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date									Notes
		Time	0704	0711	0717	0720	0725	0731	0735	0740	
GS-01											
Pressure	in wc							2.5	0	2.5	2.5
Flow Rate	scfm							6	OFF-0	6.5	6.5
Pulse Rate								15/5	15/5	15/5	15/5
DO	mg/l							-	-	-	-
ORP	mV							-	-	-	-
GS-02											
Pressure	in wc		3.5	0	3	3.5	3.5				
Flow Rate	scfm		7.5 7.5	0-off	7	7.5	7.5				
Pulse Rate			15/5	15/5	15/5	15/5	15/5				
DO	mg/l		-	-	-	-	-				
ORP	mV		-	-	-	-	-				
GS-03											
Pressure	in wc		0	3	4.0	4.0	8.0				
Flow Rate	scfm		0-OFF	6.5	7.0	9.0	OFF-0				
Pulse Rate			15/5	15/5	15/5	15/5	15/5				
DO	mg/l		-	-	-	-	-				
ORP	mV		-	-	-	-	-				

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
Pressure data will likely be collected with a manometer or similar instrument.
Dissolved oxygen and ORP to be collected before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells

Acronyms:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- A bicc - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date								Notes
		Time								
VP-DPE3										
Pressure	in wc		0.001							
VOCs	ppm		—							
CH ₄	% lcl		—							
H ₂ S	ppm		—							
CO	ppm		—							
O ₂	%		—							
VP-DPE6										
Pressure	in wc		1.225							
VOCs	ppm		0.0							
CH ₄	% lcl		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		0							
VP-DPE9										
Pressure	in wc		0.000							
VOCs	ppm		—							
CH ₄	% lcl		—							
H ₂ S	ppm		—							
CO	ppm		—							
O ₂	%		—							

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

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Well ID	Units	Date Time								Notes
VP-IW3										
Pressure	in wc		0.031							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW6										
Pressure	in wc		0.000							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-IW9										
Pressure	in wc		0.000							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO	ppm		0							
O ₂	%		20.9							
VP-CO2-01 Collected once per week										
				VOC	CH ₄	H ₂ S	CO	O ₂		
Pressure	in wc		0.001	0.0	0	0	0	20.9		
VP-CO2-03 Collected once per week										
Pressure	in wc		0.000	0.0	0	0	0	20.9		

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date							Notes
		Time							
VP-CO2-05	Collected once per week	05/11							
		1265							
			VOC	CH ₄	H ₂ S	CO	O ₂		
Pressure	in wc		0.002	0.0	0	0	0	20.9	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.

VOC concentration data will be collected with a photoionization detector, calibrated weekly.

Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column

ppm - parts per million

VOCs - Volatile organic compounds

**Geosyntec Consultants
Water Quality Instrument Calibration Form**

Project/Site _____ Project # _____ Field Personnel _____

Water Quality Meter - Model/Serial # _____								Turbidimeter - Model/Serial # _____				
Dissolved Oxygen	DEP SOP FT 1469	Date	Time	Temp (°C)	Saturation (mg/L)	Reading (mg/L)	Reading (%)	Pass or Fail	6.1 - 10 NTU Std	Date	Reading (NTU)	Pass or Fail
Acceptance Criteria: $\pm 0.2 \text{ mg/L}$								Acceptance Criteria: $\pm 10\%$				
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail	11 - 40 NTU Std	Date	Reading (NTU)	Pass or Fail
Acceptance Criteria: $\pm 5\%$								Acceptance Criteria: $\pm 6.5\%$				
CAL ICV CCV		05/04/21	0940	1409			2022 1405	F F	CAL ICV CCV			P F
CAL ICV CCV		05/11/21	1100	1409			2022 1508	F F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail	61 - 100 NTU Std	Date	Reading (NTU)	Pass or Fail
Acceptance Criteria: $\pm 0.2 \text{ SU}$								Acceptance Criteria: $\pm 6.5\%$				
CAL ICV CCV		05/04/21	0930	4			2022 4.35	F F	CAL ICV CCV			P F
CAL ICV CCV		05/04/21	0935	7			2022 7.17	F F	CAL ICV CCV			P F
CAL ICV CCV		05/11/21	0902	10			2022 9.83	F F	CAL ICV CCV			P F
CAL ICV CCV		05/11/21		7				P F	CAL ICV CCV			P F
CAL ICV CCV		5/11		4				P F	CAL ICV CCV			P F
CAL ICV CCV		5/11		10				P F	CAL ICV CCV			P F
ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail	>100 NTU Std	Date	Reading (NTU)	Pass or Fail
Geosyntec Acceptance Criteria: $\pm 5\%$								Acceptance Criteria: $\pm 5\%$				
CAL ICV CCV		05/04/21	0945	220			2022 230	F F	CAL ICV CCV			P F
CAL ICV CCV		5/11	1010	220				P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F
CAL ICV CCV								P F	CAL ICV CCV			P F

Specific Conductance Probe Cleaned? Yes No Dissolved Oxygen membrane Changed? Yes No

1. See Table FB 2200-2 on the back of this form.
 CAL - Initial Calibration
 ICV - Initial Calibration Verification
 CCV - Continuing Calibration Verification
 Allow adequate time for the dissolved oxygen sensor to equilibrate during all calibration.
 Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings $< 0.1 \text{ mS/cm}$ then one standard of 0.1 mS/cm is acceptable).
 Calibrate pH using at least two standards (for pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7, add a third calibration point if needed (i.e. pH = 7).
 If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier.

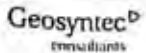


Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time									Notes
		05/12/21										
RW-12-G												
Pressure	in wc		2									
Flow Rate	scfm		6.5									
Pulse Rate			50/5									
K-packer pressure	psi		45/90									
DO	mg/L		-									
ORP	mV		-									
RW-19-G												
Pressure	in wc		2.5									
Flow Rate	scfm		6									
Pulse Rate			50/5									
K-packer pressure	psi		85/91									
DO	mg/L		-									
ORP	mV		-									
RW-47-D												
Pressure	in wc		4									
Flow Rate	scfm		6									
Pulse Rate			50/5									
K-packer pressure	psi		90/90									
DO	mg/L		-									
ORP	mV		-									

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	05/12/21									Notes
GS-01												
Pressure	in wc		2									
Flow Rate	scfm		6.5									
Pulse Rate			50/5									
DO	mg/l		-									
ORP	mV		-									
GS-02												
Pressure	in wc		3									
Flow Rate	scfm		6.5									
Pulse Rate			50/5									
DO	mg/l		-									
ORP	mV		-									
GS-03												
Pressure	in wc		3									
Flow Rate	scfm		9									
Pulse Rate			50/5									
DO	mg/l		-									
ORP	mV		-									

Notes:
 Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen and ORP to be before and after the pilot, collected using a HANNA HI-9142, or similar equipment, calibrated daily and decontaminated between wells.

Acronyms:
 in wc - inches water column
 scfm - standard cubic feet per minute
 scf - standard cubic feet
 ft bgs - feet below top of casing
 mV - millivolts
 DO - dissolved oxygen
 ORP - Oxidative reduction potential

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date Time											Notes
VP-DPE3 New install													
Pressure	in wc		0.042										
VOCs	ppm		2.5										
CH ₄	% lcl		0										
H ₂ S	ppm		0										
CO	ppm		0										
O ₂	%		20.0										
VP-DPE6													
Pressure	in wc		0.004										
VOCs	ppm		0.0										
CH ₄	% lcl		0										
H ₂ S	ppm		0										
CO	ppm		0										
O ₂	%		0										
VP-DPE9													
Pressure	in wc		0.000										
VOCs	ppm		—										
CH ₄	% lcl		—										
H ₂ S	ppm		—										
CO	ppm		—										
O ₂	%		—										

	GS-02-6'	GS-03-6'
Pressure	0.002	0.002
VOC	0.7	51.9
CH ₄	0	0
H ₂ S	0	1.0
CO	0	0
O ₂	20.9	20.0

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes
		Time							
VP-IW3									
Pressure	in wc	0.035							
VOCs	ppm	0.0							
CH ₄	% lcl	0							
H ₂ S	ppm	0							
CO	ppm	0							
O ₂	%	0							
VP-IW6									
Pressure	in wc	0.000							
VOCs	ppm	0.0							
CH ₄	% lcl	0							
H ₂ S	ppm	0							
CO	ppm	0							
O ₂	%	20.9							
VP-IW9									
Pressure	in wc	0.000							
VOCs	ppm	0.0							
CH ₄	% lcl	0							
H ₂ S	ppm	0							
CO	ppm	0							
O ₂	%	20.9							
VP-CO2-01		Collected once per week	VOC	CH ₄	H ₂ S	CO	O ₂		
Pressure	in wc	0.009	0.0	0	0	0	20.9		
VP-CO2-03		Collected once per week							
Pressure	in wc	0.000	0.0	0	0	0	20.9	-	
VP-CO2-05		Collected once per week							

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	VOC	CH ₄	H ₂ S	CO	O ₂				Notes
Pressure	in wc	05/12/21	0.002	0.0	0	0	0	20.9			

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.

Pressure data will likely be collected with a manometer or similar instrument.

VOC concentration data will be collected with a photoionization detector, calibrated weekly.

Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column

ppm - parts per million

VOCs - Volatile organic compounds

PROJECT No: Lilyblad

DATE: 05/12/21

PROJECT NAME: _____

CHECKED BY: _____

DESIGNED BY: N. Tandecki

PAGE 1 OF 1

0900 Gather supplies for vapor pin installation

0930 Rental pick-up

0945 Arrival at site. Begin system checks

1030 Vapor pin installation

↳ GS-03-6'

↳ GS-02-6'

↳ New DPE-3' pin installed

1230 DPEVP08 on DPE-6' has been moved to dpevp09.

1250 Vapor parameters collected

1400 Put away materials, scanning notes, editing note sheets to accommodate addition of CO₂ parameter, rental company calls, schedules, follow

~ ~~1600~~ end field day

PROJECT No.: Lilyblad

DATE: 05/14/2021

PROJECT NAME:

CHECKED BY:

DESIGNED BY: N. Tandeecki

PAGE 1 OF

0830 Gather Rental supplies / shop vac for VP install

0930 Site check-in

0945 System checks

1020 PID calibration / multi-gas / Gem 5000 /

1040 Hang calibration
Standard cal. points

VNA			
Conduct	1409	1768	
PH			4.12
4	4	7	7.18
7	7	10	9.91
10	10		
ORP	220mV	198.9	

1050 Well parameters

1215 Vapor parameters

↳ vapor pins at VP-DPE3' ; VP+PPE 9' both stopped Gem 5000 flow

↳ Vapor pin at VP-DPE3'-New was split at sil. con. pressure data collected is no good. Discard data

1315 Begin installation of new vapor pins / extract old vapor pins at VP-DPE-3' ; 9'. Install at VP-B61; VP-B62

1445 Mark out location across the street.

1515 Return rental equipment. Depart for office

1600 Scan field notes.

VP-B61 is at the DPE wells

VP-B62 is at the tank farm

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes	
VP-DPE3											
Pressure	in wc	0.031	Old DPE 3 Flow stopped Gem 5000 Move VP								Silicon split discard data at pressure logger
VOCs	ppm	3.1									
CH ₄	% lcl	0									
H ₂ S	ppm	0									
CO	ppm	0									
CO ₂	ppm	1.3									
O ₂	%	20.1									
VP-DPE6											
Pressure	in wc	0.000									
VOCs	ppm	0.0									
CH ₄	% lcl	0									
H ₂ S	ppm	0.5									
CO	ppm	0									
CO ₂	ppm	0.7									
O ₂	%	19.4									
VP-DPE9											
Pressure	in wc		Flow stopped Gem 5000 Move VP								
VOCs	ppm										
CH ₄	% lcl										
H ₂ S	ppm										
CO	ppm										
CO ₂	ppm										
O ₂	%										

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date Time									Notes
VP-IW3											
Pressure	in wc	05/14/21 1215	0.031								
VOCs	ppm		0.0								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0								
CO ₂	ppm		0.0								
O ₂	%		20.9								
VP-IW6											
Pressure	in wc		0.000								
VOCs	ppm		0								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0								
CO ₂	ppm		0.0								
O ₂	%		20.9								
VP-IW9											
Pressure	in wc		0.013								
VOCs	ppm		0								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0								
CO ₂	ppm		0.0								
O ₂	%		20.9								
VP-CO2-01											
Pressure			^{pressure} M 0.009	CH ₄	H ₂ S	CO	CO ₂	O ₂	VOC		
				0	0.5	0	0.1	20.9	0.1		

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	ASPH							Notes
VP-CO2-03		ASPH 12:30	Pressure	VOC	CH4	H2S	CO	CO2	O2	
			0.001	0.00	0.0	0.0	0.0	0.0	20.9	
VP-CO2-05										
			0.000	0.0	0.0	0.0	0.0	2.0	20.9	
VPGS-02-6'										
			0.000	0.00	0.0	0.5	0.0	0.0	20.9	
VPGS-03-6'										
			0.000	0.0	0.0	1.0	0.0	0.1	20.9	
VP-BG1										
			0.000	0.0	0.0	1.0	0	2.3	18.9	
VP-BG2										
			0.000	0.0	0.0	0.0	0.0	4.3	16.5	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column
 ppm - parts per million

By DPE-Wells

1420 Finish install at VP-BG2

Well ID	Units	Date							Notes
		05/06/21	05/19/21						
CDM-20									
Depth to Water	ft		3.72	3.74					
Dissolved Oxygen	mg/L		0	0					
ORP	mV		25.8	30.1					
pH	s.u.		6.65	6.47					
PID	ppm		70.7	67.8					
CH ₄	% lcl		0	0					
H ₂ S	ppm		0	0					
CO	ppm		0	0/0.5					
O ₂	%		20.9	20.9					
CDM-16									
Depth to Water	ft		3.81	3.92					
Dissolved Oxygen	mg/L		0.0	0.0					
ORP	mV		45.9	12.1					
pH	s.u.		6.52	6.64					
PID	ppm		0.4	0.0					
CH ₄	% lcl		0	0					
H ₂ S	ppm		0	0					
CO	ppm		0	0.0/0.1					
O ₂	%		20.9	20.9					
CDM-17									
Depth to Water	ft		3.91	3.96					
Dissolved Oxygen	mg/L		0.0	0.0					
ORP	mV		10.5	9.1					
pH	s.u.		6.91	7.01					
PID	ppm		0.0	0.0					
CH ₄	% lcl		0	0					
H ₂ S	ppm		0	0					
CO	ppm		0	0/0.1					
O ₂	%		20.9	20.9					

CO/CO2

T-101A
Monitoring Well Field Data Collection
LibbyMed Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time										Notes
P-1A		05-06-21	1050	1101									
Depth to Water	ft	3.73	3.85										
Dissolved Oxygen	mg/L	0.0	0.0										
ORP	mV	-20.1	-4.2										
pH	s.u.	6.59	6.89										
PID	ppm	16.2	4.3										
CH ₄	% lcl	0	0										
H ₂ S	ppm	0	0										
CO	ppm	0	0/0.2										
O ₂	%	20.9	20.9										
AGI-14				1100									
Depth to Water	ft	2.55	2.71										
Dissolved Oxygen	mg/L	0.0	0.0										
ORP	mV	-42.5	-45.5										
pH	s.u.	6.59	6.86										
PID	ppm	165.4	175.1										
CH ₄	% lcl	0	0										
H ₂ S	ppm	0	0										
CO / CO ₂	ppm	0	0/0.2										
O ₂	%	20.9	20.9										

Well ID	Units	Date								Notes
		05/06/21	05/14/21							
B-29										
Depth to Water	ft		115	3.15	3.33					
Dissolved Oxygen	mg/L			0.0	0.0					
ORP	mV			-6.3	-7.3					
pH	s.u.			6.21	6.23					
PID	ppm			0.1	0.4					
CH ₄	% lcl			23 ^{vol} /100 ^{lcl}	52.4					
H ₂ S	ppm			2.5	1.5					
CO	% Vol ppm			0	0/15.5					
O ₂	%			16.5	11.9					
SP-06										
Depth to Water	ft			3.49	3.12					
Dissolved Oxygen	mg/L			0.0	0.0					
ORP	mV			-5.5	-7.4					
pH	s.u.			5.95	6.06					
PID	ppm			0.6	0.6					
CH ₄	% lcl			0	0.0					
H ₂ S	ppm			0	0.5					
CO	ppm			0	0.0/0.3					
O ₂	%			20.9	20.9					
SP-04										
Depth to Water	ft			3.09						
Dissolved Oxygen	mg/L			0.00						
ORP	mV			10.3						
pH	s.u.			6.75						
PID	ppm			0.1						
CH ₄	% lcl			0						
H ₂ S	ppm			0						
CO	ppm			0/0						
O ₂	%			20.9						

Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc

Well ID	Units	Date		Notes
		Time		
CDM-21		05/06/21	5/14/21	
		1125	1130	
Depth to Water	ft	3.13	3.21	
Dissolved Oxygen	mg/L	0.0	0.0	
ORP	mV	-1.9	-3.8	
pH	s.u.	6.76	6.71	
PID	ppm	0.0	0.0	
CH ₄	% lcl	0	0	
H ₂ S	ppm	0	0	
CO	ppm	0	0/0.2	
O ₂	%	16.4	17.4	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization doector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

ft - feet
 mg/L - milligrams per liter
 mV - millivolts
 ORP - Oxidative reduction potential
 ppm - parts per million
 s.u. - standard units
 VOCs - Volatile organic compounds

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time										Notes
RW-12-G												
Pressure	in wc		5									
Flow Rate	scfm		6									
Pulse Rate			5015									
K-packer pressure	psi		40/90									
DO	mg/L		—									
ORP	mV		—									
RW-19-G												
Pressure	in wc		3									
Flow Rate	scfm		6.5									
Pulse Rate			5016									
K-packer pressure	psi		85/90									
DO	mg/L		—									
ORP	mV		—									
RW-47-D												
Pressure	in wc		4.5									
Flow Rate	scfm		6									
Pulse Rate			5015									
K-packer pressure	psi		87/90									
DO	mg/L		—									
ORP	mV		—									

Table 1C
Injection Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time									Notes
RW-12-G											
Pressure	in wc		3.5								
Flow Rate	scfm		6								
Pulse Rate			50/s								
K-packer pressure	psi		35/90								
DO	mg/L		—								
ORP	mV		—								
RW-19-G											
Pressure	in wc		2.5								
Flow Rate	scfm		6								
Pulse Rate			50/s								
K-packer pressure	psi		85/90								
DO	mg/L		—								
ORP	mV		—								
RW-47-D											
Pressure	in wc		4.5								
Flow Rate	scfm		6.5								
Pulse Rate			50/s								
K-packer pressure	psi		85/90								
DO	mg/L		—								
ORP	mV		—								

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time									Notes
GS-01											
Pressure	in wc		2.5								
Flow Rate	scfm		7.5								
Pulse Rate			50/5								
DO	mg/L		—								
ORP	mV		—								
GS-02											
Pressure	in wc		3								
Flow Rate	scfm		6								
Pulse Rate			50/5								
DO	mg/L		—								
ORP	mV		—								
GS-03											
Pressure	PSI in wc		3								
Flow Rate	scfm		6.5								
Pulse Rate			50/5								
DO	mg/L		—								
ORP	mV		—								

Notes
 Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen and ORP to be collected before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and decontaminated between wells.

Acronyms:
 in wc - inches water column
 scfm - standard cubic feet per minute
 scf - standard cubic feet
 ft bblc - feet below top of casing
 mV - millivolta
 DO - dissolved oxygen
 ORP - Oxidative reduction potential

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date Time								Notes
VP-DPE3-N										
		5/17 1110	1145							
Pressure	in wc		0.003							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO / CO ₂	ppm		0 / 1.1							
O ₂	%		19.4							
VP-DPE6										
Pressure	in wc									
VOCs	ppm									
CH ₄	% lel									
H ₂ S	ppm									
CO	ppm									
O ₂	%									
VP-DPE9										
Pressure	in wc									
VOCs	ppm									
CH ₄	% lel									
H ₂ S	ppm									
CO	ppm									
O ₂	%									

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Geosyntec Consultants, Inc.

Well ID	Units	Date	Time								Notes
VP-IW3											
Pressure	in wc		0.018								
VOCs	ppm		0.1								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0/0.1								
O ₂	%		20.9								
VP-IW6											
Pressure	in wc		0.016								
VOCs	ppm		0.1								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0/0.1								
O ₂	%		20.9								
VP-IW9											
Pressure	in wc		0.017								
VOCs	ppm		0.0								
CH ₄	% lel		0								
H ₂ S	ppm		0								
CO	ppm		0/0.2								
O ₂	%		20.9								
VP-CO2-01 Collected once per week											
Pressure	in wc		0.004	0.0	0	0.0	0	20.9	0.1		
VP-CO2-03 Collected once per week											
Pressure	in wc		0.001	0.0	0	0.0	0	20.9	0.1		
VP-BG1											
			0.003	0.0	0	0.0	0	16.3	3.2		
VP-BG2											
			0.000	0.0	0	0	0	20.0	3.7		

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes	
VP-CO2-05	Collected once per week	05/17	Pressure	VOC	NH ₃	CH ₄	H ₂ S	CO	O ₂	CO ₂	
Pressure	in wc		0.000	0.0		0	0	0	20.9	1.5	
<p><u>Notes</u> Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff. Pressure data will likely be collected with a manometer or similar instrument. VOC concentration data will be collected with a photoionization detector, calibrated weekly. Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.</p> <p><u>Acronyms:</u> in wc - inches water column ppm - parts per million VOCs - Volatile organic compounds</p>											
VP-GS-03-6'			0.000	0.0		0.0	0.0	0	20.9	0.1	
VP-GS-02-6'			0.000	0.0		0.0	0	0	20.9	0.1	

DRAFT

Table 1A
Monitoring Well Field Data Collection
Libbyland Cleanup Site, Tacoma, Washington

Geosyntec Consultants

CO/CO₂

Well ID	Units	Date	Time							Notes
CDM-20										
Depth to Water	ft		3.72	3.78						
Dissolved Oxygen	mg/L		0.0	0.0						
ORP	mV		-5.4	15.3						
pH	s.u.		6.03	6.58						
PID	ppm		186.5	124.3						
CH ₄	% lcl		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0/6.6						
O ₂	%		18.9	19.3	19.3					
CDM-19-18										
Depth to Water	ft		3.81	3.92						
Dissolved Oxygen	mg/L		0.0	0.0						
ORP	mV		-10.5	5.0						
pH	s.u.		6.79	6.48						
PID	ppm		0.6	0.2						
CH ₄	% lcl		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0/1.0						
O ₂	%		20.9	20.9						
CDM-17										
Depth to Water	ft		3.84	3.96						
Dissolved Oxygen	mg/L		0.0	0.0						
ORP	mV		-25.9	-5.9						
pH	s.u.		6.75	7.05						
PID	ppm		0.0	0						
CH ₄	% lcl		0	0						
H ₂ S	ppm		0	0						
CO	ppm		0	0/0.1						
O ₂	%		20.9	20.9						

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

CO/CO2

Well ID	Units	Date Time	05/04/21 0950	5/17 1015							Notes
P-1A											
Depth to Water	ft		3.69	3.85							
Dissolved Oxygen	mg/L		0.0	0.00							
ORP	mV		-67.4	38.5							
pH	s.u.		6.54	6.51							
PID	ppm		0.1	1.1							
CH ₄	% lcl		0	0							
H ₂ S	ppm		0	0							
CO	ppm		0	0/0.3							
O ₂	%		20.9	20.9							
AGI-14											
Depth to Water	ft		2.61	2.70							
Dissolved Oxygen	mg/L		0.0	0.0							
ORP	mV		-54.1	-10.5							
pH	s.u.		6.43	6.80							
PID	ppm		218.1	81.8							
CH ₄	% lcl		0	0							
H ₂ S	ppm		0	0							
CO	ppm		0	0/0.6							
O ₂	%		20.9	20.9							

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	5117						Notes
SP-06										
Depth to Water	ft			3.52	3.55					
Dissolved Oxygen	mg/L			0.0	0.0					
ORP	mV			-35.4	14.5					
pH	s.u.			5.71	5.90					
PID	ppm			0.2	0.5					
CH ₄	% lel			0	0					
H ₂ S	ppm			0	0					
CO / CO ₂	ppm			0	0 / 0.6					
O ₂	%			20.9	20.9					
SP-04										
Depth to Water	ft			3.20	3.25					
Dissolved Oxygen	mg/L			0.0	0.0					
ORP	mV			-40.2	4.3					
pH	s.u.			6.08	5.90 6.08					
PID	ppm			0.2	0.2					
CH ₄	% lel			100 (+)	100 (+)					
H ₂ S	ppm			2.5	3.5					
CO	ppm			0	0 / 12.4					
O ₂	%			20.9	15.5					
SP-04										
Depth to Water	ft			3.05	3.10					
Dissolved Oxygen	mg/L			0.0	0.0					
ORP	mV			-4.3	4.5					
pH	s.u.			6.43	6.58					
PID	ppm			0	0					
CH ₄	% lel			0	0					
H ₂ S	ppm			0	0					
CO	ppm			0	0 / 0.1					
O ₂	%			20.9	20.9					

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

0900
09

Well ID	Units	Date		Notes
		Time	Time	
CDM-21		05/04/21	5/17	
		1025	1046	
Depth to Water	ft	3.18	3.25	
Dissolved Oxygen	mg/L	0.0	0.0	
ORP	mV	-35.8	-4.5	
pH	s.u.	6.52	6.41	
PID	ppm	0	0	
CH ₄	% lcl	0	0	
H ₂ S	ppm	0	0	
CO	ppm	0	0/3.4	
O ₂	%	18.5	16.0	

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Depth to water to be collected using a water level indicator and deconned between wells.
- Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
- VOC concentration data will be collected with a photoionization detector, calibrated weekly.
- Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 05/17/21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N. Tandocki
 Recorded By: _____
 Weather: cloudy 70°F

Initial Calibration Completed at: 0955 (time)
 Final Calibration Check Completed at: 1020 (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	19.76	19.76	19.85
	instrument reading	4.21	7.26	9.85
	should read/calibrated to	4.00	7.00	10.00
final	temp. (°C)	19.85		
	instrument reading	9.85		

specific conductance calibration		standard (µS/cm)
initial	instrument reading	1501
	should read/calibrated to	1469
final	instrument reading	1501

ORP calibration		Zobell solution (mV)
initial	instrument reading	197.8
final	instrument reading	198.4

dissolved oxygen calibration		100%	0%
initial	temp. (°C)		
	instrument reading		
	should read/calibrated to		
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity: _____

Comments: (rental, condition, problems)

Rental

PROJECT No.: Lilyblad

DATE: 5/17/21

PROJECT NAME: _____

CHECKED BY: _____

DESIGNED BY: _____

PAGE 1 OF _____

0900 Arrival onsite / check-in
0915 system checks : pressure
0945 Calibrate PID / Multi-gas / Hana / GEM5000
1000 Well parameters
1100 Vapor parameters
1210 (Logger data downloaded
1240 Depart for Tacoma office
1300 Scan notes

Project Name: Lilyblad Efflux/Biospunge Project Number: PUR0097 Page 1 of 1
 Date: 5/18/21 Location: Tacoma, WA Logged By: Sasha Williams
 Weather Conditions: Sunny, 51°F, Passing rain showers
 Tailgate Safety Meeting Time: 1300 Contractor: _____

Personnel: Name	Company	Time In	Time Out
Sasha Williams	Geosyntec	12:03	1500
HQ Tram	Ecology	12:48	1300
Brent Miller	Geosyntec	12:50	1500

Time	Activities
12:29	Background vapor readings by GS-01: PID: 0.0 ppm CH ₄ : 0.0 ppm #25: su 0.1 ppm CO: su 0.0 ppm CO ₂ : 0.1 %
12:32	Collecting Vapor pin readings starting at GS-01
14:04	Call Michelle Myers to confirm SOP for vented cap. Only placing vented cap on top moving forward corrected previous placements

Copy to: _____ Total Hrs.: _____ Signature: _____

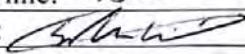
Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
		5/18/21		
CO2-01				
CH ₄	% tel ^{sw}		0	0 in well
H ₂ S	ppm		0	0 in well
CO	ppm		0	2 in well
CO ₂	%		0.3	1.2 in well
O ₂	%		23.3	20.3 in well 19 in well Gx
CO2-02				
CH ₄	0/0 % tel		0	
H ₂ S	to ppm		0	
CO	ppm		0.0	
CO ₂	%		0.1	
O ₂	%		21.4	
CO2-03				
CH ₄	% tel ^{sw}		0	11.8 in well
H ₂ S	ppm		0	0 in well
CO	ppm		0	0 in well
CO ₂	%		0.2	9.4 in well
O ₂	%		23.3	20.9 on Gx 2.1 in well
CO2-04				
CH ₄	% tel ^{sw}		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	%		7.2	
O ₂	%		14.5	

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Notes
		Time	
Well ID	Units	Date 5/18/21	Notes
Well ID	Units	Time	Notes
CO2-05			
CH ₄	% ^{sw} td	0	
H ₂ S	ppm	low flow	
CO	ppm	low flow	
CO ₂	%	1.1	1.0 in well
O ₂	%	20.0	20.9 in well
CO2-06 13:20			
CH ₄	% ^{sw} td	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	%	0.1 ^{sw} 1.2	
O ₂	%	21.0 ^{sw} 20.3	Box reads 19.2
CO2-07 13:30			
CH ₄	% ^{sw} td	0.0	Vapor pin loose
H ₂ S	ppm	0.5	
CO	ppm	0.0	
CO ₂	%	0.3	1.3 in well
O ₂	%	21.2	19.3 in well
CO2-08 14:13			
CH ₄	% ^{sw} td	0.2	7% td
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	%	0.9	
O ₂	%	20.8	19%

On-Site Health and Safety Tailgate Meeting Record Form

Project Name: <i>Lilyblad Biosparge</i>	Project Number: <i>PNROGA7</i>
Site Name: <i>Lilyblad</i>	Location: <i>Tacoma WA</i>
Meeting Date: <i>5/10/21</i>	Meeting Time: <i>1300</i>
Meeting Conducted by: <i>Sasha Williams</i>	Signature: 
The following topics shall be discussed (check [✓]) to indicate that the topic was discussed):	
<input type="checkbox"/> Biological Hazards	<input checked="" type="checkbox"/> Standard Operating Procedures
<input type="checkbox"/> Chemical Hazards	<input checked="" type="checkbox"/> Personal Protective Equipment (PPE)
<input checked="" type="checkbox"/> Physical Hazards	<input type="checkbox"/> Decontamination
<input checked="" type="checkbox"/> Traffic Safety	<input type="checkbox"/> Emergencies
<input type="checkbox"/> Air Monitoring (PID)	<input checked="" type="checkbox"/> Weather-Related Issues
<input type="checkbox"/> Site-Specific Hazards	<input type="checkbox"/> Near Misses or Incidents
Local Emergency Phone Number when Dialing from a Cell Phone (NOT 911): <i>St Joseph's 253-426-4101</i>	
Scope of Work/Additional Topics Discussed/Suggestions/Comments: <i>Eflux deployment</i>	
Task Hazard Analysis/Control Measure(s) of Topics Discussed: <i>high vis jackets, cones, face masks</i>	
List of Attendees:	
<i>Sasha Williams Geosyntec</i>	
<i>Ho Tan sign in place</i>	
<i>Brent Miller Geosyntec</i>	



**CO2 TRAP SHIPMENT AND INSTALLATION LOG
LNAPL NATURAL ATTENUATION STUDY**

Date: 5/11/2021

Date Returned to E-Flux: _____

Contaminant Type	Deployment Location	Retrieval Location	Identification on Outside of Trap Box	Trap Placed in Field		Trap Recovered from Field		Comments	Depth to Ground Water	LNAPL Thickness in Well	Smear Zone Thickness	
				Date	Time	Date	Time				Vadose Zone	Groundwater
Trap Data												
	CO ₂ -01	CO ₂ -01	10204-R2-CO2-01	5/18/21	14:45							
	CO ₂ -02	CO ₂ -02	10204-R2-CO2-02	5/18/21	13:09							
	CO ₂ -03	CO ₂ -03	10204-R2-CO2-03	5/18/21	13:21 SW 14:35							
	CO ₂ -04	CO ₂ -04	10204-R2-CO2-04	5/18/21	14:35 SW 14:25							
	CO ₂ -05	CO ₂ -05	10204-R2-CO2-05	5/18/21	13:53							
	CO ₂ -06	CO ₂ -06	10204-R2-CO2-06	5/18/21	13:29							
	CO ₂ -07	CO ₂ -07	10204-R2-CO2-07	5/18/21	13:43							
	CO ₂ -08	CO ₂ -08	10204-R2-CO2-08	5/19/21	14:18							
Travel Blanks												
				Date Received		Date Returned						
Travel Blank	Treatment shed		10204-R2-CO2-TB	5/17/21								

- Installation Steps - KEEP TRAPS UPRIGHT - CAUTION, CONTAINS CAUSTIC MATERIAL.**
- 1- Find the appropriate trap for the location chosen (see map). Remove housing from over Receiver.
 - 2- Remove screw-in caps (top and bottom). Add rain cover to top. Keep trap upright.
 - 3- Place trap on receiver in ground using 4 in rubber coupler. Tighten hose clamps on rubber coupler.
 - 4- At end of monitoring period, reverse steps. Cap both top and bottom of the trap.
 - 5- Keep upright while handling and shipping.

Return Traps to:
(970) 492-4360

E-Flux, LLC
200 West Lake St, RIC Room D230
Fort Collins, CO 80521-0922
Attn: E-Flux Receiving

Technician Name: _____

PROJECT No.: Lilyblad

DATE: 5/20/21

PROJECT NAME:

CHECKED BY:

DESIGNED BY: N. Tandeki

PAGE 1 OF

- 1200 Arrival onsite/checkin
- 1215 System checks
- 1225 Calibrate PID / Multigas / Hana / Gem 5000
- 1240 Well parameter collected up to SP-04, then switch to Vapor pin
- ~ 1330 Vapor pin data collected inside property
- 1420 Logger data collected / redeployed. Logger on IW-9' / DPE-3' New
- 1440 Well parameters collected / finish
- 1500 Collect Vapor pin data at IW-# wells
- 1515 Depart field location / pick-up field supply
- 1545 Scan field notes.
- ~ 1600 End field day

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes
		Time							
RW-12-G		05/20	12:05						
Pressure	in wc		4						
Flow Rate	scfm		6						
Pulse Rate			50/15						
K-packer pressure	psi		30/90						
DO	mg/L		—						
ORP	mV		—						
RW-19-G									
Pressure	in wc		4						
Flow Rate	scfm		6						
Pulse Rate			50/15						
K-packer pressure	psi		80/90						
DO	mg/L		—						
ORP	mV		—						
RW-47-D									
Pressure	in wc		4.5						
Flow Rate	scfm		6						
Pulse Rate			50/15						
K-packer pressure	psi		85/90						
DO	mg/L		—						
ORP	mV		—						

Table 1A
Monitoring Well Field Data Collection
Lilydell Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes
CDM-20			5/20							
		1430								
Depth to Water	ft		3.81							
Dissolved Oxygen	mg/L		0.0							
ORP	mV		-11.6							
pH	s.u.		6.51							
PID	ppm		0.0							
CH ₄	% lcl		0							
H ₂ S	ppm		0							
CO	ppm		0							
CO ₂	ppm		0.9							
O ₂	%		20.8							
CDM-18										
Depth to Water	ft		3.98							
Dissolved Oxygen	mg/L		0.0							
ORP	mV		-10.8							
pH	s.u.		6.62							
PID	ppm		0.0							
CH ₄	% lcl		0							
H ₂ S	ppm		0							
CO	ppm		0							
CO ₂	ppm		0.6							
O ₂	%		20.9							
CDM-17			1450							
Depth to Water	ft		4.05							
Dissolved Oxygen	mg/L		0.0							
ORP	mV		-24.3							
pH	s.u.		7.37							
PID	ppm		0.0							
CH ₄	% lcl		0							
H ₂ S	ppm		0							
CO	ppm		0							
CO ₂	ppm		0.1							
O ₂	%		20.9							

Table 1A
Monitoring Well Field Data Collection
Libbyland Cleanup Site, Tacoma, Washington

Well ID	Units	Date		Notes
		Time		
B-29				
Depth to Water	ft		3.35	
Dissolved Oxygen	mg/L		0.0	
ORP	mV		-23.9	
pH	s.u.		6.28	
PID	ppm		0.0	
CH ₄	% lcl		0.0 100 (+)	
H ₂ S	ppm		3.5	
CO	ppm		0	
CO ₂	ppm		16.2	
O ₂	%		15.4	
SP-06				
Depth to Water	ft		3.37	
Dissolved Oxygen	mg/L		0.0	
ORP	mV		-25.2	
pH	s.u.		6.36	
PID	ppm		0.0	
CH ₄	% lcl		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.4	
O ₂	%		20.9	
SP-04				
Depth to Water	ft		3.15	
Dissolved Oxygen	mg/L		0.0	
ORP	mV		-17.8	
pH	s.u.		7.17 7.17	
PID	ppm		0.0	
CH ₄	% lcl		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
02		20.9		

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time																Notes
CDM-21		5/17/09	1426																
Depth to Water	ft		3.73																
Dissolved Oxygen	mg/L		0.0																
ORP	mV		-54.4																
pH	s.u.		7.36																
PID	ppm		0.0																
CH ₄	% lcl		0																
H ₂ S	ppm		0																
CO	ppm		0																
CO ₂	ppm		2.7																
O ₂	%		20.9																

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosynce field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Llystad Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes
		Time							
VP-DPE3		05/20							
		1330							
Pressure	in wc	0.002							
VOCs	ppm	0.0							
CH ₄	% lel	0							
H ₂ S	ppm	0.5							
CO	ppm	0							
CO ₂	ppm	1.1							
O ₂	%	19.6							
VP-DPE6									
Pressure	in wc	0.000							
VOCs	ppm	0.0							
CH ₄	% lel	0							
H ₂ S	ppm	0							
CO	ppm	0							
CO ₂	ppm	0.5							
O ₂	%	20.6							
VP-DPE9									
Pressure	in wc								
VOCs	ppm								
CH₄	% lel								
H₂S	ppm								
CO	ppm								
CO₂	ppm								
O₂	%								

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyblud Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time								Notes
VP-IW3											
Pressure	in wc		0.018								
VOCs	ppm		0.0								
CH ₄	% lei		0								
H ₂ S	ppm		0								
CO	ppm		0								
CO ₂	ppm		0.0								
O ₂	%		20.7								
VP-IW6											
Pressure	in wc		0.001								
VOCs	ppm		0.0								
CH ₄	% lei		0								
H ₂ S	ppm		0								
CO	ppm		0								
CO ₂	ppm		0.1								
O ₂	%		20.9								
VP-IW9											
Pressure	in wc		0.014								
VOCs	ppm		0.0								
CH ₄	% lei		0								
H ₂ S	ppm		0								
CO	ppm		0								
CO ₂	ppm		0.1								
O ₂	%		20.9								
VP-CO2-01	1505	Pressure	H2S	VOC	CH ₄	CO	CO ₂	O ₂			
		0.003	0.0	0.0	0	0	0.1	20.9			

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes
VP-CO2-03	Pressure	5/20 ~1330	VOC	H ₂ S	CH ₄	CO	CO ₂	O ₂		
	0.000		0.0	0	0	0	0	20.9		
VP-CO2-05										
	0.000		9.7	0	0	0	1.1	19.6		
GS-02-6' (13/15)										
	0.000		0.0	0.5	0	0	0.1	20.9		
GS-03-6'										
	0.000		25.3	0.0	0	0	0.1	20.8		
VP-BG1										
	0.000		15.9	0	0	0	2.3	19.1		
VP-BG2										
	0.000		0.0	0	0	0	3.0	17.8		

14/20 loggers re-deployed

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 05/20/21 Page 1 of 1
 Project Number: _____ Primary Activities: PID calibration
 Field Personnel: N. Tandeki Multi-gas
 Recorded By: N. Tandeki
 Weather: 70°F cloudy

Initial Calibration Completed at: 1222 (time)
 Final Calibration Check Completed at: 1232 (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	15.56	17.11	16.49
	instrument reading	4.04	7.11	9.91
	should read/calibrated to	4.00	7.00	10.00
final	temp. (°C)	15.99	17.13	16.51
	instrument reading	4.04	7.11	9.91

specific conductance calibration		standard (µS / cm)
initial	instrument reading	1440
	should read/calibrated to	1409
final	instrument reading	1440

ORP calibration		Zobell solution (+221 mV Zobell reads)
		220
initial	instrument reading	212.4
final	instrument reading	215.4

dissolved oxygen calibration		100%	0%
initial	temp. (°C)		
	instrument reading		
	should read/calibrated to		
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments (rental condition, problems)

05/25/21

Lilyblad: Biosparge

18-
1/1

1000 Arrival at field location

1015 system checks. Locate photos

1050 calibrate PID/Multi-gas/Hana/Gem 5000

1105 well checks for parameters

↳ shallow : deep for field method validity

1300 Vapor data parameters

-1400 Logger data collected / redeploy at IW9' : Pre 3'-N

1415 lock up site / depart

1445 scan notes / email

Table 1A
Monitoring Well Test Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

System Consultants, Inc.

Well ID	Units	Date		5/25		5/25		Notes
		Time		Shallow	Deep (13')			
CDM-20								
Depth to Water	ft		3.72	3.74		3.81	—	
Dissolved Oxygen	mg/L		0	0		0.0	0.0	
ORP	mV		25.8	30.1		-29.7	-26.4	
pH	s.u.		6.65	6.47		6.92	6.59	
PID	ppm		70.7	67.8		0.0	—	
CH ₄	% lcl		0	0		0	—	
H ₂ S	ppm		0	0		0	—	
CO	ppm		0	0/0.5		0/2.4	✓	
O ₂	%		20.9	20.9		20.4	—	
CDM-16								
Depth to Water	ft		3.81	3.92		4.00	—	
Dissolved Oxygen	mg/L		0.0	0.0		0.0	0.00	
ORP	mV		45.9	12.1		-9.1	-9.2	
pH	s.u.		6.52	6.64		6.72	6.43	
PID	ppm		0.4	0.0		0.0	—	
CH ₄	% lcl		0	0		0	—	
H ₂ S	ppm		0	0		0	—	
CO	ppm		0	0.0/0.1		0/0.1	—	
O ₂	%		20.9	20.9		19.8	—	
CDM-17								
Depth to Water	ft		3.91	3.96		4.08	—	
Dissolved Oxygen	mg/L		0.0	0.0		0.00	0.00	
ORP	mV		10.3	9.1		-26.8	-24.9	
pH	s.u.		6.91	7.01		7.13	7.03	
PID	ppm		0.0	0.0		0.0	—	
CH ₄	% lcl		0	0		0	—	
H ₂ S	ppm		0	0		0	—	
CO	ppm		0	0/0.1		0/0.0	—	
O ₂	%		20.9	20.9		20.9	—	

CO/CO2

TERRA
Monitoring Well Field Data Collection
Libbyland Cleanup Site, Tacoma, Washington



Well ID	Units	Date	05-06-21	05/14/21	5/25	5/25					Notes
		Time	1050		Shallow	Deep					
P-1A											
1101											
Depth to Water	ft		3.73	3.85	3.90	3.90					
Dissolved Oxygen	mg/L		0.0	0.0	0.0	0.0					
ORP	mV		-20.1	-4.2	-20.6	-25.8					
pH	s.u.		6.59	6.89	6.35	6.47					
PID	ppm		16.2	4.3	0.3	-					
CH ₄	% lcl		0	0	0	-					
H ₂ S	ppm		0	0	0	-					
CO / CO ₂	ppm		0	0 / 0.2	0 / 0.2	-					
O ₂	%		20.9	20.9	20.9	-					
AGI-14											
1100											
Depth to Water	ft		2.55	2.71	2.80	-					
Dissolved Oxygen	mg/L		0.0	0.0	0.0	0.0					
ORP	mV		-42.5	-45.5	-43.2	-58.6					
pH	s.u.		6.59	6.86	6.39	6.54					
PID	ppm		165.4	175.1	163.9	-					
CH ₄	% lcl		0	0	0.0	-					
H ₂ S	ppm		0	0	0.0	-					
CO / CO ₂	ppm		0	0 / 0.2	0 / 0.1	-					
O ₂	%		20.9	20.9	20.9	-					

T A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington



Well ID	Units	Date Time	05/06/21	05/14/21	S125 UPR Screen	S125 DEEP				Notes
B-29										
115										
Depth to Water	ft		3.15	3.33	3.35	—				
Dissolved Oxygen	mg/L		0.0	0.0	0.00	0.00				
ORP	mV		-6.3	-7.3	-35.4	-36.0				
pH	s.u.		6.21	6.23	6.29	6.26				
PID	ppm		0.1	0.4	0.6					
CH ₄	% lcl		23 ^{vol} /100	52.4	35.3					
H ₂ S	ppm		2.5	1.5	2.5					
CO	% vol ppm		0	0/15.5	0/15.8					
O ₂	%		16.5	11.9	15.3					
SP-06										
115										
Depth to Water	ft		3.49	3.12	3.61					
Dissolved Oxygen	mg/L		0.0	0.0	0.00	0.00				
ORP	mV		-5.5	-7.4	-39.9	-40.5				
pH	s.u.		5.95	6.06	6.02	5.87				
PID	ppm		0.6	0.6	0.4	0.				
CH ₄	% lcl		0	0.0	0					
H ₂ S	ppm		0	0.5	0.0					
CO	ppm		0	0.0/0.3	0/0.6					
O ₂	%		20.9	20.9	20.9					
SP-04										
Depth to Water	ft		Observed	3.09	3.12					
Dissolved Oxygen	mg/L		Observed	0.00	0.0	0.0	0.0			
ORP	mV		Observed	10.3	-28.8	-24.3				
pH	s.u.		Observed	6.75	6.97	6.59				
PID	ppm		Observed	0.1	0.0					
CH ₄	% lcl		Observed	0	0					
H ₂ S	ppm		Observed	0	0					
CO	ppm		Observed	0/0	0/0.1					
O ₂	%		Observed	20.9	20.9					


Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	05/06/21	5/14/21		5/25	5/25				Notes
		Time	1125	1130		shallow	deep				
CDM-21											
Depth to Water	ft		3.13	3.21		3.30	—				
Dissolved Oxygen	mg/L		0.0	0.0		0.0	0.0				
ORP	mV		-1.9	-3.8		-51.3	-48.2				
pH	s.u.		6.76	6.71		6.45	6.50				
PID	ppm		0.0	0.0		0.0	—				
CH ₄	% lel		0	0		0	—				
H ₂ S	ppm		0	0		0	—				
CO	ppm		0	0/0.2		0/0.1	—				
O ₂	%		16.4	17.4		10.6	—				

Notes

- Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
- Depth to water to be collected using a water level indicator and deconned between wells.
- Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
- VOC concentration data will be collected with a photoionization detector, calibrated weekly.
- Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time								Notes
RW-12-G											
Pressure	in wc		5.5								
Flow Rate	scfm		6								
Pulse Rate			50/5								
K-packer pressure	psi		35/92								
DO	mg/L		—								
ORP	mV		—								
RW-19-G											
Pressure	in wc		3								
Flow Rate	scfm		6								
Pulse Rate			50/5								
K-packer pressure	psi		75/90								
DO	mg/L		—								
ORP	mV		—								
RW-47-D											
Pressure	in wc		2.5								
Flow Rate	scfm		6								
Pulse Rate			50/5								
K-packer pressure	psi		85/90								
DO	mg/L		—								
ORP	mV		—								

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date							Notes	
		Time								
GS-01			5/25/21	1045						
Pressure	in wc		2.5							
Flow Rate	scfm		6.5							
Pulse Rate			50/5							
DO	mg/L		—							
ORP	mV		—							
GS-02										
Pressure	in wc		3							
Flow Rate	scfm		6.5							
Pulse Rate			50/5							
DO	mg/L		—							
ORP	mV		—							
GS-03				1032						
Pressure	in wc		3							
Flow Rate	scfm		6.5							
Pulse Rate			50/5							
DO	mg/L		—							
ORP	mV		—							

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen and ORP to before and after the pilot, collected using a Horiba U-50, or similar equipment, calibrated daily and decontaminated between wells.

Acronyms:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft btoe - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes
VP-DPE3 - N										
		5/25	1325							
Pressure	in wc		0.001							
VOCs	ppm		0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO / CO ₂	ppm		0 / 0.8							
O ₂	%		20.9							
VP-DPE6										
Pressure	in wc		0.001							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0.5							
CO / CO ₂	ppm		0 / 0.4							
O ₂	%		20.9							
VP-DPE9										
Pressure	in wc									
VOCs	ppm									
CH ₄	% lel									
H ₂ S	ppm									
CO	ppm									
O ₂	%									

	GS-02-6'	GS-03-6'	VP-B6-1	VP-B62
Pressure	0.000	0.001	0.000	0.000
VOC	0.0	0.0	0.0	0.0
CH ₄	0.0	0	0	0
H ₂ S	0.0	0	0	0
CO	0	0	0	0.0
CO ₂	0.1	0.1	1.4	2.5
O ₂	20.9	20.9	18.9	17.6

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	5/25							Notes
VP-IW3										
Pressure	in wc		0.016							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO / CO ₂	ppm		0/0.1							
O ₂	%		20.9							
VP-IW6										
Pressure	in wc		0.000							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO / CO ₂	ppm		0/0.0							
O ₂	%		20.9							
VP-IW9										
Pressure	in wc		0.015							
VOCs	ppm		0.0							
CH ₄	% lel		0							
H ₂ S	ppm		0							
CO / CO ₂	ppm		0/0.0							
O ₂	%		20.9							
VP-CO2-01 Collected once per week										
			Pressure	H ₂ S	VOC	CH ₄	CO	CO ₂	O ₂	
Pressure	in wc		0.000	0	0	0	0	0.1	20.9	
VP-CO2-03 Collected once per week										
Pressure	in wc		0.000	0	0	0	0.0	0.0	20.9	

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time								Notes	
VP-CO2-05	Collected once per week	5/25	1330	pressure	VOC	H ₂ S	CO	CO ₂	CH ₄	O ₂	
Pressure	in wc		0.000	0.0	0	0	0.9	0	19.8		

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column
 ppm - parts per million
 VOCs - Volatile organic compounds

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lily Pond Date: 5/25/21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N. Tondecki
 Recorded By: _____
 Weather: cloudy 65° F

Initial Calibration Completed at: _____ (time) _____
 Final Calibration Check Completed at: _____ (time) _____

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	18.02	17.64	18.14
	instrument reading	4.12	7.08	9.88
	should read/calibrated to	4.00	7.00	10.00
final	temp. (°C)	18.00	17.65	18.14
	instrument reading	4.12	7.08	9.88

specific conductance calibration		standard (µS / cm)
initial	instrument reading	1418
	should read/calibrated to	1484
final	instrument reading	

ORP calibration		Zobell solution (+231 mv Zobell reads)
initial	instrument reading	228.0
final	instrument reading	227.3

dissolved oxygen calibration		100%	0%
initial	temp. (°C)		
	instrument reading		
	should read/calibrated to		
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental, condition, problems)

05/27/21 Lilyblad

0930 Arrival at field location

0945 Begin system checks

1010 Calibrate Hana, multigas, PIO, Gem 5000

~1030 Begin well parameters

1130 Begin vapor parameters

1300 Logger data uploaded / emailed. New program uploaded.

1330 Depart for Tacoma office to scan notes

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date		Notes
		Time		
RW-12-G			5/27/11	
			0935	
Pressure	in wc		4.5	
Flow Rate	scfm		7.5	
Pulse Rate			15/5	
K-packer pressure	psi		45/40	
DO	mg/L		—	
ORP	mV		—	
RW-19-G				
Pressure	in wc		4.5	
Flow Rate	scfm		6	
Pulse Rate			15/5	
K-packer pressure	psi		80/40	
DO	mg/L		—	
ORP	mV		—	
RW-47-D				
Pressure	in wc		5	
Flow Rate	scfm		6	
Pulse Rate			15/5	
K-packer pressure	psi		85/40	
DO	mg/L		—	
ORP	mV		—	

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
GS-01			
Pressure	in wc	5/7/21	
Flow Rate	scfm	2.5	
Pulse Rate		8.5	
DO	mg/L	15/5	
ORP	mV	—	
GS-02			
Pressure	in wc	3	
Flow Rate	scfm	6	
Pulse Rate		15/5	
DO	mg/L	—	
ORP	mV	—	
GS-03			
Pressure	in wc	3.5	
Flow Rate	scfm	7	
Pulse Rate		15/5	
DO	mg/L	—	
ORP	mV	—	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 Dissolved oxygen and ORP to be collected using a Horiba LI-50, or similar equipment, calibrated daily and decontaminated between wells.

Acronyms:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft bgs - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
CDM-20				
Depth to Water	ft	5/27	1100	
Dissolved Oxygen	mg/L		3.85	
ORP	mV		0.0	
pH	s.u.		-16.4	
PID	ppm		6.90	
CH ₄	% lel		108.6	
H ₂ S	ppm		0	
CO	ppm		0/0.2	
O ₂	%		20.6	
CDM-19				
Depth to Water	ft		3.75	
Dissolved Oxygen	mg/L		0.0	
ORP	mV		-10.3	
pH	s.u.		7.17	
PID	ppm		0.0	
CH ₄	% lel		0	
H ₂ S	ppm		0	
CO	ppm		0/0.0	
O ₂	%		20.9	
CDM-17				
Depth to Water	ft		4.01	
Dissolved Oxygen	mg/L		0.0	
ORP	mV		-39.3	
pH	s.u.		7.79	
PID	ppm		0.0	
CH ₄	% lel		0	
H ₂ S	ppm		0	
CO	ppm		0/0.0	
O ₂	%		20.9	

Table IA
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Table IA
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
P-1A		5/27/24	
1020			
Depth to Water	ft	3.91	
Dissolved Oxygen	mg/L	0.00	
ORP	mV	-16.1	
pH	s.u.	6.49	
PID	ppm	4.9	
CH ₄	% lcl	0	
H ₂ S	ppm	0	
CO / CO ₂	ppm	0 / 0.2	
O ₂	%	20.9	
1030			
Depth to Water	ft	3.65	
Dissolved Oxygen	mg/L	0.00	
ORP	mV	-35.8	
pH	s.u.	6.77	
PID	ppm	15.7	
CH ₄	% lcl	0	
H ₂ S	ppm	0	
CO / CO ₂	ppm	0 / 0.2	
O ₂	%	20.9	

Table 1A
Monitoring Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
B-29		5/27		
Depth to Water	ft	2.35		
Dissolved Oxygen	mg/L	0.00		
ORP	mV	-19.4		
pH	s.u.	6.33		
PID	ppm	0.1		
CH ₄	ppm	30		
H ₂ S	ppm	2.0		
CO	ppm	0/4.0		
O ₂	%	17.7		
SP-06				
		INEL		
Depth to Water	ft	3.55		
Dissolved Oxygen	mg/L	0.0		
ORP	mV	-25.1		
pH	s.u.	6.07		
PID	ppm	0.7		
CH ₄	% let	0		
H ₂ S	ppm	0		
CO	ppm	0/0.1		
O ₂	%	20.9		
SP-04				
Depth to Water	ft	3.10		
Dissolved Oxygen	mg/L	0.0		
ORP	mV	-41.3		
pH	s.u.	7.15		
PID	ppm	0.0		
CH ₄	% let	0		
H ₂ S	ppm	0		
CO	ppm	0/0.1		
O ₂	%	20.9		

Table JA
Monitoring Well Field Data Collection
Libby/Id Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-21			
Depth to Water	ft	5/27 10:55	
Dissolved Oxygen	mg/L	3.13	
ORP	mV	0.0 -49.5	
pH	s.u.	7.30	
PH	ppm	0.0	
CH ₄	ppm	0	
H ₂ S	ppm	0	
CO	ppm	0/17	
O ₂	%	1.1	

NOTES

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
Depth to water to be collected using a water level indicator and deconned between wells.
Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
VOC concentration data will be collected with a photoionization detector, calibrated weekly.
Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- R - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lybladd Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-DPE3			
Pressure	in wc	0.000	
VOCs	ppm	0.0	
CH ₄	% lel	0	
H ₂ S	ppm	0	
CO	ppm	0/1.0	
O ₂	%	20.9	
VP-DPE6			
Pressure	in wc	0.001	
VOCs	ppm	0.0	
CH ₄	% lel	0	
H ₂ S	ppm	0.5	
CO	ppm	6/0.5	
O ₂	%	20.9	
VP-DPE9			
Pressure	in wc		
VOCs	ppm		
CH ₄	% lel		
H ₂ S	ppm		
CO	ppm		
O ₂	%		

Well ID	Units	Date Time	Notes
GS-02-6			
Pressure	in wc	0.010	
VOC	ppm	0.0	
CH ₄	% lel	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
GS-03-6			
Pressure	in wc	0.00	
VOC	ppm	0.0	
CH ₄	% lel	0	
H ₂ S	ppm	0	
CO	ppm	0.1	
CO ₂	ppm	20.9	
O ₂	%	18.5	
VP-BG-1			
Pressure	in wc	0.000	
VOC	ppm	0	
CH ₄	% lel	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	1.8	
O ₂	%	20.9	
VP-BG-2			
Pressure	in wc	0.000	
VOC	ppm	0.0	
CH ₄	% lel	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	2.4	
O ₂	%	17.6	

Table 1B
Vapor Pin Field Data Collection
 Biospace Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time							Notes
VP-1W3									
Pressure	in wc								
VOCs	ppm		0.135						
CH ₄	ppm		0.0						
H ₂ S	ppm		0.0						
CO	ppm		0/0.0						
O ₂	%		20.9						
VP-1W6									
Pressure	in wc		0.008						
VOCs	ppm		0						
CH ₄	ppm		0						
H ₂ S	ppm		0						
CO	ppm		0/0.0						
O ₂	%		20.9						
VP-1W9									
Pressure	in wc		0.046						
VOCs	ppm		0.0						
CH ₄	ppm		0						
H ₂ S	ppm		0						
CO	ppm		0/0.1						
O ₂	%		20.9						
VP-CO2-01 Collected once per week. N/A									
Pressure	in wc		0.063						
VP-CO2-03 Collected once per week									
Pressure	in wc		0.000						

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lily Bld Date: 05-27-21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N. Tandecki
 Recorded By: _____
 Weather: sunny / Rain 60°F

Initial Calibration Completed at: 1000 (time)
 Final Calibration Check Completed at: _____ (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	<u>17.46</u>	<u>17.04</u>	<u>18.02</u>
	instrument reading	<u>4.17</u>	<u>7.04</u>	<u>9.89</u>
	should read/calibrated to	<u>4.00</u>	<u>7.00</u>	<u>10.00</u>
final	temp. (°C)	—	—	—
	instrument reading	—	—	—

specific conductance calibration		standard (µS / cm)
initial	instrument reading	<u>1404</u>
	should read/calibrated to	<u>1405</u>
final	instrument reading	

ORP calibration		Zobell solution (+231 mv Zobell reads)
initial	instrument reading	<u>220</u>
final	instrument reading	

dissolved oxygen calibration		100%	0%
initial	temp. (°C)		
	instrument reading		
	should read/calibrated to		
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental, condition, problems)

221.8
221.2

Table 1C
Injection Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
RW-12-G		5/28/12	
Pressure	in wc	0955	
Flow Rate	scfm	3	
Pulse Rate	psi	8.5	
K-packer pressure	psi	15/5	
DO	mg/L	60/90	
ORP	mV	—	
RW-19-G			
Pressure	in wc	2.5	
Flow Rate	scfm	6	
Pulse Rate	psi	15/5	
K-packer pressure	psi	85/90	
DO	mg/L	—	
ORP	mV	—	
RW-47-D			
Pressure	in wc	4.5	
Flow Rate	scfm	6	
Pulse Rate	psi	15/5	
K-packer pressure	psi	90/90	
DO	mg/L	—	
ORP	mV	—	

Table 1C
Injection Well Field Data Collection
 Lyall Creek Super Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
GS-01		5/28		
Pressure	in w.c.		1001	
Flow Rate	scfm		2.5	
Pulse Rate			7	
DO	mg/l		15/5	
ORP	mV		—	
			—	
GS-02				
Pressure	in w.c.		3.5	
Flow Rate	scfm		7	
Pulse Rate			15/5	
DO	mg/l		—	
ORP	mV		—	
GS-03				
Pressure	in w.c.		4	
Flow Rate	scfm		7.6	
Pulse Rate			15/5	
DO	mg/l		—	
ORP	mV		—	

Notes:

Monitoring well data to be collected daily for five weeks and two times per week for remainder of Pilot Test by Geosynthetic field staff
 Pressure data will likely be collected with a manometer or similar instrument
 Dissolved oxygen and ORP to be collected before and after the pulse, collected using a Horiba U-50, or similar equipment, calibrated daily and decontaminated wells

Abbreviations:

- in w.c. - inches water column
- scfm - standard cubic feet per minute
- w.c. - standard cubic feet
- ft base - feet below top of casing
- mV - millivolts
- DO - Dissolved oxygen
- ORP - Oxidative reduction potential

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
CDM-20				
Depth to Water	ft	5/28	12:15	
Dissolved Oxygen	mg/L		3.85	
ORP	mV		0.0	
pH	s.u.		6.57	
PID	ppm		0.0	
CH ₄	% lcl		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.4	
O ₂	%		20.8	
CDM-18				
Depth to Water	ft		3.82	
Dissolved Oxygen	mg/L		0.4	
ORP	mV		-5.3	
pH	s.u.		6.56	
PID	ppm		0.0	
CH ₄	% lcl		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
O ₂	%		20.9	
CDM-17				
Depth to Water	ft		3.88	
Dissolved Oxygen	mg/L		0.0	
ORP	mV		-17	
pH	s.u.		7.16	
PID	ppm		0.0	
CH ₄	% lcl		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
O ₂	%		20.9	

Table 1A
Monitoring Well Field Data Collection
Libbytail Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
P-7A			
Depth to Water	ft	5/28	
Dissolved Oxygen	mg/L	3.85	
ORP	mV	0.0	
pH	s.u.	33.3	
PID	ppm	6.64	
Cl ₂	% lcl	5.7	
H ₂ S	ppm	0	
ZO	ppm	0	
CO ₂	ppm	0.3	
O ₂	%	20.9	
AGI-14			
Depth to Water	ft	2.21	
Dissolved Oxygen	mg/L	0.0	
ORP	mV	15.7	
pH	s.u.	6.79	
PID	ppm	107.4	
Cl ₂	% lcl	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
SP-06 SP-06		5/128	
Depth to Water	ft	3.35	
Dissolved Oxygen	mg/L	0.0	
ORP	mV	5.8	
pH	s.u.	6.76	
PID	ppm	0.0	
CH ₄	% lcl	0	
H ₂ S	ppm	0	
CO	ppm		
CO ₂	ppm	0.2	
O ₂	%	20.9	
SP-04 SP-04			
Depth to Water	ft	3.55	
Dissolved Oxygen	mg/L	0.0	
ORP	mV	25.8	
pH	s.u.	6.45	
PID	ppm	0.0	
CH ₄	% lcl	32	
H ₂ S	ppm	0.5	
CO	ppm	0	
CO ₂	ppm	12.5	
O ₂	%	11.8	
SP-04 SP-04			
Depth to Water	ft	3.75	
Dissolved Oxygen	mg/L	0.00	
ORP	mV	-10.5	
pH	s.u.	7.55	
PID	ppm	0.0	
CH ₄	% lcl	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.0	

02

20.9

Table 1A
Monitoring Well Field Data Collection
 Lyfjold Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-21			
Depth to Water	ft	5/18	
Dissolved Oxygen	mg/L	3.65	
ORP	mV	0.0	
pH	s.u.	-33.4	
UID	ppm	7.10	
Cl ₁	% lcl	0.0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	15.8	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
 Vapor Pin Field Data Collection
 Bloumberg Pilot Test
 Lyblal Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	5/28	Notes
VP-DPE3				
Pressure	in wc		0.000	
VOC's	ppm		0.0	
CH ₄	% lel		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.6	
O ₂	%		20.9	
VP-DPE6				
Pressure	in wc		0.000	
VOC's	ppm		0.0	
CH ₄	% lel		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.7	
O ₂	%		20.9	
VP-DPE9				
Pressure	in wc			
VOC's	ppm			
CH ₄	% lel			
H ₂ S	ppm			
CO	ppm			
CO ₂	ppm			
O ₂	%			



Table III
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilybald Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time											Notes
VP-IW3													
Pressure	in w.c.	0.030											
VOCs	ppm	0.0											
CH ₄	% lcl	0											
H ₂ S	ppm	0											
CO	ppm	0											
CO ₂	ppm	0.1											
O ₂	%	20.9											
VP-IW6													
Pressure	in w.c.	0.000											
VOCs	ppm	0.0											
CH ₄	% lcl	0											
H ₂ S	ppm	0											
CO	ppm	0											
CO ₂	ppm	0.1											
O ₂	%	20.9											
VP-IW9													
Pressure	in w.c.	0.011											
VOCs	ppm	0.0											
CH ₄	% lcl	0											
H ₂ S	ppm	0											
CO	ppm	0											
CO ₂	ppm	0.2											
O ₂	%	20.9											
VP-CO2-01													
Pressure	in w.c.	0.018											
VOCs	ppm	0.0											
CH ₄	% lcl	0											
H ₂ S	ppm	0											
CO	ppm	0											
CO ₂	ppm	0.1											
O ₂	%	20.9											

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lylahdal Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time					Notes		
VP-C02-03		5/28/2							
			Pressure	CO ₂	CO	O ₂	N ₂ S	CH ₄	VOC
			0.001	0	0	20.9	0	0	0.00
VP-C02-05			0.000	1.0	0	20.8	0	0	0.0
GS-02-6'			0.017	9.1	0	20.9	0	0	0
GS-03-6'			0.000	0.2	0	20.9	0	0	0.0
<p>Notes</p> <p>Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosynce field staff.</p> <p>Pressure data will likely be collected with a manometer or similar instrument.</p> <p>VOC concentration data will be collected with a photoionization detector, calibrated weekly.</p> <p>Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.</p>									
VP-B61			0.000	3.0	0	15.5	0	0	0
<p>in wt - inches water column ppm - parts per million</p>									
VP-B67			0.000	3.0	0	19.9	0	0	0

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 05/28/21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N. Tandocki
 Recorded By: _____
 Weather: _____

Initial Calibration Completed at: 1010 (time)
 Final Calibration Check Completed at: _____ (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	<u>15.69</u>	<u>15.66</u>	<u>15.64</u>
	instrument reading	<u>3.91</u>	<u>6.89</u>	<u>9.95</u>
	should read/calibrated to	<u>4.00</u>	<u>7.00</u>	<u>10.00</u>
final	temp. (°C)	—	—	—
	instrument reading	—	—	—

specific conductance calibration		standard (µS / cm)
initial	instrument reading	<u>1415</u>
	should read/calibrated to	<u>1409</u>
final	instrument reading	<u>1415</u>

ORP calibration		Zobell solution (220 my Zobell reads) <u>220 (mv)</u>
initial	instrument reading	<u>218.7</u>
final	instrument reading	<u>219.0</u>

dissolved oxygen calibration		100%	0%
initial	temp. (°C)		
	instrument reading		
	should read/calibrated to		
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental) condition, problems

5/28/21 Lilyblad

0930 Arrival at field location

0950 System checks

1010 Calibrate HANA, Gem 5000, MultiGas, PID

1045 Well parameters on-site first due to limited hours

~1120 Inside vapor pins

1220 Well parameters outside compound

~1320 Logger downloaded / re-deploy

1345 Depart field location to scan notes.

PROJECT No. Lilyblad

DATE: 06-01-21

PROJECT NAME: _____

CHECKED BY: _____

DESIGNED BY: _____

PAGE 1 OF 1

- 0800 Depart for Tacoma field office to pick up cal fluid
- 0830 Arrive onsite
- 0845 Calibrate Hant
- 0910 well checks at CDM-17 : P-1A for ORP
- 0930 Lilyblad meeting
- 1015 Calibrate PID, Multigas, Gem 5000
- 1040 system checks
- 1115 well parameters continued
- 1230 Vapor parameters collected
- 1310 Logger redeployment at IW-a' : DPE-3'N
- 1320 call to PM with schedule
- 1330 Depart field location to Tacoma office to scan notes

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date		Notes
		Time		
RW-12-G				
Pressure	in wc		6-01-21	
Flow Rate	scfm	3.5	1020	
Pulse Rate		8.5		
K-spacer pressure	psi	15/5		
DO	mg/L	40/90		
ORP	mV	—		
RW-19-G				
Pressure	in wc	2.5		
Flow Rate	scfm	6.5		
Pulse Rate		15/5		
K-spacer pressure	psi	80/90		
DO	mg/L	—		
ORP	mV	—		
RW-47-D				
Pressure	in wc	4.5		
Flow Rate	scfm	6		
Pulse Rate		15+5		
K-spacer pressure	psi	85/90		
DO	mg/L	—		
ORP	mV	—		

Table 1C
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tuzena, Washington

Well ID	Units	Date Time	Notes
GS-01			
Pressure	in wc	6-01-21	
Flow Rate	scfm	2.5	
Pulse Rate	scfm	6.5	
DO	mg/L	15/5	
ORP	mV	-	
GS-02			
Pressure	in wc	3	
Flow Rate	scfm	6	
Pulse Rate	scfm	15/5	
DO	mg/L	-	
ORP	mV	-	
GS-03			
Pressure	in wc	3	
Flow Rate	scfm	6.5	
Pulse Rate	scfm	15/5	
DO	mg/L	-	
ORP	mV	-	

Notes
 Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff
 Pressure data will likely be collected with a manometer or similar instrument
 Dissolved oxygen and ORP to be collected before and after the field, collected using a HANNA U-50, or similar equipment, if located daily and determined between wells

- Acronyms:**
- in wc - inches water column
 - scfm - standard cubic feet per minute
 - scf - standard cubic feet
 - ft bnc - feet below top of casing
 - mg/L - milligrams
 - DO - dissolved oxygen
 - ORP - Oxidative reduction potential

Table 1A
Monitoring Well Field Data Collection
Ulybba Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-20			
Depth to Water	ft	6/01 12:0	
Dissolved Oxygen	mg/L	3.74	
ORP	mV	0.00	
pH	s.u.	-26.7	
PID	ppm	7.11	
CH ₄	% Vol	122.4	
H ₂ S	ppm	0	
CO	ppm	0.5	
CO ₂	ppm	0	
O ₂	%	18.1	
CDM-18			
Depth to Water	ft	3.98	
Dissolved Oxygen	mg/L	0.0	
ORP	mV	-24.7	
pH	s.u.	6.83	
PID	ppm	0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.0	
O ₂	%	20.9	
CDM-17			
Depth to Water	ft	4.05	
Dissolved Oxygen	mg/L	0.0	
ORP	mV	-46.9	
pH	s.u.	6.73	
PID	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	

Table 1A
Monitoring Well Field Data Collection
Libby/Blad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Notes
P-1A		6/01	
		0402	
Depth to Water	ft	3.91	
Dissolved Oxygen	mg/L	0.0	
ORP	mV	-34.3	
pH	s.u.	7.06	
PHD	ppm	0.9	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
AGI-14			
Depth to Water	ft	2.55	
Dissolved Oxygen	mg/L	0.00	
ORP	mV	-59.4	
pH	s.u.	7.11	
PHD	ppm	194.2	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0.1	
CO ₂	ppm	18.9	
O ₂	%		



Table 1A
Monitoring Well Field Data Collection
Lithofab Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
B-29			
Depth to Water	ft	6/01	
Dissolved Oxygen	mg/L	3.30	
ORP	mV	0.0	
pH	s.u.	-27.1	
PID	ppm	6.65	
CH ₄	% Vol	0.1	
H ₂ S	ppm	36	
CO	ppm	0.5	
CO ₂	ppm	0	
O ₂	%	3.0	
		9.2	
SP-06			
Depth to Water	ft	3.22	
Dissolved Oxygen	mg/L	0.00	
ORP	mV	-38.3	
pH	s.u.	6.46	
PID	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
SP-04			
Depth to Water	ft	2.85	
Dissolved Oxygen	mg/L	0.00	
ORP	mV	-75.7	
pH	s.u.	7.42	
PID	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0	
		20.9	

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time							Notes
CDM-21										
Depth to Water	ft	06/01								
Dissolved Oxygen	mg/L		11:15							
ORP	mV			3.09						
pH	s.u.			0.00						
PID	ppm			-60.1						
CH ₄	% Vol			7.68						
H ₂ S	ppm			0.0						
CO	ppm			0						
CO ₂	ppm			0.1						
O ₂	%			3.0						

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconncted between wells.
 Dissolved oxygen and ORP to be collected using a Horiba L-50, or similar equipment, calibrated daily and deconncted between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Abbreviations

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
VP-DPE3				
Pressure	in wc	6/01		
VOCs	ppm		0.000	
CH ₄	% Vol		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.4	
O ₂	%		20.9	
VP-DPE6				
Pressure	in wc		0.000	
VOCs	ppm		0	
CH ₄	% Vol		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.6	
O ₂	%		20.9	
VP-DPE9				
Pressure	in wc			
VOCs	ppm			
CH ₄	% Vol			
H ₂ S	ppm			
CO	ppm			
CO ₂	ppm			
O ₂	%			

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-JW3		6/01 1720	
Pressure	in wc	0.0/3	
VOCs	ppm	0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-JW6			
Pressure	in wc	0.000	
VOCs	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-JW9			
Pressure	in wc	0.011	
VOCs	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.0	
O ₂	%	20.9	
VP-CO2-01			
Pressure	Pressure	0.002	
VOCs	VOCs	0.2	
CH ₄	CH ₄	0	
CO	CO	0	
CO ₂	CO ₂	0.1	
H ₂ S	H ₂ S	0	
O ₂	O ₂	20.9	

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyblud Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	GPI	Pressure	VOC	H ₂ S	CH ₄	CO	CO ₂	O ₂	Notes
VP-CO2-03			0.000	0	0	0	0	0	0.0	20.9	
VP-CO2-05			0.000	0	0	0	0	0	1.1	20.8	
GS-02-6'			0.003	0.0	0	0	0	0	0.0	20.9	
GS-03-6'			0.000	0.0	0	0	0	0	0.2	20.9	
VP-BG1			0.000	0.0	0.5	0	0	0	2.4	16.9	
VP-BG2			0.000	0.0	0	0	0	0	2.1	19.8	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.

Pressure data will likely be collected with a manometer or similar instrument.

VOC concentration data will be collected with a photoionization detector, calibrated weekly.

Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column

ppm - parts per million

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 06/01/21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N. Tandecki
 Recorded By: _____
 Weather: 75°F Sunny

Initial Calibration Completed at: 0845 (time)
 Final Calibration Check Completed at: _____ (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	<u>26.27</u>	<u>25.92</u>	<u>25.54</u>
	instrument reading	<u>4.13</u>	<u>6.99</u>	<u>9.98</u>
	should read/calibrated to	<u>4.00</u>	<u>7.00</u>	<u>10.00</u>
final	temp. (°C)			
	instrument reading			

specific conductance calibration		standard (µS / cm)	
initial	instrument reading	<u>1410</u>	
	should read/calibrated to	<u>1409</u>	
final	instrument reading		

ORP calibration		Zobell solution (+231.mv Zobell reads)	
		<u>220</u>	
		<u>220 mV</u>	
initial	instrument reading	<u>214.5</u>	
final	instrument reading	<u>215.0</u>	

dissolved oxygen calibration		100%	0%
initial	temp. (°C)		
	instrument reading		
	should read/calibrated to		
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

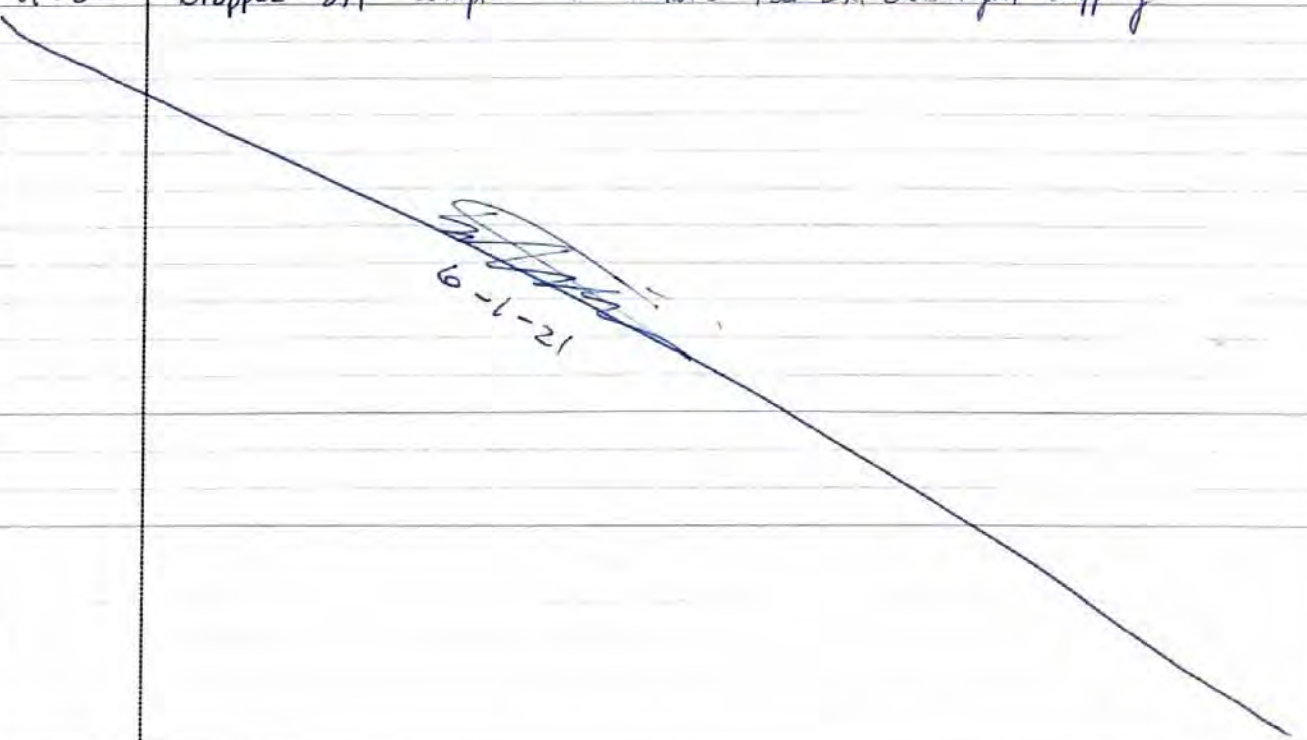
ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental, condition, problems)

Project Name: Lilyblad Biosponge **Project Number:** PNR0697 **Page** 1 **of** 2
Date: 6/1/21 **Location:** Tacoma, WA **Logged By:** Sasha Williams

Time	Activities
8:00	Arrive on site. Sign in at office
8:16	Get supplies from shed. collect ambient air readings by shed.
8:28	Collected CO ₂ -01
8:35	Collected CO ₂ -02
	Nate Tandocki on site, checking in.
8:42	Collected CO ₂ -05
8:50	Collected CO ₂ -07
8:59	Collected CO ₂ -06
9:05	Collected CO ₂ -03
9:10	Collected CO ₂ -08
9:17	CO ₂ -04
	Lilyblad biosponge team call
	Leaving site
11:30	Dropped off samples at Ballard Fed Ex. Overnight shipping
	

Project Name: *Lilyblad biosparge* Project Number: *PNR0697* Page 2 of 2

Date: *6/01/21* Location: *Port of Tacoma, WA* Logged By: *Sasha Williams*

Time	Activities					
	CO₂ - 01 -02 -03 -04^{**} -05 -06					
CH ₄ (%)	0.0	0.0	0.0	0.1	0.0	0.0
H ₂ S (ppm)	0.5	0.0	0.5	0.0	0.0	0.0
CO (ppm)	0.0	0.0	0.0	0.0	0.0	0.0
CO ₂ (%)	0.3	0.1	0.5	0.0	1.5	1.5
O ₂ (%)	21.0	21.0	20.8	21.1	18.8	19.5
	CO₂ - 07 -08 Ambient (in front of treatment trailer)					
CH ₄ (%)	0.0	0.2	0.0			
H ₂ S (ppm)	0	0.0	0.0			
CO (ppm)	0.0	0.0	0			
CO ₂ (%)	0.3	2.0	0.3^{sw} 0.1			
O ₂ (%)	20.4	18.7	21.3			
* Vapor readings collected from vapor pins prior to cartridge collection.						
** CO ₂ -04 has no vapor pin. vapor reading taken from inside of well w/ cap covering the top as much as possible.						
6-1-21						



CO2 TRAP SHIPMENT AND INSTALLATION LOG
LNAPL NATURAL ATTENUATION STUDY

Date: 5/11/2021

Date Returned to E-Flux: _____

Contaminant Type	Deployment Location	Retrieval Location	Identification on Outside of Trap Box	Trap Placed in Field		Trap Recovered from Field		Comments	Depth to Ground Water	Smear Zone Thickness		
				Date	Time	Date	Time			Valiase Zone	Groundwater	
				Trap Data								
	CO2-01	CO2-01	10204-R2-CO2-01	5/18/21	14:45	6/1/21	08:28					
	CO2-02	CO2-02	10204-R2-CO2-02	5/18/21	13:09	6/1/21	08:35					
	CO2-03	CO2-03	10204-R2-CO2-03	5/18/21	SW 14:35 13:21	6/1/21	09:05					
	CO2-04	CO2-04	10204-R2-CO2-04	5/18/21	SW 14:35 14:35	6/1/21	09:17					
	CO2-05	CO2-05	10204-R2-CO2-05	5/18/21	13:53	6/1/21	08:42					
	CO2-06	CO2-06	10204-R2-CO2-06	5/18/21	13:29	6/1/21	08:59					
	CO2-07	CO2-07	10204-R2-CO2-07	5/18/21	13:43	6/1/21	08:50					
	CO2-08	CO2-08	10204-R2-CO2-08	5/19/21	14:18	6/1/21	09:10					
				Travel Details								
Travel Blank	Treatment shed	Treatment shed	10204-R2-CO2-TB	5/17/21								

Technician Name: *Sasha Williams*

E-Flux, LLC
200 West Lake St, RIC Room D230
Fort Collins, CO 80521-0922
Attn: E-Flux Receiving

Return Traps to:
(970) 492-4360

- Installation Steps - KEEP TRAPS UPRIGHT - CAUTION, CONTAINS CAUSTIC MATERIAL.**
- 1- Find the appropriate trap for the location chosen (see map). Remove housing from over Receiver.
 - 2- Remove screws in caps (top and bottom). Add rain cover to top. Keep trap upright.
 - 3- Place trap on receiver in ground using 4 in rubber coupler. Tighten hose clamps on rubber coupler.
 - 4- At end of monitoring period, reverse steps. Cap both top and bottom of the trap.
 - 5- Keep upright while handling and shipping.



FedEx Office

Address: 1740 NW MARKET ST
 SEATTLE
 WA 98107
 Location: BFIKN
 Device ID: -BTC02
 Transaction: 940302528921

FedEx First Overnight
 787809904695 18.60 lb (S) 279.11
 Declared Value 0
 Recipient Address:
 Attn: E-Flux Receiving
 E-Flux LLC
 200 West Lake St, RIC Room D230
 Fort Collins, CO 80521
 9704924360

Scheduled Delivery Date 6/2/2021

Pricing option:
 STANDARD RATE

Package Information:
 Your Packaging
 19 x 16 x 11

Shipment subtotal: \$279.11

Total Due: \$279.11

(S) CreditCard: \$279.11

*****7580

M = Weight entered manually
 S = Weight read from scale
 T = Taxable item

Terms and Conditions apply. See
fedex.com/us/service-guide for details.

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Jun 01, 2021 11:30:36 AM

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 Tell us how we're doing
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 Redemption Code: _____

*** Thank you ***

PROJECT No.: Lilyblad

DATE: 06/03/21

PROJECT NAME: _____

CHECKED BY: _____

DESIGNED BY: N. Tandecki

PAGE 1 OF 1

0730 Depart to Tacoma office to pickup DI water

0800 Arrival onsite check in / system checks

0900 Calibrate HANNA, PID, Multigas, GEM5000

↳ Problem calibrating PH. call to FEI
Problem resolved.

↳ Problem calibrating DO. call to FeI resolved

Distilled water before calibration 4.70mg/L. After 5.30mg/L.

1120 Begin well parameters

1250 Begin vapor parameters

~1400 Send Logger data. Depart for Test America to
pick up sampling supplies for tomorrow.

1440 Blower off: 7603.2 Hours.

1500 Head to Tacoma office. scan notes

Table 1C
Injection Well Field Data Collection
 Lightfoot Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
RW-12-G		6/3	
		845	
Pressure	in wc	2.5	
Flow Rate	scfm	8	
Pulse Rate	psi	15/5	
K-packer pressure	psi	45/90	
DO	mg/L	—	
ORP	mV	—	
RW-19-G			
Pressure	in wc	3	
Flow Rate	scfm	6	
Pulse Rate	psi	15/5	
K-packer pressure	psi	80/90	
DO	mg/L	—	
ORP	mV	—	
RW-47-D			
Pressure	in wc	4	
Flow Rate	scfm	6	
Pulse Rate	psi	15/5	
K-packer pressure	psi	85/90	
DO	mg/L	—	
ORP	mV	—	

Table 1c
Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
GS-01		6/3	
Pressure	in wc	0400	
Flow Rate	scfm	2.5	
Pulse Rate		6.5	
DO	mg/L	15/5	
ORP	mV	—	
GS-02			
Pressure	in wc	3	
Flow Rate	scfm	8	
Pulse Rate		15/5	
DO	mg/L	—	
ORP	mV	—	
GS-03			
Pressure	in wc	3.5	
Flow Rate	scfm	7	
Pulse Rate		15/5	
DO	mg/L	—	
ORP	mV	—	

Notes:

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geospace field staff
 Pressure data will likely be collected with a manometer or similar instrument
 Dissolved oxygen and ORP to be before and after the pilot, collected using a HANNA U-50, or similar equipment, calibrated daily and accounted between wells.

ACRONYMS:

- in wc - inches water column
- scfm - standard cubic feet per minute
- scf - standard cubic feet
- ft bblc - feet below top of casing
- mV - millivolts
- DO - dissolved oxygen
- ORP - Oxidative reduction potential

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
CDM-20				
Depth to Water	ft	6/03	1206	
Dissolved Oxygen	mg/L		3.78	
ORP	mV		0.63	
pH	s.u.		-38.3	
PID	ppm		7.85	
CH ₄	% Vol		0.5	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
O ₂	%		20.5	
CDM-18				
Depth to Water	ft		4.01	
Dissolved Oxygen	mg/L		0.17	
ORP	mV		-28.8	
pH	s.u.		7.27	
PID	ppm		0.5	
CH ₄	% Vol		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
O ₂	%		20.4	
CDM-17				
Depth to Water	ft		12.30	
Dissolved Oxygen	mg/L		4.11	
ORP	mV		0.14	
pH	s.u.		-35.6	
PID	ppm		7.50	
CH ₄	% Vol		0.1	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0	
O ₂	%		0.0	
			20.7	

Table 1A
Monitoring Well Field Data Collection
Lafayette Cleanup Site - Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-21		6/03/21	
Depth to Water	ft	12.00	
Dissolved Oxygen	mg/L	3.06	
ORP	mV	0.65	
pH	su	-14.5	
RED	ppm	7.10	
CH ₄	% Vol	0.3	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	01	
O ₂	%	3.7	

Notes

Monitoring well data to be collected daily for first week, and two times per week for remainder of Pilot Test by GeoScience field staff
 Depth to water to be collected using a water level indicator and recorded between wells
 Dissolved oxygen and ORP to be collected using a HANNA DO-50 or similar equipment, calibrated daily and decommissioned between wells
 VOC concentration data will be collected with a photoionization detector, calibrated weekly
 Vapor composition data will be collected with a multi gas meter or similar instrument, calibrated weekly

Abbreviations

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- % - standard units
- VOC's - Volatile organic compounds

Table 1A
Monitoring Well Field Data Collection
Lafayette Cleanup Site, Phoenix, Michigan

Well ID	Units	Date Time	Notes
SP-29		6/03/11 11:55	
Depth to Water	ft	3.33	
Dissolved Oxygen	mg/l	1.02	
ORP	mV	-7.1	
pH	s.u.	6.69	
PHD	ppm	0.1	
CHL	% Vol	21.5	
H.S	ppm	3.5	
CO	ppm	0	
CO2	ppm	4.2	
CO	%	15.6	
SP-06			
Depth to Water	ft	3.41	
Dissolved Oxygen	mg/l	1.31	
ORP	mV	-11.2	
pH	s.u.	6.61	
PHD	ppm	0.5	
CHL	% Vol	0	
H.S	ppm	0	
CO	ppm	0	
CO2	ppm	0.1	
CO	%	20.9	
SP-04			
Depth to Water	ft	3.10	
Dissolved Oxygen	mg/l	0.66	
ORP	mV	-54.0	
pH	s.u.	7.47	
PHD	ppm	0.0	
CHL	% Vol	0	
H.S	ppm	0	
CO	ppm	0	
CO2	ppm	0.1	
		20.9	

02

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
P-1A		6/03/21	
		1135	
Depth to Water	ft	4.01	
Dissolved Oxygen	mg/L	0.30	
ORP	mV	-2.4	
pH	s.u.	6.85	
Fe	ppm	1.1	
Cl ₂	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	20.9	
AGI-14			
Depth to Water	ft	3.45	
Dissolved Oxygen	mg/L	0.95	
ORP	mV	-24.3	
pH	s.u.	7.04	
Fe	ppm	174.2	
Cl ₂	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	20.7	

Table 1B
Vapor Pin Field Data Collection
Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-DPE3		6/03/21	
		1750	
Pressure	in wc	0.000	
VOCs	ppm	0.16	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.9	
O ₂	%	20.5	
VP-DPE6			
Pressure	in wc	0.001	
VOCs	ppm	0.2	
CH ₄	% Vol	0	
H ₂ S	ppm	0.5	
CO	ppm	0	
CO ₂	ppm	0.5	
O ₂	%	20.7	
VP-DPE9			
Pressure	in wc		
VOCs	ppm		
CH ₄	% Vol		
H ₂ S	ppm		
CO	ppm		
CO ₂	ppm		
O ₂	%		

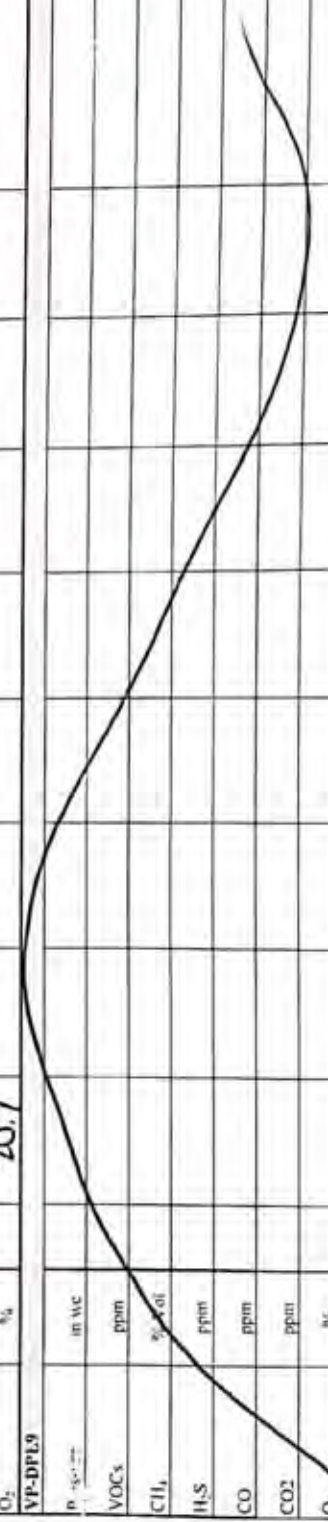


Table JB
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lillyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-1W3		6/03/21	
Pressure	in wc	0.022	
VOCs	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-1W6			
Pressure	in wc	0.000	
VOCs	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-1W9			
Pressure	in wc	0.012	
VOCs	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0.0	
CO ₂	ppm	0.0	
O ₂	%	20.9	
VP-CO2-01		1400	
Pressure		0.002	
VOCs		0.2	
CH ₄		0	
CO		0	
CO ₂		0.1	
O ₂		20.9	

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lulubidat Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	VOL	CH ₄	H ₂ S	CO	CO ₂	O ₂	Notes
VP-CO2-03		6/03/14							
		pressure							
		1320							
VP-CO2-05		0.001	0.0	0	0	0	0.0	20.9	
		0.002	7.1	0	0	0	1.7	18.5	
GS-02-6'		0.000	0.0	0	0	0	0.1	20.9	
GS-03-6'		0.000	3.4	0	0	0	2.4	20.9	
VP-BG1		0.000	8.3	0	0.5	0	2.4	17.5	
VP-BG2		0.000	0.3	0	0	0	1.8	19.3	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosynce field staff
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms:

in wc - inches water column
 ppm - parts per million

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 06/03/21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N. Tandecki
 Recorded By: N. Tandecki
 Weather: Cloudy 65°F

Initial Calibration Completed at: 0900 (time)
 Final Calibration Check Completed at: 1115 (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	23.06	22.37	23.16
	instrument reading	4.18	7.10	9.95
	should read/calibrated to	4.00	7.00	10.00
final	temp. (°C)			
	instrument reading			

specific conductance calibration		standard <u>10.0000</u> <u>4.450</u>
initial	instrument reading	4500 <u>uS/cm</u>
	should read/calibrated to	4450 <u>uS/cm</u>
final	instrument reading	4450 <u>uS/cm</u>

ORP calibration		Zobell solution <u>(+231 mv Zobell reads)</u>
		220
initial	instrument reading	213.3
final	instrument reading	213.3

Before calibration in DI: 4.70 mg/L

dissolved oxygen calibration		100%	0%
initial	temp. (°C)	25.5	
	instrument reading	97.5	
	should read/calibrated to	100	
final	temp. (°C)		
	instrument reading		

turbidity	
initial	instrument reading
final	instrument reading

Meter Summary
 pH Meter / Probe: Model:
 DO Meter / Probe: Model:
 ORP Meter / Probe: Model:
 Conductivity Meter / Probe: Model:
 Turbidity

Comments: (rental, condition, problems)
 Before cal. of DO: 4.70 mg/L in DI
 pH 7.00 would not calibrate. Check sensor issue.
 1040 Dissolved oxygen sensor not calibrating

After DO cal. 5.30 mg/L in DI

Project Name: *Lilyblad* Project Number: *PNR0697* Page 1 of 1
 Date: *6/4/21* Location: *2244 Port of Tacoma Rd* Logged By: *Sasha Williams*
 Weather Conditions: *Cloudy, 55°F, dry*
 Tailgate Safety Meeting Time: *9:15* Contractor:

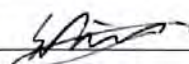

Personnel: Name	Company	Time In	Time Out
<i>Sasha Williams</i>	<i>Geosyntec</i>	<i>7:15</i>	<i>1:57</i>
<i>Mate Tandecki</i>		<i>7:30</i>	

Time	Activities
<i>7:28</i>	<i>Starting calibration of YSI</i>
<i>8:20</i>	<i>Call w/ Luke to discuss DO sensor cal issues on Hanna</i>
<i>8:30</i>	<i>Removed PVC connection from tops of RW-12-60, 1460 + 47D to sample through galvanized pipe. Measured DTW from top of Galvanized pipe minus top of pipe to top of casing.</i>
<i>1:50</i>	<i>Clearing up and leaving site</i>
<i>Im/ww</i> <i>6/4/21</i>	

Copy to: Total Hrs.: Signature:

Lab PO: 100025833

On-Site Health and Safety Tailgate Meeting Record Form

Project Name: <i>Lily 662</i>	Project Number: <i>PNR0697</i>
Site Name:	Location: <i>2244 Port of Tacoma Rd, Tacoma WA</i>
Meeting Date: <i>6/21/21</i>	Meeting Time: <i>9:12</i>
Meeting Conducted by:	Signature:
The following topics shall be discussed (check [✓]) to indicate that the topic was discussed):	
<input type="checkbox"/> Biological Hazards	<input checked="" type="checkbox"/> Standard Operating Procedures
<input type="checkbox"/> Chemical Hazards	<input checked="" type="checkbox"/> Personal Protective Equipment (PPE)
<input checked="" type="checkbox"/> Physical Hazards	<input type="checkbox"/> Decontamination
<input checked="" type="checkbox"/> Traffic Safety	<input checked="" type="checkbox"/> Emergencies
<input type="checkbox"/> Air Monitoring (PID)	<input type="checkbox"/> Weather-Related Issues
<input checked="" type="checkbox"/> Site-Specific Hazards	<input type="checkbox"/> Near Misses or Incidents
Local Emergency Phone Number when Dialing from a Cell Phone (NOT 911): <i>St Joseph's 253-426-4101</i>	
Scope of Work/Additional Topics Discussed/Suggestions/Comments: <i>Groundwater sampling from 6 injection wells</i>	
Task Hazard Analysis/Control Measure(s) of Topics Discussed:	
List of Attendees:	
<i>Sasha Williams</i> 	
<i>Nate Tardocki</i> 	

1/20/02

Groundwater Purging and Sampling Log

520 Pike Street, Suite 2600
Seattle, Washington 98101
PH 510.836.3034
FAX 510.836.3036

Project No: PNR0697 Task No: 05/2A Project Name: Lilyblad Date: 6 10 12
Site Location: Port of Tacoma Depth to Water (DTW)(ft): 6.65 Measurements Referenced to: TOC
Well ID: RW-12-G Total Well Depth (ft): 10.05 OVM (ppm) =
Screen Interval (ft): 4-10.05 Well Diameter (inch): 4 Casing Volume:
Pump Placement (ft): 9 DTW After Purge (ft): 8.24 3 Casing Volumes:
Sampler(s): NT

- Purging Equipment: () Disposable Bailer () Electric Submersible Pump () Bladder Pump
Sampling Equipment: () Disposable Bailer () Dedicated Tubing (x) Other: Peristaltic

Type of Water Quality Meter Used: Pro DSS YSI
(x) Low-Flow/Micro Purging
() Purge at least 3 well volumes

Volume of Schedule 40 PVC Pipe
Well Diameter (inches) gal/linear ft.
1.00 0.041
2.00 0.163
3.00 0.367
4.00 0.653
5.00 1.023
6.00 1.469

Hana
Ysi
Ysi
Ysi
Ysi
Ysi
Ysi
Ysi
Ysi
Ysi
Ysi

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs) (+ 10%)	DO (mg/l) (+ 0.3)	pH (units) (+ 0.1)	Spec. Cond. (uS/cm) (+ 3%)	ORP (mv) (+ 10mV)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
0930	-	-	0.80	6.98	2457	63.8	7.02		
0932	-	24.67	9.66	6.83	2996	186.6	13.6	200	
0934	-	24.51	9.23	7.25	3016	184.3	13.6	200	
0936	-	28.10	8.99	7.44	3026	183.1	13.6	200	
938	-	6.50	8.79	7.62	3041	181.9	13.6	200	
0940	-	8.95	8.72	7.72	3046	181.4	13.6	200	
0942	-	11.82	8.67	7.80	3052	181.2	13.6	200	
0944	-	13.67	8.61	7.87	3055	180.9	13.6	200	
0946	-	17.27	8.53	7.93	3059	180.7	13.6	200	
0948	-	20.55 4.05	8.41	7.99	3062	180.3	13.6	200	

Notes: CO2: 0.2 ppm Purge start 0929
Hana O2 flashing
Sample time 9:52

Total Gallons Purged:
Presence of Sheen in groundwater sample (yes/no):
Sample ID and Analysis: 060421-NT-RW12G
Duplicate Sample: N
Equipment Blank: N
Field Blank: N

**Groundwater Purging and
Sampling Log**

Project No:	Task No:	Project Name:	Date: / /
Site Location: <u>RW-126</u>	Depth to Water (DTW)(ft):	Measurements Referenced to: TOC	
Well ID:	Total Well Depth (ft):	OVM (ppm) =	
Screen Interval (ft):	Well Diameter (inch):	Casing Volume:	
Pump Placement (ft):	DTW After Purge (ft):	3 Casing Volumes:	
Sampler(s):			

- Purging Equipment:**
- Disposable Bailer
 - Electric Submersible Pump
 - Bladder Pump
- Sampling Equipment:**
- Disposable Bailer
 - Dedicated Tubing
 - Other: _____

- Type of Water Quality Meter Used:** _____
- Low-Flow/Micro Purging
 - Purge at least 3 well volumes

Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Ysi
Ysi
Hang

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec.Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(+ 10%)	(+ 0.3)	(+ 0.1)	(+ 3%)	(+ 10mV)	---	---	---
0950	—	3.62	8.30	8.04	3063	180.0	13.6	200	
0952	—	4.51	8.25	8.06	3061	179.8	13.6	200	
0952	—	—	0.64	7.70	2433	55.7	13.87	—	

Notes: _____

Total Gallons Purged: _____
 Presence of Sheen in groundwater sample (yes/no): _____
 Sample ID and Analysis: _____
 Duplicate Sample: _____
 Equipment Blank: _____
 Field Blank: _____

Project No: <u>PNR0697</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u> / /</u>
Site Location: <u>Port of Tacoma</u>		Depth to Water (DTW)(ft): <u>7.07</u>	Measurements Referenced to: <u>TOC</u>
Well ID: <u>RW-19-G</u>	Total Well Depth (ft): <u>10.35</u>	OVM (ppm) =	
Screen Interval (ft): <u>4-10.35</u>	Well Diameter (inch): <u>4</u>	Casing Volume:	
Pump Placement (ft): <u>9</u>	DTW After Purge (ft): <u>7.23</u>	3 Casing Volumes:	
Sampler(s): <u>NT</u>			

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: Peristaltic

Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: YSI

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Start time
10:18

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(± 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	---	---	---
10:19			3.84 5.07	5.71	3609	74.8	16.68		
10:21		101.24	6.06	5.01	4240	205.8	16.4	200	
10:23		55.30	4.63	5.34	4238	277.6	16.0	200	
10:26		24.68	2.93	3.16	3501	490.2	15.7	200	
10:28		31.74	2.85	3.23	4032	471.0	15.8	200	
10:30		29.64	2.74	3.30	3794	443.5	16.0	200	
10:32		24.14	2.03	3.30	3401	412.0	16.0	200	
10:34		23.45	1.70	3.29	3254	404.1	16.0	200	
10:36		21.51	1.32	3.27	3065	397.5	16.0	200	
10:38		20.30	1.21	3.26	2964	394.1	15.9	200	
10:40		20.45	1.12	3.26	2813	392.2	16.0	200	

Hanna
YSI

Sample time
10:40

Notes:

CO₂: 0.2 %

Purge water blue at 10:36

Total Gallons Purged:

Presence of Sheen in groundwater sample (yes/no): no

Sample ID and Analysis: 060421-NT-RW19G

Duplicate Sample: N

Equipment Blank: N

Field Blank: N

Hanna

10:40 1.15 3.11 2445 14304 16.16

**Groundwater Purging and
Sampling Log**

Project No: PNR0697 Task No: 05/2A Project Name: Lilyblad Date: 6/14/21
 Site Location: Port of Tacoma Depth to Water (DTW)(ft): 5.06 Measurements Referenced to: TOC
 Well ID: G2S-03 Total Well Depth (ft): 11 OVM (ppm) =
 Screen Interval (ft): 8-10 Well Diameter (inch): 2 Casing Volume:
 Pump Placement (ft): 9 DTW After Purge (ft): 8.30 3 Casing Volumes:
 Sampler(s):

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: Peristaltic

Volume of Schedule 40 PVC Pipe	
Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: YSI

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs) (+ 10%)	DO (mg/l) (+ 0.3)	pH (units) (+ 0.1)	Spec. Cond. (uS/cm) (+ 3%)	ORP (mv) (+ 10mV)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(+ 10%)	(+ 0.3)	(+ 0.1)	(+ 3%)	(+ 10mV)	---	---	---
1105			1.38	2.95	5639	156.5	18.94		
1107	6.74	10.21	2.27	3.41	6358	340.5	19.0		
1109	7.43	10.89	2.08	3.42	5652	338.6	18.9	200	
1111	7.65	11.89	2.02	3.42	5705	337.4	19.0	200	
1113	7.90	15.69	1.95	3.44	6534	332.5	18.9	200	
1115	8.15	19.10	1.87	3.48	6583	332.5	18.8	200	
1117	8.35	17.92	1.81	3.47	6658	332.1	18.8	200	
1119	8.50	18.43	1.77	3.46	6554	331.5	18.7	200	
1119	—	—	1.42	2.96	5964	171.8	19.44	200	

Notes:

CO₂: 0.2

Sample time: 1120

Total Gallons Purged:

Presence of Sheen in groundwater sample (yes/no): N

Sample ID and Analysis: 060421-NT-G2S03

Duplicate Sample: N

Equipment Blank: N

Field Blank: N

Start
11:03

Hanna
YSI

Hanna

Project No: <u>PNR0697</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u> / /</u>
Site Location: <u>Part of Tacoma</u>	Depth to Water (DTW)(ft): <u>3.13</u>	Measurements Referenced to: <u>TOC</u>	
Well ID: <u>RW-47-D</u>	Total Well Depth (ft): <u>10.35</u>	OVM (ppm) =	
Screen Interval (ft): <u>5-10.35</u>	Well Diameter (inch): <u>4</u>	Casing Volume:	
Pump Placement (ft): <u>9</u>	DTW After Purge (ft): <u>4.05</u>	3 Casing Volumes:	
Sampler(s): <u>NT</u>			

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: peristaltic

Volume of Schedule 40 PVC Pipe	
Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: YSI

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(± 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	---	---	---
1157		—	4.24	5.07	1492	89.2	18.03		
1159		31.28	7.90	5.09	2062	306.2	16.0		
1201		23.98	6.82	5.57	1954	274.3	15.7	200	
1203		23.00	6.51	5.80	1937	250.6	16.0	200	
1205		22.13	6.31	5.79	1953	236.5	16.3	200	
1207		21.65	6.23	5.81	1974	224.1	16.2	200	
1209		23.27	6.06	5.62	2042	202.3	16.2	200	
1211		23.00	5.95	5.26	2131	200.3	16.0	200	
1213		24.01	6.87	5.10	2174	205.4	16.1	200	
1215		22.52	5.84	5.06	2203	212.4	16.0	200	
1217		21.30	5.72	5.00	2250	223.2	16.1	200	

Hany
ysi

Notes: purge start 11:57

CO₂: 0.2%

Sample time 1220

Total Gallons Purged: _____

Presence of Sheen in groundwater sample (yes/no): N

Sample ID and Analysis: 060421-NT-RW47D

Duplicate Sample: Y 060421-NT-RW47D-DUP

Equipment Blank: N

Field Blank: N

Hanna 1217

2.89 5.35 1924 63.9 17.53 200

SPO6

Geosyntec
consultants

Groundwater Purging and
SW-Sampling Log

520 Pike Street, Suite 2600
Seattle, Washington 98101
PH 510.836.3034
FAX 510.836.3036

Project No: PNRD697	Task No: 05/21	Project Name: Lilyblad	Date: 10/4/21
Site Location:	Depth to Water (DTW)(ft): 3.62	Measurements Referenced to: TOC	
Well ID: SPO6	Total Well Depth (ft): 6.85	OVM (ppm) =	
Screen Interval (ft):	Well Diameter (inch):	Casing Volume:	
Pump Placement (ft):	DTW After Purge (ft):	3 Casing Volumes:	
Sampler(s):			

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: _____

Type of Water Quality Meter Used:

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Volume of Schedule 40 PVC Pipe	
Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(± 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	---	---	---
1240	3.65	—	0.36	6.07	335	-31.8	17.76		
1308	3.75	19.15	3.14	6.01	413.4	66.2	18.9		
1310	3.75	19.12	3.24	6.03	391.6	41.4	18.8		
1312	3.75	23.50	2.91	6.07	394.5	14.0	18.7		
1314	—	16.76	2.64	6.06	374.4	-7.3	18.7		
1316	—	20.14	2.29	6.06	363.7	-27.4	18.8		
1318	—	23.16	2.05	6.07	359.3	-38.3	18.8		
1320	—	31.63	1.71	6.07	349.3	-48.1	18.8		
1322	—	21.38	1.19	6.05	344.8	-54.5	18.8		
1324	—	14.37	1.17	6.05	338.9	-57.1	18.8		

Handwritten notes on the left margin.

Ham 1325
Notes:

Tubing Deployed at 5

Total Gallons Purged:

Presence of Sheen in groundwater sample (yes/no):

Sample ID and Analysis:

Duplicate Sample:

Equipment Blank:

Field Blank:

**Groundwater Purging and
Sampling Log**

Project No: <u>PA0693</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u>6/4/12</u>
Site Location: <u>Port of Tacoma</u>	Depth to Water (DTW)(ft): <u>6.85</u>	Measurements Referenced to: TOC	
Well ID: <u>G5-01</u>	Total Well Depth (ft): <u>10</u>	OVM (ppm) =	
Screen Interval (ft): <u>8-10</u>	Well Diameter (inch): <u>2</u>	Casing Volume:	
Pump Placement (ft): <u>9</u>	DTW After Purge (ft):	3 Casing Volumes:	
Sampler(s): <u>NT</u>			

Purging Equipment:

- Disposable Bailer
- Electric Submersible Pump
- Bladder Pump

Sampling Equipment:

- Disposable Bailer
- Dedicated Tubing
- Other: Peristaltic

Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

Type of Water Quality Meter Used: YSI

- Low-Flow/Micro Purging
- Purge at least 3 well volumes

Start time
14:20

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(± 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	---	---	---
			0.29	4.67	4847		13.70		
14:23	7.65	14.92	6.30	4.18	3698	345.9	17.10		
14:25	7.85	13.92	5.01	4.33	3537	338.0	16.9		
14:27	7.90	12.70	4.98	4.37	3453	335.2	16.9		
14:29	8.00	14.05	4.94	4.41	3389	332.1	16.9		
14:31	8.10	9.98	4.88	4.51	3384	333.8	17.0		
14:33	—	—	1.88	4.02	2578	98.7	18.84		

Hana
YSI

Hana

Notes: sample time 14:35
CO₂: 0.1 %

Total Gallons Purged: _____
 Presence of Sheen in groundwater sample (yes/no): N
 Sample ID and Analysis: 060421-NT-G501
 Duplicate Sample: N
 Equipment Blank: N
 Field Blank: N

**Groundwater Purging and
Sampling Log**

Project No: <u>PUR0697</u>	Task No: <u>05/2A</u>	Project Name: <u>Lilyblad</u>	Date: <u>6/14/21</u>
Site Location: <u>Port of Tacoma</u>	Depth to Water (DTW)(ft):	Measurements Referenced to: TOC	
Well ID: <u>G5-02</u>	Total Well Depth (ft): <u>10</u>	OVM (ppm) =	
Screen Interval (ft): <u>8-10</u>	Well Diameter (inch): <u>2</u>	Casing Volume:	
Pump Placement (ft): <u>9</u>	DTW After Purge (ft): <u>7.8</u>	3 Casing Volumes:	
Sampler(s): <u>NT</u>			

- Purging Equipment:**
- Disposable Bailer
 - Electric Submersible Pump
 - Bladder Pump
- Sampling Equipment:**
- Disposable Bailer
 - Dedicated Tubing
 - Other: Peristaltic

Volume of Schedule 40 PVC Pipe	
Well Diameter (inches)	gal/linear ft.
1.00	0.041
2.00	0.163
3.00	0.367
4.00	0.653
5.00	1.023
6.00	1.469

- Type of Water Quality Meter Used: YSI
- Low-Flow/Micro Purging
 - Purge at least 3 well volumes

Sampling
start
13:30

Time (24 hrs)	Water Level (ft TOC)	Turbidity (NTUs)	DO (mg/l)	pH (units)	Spec. Cond. (uS/cm)	ORP (mv)	Temp. (°C or °F)	Rate (ml/min)	Total Volume
---	---	(+ 10%)	(± 0.3)	(± 0.1)	(± 3%)	(± 10mV)	---	---	---
	6.05	—	0.46	2.42	8359	242.9	15.50	350	
1332	7.00	21.56	1.35	2.72	9851	403.8	18.3	350	
1334	7.15	19.72	1.22	2.68	9824	405.3	18.3	350	
1336	7.45	21.81	1.23	2.68	9710	403.3	18.2	350	
1338	7.50	24.86	1.20	2.69	9661	399.8	18.2	200	
1340	7.53	28.04	1.16	2.71	9500	396.7	18.3	200	
1342	7.65	51.42	1.16	2.73	9290	393.5	18.0	200	
1344	7.70	48.60	1.17	2.74	9247	392.5	17.9	200	
1346	7.75	50.05	1.17	2.75	9180	391.2	17.9	200	
1348	7.80	52.30	1.19	2.76	9140	390.3	17.8	200	

Hana

Notes: Sample time: 1350
CO2: 0.1 %

Total Gallons Purged: _____
Presence of Sheen in groundwater sample (yes/no): N
Sample ID and Analysis: 060421-NT-G502
Duplicate Sample: N
Equipment Blank: N
Field Blank: N

Hana 1348 0.59 2.32 7797 203.5 19.15

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 6/4/21 Page 1 of
 Project Number: PNR0697 Primary Activities: GW Sampling
 Field Personnel: Sasha Williams
 Recorded By: Sasha Williams
 Weather: cloudy, 53°F

Initial Calibration Completed at: 6/4/21 (time) 8:05
 Final Calibration Check Completed at: 6/4/21 (time) 14:53

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	19.4	19.0	19.8
	instrument reading	3.44	7.09	10.24
	should read/calibrated to	4.0	7.0	10.0
final	temp. (°C)	18.9	18.8	18.4
	instrument reading	4.08	7.05	9.55

specific conductance calibration		standard (µS / cm)	
initial	instrument reading	1336	
	should read/calibrated to	1413	
final	instrument reading	1418	

1.413 std

ORP calibration		Zobell solution (+231 mv Zobell reads)
		240 mV
initial	instrument reading	257.1
final	instrument reading	240

dissolved oxygen calibration		100%	0%
initial	temp. (°C)	16.7	
	instrument reading	101.3	
	should read/calibrated to	100.3	
final	temp. (°C)	18.1	
	instrument reading	102.4	

turbidity		0	126
initial	instrument reading	-1.50	127.15
final	instrument reading	0.0	126

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental, condition, problems)

Serial #: 11D103086

06/09/21 Lilyblad

0910 Arrive at field location

0925 System check (blower off)

0940 Calibrate Hana, multigas, PID, Gem 5000
↳ Out of calibration sheets

Dissolved oxygen

temp °C: 14.95

O₂ : 107.6

PH cal.

	4.0	7.0	10.0
Temp	18.69	18.61	18.75
cal.#	4.07	7.05	9.91

Specific conductance

ORP

cal.# 1444
should be: 1409

cal.#. 211.4
should be: 220 mv

1011 Start Well parameters / injection wells

~1130 Vapor pin data collection

1240 Depart for Tacoma office to scan notes

VP-CO₂-05 Noted methane / CO₂

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date		Notes
		Time		
CDM-20				
Depth to Water	ft		11:30	
Dissolved Oxygen	mg/L	3.85		
ORP	mV	0.67		
pH	s.u.	188.6		
PHD	ppm	6.56		
CH ₄	% Vol	0		
H ₂ S	ppm	0		
CO	ppm	0		
CO ₂	ppm	0		
O ₂	%	18.8		
CDM-18				
Depth to Water	ft	3.98		
Dissolved Oxygen	mg/L	0.43		
ORP	mV	193.1		
pH	s.u.	6.57		
PHD	ppm	0.0		
CH ₄	% Vol	0		
H ₂ S	ppm	0		
CO	ppm	0		
CO ₂	ppm	0.2		
O ₂	%	20.9		
CDM-17				
Depth to Water	ft	4.08		
Dissolved Oxygen	mg/L	0.88		
ORP	mV	172.2		
pH	s.u.	6.94		
PHD	ppm	0.0		
CH ₄	% Vol	0		
H ₂ S	ppm	0		
CO	ppm	0		
CO ₂	ppm	0.1		
		20.9		

02

Table 1A
Monitoring Well Field Data Collection
Libbyland Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
P-1A		06/04/12	
Depth to Water	ft	1011 3.95	
Dissolved Oxygen	mg/L	0.58	
ORP	mV	146.2	
pH	s.u.	6.80	
PID	ppm	3.7	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
AGI-14			
Depth to Water	ft	2.45	
Dissolved Oxygen	mg/L	0.76	
ORP	mV	155.2	
pH	s.u.	6.54	
PID	ppm	6.6	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0.2	
CO ₂	ppm	20.9	
O ₂	%		

Table 1A
Monitoring Well Field Data Collection
Libby/old Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
B-29		06/10/17		
Depth to Water	ft	1040		
Dissolved Oxygen	mg/L	3.34		
ORP	mV	0.65		
pH	s.u.	191.6		
PID	ppm	5.94		
CH ₄	% Vol	0.1		
H ₂ S	ppm	3.0		
CO	ppm	0.5		
CO ₂	ppm	0		
O ₂	%	3.2		
		11.6		
SP-06		1933		
Depth to Water	ft	3.41		
Dissolved Oxygen	mg/L	0.49		
ORP	mV	178.3		
pH	s.u.	5.76		
PID	ppm	0.7		
CH ₄	% Vol	0		
H ₂ S	ppm	0		
CO	ppm	0		
CO ₂	ppm	0.2		
O ₂	%	20.9		
SP-04				
Depth to Water	ft	2.15		
Dissolved Oxygen	mg/L	0.127		
ORP	mV	58.8		
pH	s.u.	5.99		
PID	ppm	0.0		
CH ₄	% Vol	0		
H ₂ S	ppm	0		
CO	ppm	0		
CO ₂	ppm	0.1		
		20.9		

Table 1A
Monitoring Well Field Data Collection
Lily Road Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-21		06/10/21	
Depth to Water	ft	17.0	
Dissolved Oxygen	mg/L	3.11	
ORP	mV	156	
pH	s.u.	14.7	
PID	ppm	6.68	
CH ₄	% Vol	0.1	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	10.3	

Notes
Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
Depth to water to be collected using a water level indicator and deconned between wells.
Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
VOC concentration data will be collected with a photoionization detector, calibrated weekly.
Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

- Acronyms**
ft - feet
mg/L - milligrams per liter
mV - millivolts
ORP - Oxidative reduction potential
ppm - parts per million
s.u. - standard units
VOCs - Volatile organic compounds

Table 1C
 Injection Well Field Data Collection
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
RW-12-G				
Pressure	in w.c.	06/04/21	0	
Flow Rate	scfm		0	
Pulse Rate			off	
K-packter pressure	psi		---	
DO	mg/L		---	
ORP	mV		---	
RW-19-G				
Pressure	in w.c.		0	
Flow Rate	scfm		off	
Pulse Rate			---	
K-packter pressure	psi		---	
DO	mg/L		---	
ORP	mV		---	
RW-47-D				
Pressure	in w.c.		0	
Flow Rate	scfm		off	
Pulse Rate			---	
K-packter pressure	psi		---	
DO	mg/L		---	
ORP	mV		---	

Table 1C
Injection Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
GS-01		06/07/21	
		1200	spec conductivity
Pressure	in wc	0	
Flow Rate	scfm	0	
Pulse Rate	OFF		
Sp. Cond.	µS/cm	3.713	CO ₂
pH		5.65	0.1
Depth to Water	ft	6.44	
ORP	mV	199.8	
GS-02			
Pressure	in wc	0	
Flow Rate	scfm	0	
Pulse Rate	OFF		
Sp. Cond.	µS/cm	6.864	CO ₂
pH		7.07	0.2
Depth to Water	ft	5.75	
ORP	mV	239.6	
GS-03			
Pressure	in wc	0	
Flow Rate	scfm	0	
Pulse Rate	OFF		
Sp. Cond.	µS/cm	5.673	CO ₂
pH		0.37	0.1
Depth to Water	ft	3.50	
ORP	mV	5.55	
		227.7	

Notes
Monitoring well data to be collected daily for five week and two times per week for remainder of Pilot Test by Geonysnes field staff
Pressure data will likely be collected with a manometer or similar instrument
Dissolved oxygen and ORP to be before and after the pilot, collected using a HANNA U-50, or similar equipment, calibrated daily and deoxygenated between wells.

Abbreviations
in wc - inches water column
scfm - standard cubic feet per minute
scf - standard cubic feet
ft bwc - feet below top of casing
mV - millivolts

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Leblond Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
VP-DPE3				
Pressure	in wc	06/09/21	1107	
VOCs	ppm		0.2	
CH ₄	% Vol		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
O ₂	%		19.2	
VP-DPE6				
Pressure	in wc		1111	
VOCs	ppm		0.8	
CH ₄	% Vol		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		1.4	
O ₂	%		18.4	
VP-DPE9				
Pressure	in wc			
VOCs	ppm			
CH ₄	% Vol			
H ₂ S	ppm			
CO	ppm			
CO ₂	ppm			
O ₂	%			

Table 1B
 Vapor Pin Field Data Collection
 Biosurge Pilot Test
 Lilyhal Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-IW3			
Pressure	in wc		
VOCs	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-IW6			
Pressure	in wc		
VOCs	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-IW9			
Pressure	in wc		
VOCs	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-CO2-01			
Pressure	in wc	1230	
VOCs	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
Pressure			
VOCs			
CH ₄			
H ₂ S			
CO			
CO ₂			
O ₂			

06/11/21 Lilyblad

0930 Arrive at Lilyblad

0940 system checks / weatherize

1020 Calibrate Hana / PID / multigas / Gem 5000

1045 Begin collecting well parameters

~1150 Injection well parameter collection

1245 Vapor parameter collection

1400 multimeter / GEM 5000 / PID take

home to dry from the wet conditions

1930 scan field notes at Tacoma field office

Table 1C
 Injection Well Field Data Collection
 Lufkin Road Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
RW-12-G			
Pressure	in wc	06/11/21	
Flow Rate	scfm	0	
Pulse Rate		off	
K-jacket pressure	psi	-	
ORP	mg/L	-	
ORP	mV	-	
RW-19-G			
Pressure	in wc	0	
Flow Rate	scfm	0	
Pulse Rate		off	
K-jacket pressure	psi	-	
DO	mg/L	-	
ORP	mV	-	
RW-47-D			
Pressure	in wc	0	
Flow Rate	scfm	0	
Pulse Rate		off	
K-jacket pressure	psi	-	
DO	mg/L	-	
ORP	mV	-	

Table 1C
Injection Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
GS-01	Pressure	0	
	Flow Rate	0	
	Pulse Rate	OFF	
		0.78	
		5.37	
		6.85	
	3032		
	91.4		
	11.5		
GS-02	Pressure	0	
	Flow Rate	0	
	Pulse Rate	OFF	
		0.44	
		2.80	
		5.79	
	6.863/0.5		
	280.7		
GS-03	Pressure	0	
	Flow Rate	0	
	Pulse Rate	OFF	
		0.26	
		3.56	
		5.73	
	5.950		
	288.7		

Notes
Monitoring well data to be collected daily for first well and two times per week for remainder of 1-in Test by Geoconize (GPU) staff
Pressure data will likely be collected with a manometer or similar instrument
Dissolved oxygen and ORP to be collected before and after the pilot, collected using a Hach DR/9000 or similar equipment, calibrated daily and decontaminated between wells.

Table 1A
Monitoring Well Field Data Collection
Lubbock Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-20			
Depth to Water	ft	06/11/21	
Dissolved Oxygen	mg/L	3.80	
ORP	mV	0.91	
pH	s.u.	234.3	
PH	s.u.	0.59	
PH	ppm	14.3	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.2	
O ₂	%	19.4	
CDM-18			
Depth to Water	ft	4.01	
Dissolved Oxygen	mg/L	0.58	
ORP	mV	235.2	
pH	s.u.	6.59	
PH	ppm	0.0	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
CDM-17			
Depth to Water	ft	4.11	
Dissolved Oxygen	mg/L	0.72	
ORP	mV	231.2	
pH	s.u.	6.96	
PH	ppm	0.0	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.1	
O ₂	%	20.9	

Scanned with CamScanner

Table 1A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date	Time	Notes
P-1A				
Depth to Water	ft	06/10/21	1040	
Dissolved Oxygen	mg/L		3.98	
ORP	mV		1.13	
pH	s.u.		193.5	
PID	ppm		6.73	
CH ₄	% Vol		1.0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.1	
O ₂	%		20.9	
AGI-14				
Depth to Water	ft		2.51	
Dissolved Oxygen	mg/L		1.34	
ORP	mV		2188	
pH	s.u.		200/198 6.45	
PID	ppm		53.0	
CH ₄	% Vol		0	
H ₂ S	ppm		0	
CO	ppm		0	
CO ₂	ppm		0.2	
O ₂	%		20.9	

Table 1A
Monitoring Well Field Data Collection
Laybald Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
SP-04		06/11/21	
Depth to Water	ft	11.0	
Dissolved Oxygen	mg/L	2.17	
ORP	mV	0.18	
pH	s.u.	36.6	
PID	ppm	6.30	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
SP-06		11.0	
Depth to Water	ft	3.35	
Dissolved Oxygen	mg/L	0.45	
ORP	mV	66.4	
pH	s.u.	5.80	
PID	ppm	1.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0.0	
CO ₂	ppm	0.4	
O ₂	%	20.2	
SP-04		3.23	
Depth to Water	ft	0.24	
Dissolved Oxygen	mg/L	58.1	
ORP	mV	5.96	
pH	s.u.	0.1	
PID	ppm	21.0	
CH ₄	% Vol	2.5	
H ₂ S	ppm	0.0	
CO	ppm	0.1	
CO ₂	ppm	11.5	

02

Table 1.A
Monitoring Well Field Data Collection
Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-21			
Depth to Water	ft	06/11/21 11:45	
Dissolved Oxygen	mg/L	3.15	
ORP	mV	0.26 243.8	
pH	s.u.	6.74	
PHD	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	11.5	

Notes:

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosynec field staff.
Depth to water to be collected using a water level indicator and deconned between wells.
Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
VOC concentration data will be collected with a photoionization detector, calibrated weekly.
Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Acronyms

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lybbald Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-DPE3			
Pressure	in w.c.		
VOCs	ppm	0.2	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm		
CO ₂	ppm	0.1	
O ₂	%	19.8	
VP-DPE6			
Pressure	in w.c.		
VOCs	ppm	1.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm		
CO ₂	ppm	1.0	
O ₂	%	20.3	
VP-DPE9			
Pressure	in w.c.		
VOCs	ppm		
CH ₄	% Vol		
H ₂ S	ppm		
CO	ppm		
CO ₂	ppm		
O ₂	%		

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 14834ad Cleanup Site, Everett, Washington

Well ID	Units	Date Time	Notes
VP-IW3			
Pressure	in wc	-	
VOC's	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-IW6			
Pressure	in wc	-	
VOC's	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-IW9			
Pressure	in wc	-	
VOC's	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-CO2-III			
Pressure	in wc	-	
VOC's	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	20.9	

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time																		Note
VP-C02-03		02	VOC	H2S	CH4	CO2														
		20.9	0.0	0.0	0.0	0	0.2													
VP-C02-05		18.4	0.2	0	6.0	0	0.0													
		20.9	0.1	0.0	0.0	0.0	0.0	0.2												
GS-02-6'		20.5	0.7	0.0	0.0	0.0	0.3													
		20.5	1.6	0.0	0.0	0.0	1.5													
VP-BG2		19.6	0.1	0.0	0	0	1.0													

Notes
 Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

ACRONYMS:
 in wc - inches water column
 ppm - parts per million

METER CALIBRATION FORM

Geosyntec Consultants
520 Pike Street, Suite 2600
Seattle, WA 98101
Phone: 206-496-1450

Project Name: Lilyblad Date: 06/11/21 Page 1 of 1
 Project Number: _____ Primary Activities: _____
 Field Personnel: N.T. Cal. Hang. PID, multi-gas
Gem5000
 Recorded By: _____
 Weather: Rain 58°F

Initial Calibration Completed at: 1020 (time)
 Final Calibration Check Completed at: ~1045 (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	16.22	15.70	15.90
	instrument reading	4.05	6.98	9.92
	should read/calibrated to	4.00	7.0	10.0
final	temp. (°C)			
	instrument reading			

specific conductance calibration		standard (µS / cm)
<u>1.409</u>		
initial	instrument reading	1423
	should read/calibrated to	1409
final	instrument reading	

dissolved oxygen calibration		100%	0%
initial	temp. (°C)	17.83	
	instrument reading	91.4	
	should read/calibrated to	100	
final	temp. (°C)		
	instrument reading		

ORP calibration		Zobell solution (+231 mv Zobell reads)
<u>220 mV</u>		
initial	instrument reading	214.4
final	instrument reading	

turbidity		
initial	instrument reading	
final	instrument reading	

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental condition, problems)

220
214.4

06/18/21

Lilyblad

1000 Arrival at Lilyblad /check-in

1020 Calibrate Hg₄

1040 Begin Well parameters/groundwater

- 1145 Begin Vapor parameters

1245 Begin packing up rental field equipment

after call with Sasha. Site sign out

1320 Depart for Tacoma field office to

scan notes

Table 1c
Injection Well Field Data Collection
Lajvblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date		Notes
		Time		
RW-12-G				
Pressure	in w.c.		06/18/21	
Flow Rate	scfm		0	
Pulse Rate			off	
K-packeter pressure	psi		off	
DO	mg/L			
ORP	mV			
RW-19-G				
Pressure	in w.c.		0	
Flow Rate	scfm		off	
Pulse Rate			-	
K-packeter pressure	psi		-	
DO	mg/L			
ORP	mV			
RW-47-D				
Pressure	in w.c.		0	
Flow Rate	scfm		off	
Pulse Rate			-	
K-packeter pressure	psi		-	
DO	mg/L			
ORP	mV			

Table 1C
Injection Well Field Data Collection
Lillyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
GS-01		06/18/21 1145	
Pressure	in wc	0	
Flow Rate	scfm	0FC	
pH	S.U.	5.71	
DO	mg/L	0.46	
ORP	mV	234.5	
Conductivity	µmhos	2.857	
Temp	°C	0.0	
Depth to Water	ft	6.62	
GS-02			
Pressure	in wc	0	
Flow Rate	scfm	OFF	
pH	S.U.	3.33	
DO	mg/L	0.87	
ORP	mV	233.7	
Conductivity	µmhos	7.522	
Temp	°C	0.2	
Depth to Water	ft	5.56	
GS-03		1045	
Pressure	in wc	0	
Flow Rate	scfm	OFF	
pH	S.U.	3.51	
DO	mg/L	0.22	
ORP	mV	250.7	
Conductivity	µmhos	6.567	
Temp	°C	0.2	
Depth to Water	ft	5.35	

Table 1A
Monitoring Well Field Data Collection
Lloyd Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-20		06/18/14	
Depth to Water	ft	3.60	
Dissolved Oxygen	mg/L	0.33	
ORP	mV	218.1	
pH	s.u.	6.44	
PID	ppm	247.7	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.2	
O ₂	%	20.6	
CDM-18			
Depth to Water	ft	3.82	
Dissolved Oxygen	mg/L	0.77	
ORP	mV	213.7	
pH	s.u.	6.52	
PID	ppm	0.4	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.2	
CO ₂	ppm	20.9	
O ₂	%		
CDM-17			
Depth to Water	ft	3.90	
Dissolved Oxygen	mg/L	0.93	
ORP	mV	204.7	
pH	s.u.	6.88	
PID	ppm	0.2	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.2	
O ₂	%	19.9	

Table 1A
Monitoring Well Field Data Collection
LJ Field Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
P-1A		06/18/12	
Depth to Water	ft	10.40	
Dissolved Oxygen	mg/L	3.80	
ORP	mV	0.47	
pH	su	7.77	
PID	ppm	6.72	
CH ₄	% Vol	5.5	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.2	
O ₂	%	20.9	
AGI-14			
Depth to Water	ft	2.33	
Dissolved Oxygen	mg/L	0.38	
ORP	mV	171.5	
pH	su	6.66	
PID	ppm	479	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.3	
O ₂	%	20.9	

Well ID	Units	Date Time	Notes
B-29		06/18/11	
Depth to Water	ft	3.05	
Dissolved Oxygen	mg/L	0.63	
ORP	mV	222.6	
pH	u.u.	6.39	
PH	ppm	0.3	
CH ₄	% Vol	1.6	
H ₂ S	ppm	2.5	
CO	ppm	0	
CO ₂	ppm	8.4	
O ₂	%	16.5	
SP-06			
Depth to Water	ft	3.12	
Dissolved Oxygen	mg/L	0.61	
ORP	mV	216.5	
pH	u.u.	5.95	
PH	ppm	2.5	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.5	
CO	ppm	0.0	
CO ₂	ppm	9.7	
O ₂	%	9.4	Both O ₂ sensors LOW O ₂ (?)
SP-04			
Depth to Water	ft	3.73	
Dissolved Oxygen	mg/L	0.79	
ORP	mV	187.4	
pH	u.u.	7.12	
PH	ppm	0.0	
CH ₄	% Vol	0	
H ₂ S	ppm	0	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	20.9	

Table 1A
Monitoring Well Field Data Collection
Lloyd Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
CDM-21		06/18/21	
Depth to Water	ft	1115 3.91	
Dissolved Oxygen	mg/L	0.76	
ORP	mV	245.6	
pH	s.u.	6.09	
PH	ppm	0.1	
CH ₄	% Vol	0	
H ₂ S	ppm	0.5	
CO	ppm	0	
CO ₂	ppm	0.2	
O ₂	%	15.8	

NOTES

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Depth to water to be collected using a water level indicator and deconned between wells.
 Dissolved oxygen and ORP to be collected using a Horiba U-50, or similar equipment, calibrated daily and deconned between wells.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

ACRONYMS

- ft - feet
- mg/L - milligrams per liter
- mV - millivolts
- ORP - Oxidative reduction potential
- ppm - parts per million
- s.u. - standard units
- VOCs - Volatile organic compounds

Page 4 of 4

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyallbad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-DPE3			
Pressure	in wc		
VOCs	ppm		
CH ₄	% Vol	0.2	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.7	
O ₂	%	19.3	
VP-DPE6			
Pressure	in wc		
VOCs	ppm		
CH ₄	% Vol	0.9	
H ₂ S	ppm	0.5	
CO	ppm	0.0	
CO ₂	ppm	1.6	
O ₂	%	17.4	
VP-DPE9			
Pressure	in wc		
VOCs	ppm		
CH ₄	% Vol		
H ₂ S	ppm		
CO	ppm		
CO ₂	ppm		
O ₂	%		

Table 1B
 Vapor Pin Field Data Collection
 Biosurge Pilot Test
 Lilyblad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	Notes
VP-IW3		06/18/21 1245	
Pressure	in wc	—	
VOCs	ppm	0.2	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.1	
O ₂	%	20.9	
VP-IW6			
Pressure	in wc	—	
VOCs	ppm	0.1	
CH ₄	% Vol	0.	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.7	
O ₂	%	20.9	
VP-IW9			
Pressure	in wc	—	
VOCs	ppm	0.1	
CH ₄	% Vol	0.0	
H ₂ S	ppm	0.0	
CO	ppm	0.0	
CO ₂	ppm	0.1	
O ₂	%	20.9	

Table 1B
 Vapor Pin Field Data Collection
 Biosparge Pilot Test
 Lyallstad Cleanup Site, Tacoma, Washington

Well ID	Units	Date Time	06/18/21										Notes	
			Pressure	VOCs	CH4	CO	CO2	H2S	O2					
VP-CO2-01			—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.9	
VP-CO2-03			—	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	20.9	
VP-CO2-05			—	0.2	14.4	0.0	6.9	0.0	0.0	0.0	0.0	0.0	18.6	
GS-02-6'			—	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.9	
GS-03-6'			—	1.8	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.5	20.9	
VP-BG1			—	0.5	0.0	0.0	0.7	0.0	0.0	0.0	0.5	0.5	20.5	
VP-BG2		HJD	—	0.2	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.5	20.5	

Notes

Monitoring well data to be collected daily for first week and two times per week for remainder of Pilot Test by Geosyntec field staff.
 Pressure data will likely be collected with a manometer or similar instrument.
 VOC concentration data will be collected with a photoionization detector, calibrated weekly.
 Vapor composition data will be collected with a multi-gas meter or similar instrument, calibrated weekly.

Abbreviations

- in wc - inches water column
- ppm - parts per million
- VOCs - Volatile organic compounds

METER CALIBRATION FORM

Geosyntec Consultants
 520 Pike Street, Suite 2600
 Seattle, WA 98101
 Phone: 206-496-1450

Project Name: Lilyblad Date: 06/18/21 Page 1 of 1
 Project Number: _____ Primary Activities: Calibrate H977
 Field Personnel: N. Tandeki
 Recorded By: _____
 Weather: SUNNY 68°F

Initial Calibration Completed at: 1020 (time)
 Final Calibration Check Completed at: 1035 (time)

pH calibration		buffer solution		
		pH 4.0	pH 7.0	pH 10.0
initial	temp. (°C)	<u>20.36</u>	<u>21.37</u>	<u>19.93</u>
	instrument reading	<u>4.00</u>	<u>6.89</u>	<u>10.05</u>
	should read/calibrated to	<u>4.00</u>	<u>7.00</u>	<u>10.00</u>
final	temp. (°C)	-	-	-
	instrument reading	-	-	-

specific conductance calibration		standard (µS / cm)	
initial	instrument reading	<u>1450</u>	-
	should read/calibrated to	<u>1409</u>	-
final	instrument reading	-	-

ORP calibration		Zobell solution <small>(Zobell 1935)</small>
		<u>220 mV</u>
initial	instrument reading	<u>218.1</u>
final	instrument reading	-

dissolved oxygen calibration		100%	0%
initial	temp. (°C)	<u>20.31</u>	-
	instrument reading	<u>102.6</u>	-
	should read/calibrated to	<u>100</u>	-
final	temp. (°C)	-	-
	instrument reading	-	-

turbidity		
initial	instrument reading	-
final	instrument reading	-

Meter Summary

pH Meter / Probe: Model: _____

DO Meter / Probe: Model: _____

ORP Meter / Probe: Model: _____

Conductivity Meter / Probe: Model: _____

Turbidity _____

Comments: (rental condition, problems)

U101831X

ATTACHMENT 2

Laboratory Analytical Results

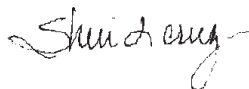
ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-102482-1
Client Project/Site: Lilyblad Biosparge Pilot

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
4/30/2021 12:58:17 PM

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



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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

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Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative 580-102482-1

Comments

No additional comments.

Receipt

The samples were received on 4/15/2021 3:22 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 7.5° C and 10.3° C.

Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The following samples were received unpreserved: 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-GS-03 (580-102482-3), 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5), 041521-RB-RW-47-D-DUP (580-102482-6) and 041521-RB-GS-01 (580-102482-7). The samples were preserved to the appropriate pH in the laboratory using hydrochloric acid from reagent # 2836710.

Client confirmed to run Pentachlorophenol and Bis-(2-ethylhexyl)phthalate by method 8270E_SIM to meet clients action limits.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-355057 recovered outside acceptance criteria, low biased, for Dichlorodifluoromethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-355057 recovered outside control limits for the following analytes: Carbon tetrachloride, Dichlorodifluoromethane, Benzene, Chloroethane, trans-1,3-Dichloropropene, 1,1-Dichloropropene, Ethylene Dibromide, Chloromethane, 1,2-Dichloroethane, 1,1,1-Trichloroethane, 1,2-Dichloropropane and 1,1-Dichloroethane.

Method 8260D: The following samples were diluted to bring the concentration of target analytes within the calibration range: 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5) and 041521-RB-RW-47-D-DUP (580-102482-6). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Methods 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-354492 and analytical batch 580-354571 recovered outside control limits for the following analytes: Phenol, 2-Chlorophenol, 3 & 4 Methylphenol, N-Nitrosodi-n-propylamine, Nitrobenzene, Isophorone, 2,4-Dimethylphenol, Bis(2-chloroethoxy)methane, 4-Nitrophenol, Diethyl phthalate, Anthracene, Pyrene, indeno(1, 2, 3-cd)pyrene and Bis(chloroisopropyl)ether.

Method 8270E: The laboratory control sample duplicate (LCSD) for preparation batch 580-354492 and analytical batch 580-354571 recovered outside control limits for the following analytes: Benzo[k]fluoranthene and Benzo[a]pyrene. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8270E: The surrogate recovery for the LCS associated with preparation batch 580-354492 and analytical batch 580-354571 was outside the upper control limits. (LCSD 580-354492/3-A)

Method 8270E: The CCV for preparation batch 580-354492 and analytical batch 580-355266 recovered outside control limits for the following analyte(s): 4-Nitrophenol and 2,4-Dinitrophenol. 4-Nitrophenol and 2,4-Dinitrophenol have been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed. These results have been reported and qualified.

Methods 8270E: Surrogate recovery for the following samples were outside control limits: 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-GS-03 (580-102482-3), 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5) and 041521-RB-RW-47-D-DUP (580-102482-6). Evidence of matrix interference is present; therefore, re-extraction and/or

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Job ID: 580-102482-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

re-analysis was not performed.

Methods 8270E: The following samples were diluted due to the nature of the sample matrix: 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-RW-47-D (580-102482-4), 041521-RB-RW-47-D-DUP (580-102482-6) and 041521-RB-GS-01 (580-102482-7). Elevated reporting limits (RLs) are provided.

Methods 8270E: Internal standard, Perylene-d12, response was outside of lower acceptance limits for the following samples: 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-GS-03 (580-102482-3), 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5), 041521-RB-RW-47-D-DUP (580-102482-6) and 041521-RB-GS-01 (580-102482-7). The samples show evidence of matrix interference. The low recovery creates a high calculation bias for the associated compound. Since the associated analyte resulted non-detect, therefore re-analysis was not performed and data has been reported.

Method 8270E SIM: The method blank for preparation batch 580-354548 and analytical batch 580-354576 contained Pentachlorophenol above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8270E SIM: Due to sample matrix interference on the internal standard Acenaphthene-d10, a dilution was required for the following samples: 041521-RB-RW-12-G (580-102482-1) and 041521-RB-RW-19-G (580-102482-2). Surrogates reported from 3X dilution only since the 1X had matrix interference on the surrogate and the internal standard.

Method 8270E SIM: The following samples were diluted due to the nature of the sample matrix: 041521-RB-RW-12-G (580-102482-1) and 041521-RB-RW-19-G (580-102482-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

Method NWTPH-Dx: The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was earlier than the typical diesel fuel pattern used by the laboratory for quantitative purposes: 041521-RB-GS-03 (580-102482-3).

Method NWTPH-Dx: The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5), 041521-RB-RW-47-D-DUP (580-102482-6) and 041521-RB-GS-01 (580-102482-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Methods 3510C, CWA_Prep: The following samples formed emulsions during the extraction procedure: 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5) and 041521-RB-RW-47-D-DUP (580-102482-6). The emulsions were broken up using sodium sulfate and rinsed with solvent.

Methods 3510C, CWA_Prep: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-354492, so a LCS and LCSD were used instead.

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-354548, so a LCS and LCSD were used instead.

Method 3510C: A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: Samples came preserved at a pH of 2 SU. The samples were extracted following the SOP. 041521-RB-RW-12-G (580-102482-1), 041521-RB-RW-19-G (580-102482-2), 041521-RB-GS-03 (580-102482-3), 041521-RB-RW-47-D (580-102482-4), 041521-RB-GS-02 (580-102482-5), 041521-RB-RW-47-D-DUP (580-102482-6) and 041521-RB-GS-01 (580-102482-7).

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

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Job ID: 580-102482-1 (Continued)

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Laboratory: Eurofins FGS, Seattle (Continued)

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Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-354490, so a LCS and LCSD were used instead.

5

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

6

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

7

8

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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*1	LCS/LCSD 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/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
*3	ISTD response or retention time outside acceptable limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

GC 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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-12-G

Lab Sample ID: 580-102482-1

Date Collected: 04/15/21 09:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/26/21 21:58	1
Chloromethane	ND		1.0	0.28	ug/L			04/26/21 21:58	1
Vinyl chloride	3.7		1.0	0.22	ug/L			04/26/21 21:58	1
Bromomethane	ND		1.0	0.21	ug/L			04/26/21 21:58	1
Chloroethane	9.2		1.0	0.35	ug/L			04/26/21 21:58	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/26/21 21:58	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/26/21 21:58	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/26/21 21:58	1
trans-1,2-Dichloroethene	0.84	J	1.0	0.39	ug/L			04/26/21 21:58	1
1,1-Dichloroethane	3.0		1.0	0.22	ug/L			04/26/21 21:58	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/26/21 21:58	1
cis-1,2-Dichloroethene	7.0		1.0	0.35	ug/L			04/26/21 21:58	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/26/21 21:58	1
Chloroform	ND		1.0	0.26	ug/L			04/26/21 21:58	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			04/26/21 21:58	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			04/26/21 21:58	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			04/26/21 21:58	1
Benzene	2.2		1.0	0.24	ug/L			04/26/21 21:58	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			04/26/21 21:58	1
Trichloroethene	0.51	J	1.0	0.26	ug/L			04/26/21 21:58	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			04/26/21 21:58	1
Dibromomethane	ND		1.0	0.34	ug/L			04/26/21 21:58	1
Bromodichloromethane	ND		1.0	0.29	ug/L			04/26/21 21:58	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/26/21 21:58	1
Toluene	ND		1.0	0.39	ug/L			04/26/21 21:58	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			04/26/21 21:58	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/26/21 21:58	1
Tetrachloroethene	ND		1.0	0.41	ug/L			04/26/21 21:58	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/26/21 21:58	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/26/21 21:58	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			04/26/21 21:58	1
Chlorobenzene	ND		1.0	0.44	ug/L			04/26/21 21:58	1
Ethylbenzene	0.52	J	1.0	0.50	ug/L			04/26/21 21:58	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/26/21 21:58	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/26/21 21:58	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/26/21 21:58	1
o-Xylene	0.42	J	1.0	0.39	ug/L			04/26/21 21:58	1
Styrene	ND		1.0	0.53	ug/L			04/26/21 21:58	1
Bromoform	ND		1.0	0.51	ug/L			04/26/21 21:58	1
Isopropylbenzene	0.61	J	1.0	0.44	ug/L			04/26/21 21:58	1
Bromobenzene	ND		1.0	0.43	ug/L			04/26/21 21:58	1
N-Propylbenzene	ND		1.0	0.50	ug/L			04/26/21 21:58	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/26/21 21:58	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/26/21 21:58	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			04/26/21 21:58	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/26/21 21:58	1
t-Butylbenzene	ND		2.0	0.58	ug/L			04/26/21 21:58	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			04/26/21 21:58	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			04/26/21 21:58	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-12-G

Lab Sample ID: 580-102482-1

Date Collected: 04/15/21 09:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			04/26/21 21:58	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			04/26/21 21:58	1
1,4-Dichlorobenzene	2.6		1.0	0.46	ug/L			04/26/21 21:58	1
n-Butylbenzene	ND		1.0	0.44	ug/L			04/26/21 21:58	1
1,2-Dichlorobenzene	2.1		1.0	0.46	ug/L			04/26/21 21:58	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/26/21 21:58	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/26/21 21:58	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/26/21 21:58	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/26/21 21:58	1
Naphthalene	ND		3.0	0.93	ug/L			04/26/21 21:58	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/26/21 21:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		80 - 120					04/26/21 21:58	1
4-Bromofluorobenzene (Surr)	105		80 - 120					04/26/21 21:58	1
Dibromofluoromethane (Surr)	113		80 - 120					04/26/21 21:58	1
1,2-Dichloroethane-d4 (Surr)	102		80 - 126					04/26/21 21:58	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.20	0.087	ug/L		04/17/21 16:39	04/19/21 12:19	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		3.0	0.54	ug/L		04/17/21 16:39	04/28/21 18:13	3
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	73		35 - 133				04/17/21 16:39	04/28/21 18:13	3

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	9.6	3.5	ug/L		04/16/21 11:19	04/19/21 19:37	10
Bis(2-chloroethyl)ether	ND		0.96	0.29	ug/L		04/16/21 11:19	04/19/21 19:37	10
2-Chlorophenol	ND	*1	9.6	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
1,3-Dichlorobenzene	ND		3.8	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
1,4-Dichlorobenzene	1.5	J	3.8	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzyl alcohol	ND		48	1.7	ug/L		04/16/21 11:19	04/19/21 19:37	10
1,2-Dichlorobenzene	1.2	J	3.8	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
2-Methylphenol	ND		5.8	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
3 & 4 Methylphenol	ND	*1	5.8	0.96	ug/L		04/16/21 11:19	04/19/21 19:37	10
N-Nitrosodi-n-propylamine	ND	*1	3.8	0.58	ug/L		04/16/21 11:19	04/19/21 19:37	10
Hexachloroethane	ND		9.6	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
Nitrobenzene	ND	*1	9.6	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Isophorone	ND	*1	3.8	0.96	ug/L		04/16/21 11:19	04/19/21 19:37	10
2-Nitrophenol	ND		9.6	0.67	ug/L		04/16/21 11:19	04/19/21 19:37	10
2,4-Dimethylphenol	ND	*1	38	1.5	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzoic acid	ND		96	13	ug/L		04/16/21 11:19	04/19/21 19:37	10
Bis(2-chloroethoxy)methane	ND	*1	5.8	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
2,4-Dichlorophenol	ND		9.6	1.9	ug/L		04/16/21 11:19	04/19/21 19:37	10
1,2,4-Trichlorobenzene	ND		3.8	0.87	ug/L		04/16/21 11:19	04/19/21 19:37	10
Naphthalene	ND		3.8	1.5	ug/L		04/16/21 11:19	04/19/21 19:37	10

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-12-G

Lab Sample ID: 580-102482-1

Date Collected: 04/15/21 09:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloroaniline	ND		19	5.7	ug/L		04/16/21 11:19	04/19/21 19:37	10
Hexachlorobutadiene	ND		9.6	0.58	ug/L		04/16/21 11:19	04/19/21 19:37	10
2-Methylnaphthalene	ND		3.8	0.58	ug/L		04/16/21 11:19	04/19/21 19:37	10
4,6-Dinitro-2-methylphenol	ND		19	5.3	ug/L		04/16/21 11:19	04/19/21 19:37	10
N-Nitrosodiphenylamine	ND		9.6	0.67	ug/L		04/16/21 11:19	04/19/21 19:37	10
4-Bromophenyl phenyl ether	ND		5.8	0.58	ug/L		04/16/21 11:19	04/19/21 19:37	10
Hexachlorobenzene	ND		5.8	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Phenanthrene	ND		9.6	1.2	ug/L		04/16/21 11:19	04/19/21 19:37	10
Anthracene	ND	*1	9.6	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
Di-n-butyl phthalate	ND		29	1.8	ug/L		04/16/21 11:19	04/19/21 19:37	10
Fluoranthene	ND		2.4	0.58	ug/L		04/16/21 11:19	04/19/21 19:37	10
Pyrene	ND	*1	9.6	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Butyl benzyl phthalate	ND		38	2.6	ug/L		04/16/21 11:19	04/19/21 19:37	10
3,3'-Dichlorobenzidine	ND		9.6	2.5	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzo[a]anthracene	ND		2.4	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
Chrysene	ND		2.4	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Di-n-octyl phthalate	ND	*3	9.6	1.2	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzo[a]pyrene	ND	*+ *3	2.4	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Indeno[1,2,3-cd]pyrene	ND	*3 *1	3.8	1.2	ug/L		04/16/21 11:19	04/19/21 19:37	10
Dibenz(a,h)anthracene	ND	*3	2.4	0.67	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzo[g,h,i]perylene	ND	*3	2.4	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Carbazole	ND		5.8	0.96	ug/L		04/16/21 11:19	04/19/21 19:37	10
1-Methylnaphthalene	ND		9.6	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzo[b]fluoranthene	ND	*3	2.4	0.38	ug/L		04/16/21 11:19	04/19/21 19:37	10
Benzo[k]fluoranthene	ND	*+ *3	2.4	0.48	ug/L		04/16/21 11:19	04/19/21 19:37	10
bis(chloroisopropyl) ether	ND	*1	2.4	0.58	ug/L		04/16/21 11:19	04/19/21 19:37	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	30		14 - 120	04/16/21 11:19	04/19/21 19:37	10
Phenol-d5 (Surr)	14		10 - 120	04/16/21 11:19	04/19/21 19:37	10
Nitrobenzene-d5 (Surr)	70		46 - 125	04/16/21 11:19	04/19/21 19:37	10
2,4,6-Tribromophenol (Surr)	66		50 - 125	04/16/21 11:19	04/19/21 19:37	10
Terphenyl-d14 (Surr)	83		63 - 122	04/16/21 11:19	04/19/21 19:37	10

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		29	6.2	ug/L		04/16/21 11:19	04/28/21 13:54	50
Hexachlorocyclopentadiene	ND		48	6.7	ug/L		04/16/21 11:19	04/28/21 13:54	50
2,4,6-Trichlorophenol	ND		29	4.8	ug/L		04/16/21 11:19	04/28/21 13:54	50
2,4,5-Trichlorophenol	ND		19	4.8	ug/L		04/16/21 11:19	04/28/21 13:54	50
2-Chloronaphthalene	ND		48	3.4	ug/L		04/16/21 11:19	04/28/21 13:54	50
2-Nitroaniline	ND		48	4.8	ug/L		04/16/21 11:19	04/28/21 13:54	50
Dimethyl phthalate	ND		29	2.9	ug/L		04/16/21 11:19	04/28/21 13:54	50
Acenaphthylene	ND		48	2.9	ug/L		04/16/21 11:19	04/28/21 13:54	50
2,6-Dinitrotoluene	ND		19	4.8	ug/L		04/16/21 11:19	04/28/21 13:54	50
3-Nitroaniline	ND		140	7.7	ug/L		04/16/21 11:19	04/28/21 13:54	50
Acenaphthene	ND		19	2.4	ug/L		04/16/21 11:19	04/28/21 13:54	50
2,4-Dinitrophenol	ND		240	77	ug/L		04/16/21 11:19	04/28/21 13:54	50
4-Nitrophenol	ND	*1	480	82	ug/L		04/16/21 11:19	04/28/21 13:54	50
Dibenzofuran	ND		19	4.8	ug/L		04/16/21 11:19	04/28/21 13:54	50

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-12-G

Lab Sample ID: 580-102482-1

Date Collected: 04/15/21 09:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	ND		48	4.8	ug/L		04/16/21 11:19	04/28/21 13:54	50
Diethyl phthalate	ND	*1	48	7.2	ug/L		04/16/21 11:19	04/28/21 13:54	50
4-Chlorophenyl phenyl ether	ND		29	2.4	ug/L		04/16/21 11:19	04/28/21 13:54	50
Fluorene	ND		12	2.4	ug/L		04/16/21 11:19	04/28/21 13:54	50
4-Nitroaniline	ND		96	10	ug/L		04/16/21 11:19	04/28/21 13:54	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	89		14 - 120	04/16/21 11:19	04/28/21 13:54	50
Phenol-d5 (Surr)	12		10 - 120	04/16/21 11:19	04/28/21 13:54	50
Nitrobenzene-d5 (Surr)	136	S1+	46 - 125	04/16/21 11:19	04/28/21 13:54	50
2-Fluorobiphenyl	21	S1-	51 - 120	04/16/21 11:19	04/28/21 13:54	50
2,4,6-Tribromophenol (Surr)	89		50 - 125	04/16/21 11:19	04/28/21 13:54	50
Terphenyl-d14 (Surr)	75		63 - 122	04/16/21 11:19	04/28/21 13:54	50

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	1.5		0.25	0.10	mg/L			04/27/21 00:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		50 - 150		04/27/21 00:54	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	24		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 21:01	1
Motor Oil (>C24-C36)	16		0.35	0.096	mg/L		04/16/21 11:12	04/19/21 21:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	79		50 - 150	04/16/21 11:12	04/19/21 21:01	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-19-G

Lab Sample ID: 580-102482-2

Date Collected: 04/15/21 10:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/26/21 22:24	1
Chloromethane	ND		1.0	0.28	ug/L			04/26/21 22:24	1
Vinyl chloride	0.23	J	1.0	0.22	ug/L			04/26/21 22:24	1
Bromomethane	ND		1.0	0.21	ug/L			04/26/21 22:24	1
Chloroethane	14		1.0	0.35	ug/L			04/26/21 22:24	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/26/21 22:24	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/26/21 22:24	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/26/21 22:24	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			04/26/21 22:24	1
1,1-Dichloroethane	0.61	J	1.0	0.22	ug/L			04/26/21 22:24	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/26/21 22:24	1
cis-1,2-Dichloroethene	0.44	J	1.0	0.35	ug/L			04/26/21 22:24	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/26/21 22:24	1
Chloroform	ND		1.0	0.26	ug/L			04/26/21 22:24	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			04/26/21 22:24	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			04/26/21 22:24	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			04/26/21 22:24	1
Benzene	ND		1.0	0.24	ug/L			04/26/21 22:24	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			04/26/21 22:24	1
Trichloroethene	ND		1.0	0.26	ug/L			04/26/21 22:24	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			04/26/21 22:24	1
Dibromomethane	ND		1.0	0.34	ug/L			04/26/21 22:24	1
Bromodichloromethane	ND		1.0	0.29	ug/L			04/26/21 22:24	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/26/21 22:24	1
Toluene	0.57	J	1.0	0.39	ug/L			04/26/21 22:24	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			04/26/21 22:24	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/26/21 22:24	1
Tetrachloroethene	ND		1.0	0.41	ug/L			04/26/21 22:24	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/26/21 22:24	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/26/21 22:24	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			04/26/21 22:24	1
Chlorobenzene	ND		1.0	0.44	ug/L			04/26/21 22:24	1
Ethylbenzene	ND		1.0	0.50	ug/L			04/26/21 22:24	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/26/21 22:24	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/26/21 22:24	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/26/21 22:24	1
o-Xylene	ND		1.0	0.39	ug/L			04/26/21 22:24	1
Styrene	ND		1.0	0.53	ug/L			04/26/21 22:24	1
Bromoform	ND		1.0	0.51	ug/L			04/26/21 22:24	1
Isopropylbenzene	ND		1.0	0.44	ug/L			04/26/21 22:24	1
Bromobenzene	ND		1.0	0.43	ug/L			04/26/21 22:24	1
N-Propylbenzene	ND		1.0	0.50	ug/L			04/26/21 22:24	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/26/21 22:24	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/26/21 22:24	1
1,3,5-Trimethylbenzene	0.63	J	1.0	0.55	ug/L			04/26/21 22:24	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/26/21 22:24	1
t-Butylbenzene	ND		2.0	0.58	ug/L			04/26/21 22:24	1
1,2,4-Trimethylbenzene	1.7	J	3.0	0.61	ug/L			04/26/21 22:24	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			04/26/21 22:24	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-19-G

Lab Sample ID: 580-102482-2

Date Collected: 04/15/21 10:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			04/26/21 22:24	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			04/26/21 22:24	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			04/26/21 22:24	1
n-Butylbenzene	ND		1.0	0.44	ug/L			04/26/21 22:24	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			04/26/21 22:24	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/26/21 22:24	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/26/21 22:24	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/26/21 22:24	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/26/21 22:24	1
Naphthalene	ND		3.0	0.93	ug/L			04/26/21 22:24	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/26/21 22:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		80 - 120					04/26/21 22:24	1
4-Bromofluorobenzene (Surr)	103		80 - 120					04/26/21 22:24	1
Dibromofluoromethane (Surr)	107		80 - 120					04/26/21 22:24	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 126					04/26/21 22:24	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.20	0.087	ug/L		04/17/21 16:39	04/19/21 12:42	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		3.0	0.54	ug/L		04/17/21 16:39	04/28/21 18:38	3
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	73		35 - 133				04/17/21 16:39	04/28/21 18:38	3

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	4.8	1.7	ug/L		04/16/21 11:19	04/19/21 20:01	5
Bis(2-chloroethyl)ether	ND		0.48	0.14	ug/L		04/16/21 11:19	04/19/21 20:01	5
2-Chlorophenol	ND	*1	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
1,3-Dichlorobenzene	ND		1.9	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
1,4-Dichlorobenzene	ND		1.9	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzyl alcohol	ND		24	0.87	ug/L		04/16/21 11:19	04/19/21 20:01	5
1,2-Dichlorobenzene	ND		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
2-Methylphenol	1.6	J	2.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
3 & 4 Methylphenol	0.77	J *1	2.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:01	5
N-Nitrosodi-n-propylamine	ND	*1	1.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:01	5
Hexachloroethane	ND		4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
Nitrobenzene	ND	*1	4.8	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Isophorone	ND	*1	1.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:01	5
2-Nitrophenol	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 20:01	5
2,4-Dimethylphenol	3.4	J *1	19	0.77	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzoic acid	ND		48	6.4	ug/L		04/16/21 11:19	04/19/21 20:01	5
Bis(2-chloroethoxy)methane	ND	*1	2.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
2,4-Dichlorophenol	ND		4.8	0.96	ug/L		04/16/21 11:19	04/19/21 20:01	5
1,2,4-Trichlorobenzene	ND		1.9	0.43	ug/L		04/16/21 11:19	04/19/21 20:01	5
Naphthalene	ND		1.9	0.77	ug/L		04/16/21 11:19	04/19/21 20:01	5

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-19-G

Lab Sample ID: 580-102482-2

Date Collected: 04/15/21 10:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloroaniline	ND		9.6	2.8	ug/L		04/16/21 11:19	04/19/21 20:01	5
Hexachlorobutadiene	ND		4.8	0.29	ug/L		04/16/21 11:19	04/19/21 20:01	5
2-Methylnaphthalene	ND		1.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:01	5
4,6-Dinitro-2-methylphenol	ND		9.6	2.6	ug/L		04/16/21 11:19	04/19/21 20:01	5
N-Nitrosodiphenylamine	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 20:01	5
4-Bromophenyl phenyl ether	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:01	5
Hexachlorobenzene	ND		2.9	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Phenanthrene	ND		4.8	0.58	ug/L		04/16/21 11:19	04/19/21 20:01	5
Anthracene	ND	*1	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
Di-n-butyl phthalate	ND		14	0.91	ug/L		04/16/21 11:19	04/19/21 20:01	5
Fluoranthene	ND		1.2	0.29	ug/L		04/16/21 11:19	04/19/21 20:01	5
Pyrene	ND	*1	4.8	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Butyl benzyl phthalate	ND		19	1.3	ug/L		04/16/21 11:19	04/19/21 20:01	5
3,3'-Dichlorobenzidine	ND		4.8	1.3	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzo[a]anthracene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
Chrysene	ND		1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Di-n-octyl phthalate	ND	*3	4.8	0.63	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzo[a]pyrene	ND	*+ *3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Indeno[1,2,3-cd]pyrene	ND	*3 *1	1.9	0.63	ug/L		04/16/21 11:19	04/19/21 20:01	5
Dibenz(a,h)anthracene	ND	*3	1.2	0.34	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzo[g,h,i]perylene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Carbazole	ND		2.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:01	5
1-Methylnaphthalene	ND		4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzo[b]fluoranthene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:01	5
Benzo[k]fluoranthene	ND	*+ *3	1.2	0.24	ug/L		04/16/21 11:19	04/19/21 20:01	5
bis(chloroisopropyl) ether	ND	*1	1.2	0.29	ug/L		04/16/21 11:19	04/19/21 20:01	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	39		14 - 120	04/16/21 11:19	04/19/21 20:01	5
Phenol-d5 (Surr)	19		10 - 120	04/16/21 11:19	04/19/21 20:01	5
Nitrobenzene-d5 (Surr)	85		46 - 125	04/16/21 11:19	04/19/21 20:01	5
2,4,6-Tribromophenol (Surr)	105		50 - 125	04/16/21 11:19	04/19/21 20:01	5
Terphenyl-d14 (Surr)	94		63 - 122	04/16/21 11:19	04/19/21 20:01	5

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		29	6.3	ug/L		04/16/21 11:19	04/28/21 14:18	50
Hexachlorocyclopentadiene	ND		48	6.7	ug/L		04/16/21 11:19	04/28/21 14:18	50
2,4,6-Trichlorophenol	ND		29	4.8	ug/L		04/16/21 11:19	04/28/21 14:18	50
2,4,5-Trichlorophenol	ND		19	4.8	ug/L		04/16/21 11:19	04/28/21 14:18	50
2-Chloronaphthalene	ND		48	3.4	ug/L		04/16/21 11:19	04/28/21 14:18	50
2-Nitroaniline	ND		48	4.8	ug/L		04/16/21 11:19	04/28/21 14:18	50
Dimethyl phthalate	ND		29	2.9	ug/L		04/16/21 11:19	04/28/21 14:18	50
Acenaphthylene	ND		48	2.9	ug/L		04/16/21 11:19	04/28/21 14:18	50
2,6-Dinitrotoluene	ND		19	4.8	ug/L		04/16/21 11:19	04/28/21 14:18	50
3-Nitroaniline	ND		140	7.7	ug/L		04/16/21 11:19	04/28/21 14:18	50
Acenaphthene	ND		19	2.4	ug/L		04/16/21 11:19	04/28/21 14:18	50
2,4-Dinitrophenol	ND		240	77	ug/L		04/16/21 11:19	04/28/21 14:18	50
4-Nitrophenol	ND	*1	480	82	ug/L		04/16/21 11:19	04/28/21 14:18	50
Dibenzofuran	ND		19	4.8	ug/L		04/16/21 11:19	04/28/21 14:18	50

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-19-G

Lab Sample ID: 580-102482-2

Date Collected: 04/15/21 10:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dinitrotoluene	ND		48	4.8	ug/L		04/16/21 11:19	04/28/21 14:18	50
Diethyl phthalate	ND	*1	48	7.2	ug/L		04/16/21 11:19	04/28/21 14:18	50
4-Chlorophenyl phenyl ether	ND		29	2.4	ug/L		04/16/21 11:19	04/28/21 14:18	50
Fluorene	ND		12	2.4	ug/L		04/16/21 11:19	04/28/21 14:18	50
4-Nitroaniline	ND		96	10	ug/L		04/16/21 11:19	04/28/21 14:18	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	126	S1+	14 - 120	04/16/21 11:19	04/28/21 14:18	50
Phenol-d5 (Surr)	17		10 - 120	04/16/21 11:19	04/28/21 14:18	50
Nitrobenzene-d5 (Surr)	222	S1+	46 - 125	04/16/21 11:19	04/28/21 14:18	50
2-Fluorobiphenyl	132	S1+	51 - 120	04/16/21 11:19	04/28/21 14:18	50
2,4,6-Tribromophenol (Surr)	311	S1+	50 - 125	04/16/21 11:19	04/28/21 14:18	50
Terphenyl-d14 (Surr)	386	S1+	63 - 122	04/16/21 11:19	04/28/21 14:18	50

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.74		0.25	0.10	mg/L			04/27/21 01:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150		04/27/21 01:19	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	7.4		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 21:21	1
Motor Oil (>C24-C36)	3.8		0.35	0.096	mg/L		04/16/21 11:12	04/19/21 21:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		50 - 150	04/16/21 11:12	04/19/21 21:21	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-03

Lab Sample ID: 580-102482-3

Date Collected: 04/15/21 11:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/25/21 00:46	1
Chloromethane	ND	*1	1.0	0.28	ug/L			04/25/21 00:46	1
Vinyl chloride	0.48	J	1.0	0.22	ug/L			04/25/21 00:46	1
Bromomethane	ND		1.0	0.21	ug/L			04/25/21 00:46	1
Chloroethane	ND	*1	1.0	0.35	ug/L			04/25/21 00:46	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/25/21 00:46	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/25/21 00:46	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/25/21 00:46	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			04/25/21 00:46	1
1,1-Dichloroethane	0.36	J *1	1.0	0.22	ug/L			04/25/21 00:46	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/25/21 00:46	1
cis-1,2-Dichloroethene	0.40	J	1.0	0.35	ug/L			04/25/21 00:46	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/25/21 00:46	1
Chloroform	0.39	J	1.0	0.26	ug/L			04/25/21 00:46	1
1,1,1-Trichloroethane	ND	*1	1.0	0.39	ug/L			04/25/21 00:46	1
Carbon tetrachloride	ND	*1	1.0	0.30	ug/L			04/25/21 00:46	1
1,1-Dichloropropene	ND	*1	1.0	0.29	ug/L			04/25/21 00:46	1
Benzene	0.40	J *1	1.0	0.24	ug/L			04/25/21 00:46	1
1,2-Dichloroethane	ND	*1	1.0	0.42	ug/L			04/25/21 00:46	1
Trichloroethene	ND		1.0	0.26	ug/L			04/25/21 00:46	1
1,2-Dichloropropane	ND	*1	1.0	0.18	ug/L			04/25/21 00:46	1
Dibromomethane	ND		1.0	0.34	ug/L			04/25/21 00:46	1
Bromodichloromethane	ND	*1	1.0	0.29	ug/L			04/25/21 00:46	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/25/21 00:46	1
Toluene	ND		1.0	0.39	ug/L			04/25/21 00:46	1
trans-1,3-Dichloropropene	ND	*1	1.0	0.41	ug/L			04/25/21 00:46	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/25/21 00:46	1
Tetrachloroethene	0.95	J	1.0	0.41	ug/L			04/25/21 00:46	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/25/21 00:46	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/25/21 00:46	1
1,2-Dibromoethane	ND	*1	1.0	0.40	ug/L			04/25/21 00:46	1
Chlorobenzene	8.6		1.0	0.44	ug/L			04/25/21 00:46	1
Ethylbenzene	ND		1.0	0.50	ug/L			04/25/21 00:46	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/25/21 00:46	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/25/21 00:46	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/25/21 00:46	1
o-Xylene	ND		1.0	0.39	ug/L			04/25/21 00:46	1
Styrene	ND		1.0	0.53	ug/L			04/25/21 00:46	1
Bromoform	ND		1.0	0.51	ug/L			04/25/21 00:46	1
Isopropylbenzene	5.2		1.0	0.44	ug/L			04/25/21 00:46	1
Bromobenzene	ND		1.0	0.43	ug/L			04/25/21 00:46	1
N-Propylbenzene	12		1.0	0.50	ug/L			04/25/21 00:46	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/25/21 00:46	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/25/21 00:46	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			04/25/21 00:46	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/25/21 00:46	1
t-Butylbenzene	1.1	J	2.0	0.58	ug/L			04/25/21 00:46	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			04/25/21 00:46	1
sec-Butylbenzene	6.0		1.0	0.49	ug/L			04/25/21 00:46	1

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-03

Lab Sample ID: 580-102482-3

Date Collected: 04/15/21 11:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	1.8		1.0	0.48	ug/L			04/25/21 00:46	1
4-Isopropyltoluene	1.4		1.0	0.28	ug/L			04/25/21 00:46	1
1,4-Dichlorobenzene	13		1.0	0.46	ug/L			04/25/21 00:46	1
n-Butylbenzene	2.9		1.0	0.44	ug/L			04/25/21 00:46	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			04/25/21 00:46	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/25/21 00:46	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/25/21 00:46	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/25/21 00:46	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/25/21 00:46	1
Naphthalene	1.7	J	3.0	0.93	ug/L			04/25/21 00:46	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/25/21 00:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	94		80 - 120		04/25/21 00:46	1
4-Bromofluorobenzene (Surr)	106		80 - 120		04/25/21 00:46	1
Dibromofluoromethane (Surr)	111		80 - 120		04/25/21 00:46	1
1,2-Dichloroethane-d4 (Surr)	105		80 - 126		04/25/21 00:46	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.44	J B	1.0	0.18	ug/L		04/17/21 16:39	04/19/21 13:05	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.088	ug/L		04/17/21 16:39	04/19/21 13:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	66		35 - 133	04/17/21 16:39	04/19/21 13:05	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	0.96	0.34	ug/L		04/16/21 11:19	04/19/21 20:24	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		04/16/21 11:19	04/19/21 20:24	1
2-Chlorophenol	ND	*1	0.96	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
1,3-Dichlorobenzene	1.5		0.38	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
1,4-Dichlorobenzene	12		0.38	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzyl alcohol	ND		4.8	0.17	ug/L		04/16/21 11:19	04/19/21 20:24	1
1,2-Dichlorobenzene	0.33	J	0.38	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
2-Methylphenol	ND		0.57	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
3 & 4 Methylphenol	ND	*1	0.57	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
N-Nitrosodi-n-propylamine	ND	*1	0.38	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1
Hexachloroethane	ND		0.96	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
Nitrobenzene	ND	*1	0.96	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Isophorone	ND	*1	0.38	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
2-Nitrophenol	ND		0.96	0.067	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,4-Dimethylphenol	ND	*1	3.8	0.15	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzoic acid	ND		9.6	1.3	ug/L		04/16/21 11:19	04/19/21 20:24	1
Bis(2-chloroethoxy)methane	ND	*1	0.57	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		04/16/21 11:19	04/19/21 20:24	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		04/16/21 11:19	04/19/21 20:24	1
Naphthalene	1.9		0.38	0.15	ug/L		04/16/21 11:19	04/19/21 20:24	1
4-Chloroaniline	ND		1.9	0.56	ug/L		04/16/21 11:19	04/19/21 20:24	1
Hexachlorobutadiene	ND		0.96	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-03

Lab Sample ID: 580-102482-3

Date Collected: 04/15/21 11:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		04/16/21 11:19	04/19/21 20:24	1
2-Methylnaphthalene	0.25	J	0.38	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		04/16/21 11:19	04/19/21 20:24	1
2-Nitroaniline	ND		0.96	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1
Acenaphthylene	ND		0.96	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,6-Dinitrotoluene	ND		0.38	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
3-Nitroaniline	ND		2.9	0.15	ug/L		04/16/21 11:19	04/19/21 20:24	1
Acenaphthene	ND		0.38	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		04/16/21 11:19	04/19/21 20:24	1
4-Nitrophenol	ND	*1	9.6	1.6	ug/L		04/16/21 11:19	04/19/21 20:24	1
Dibenzofuran	ND		0.38	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
Diethyl phthalate	ND	*1	0.96	0.14	ug/L		04/16/21 11:19	04/19/21 20:24	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
Fluorene	ND		0.24	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
4-Nitroaniline	ND		1.9	0.20	ug/L		04/16/21 11:19	04/19/21 20:24	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		04/16/21 11:19	04/19/21 20:24	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		04/16/21 11:19	04/19/21 20:24	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Phenanthrene	ND		0.96	0.11	ug/L		04/16/21 11:19	04/19/21 20:24	1
Anthracene	ND	*1	0.96	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
Di-n-butyl phthalate	ND		2.9	0.18	ug/L		04/16/21 11:19	04/19/21 20:24	1
Fluoranthene	ND		0.24	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1
Pyrene	ND	*1	0.96	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		04/16/21 11:19	04/19/21 20:24	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
Chrysene	ND		0.24	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Di-n-octyl phthalate	ND	*3	0.96	0.12	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzo[a]pyrene	ND	*+ *3	0.24	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Indeno[1,2,3-cd]pyrene	ND	*3 *1	0.38	0.12	ug/L		04/16/21 11:19	04/19/21 20:24	1
Dibenz(a,h)anthracene	ND	*3	0.24	0.067	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzo[g,h,i]perylene	ND	*3	0.24	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Carbazole	ND		0.57	0.096	ug/L		04/16/21 11:19	04/19/21 20:24	1
1-Methylnaphthalene	0.53	J	0.96	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzo[b]fluoranthene	ND	*3	0.24	0.038	ug/L		04/16/21 11:19	04/19/21 20:24	1
Benzo[k]fluoranthene	ND	*+ *3	0.24	0.048	ug/L		04/16/21 11:19	04/19/21 20:24	1
bis(chloroisopropyl) ether	ND	*1	0.24	0.057	ug/L		04/16/21 11:19	04/19/21 20:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	38		14 - 120	04/16/21 11:19	04/19/21 20:24	1
Phenol-d5 (Surr)	27		10 - 120	04/16/21 11:19	04/19/21 20:24	1
Nitrobenzene-d5 (Surr)	76		46 - 125	04/16/21 11:19	04/19/21 20:24	1
2-Fluorobiphenyl	45	S1-	51 - 120	04/16/21 11:19	04/19/21 20:24	1
2,4,6-Tribromophenol (Surr)	92		50 - 125	04/16/21 11:19	04/19/21 20:24	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-03

Lab Sample ID: 580-102482-3

Date Collected: 04/15/21 11:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	98		63 - 122	04/16/21 11:19	04/19/21 20:24	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.81		0.25	0.10	mg/L			04/27/21 01:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		50 - 150		04/27/21 01:44	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.2		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 21:41	1
Motor Oil (>C24-C36)	1.2		0.35	0.096	mg/L		04/16/21 11:12	04/19/21 21:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	79		50 - 150	04/16/21 11:12	04/19/21 21:41	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D

Lab Sample ID: 580-102482-4

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		20	11	ug/L			04/24/21 23:28	20
Chloromethane	ND	*1	20	5.6	ug/L			04/24/21 23:28	20
Vinyl chloride	ND		20	4.4	ug/L			04/24/21 23:28	20
Bromomethane	ND		20	4.2	ug/L			04/24/21 23:28	20
Chloroethane	ND	*1	20	7.0	ug/L			04/24/21 23:28	20
Trichlorofluoromethane	ND		20	7.2	ug/L			04/24/21 23:28	20
1,1-Dichloroethene	ND		20	5.6	ug/L			04/24/21 23:28	20
Methylene Chloride	ND		60	29	ug/L			04/24/21 23:28	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			04/24/21 23:28	20
1,1-Dichloroethane	ND	*1	20	4.4	ug/L			04/24/21 23:28	20
2,2-Dichloropropane	ND		20	6.4	ug/L			04/24/21 23:28	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			04/24/21 23:28	20
Bromochloromethane	ND		20	5.8	ug/L			04/24/21 23:28	20
Chloroform	ND		20	5.2	ug/L			04/24/21 23:28	20
1,1,1-Trichloroethane	ND	*1	20	7.8	ug/L			04/24/21 23:28	20
Carbon tetrachloride	ND	*1	20	6.0	ug/L			04/24/21 23:28	20
1,1-Dichloropropene	ND	*1	20	5.8	ug/L			04/24/21 23:28	20
Benzene	ND	*1	20	4.8	ug/L			04/24/21 23:28	20
1,2-Dichloroethane	ND	*1	20	8.4	ug/L			04/24/21 23:28	20
Trichloroethene	ND		20	5.2	ug/L			04/24/21 23:28	20
1,2-Dichloropropane	ND	*1	20	3.6	ug/L			04/24/21 23:28	20
Dibromomethane	ND		20	6.8	ug/L			04/24/21 23:28	20
Bromodichloromethane	ND	*1	20	5.8	ug/L			04/24/21 23:28	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			04/24/21 23:28	20
Toluene	ND		20	7.8	ug/L			04/24/21 23:28	20
trans-1,3-Dichloropropene	ND	*1	20	8.2	ug/L			04/24/21 23:28	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			04/24/21 23:28	20
Tetrachloroethene	ND		20	8.2	ug/L			04/24/21 23:28	20
1,3-Dichloropropane	ND		20	7.0	ug/L			04/24/21 23:28	20
Dibromochloromethane	ND		20	8.6	ug/L			04/24/21 23:28	20
1,2-Dibromoethane	ND	*1	20	8.0	ug/L			04/24/21 23:28	20
Chlorobenzene	37		20	8.8	ug/L			04/24/21 23:28	20
Ethylbenzene	ND		20	10	ug/L			04/24/21 23:28	20
1,1,1,2-Tetrachloroethane	ND		20	3.6	ug/L			04/24/21 23:28	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			04/24/21 23:28	20
m-Xylene & p-Xylene	ND		40	11	ug/L			04/24/21 23:28	20
o-Xylene	12 J		20	7.8	ug/L			04/24/21 23:28	20
Styrene	ND		20	11	ug/L			04/24/21 23:28	20
Bromoform	ND		20	10	ug/L			04/24/21 23:28	20
Isopropylbenzene	ND		20	8.8	ug/L			04/24/21 23:28	20
Bromobenzene	ND		20	8.6	ug/L			04/24/21 23:28	20
N-Propylbenzene	ND		20	10	ug/L			04/24/21 23:28	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			04/24/21 23:28	20
2-Chlorotoluene	ND		20	10	ug/L			04/24/21 23:28	20
1,3,5-Trimethylbenzene	12 J		20	11	ug/L			04/24/21 23:28	20
4-Chlorotoluene	ND		20	7.6	ug/L			04/24/21 23:28	20
t-Butylbenzene	ND		40	12	ug/L			04/24/21 23:28	20
1,2,4-Trimethylbenzene	38 J		60	12	ug/L			04/24/21 23:28	20
sec-Butylbenzene	ND		20	9.8	ug/L			04/24/21 23:28	20

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D

Lab Sample ID: 580-102482-4

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			04/24/21 23:28	20
4-Isopropyltoluene	ND		20	5.6	ug/L			04/24/21 23:28	20
1,4-Dichlorobenzene	12	J	20	9.2	ug/L			04/24/21 23:28	20
n-Butylbenzene	ND		20	8.8	ug/L			04/24/21 23:28	20
1,2-Dichlorobenzene	20		20	9.2	ug/L			04/24/21 23:28	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			04/24/21 23:28	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			04/24/21 23:28	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			04/24/21 23:28	20
Hexachlorobutadiene	ND		60	16	ug/L			04/24/21 23:28	20
Naphthalene	ND		60	19	ug/L			04/24/21 23:28	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			04/24/21 23:28	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		80 - 120					04/24/21 23:28	20
4-Bromofluorobenzene (Surr)	94		80 - 120					04/24/21 23:28	20
Dibromofluoromethane (Surr)	104		80 - 120					04/24/21 23:28	20
1,2-Dichloroethane-d4 (Surr)	103		80 - 126					04/24/21 23:28	20

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.49	J B	1.0	0.18	ug/L		04/17/21 16:39	04/19/21 13:28	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.088	ug/L		04/17/21 16:39	04/19/21 13:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	77		35 - 133				04/17/21 16:39	04/19/21 13:28	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	4.8	1.7	ug/L		04/16/21 11:19	04/19/21 20:48	5
Bis(2-chloroethyl)ether	ND		0.48	0.14	ug/L		04/16/21 11:19	04/19/21 20:48	5
2-Chlorophenol	ND	*1	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
1,3-Dichlorobenzene	1.5	J	1.9	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
1,4-Dichlorobenzene	11		1.9	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzyl alcohol	ND		24	0.86	ug/L		04/16/21 11:19	04/19/21 20:48	5
1,2-Dichlorobenzene	16		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
2-Methylphenol	0.97	J	2.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
3 & 4 Methylphenol	ND	*1	2.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
N-Nitrosodi-n-propylamine	ND	*1	1.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5
Hexachloroethane	ND		4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
Nitrobenzene	ND	*1	4.8	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Isophorone	ND	*1	1.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
2-Nitrophenol	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,4-Dimethylphenol	ND	*1	19	0.77	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzoic acid	ND		48	6.4	ug/L		04/16/21 11:19	04/19/21 20:48	5
Bis(2-chloroethoxy)methane	ND	*1	2.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,4-Dichlorophenol	ND		4.8	0.96	ug/L		04/16/21 11:19	04/19/21 20:48	5
1,2,4-Trichlorobenzene	ND		1.9	0.43	ug/L		04/16/21 11:19	04/19/21 20:48	5
Naphthalene	3.9		1.9	0.77	ug/L		04/16/21 11:19	04/19/21 20:48	5
4-Chloroaniline	ND		9.6	2.8	ug/L		04/16/21 11:19	04/19/21 20:48	5
Hexachlorobutadiene	ND		4.8	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D

Lab Sample ID: 580-102482-4

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		2.9	0.62	ug/L		04/16/21 11:19	04/19/21 20:48	5
2-Methylnaphthalene	1.4	J	1.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5
Hexachlorocyclopentadiene	ND		4.8	0.67	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,4,6-Trichlorophenol	ND		2.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,4,5-Trichlorophenol	ND		1.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
2-Chloronaphthalene	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 20:48	5
2-Nitroaniline	ND		4.8	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
Dimethyl phthalate	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5
Acenaphthylene	ND		4.8	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,6-Dinitrotoluene	ND		1.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
3-Nitroaniline	ND		14	0.77	ug/L		04/16/21 11:19	04/19/21 20:48	5
Acenaphthene	ND		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,4-Dinitrophenol	ND		24	7.7	ug/L		04/16/21 11:19	04/19/21 20:48	5
4-Nitrophenol	ND	*1	48	8.2	ug/L		04/16/21 11:19	04/19/21 20:48	5
Dibenzofuran	ND		1.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
2,4-Dinitrotoluene	ND		4.8	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
Diethyl phthalate	ND	*1	4.8	0.72	ug/L		04/16/21 11:19	04/19/21 20:48	5
4-Chlorophenyl phenyl ether	ND		2.9	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
Fluorene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
4-Nitroaniline	ND		9.6	1.0	ug/L		04/16/21 11:19	04/19/21 20:48	5
4,6-Dinitro-2-methylphenol	ND		9.6	2.6	ug/L		04/16/21 11:19	04/19/21 20:48	5
N-Nitrosodiphenylamine	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 20:48	5
4-Bromophenyl phenyl ether	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5
Hexachlorobenzene	ND		2.9	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Phenanthrene	ND		4.8	0.58	ug/L		04/16/21 11:19	04/19/21 20:48	5
Anthracene	ND	*1	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
Di-n-butyl phthalate	ND		14	0.91	ug/L		04/16/21 11:19	04/19/21 20:48	5
Fluoranthene	ND		1.2	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5
Pyrene	ND	*1	4.8	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Butyl benzyl phthalate	ND		19	1.3	ug/L		04/16/21 11:19	04/19/21 20:48	5
3,3'-Dichlorobenzidine	ND		4.8	1.2	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzo[a]anthracene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
Chrysene	ND		1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Di-n-octyl phthalate	ND	*3	4.8	0.62	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzo[a]pyrene	ND	*+ *3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Indeno[1,2,3-cd]pyrene	ND	*3 *1	1.9	0.62	ug/L		04/16/21 11:19	04/19/21 20:48	5
Dibenz(a,h)anthracene	ND	*3	1.2	0.34	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzo[g,h,i]perylene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Carbazole	ND		2.9	0.48	ug/L		04/16/21 11:19	04/19/21 20:48	5
1-Methylnaphthalene	1.3	J	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzo[b]fluoranthene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 20:48	5
Benzo[k]fluoranthene	ND	*+ *3	1.2	0.24	ug/L		04/16/21 11:19	04/19/21 20:48	5
bis(chloroisopropyl) ether	ND	*1	1.2	0.29	ug/L		04/16/21 11:19	04/19/21 20:48	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	38		14 - 120	04/16/21 11:19	04/19/21 20:48	5
Phenol-d5 (Surr)	21		10 - 120	04/16/21 11:19	04/19/21 20:48	5
Nitrobenzene-d5 (Surr)	81		46 - 125	04/16/21 11:19	04/19/21 20:48	5
2-Fluorobiphenyl	132	S1+	51 - 120	04/16/21 11:19	04/19/21 20:48	5
2,4,6-Tribromophenol (Surr)	100		50 - 125	04/16/21 11:19	04/19/21 20:48	5

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D

Lab Sample ID: 580-102482-4

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	108		63 - 122	04/16/21 11:19	04/19/21 20:48	5

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.88		0.25	0.10	mg/L			04/27/21 02:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		50 - 150		04/27/21 02:08	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	4.1		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 22:01	1
Motor Oil (>C24-C36)	2.6		0.35	0.096	mg/L		04/16/21 11:12	04/19/21 22:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	79		50 - 150	04/16/21 11:12	04/19/21 22:01	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-02

Lab Sample ID: 580-102482-5

Date Collected: 04/15/21 13:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		20	11	ug/L			04/25/21 00:20	20
Chloromethane	ND	*1	20	5.6	ug/L			04/25/21 00:20	20
Vinyl chloride	ND		20	4.4	ug/L			04/25/21 00:20	20
Bromomethane	ND		20	4.2	ug/L			04/25/21 00:20	20
Chloroethane	ND	*1	20	7.0	ug/L			04/25/21 00:20	20
Trichlorofluoromethane	ND		20	7.2	ug/L			04/25/21 00:20	20
1,1-Dichloroethene	ND		20	5.6	ug/L			04/25/21 00:20	20
Methylene Chloride	ND		60	29	ug/L			04/25/21 00:20	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			04/25/21 00:20	20
1,1-Dichloroethane	ND	*1	20	4.4	ug/L			04/25/21 00:20	20
2,2-Dichloropropane	ND		20	6.4	ug/L			04/25/21 00:20	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			04/25/21 00:20	20
Bromochloromethane	ND		20	5.8	ug/L			04/25/21 00:20	20
Chloroform	ND		20	5.2	ug/L			04/25/21 00:20	20
1,1,1-Trichloroethane	ND	*1	20	7.8	ug/L			04/25/21 00:20	20
Carbon tetrachloride	ND	*1	20	6.0	ug/L			04/25/21 00:20	20
1,1-Dichloropropene	ND	*1	20	5.8	ug/L			04/25/21 00:20	20
Benzene	ND	*1	20	4.8	ug/L			04/25/21 00:20	20
1,2-Dichloroethane	ND	*1	20	8.4	ug/L			04/25/21 00:20	20
Trichloroethene	ND		20	5.2	ug/L			04/25/21 00:20	20
1,2-Dichloropropane	ND	*1	20	3.6	ug/L			04/25/21 00:20	20
Dibromomethane	ND		20	6.8	ug/L			04/25/21 00:20	20
Bromodichloromethane	ND	*1	20	5.8	ug/L			04/25/21 00:20	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			04/25/21 00:20	20
Toluene	ND		20	7.8	ug/L			04/25/21 00:20	20
trans-1,3-Dichloropropene	ND	*1	20	8.2	ug/L			04/25/21 00:20	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			04/25/21 00:20	20
Tetrachloroethene	ND		20	8.2	ug/L			04/25/21 00:20	20
1,3-Dichloropropane	ND		20	7.0	ug/L			04/25/21 00:20	20
Dibromochloromethane	ND		20	8.6	ug/L			04/25/21 00:20	20
1,2-Dibromoethane	ND	*1	20	8.0	ug/L			04/25/21 00:20	20
Chlorobenzene	20		20	8.8	ug/L			04/25/21 00:20	20
Ethylbenzene	ND		20	10	ug/L			04/25/21 00:20	20
1,1,1,2-Tetrachloroethane	ND		20	3.6	ug/L			04/25/21 00:20	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			04/25/21 00:20	20
m-Xylene & p-Xylene	ND		40	11	ug/L			04/25/21 00:20	20
o-Xylene	ND		20	7.8	ug/L			04/25/21 00:20	20
Styrene	ND		20	11	ug/L			04/25/21 00:20	20
Bromoform	ND		20	10	ug/L			04/25/21 00:20	20
Isopropylbenzene	ND		20	8.8	ug/L			04/25/21 00:20	20
Bromobenzene	ND		20	8.6	ug/L			04/25/21 00:20	20
N-Propylbenzene	ND		20	10	ug/L			04/25/21 00:20	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			04/25/21 00:20	20
2-Chlorotoluene	ND		20	10	ug/L			04/25/21 00:20	20
1,3,5-Trimethylbenzene	ND		20	11	ug/L			04/25/21 00:20	20
4-Chlorotoluene	ND		20	7.6	ug/L			04/25/21 00:20	20
t-Butylbenzene	ND		40	12	ug/L			04/25/21 00:20	20
1,2,4-Trimethylbenzene	ND		60	12	ug/L			04/25/21 00:20	20
sec-Butylbenzene	ND		20	9.8	ug/L			04/25/21 00:20	20

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-02

Lab Sample ID: 580-102482-5

Date Collected: 04/15/21 13:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			04/25/21 00:20	20
4-Isopropyltoluene	ND		20	5.6	ug/L			04/25/21 00:20	20
1,4-Dichlorobenzene	ND		20	9.2	ug/L			04/25/21 00:20	20
n-Butylbenzene	ND		20	8.8	ug/L			04/25/21 00:20	20
1,2-Dichlorobenzene	ND		20	9.2	ug/L			04/25/21 00:20	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			04/25/21 00:20	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			04/25/21 00:20	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			04/25/21 00:20	20
Hexachlorobutadiene	ND		60	16	ug/L			04/25/21 00:20	20
Naphthalene	ND		60	19	ug/L			04/25/21 00:20	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			04/25/21 00:20	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		04/25/21 00:20	20
4-Bromofluorobenzene (Surr)	90		80 - 120		04/25/21 00:20	20
Dibromofluoromethane (Surr)	106		80 - 120		04/25/21 00:20	20
1,2-Dichloroethane-d4 (Surr)	101		80 - 126		04/25/21 00:20	20

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	25	B	1.0	0.18	ug/L		04/17/21 16:39	04/19/21 13:51	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.088	ug/L		04/17/21 16:39	04/19/21 13:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	77		35 - 133	04/17/21 16:39	04/19/21 13:51	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	0.96	0.34	ug/L		04/16/21 11:19	04/19/21 21:12	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		04/16/21 11:19	04/19/21 21:12	1
2-Chlorophenol	ND	*1	0.96	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
1,3-Dichlorobenzene	0.23	J	0.38	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
1,4-Dichlorobenzene	2.0		0.38	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzyl alcohol	ND		4.8	0.17	ug/L		04/16/21 11:19	04/19/21 21:12	1
1,2-Dichlorobenzene	0.25	J	0.38	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
2-Methylphenol	ND		0.57	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
3 & 4 Methylphenol	ND	*1	0.57	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
N-Nitrosodi-n-propylamine	ND	*1	0.38	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1
Hexachloroethane	ND		0.96	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
Nitrobenzene	ND	*1	0.96	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Isophorone	ND	*1	0.38	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
2-Nitrophenol	ND		0.96	0.067	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,4-Dimethylphenol	ND	*1	3.8	0.15	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzoic acid	ND		9.6	1.3	ug/L		04/16/21 11:19	04/19/21 21:12	1
Bis(2-chloroethoxy)methane	ND	*1	0.57	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		04/16/21 11:19	04/19/21 21:12	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		04/16/21 11:19	04/19/21 21:12	1
Naphthalene	0.16	J	0.38	0.15	ug/L		04/16/21 11:19	04/19/21 21:12	1
4-Chloroaniline	ND		1.9	0.56	ug/L		04/16/21 11:19	04/19/21 21:12	1
Hexachlorobutadiene	ND		0.96	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-02

Lab Sample ID: 580-102482-5

Date Collected: 04/15/21 13:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		04/16/21 11:19	04/19/21 21:12	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		04/16/21 11:19	04/19/21 21:12	1
2-Nitroaniline	ND		0.96	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1
Acenaphthylene	ND		0.96	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,6-Dinitrotoluene	ND		0.38	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
3-Nitroaniline	ND		2.9	0.15	ug/L		04/16/21 11:19	04/19/21 21:12	1
Acenaphthene	0.83		0.38	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		04/16/21 11:19	04/19/21 21:12	1
4-Nitrophenol	ND	*1	9.6	1.6	ug/L		04/16/21 11:19	04/19/21 21:12	1
Dibenzofuran	ND		0.38	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
Diethyl phthalate	0.16	J *1	0.96	0.14	ug/L		04/16/21 11:19	04/19/21 21:12	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
Fluorene	0.17	J	0.24	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
4-Nitroaniline	ND		1.9	0.20	ug/L		04/16/21 11:19	04/19/21 21:12	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		04/16/21 11:19	04/19/21 21:12	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		04/16/21 11:19	04/19/21 21:12	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Phenanthrene	ND		0.96	0.11	ug/L		04/16/21 11:19	04/19/21 21:12	1
Anthracene	ND	*1	0.96	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
Di-n-butyl phthalate	ND		2.9	0.18	ug/L		04/16/21 11:19	04/19/21 21:12	1
Fluoranthene	ND		0.24	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1
Pyrene	ND	*1	0.96	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		04/16/21 11:19	04/19/21 21:12	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
Chrysene	ND		0.24	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Di-n-octyl phthalate	ND	*3	0.96	0.12	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzo[a]pyrene	ND	*+ *3	0.24	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Indeno[1,2,3-cd]pyrene	ND	*3 *1	0.38	0.12	ug/L		04/16/21 11:19	04/19/21 21:12	1
Dibenz(a,h)anthracene	ND	*3	0.24	0.067	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzo[g,h,i]perylene	ND	*3	0.24	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Carbazole	ND		0.57	0.096	ug/L		04/16/21 11:19	04/19/21 21:12	1
1-Methylnaphthalene	0.33	J	0.96	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzo[b]fluoranthene	ND	*3	0.24	0.038	ug/L		04/16/21 11:19	04/19/21 21:12	1
Benzo[k]fluoranthene	ND	*+ *3	0.24	0.048	ug/L		04/16/21 11:19	04/19/21 21:12	1
bis(chloroisopropyl) ether	ND	*1	0.24	0.057	ug/L		04/16/21 11:19	04/19/21 21:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	21		14 - 120	04/16/21 11:19	04/19/21 21:12	1
Phenol-d5 (Surr)	11		10 - 120	04/16/21 11:19	04/19/21 21:12	1
Nitrobenzene-d5 (Surr)	59		46 - 125	04/16/21 11:19	04/19/21 21:12	1
2-Fluorobiphenyl	49	S1-	51 - 120	04/16/21 11:19	04/19/21 21:12	1
2,4,6-Tribromophenol (Surr)	56		50 - 125	04/16/21 11:19	04/19/21 21:12	1

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Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-02

Lab Sample ID: 580-102482-5

Date Collected: 04/15/21 13:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	80		63 - 122	04/16/21 11:19	04/19/21 21:12	1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.21	J	0.25	0.10	mg/L			04/27/21 02:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		50 - 150		04/27/21 02:33	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.41		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 22:21	1
Motor Oil (>C24-C36)	0.47		0.35	0.096	mg/L		04/16/21 11:12	04/19/21 22:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	64		50 - 150	04/16/21 11:12	04/19/21 22:21	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D-DUP

Lab Sample ID: 580-102482-6

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		20	11	ug/L			04/24/21 23:54	20
Chloromethane	ND	*1	20	5.6	ug/L			04/24/21 23:54	20
Vinyl chloride	ND		20	4.4	ug/L			04/24/21 23:54	20
Bromomethane	ND		20	4.2	ug/L			04/24/21 23:54	20
Chloroethane	ND	*1	20	7.0	ug/L			04/24/21 23:54	20
Trichlorofluoromethane	ND		20	7.2	ug/L			04/24/21 23:54	20
1,1-Dichloroethene	ND		20	5.6	ug/L			04/24/21 23:54	20
Methylene Chloride	ND		60	29	ug/L			04/24/21 23:54	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			04/24/21 23:54	20
1,1-Dichloroethane	ND	*1	20	4.4	ug/L			04/24/21 23:54	20
2,2-Dichloropropane	ND		20	6.4	ug/L			04/24/21 23:54	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			04/24/21 23:54	20
Bromochloromethane	ND		20	5.8	ug/L			04/24/21 23:54	20
Chloroform	ND		20	5.2	ug/L			04/24/21 23:54	20
1,1,1-Trichloroethane	ND	*1	20	7.8	ug/L			04/24/21 23:54	20
Carbon tetrachloride	ND	*1	20	6.0	ug/L			04/24/21 23:54	20
1,1-Dichloropropene	ND	*1	20	5.8	ug/L			04/24/21 23:54	20
Benzene	ND	*1	20	4.8	ug/L			04/24/21 23:54	20
1,2-Dichloroethane	ND	*1	20	8.4	ug/L			04/24/21 23:54	20
Trichloroethene	ND		20	5.2	ug/L			04/24/21 23:54	20
1,2-Dichloropropane	ND	*1	20	3.6	ug/L			04/24/21 23:54	20
Dibromomethane	ND		20	6.8	ug/L			04/24/21 23:54	20
Bromodichloromethane	ND	*1	20	5.8	ug/L			04/24/21 23:54	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			04/24/21 23:54	20
Toluene	ND		20	7.8	ug/L			04/24/21 23:54	20
trans-1,3-Dichloropropene	ND	*1	20	8.2	ug/L			04/24/21 23:54	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			04/24/21 23:54	20
Tetrachloroethene	ND		20	8.2	ug/L			04/24/21 23:54	20
1,3-Dichloropropane	ND		20	7.0	ug/L			04/24/21 23:54	20
Dibromochloromethane	ND		20	8.6	ug/L			04/24/21 23:54	20
1,2-Dibromoethane	ND	*1	20	8.0	ug/L			04/24/21 23:54	20
Chlorobenzene	40		20	8.8	ug/L			04/24/21 23:54	20
Ethylbenzene	ND		20	10	ug/L			04/24/21 23:54	20
1,1,1,2-Tetrachloroethane	ND		20	3.6	ug/L			04/24/21 23:54	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			04/24/21 23:54	20
m-Xylene & p-Xylene	ND		40	11	ug/L			04/24/21 23:54	20
o-Xylene	12 J		20	7.8	ug/L			04/24/21 23:54	20
Styrene	ND		20	11	ug/L			04/24/21 23:54	20
Bromoform	ND		20	10	ug/L			04/24/21 23:54	20
Isopropylbenzene	ND		20	8.8	ug/L			04/24/21 23:54	20
Bromobenzene	ND		20	8.6	ug/L			04/24/21 23:54	20
N-Propylbenzene	ND		20	10	ug/L			04/24/21 23:54	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			04/24/21 23:54	20
2-Chlorotoluene	ND		20	10	ug/L			04/24/21 23:54	20
1,3,5-Trimethylbenzene	13 J		20	11	ug/L			04/24/21 23:54	20
4-Chlorotoluene	ND		20	7.6	ug/L			04/24/21 23:54	20
t-Butylbenzene	ND		40	12	ug/L			04/24/21 23:54	20
1,2,4-Trimethylbenzene	40 J		60	12	ug/L			04/24/21 23:54	20
sec-Butylbenzene	ND		20	9.8	ug/L			04/24/21 23:54	20

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D-DUP

Lab Sample ID: 580-102482-6

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			04/24/21 23:54	20
4-Isopropyltoluene	ND		20	5.6	ug/L			04/24/21 23:54	20
1,4-Dichlorobenzene	13	J	20	9.2	ug/L			04/24/21 23:54	20
n-Butylbenzene	ND		20	8.8	ug/L			04/24/21 23:54	20
1,2-Dichlorobenzene	20		20	9.2	ug/L			04/24/21 23:54	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			04/24/21 23:54	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			04/24/21 23:54	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			04/24/21 23:54	20
Hexachlorobutadiene	ND		60	16	ug/L			04/24/21 23:54	20
Naphthalene	ND		60	19	ug/L			04/24/21 23:54	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			04/24/21 23:54	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120					04/24/21 23:54	20
4-Bromofluorobenzene (Surr)	95		80 - 120					04/24/21 23:54	20
Dibromofluoromethane (Surr)	107		80 - 120					04/24/21 23:54	20
1,2-Dichloroethane-d4 (Surr)	100		80 - 126					04/24/21 23:54	20

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.52	J B	1.0	0.18	ug/L		04/17/21 16:39	04/19/21 14:14	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.088	ug/L		04/17/21 16:39	04/19/21 14:14	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	86		35 - 133				04/17/21 16:39	04/19/21 14:14	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	4.9	1.7	ug/L		04/16/21 11:19	04/19/21 21:35	5
Bis(2-chloroethyl)ether	ND		0.49	0.15	ug/L		04/16/21 11:19	04/19/21 21:35	5
2-Chlorophenol	ND	*1	4.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
1,3-Dichlorobenzene	1.2	J	1.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
1,4-Dichlorobenzene	7.8		1.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzyl alcohol	ND		24	0.87	ug/L		04/16/21 11:19	04/19/21 21:35	5
1,2-Dichlorobenzene	13		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
2-Methylphenol	ND		2.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
3 & 4 Methylphenol	ND	*1	2.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
N-Nitrosodi-n-propylamine	ND	*1	1.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5
Hexachloroethane	ND		4.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
Nitrobenzene	ND	*1	4.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Isophorone	ND	*1	1.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
2-Nitrophenol	ND		4.9	0.34	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,4-Dimethylphenol	ND	*1	19	0.78	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzoic acid	ND		49	6.5	ug/L		04/16/21 11:19	04/19/21 21:35	5
Bis(2-chloroethoxy)methane	ND	*1	2.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,4-Dichlorophenol	ND		4.9	0.97	ug/L		04/16/21 11:19	04/19/21 21:35	5
1,2,4-Trichlorobenzene	ND		1.9	0.44	ug/L		04/16/21 11:19	04/19/21 21:35	5
Naphthalene	3.1		1.9	0.78	ug/L		04/16/21 11:19	04/19/21 21:35	5
4-Chloroaniline	ND		9.7	2.9	ug/L		04/16/21 11:19	04/19/21 21:35	5
Hexachlorobutadiene	ND		4.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D-DUP

Lab Sample ID: 580-102482-6

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		2.9	0.63	ug/L		04/16/21 11:19	04/19/21 21:35	5
2-Methylnaphthalene	1.2	J	1.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5
Hexachlorocyclopentadiene	ND		4.9	0.68	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,4,6-Trichlorophenol	ND		2.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,4,5-Trichlorophenol	ND		1.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
2-Chloronaphthalene	ND		4.9	0.34	ug/L		04/16/21 11:19	04/19/21 21:35	5
2-Nitroaniline	ND		4.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
Dimethyl phthalate	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5
Acenaphthylene	ND		4.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,6-Dinitrotoluene	ND		1.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
3-Nitroaniline	ND		15	0.78	ug/L		04/16/21 11:19	04/19/21 21:35	5
Acenaphthene	ND		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,4-Dinitrophenol	ND		24	7.8	ug/L		04/16/21 11:19	04/19/21 21:35	5
4-Nitrophenol	ND	*1	49	8.3	ug/L		04/16/21 11:19	04/19/21 21:35	5
Dibenzofuran	ND		1.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
2,4-Dinitrotoluene	ND		4.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
Diethyl phthalate	ND	*1	4.9	0.73	ug/L		04/16/21 11:19	04/19/21 21:35	5
4-Chlorophenyl phenyl ether	ND		2.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
Fluorene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
4-Nitroaniline	ND		9.7	1.0	ug/L		04/16/21 11:19	04/19/21 21:35	5
4,6-Dinitro-2-methylphenol	ND		9.7	2.7	ug/L		04/16/21 11:19	04/19/21 21:35	5
N-Nitrosodiphenylamine	ND		4.9	0.34	ug/L		04/16/21 11:19	04/19/21 21:35	5
4-Bromophenyl phenyl ether	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5
Hexachlorobenzene	ND		2.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Phenanthrene	ND		4.9	0.58	ug/L		04/16/21 11:19	04/19/21 21:35	5
Anthracene	ND	*1	4.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
Di-n-butyl phthalate	ND		15	0.92	ug/L		04/16/21 11:19	04/19/21 21:35	5
Fluoranthene	ND		1.2	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5
Pyrene	ND	*1	4.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Butyl benzyl phthalate	5.7	J	19	1.3	ug/L		04/16/21 11:19	04/19/21 21:35	5
3,3'-Dichlorobenzidine	ND		4.9	1.3	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzo[a]anthracene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
Chrysene	ND		1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Di-n-octyl phthalate	ND	*3	4.9	0.63	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzo[a]pyrene	ND	*+ *3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Indeno[1,2,3-cd]pyrene	ND	*3 *1	1.9	0.63	ug/L		04/16/21 11:19	04/19/21 21:35	5
Dibenz(a,h)anthracene	ND	*3	1.2	0.34	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzo[g,h,i]perylene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Carbazole	ND		2.9	0.49	ug/L		04/16/21 11:19	04/19/21 21:35	5
1-Methylnaphthalene	1.1	J	4.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzo[b]fluoranthene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:35	5
Benzo[k]fluoranthene	ND	*+ *3	1.2	0.24	ug/L		04/16/21 11:19	04/19/21 21:35	5
bis(chloroisopropyl) ether	ND	*1	1.2	0.29	ug/L		04/16/21 11:19	04/19/21 21:35	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	30		14 - 120	04/16/21 11:19	04/19/21 21:35	5
Phenol-d5 (Surr)	17		10 - 120	04/16/21 11:19	04/19/21 21:35	5
Nitrobenzene-d5 (Surr)	61		46 - 125	04/16/21 11:19	04/19/21 21:35	5
2-Fluorobiphenyl	41	S1-	51 - 120	04/16/21 11:19	04/19/21 21:35	5
2,4,6-Tribromophenol (Surr)	83		50 - 125	04/16/21 11:19	04/19/21 21:35	5

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D-DUP

Lab Sample ID: 580-102482-6

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	92		63 - 122	04/16/21 11:19	04/19/21 21:35	5

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.80		0.25	0.10	mg/L			04/27/21 03:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150		04/27/21 03:22	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	4.0		0.11	0.066	mg/L		04/16/21 11:12	04/19/21 22:41	1
Motor Oil (>C24-C36)	2.6		0.36	0.097	mg/L		04/16/21 11:12	04/19/21 22:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		50 - 150	04/16/21 11:12	04/19/21 22:41	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-01

Lab Sample ID: 580-102482-7

Date Collected: 04/15/21 14:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/25/21 01:12	1
Chloromethane	ND	*1	1.0	0.28	ug/L			04/25/21 01:12	1
Vinyl chloride	ND		1.0	0.22	ug/L			04/25/21 01:12	1
Bromomethane	ND		1.0	0.21	ug/L			04/25/21 01:12	1
Chloroethane	ND	*1	1.0	0.35	ug/L			04/25/21 01:12	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/25/21 01:12	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/25/21 01:12	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/25/21 01:12	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			04/25/21 01:12	1
1,1-Dichloroethane	ND	*1	1.0	0.22	ug/L			04/25/21 01:12	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/25/21 01:12	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			04/25/21 01:12	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/25/21 01:12	1
Chloroform	ND		1.0	0.26	ug/L			04/25/21 01:12	1
1,1,1-Trichloroethane	ND	*1	1.0	0.39	ug/L			04/25/21 01:12	1
Carbon tetrachloride	ND	*1	1.0	0.30	ug/L			04/25/21 01:12	1
1,1-Dichloropropene	ND	*1	1.0	0.29	ug/L			04/25/21 01:12	1
Benzene	ND	*1	1.0	0.24	ug/L			04/25/21 01:12	1
1,2-Dichloroethane	ND	*1	1.0	0.42	ug/L			04/25/21 01:12	1
Trichloroethene	ND		1.0	0.26	ug/L			04/25/21 01:12	1
1,2-Dichloropropane	ND	*1	1.0	0.18	ug/L			04/25/21 01:12	1
Dibromomethane	ND		1.0	0.34	ug/L			04/25/21 01:12	1
Bromodichloromethane	ND	*1	1.0	0.29	ug/L			04/25/21 01:12	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/25/21 01:12	1
Toluene	ND		1.0	0.39	ug/L			04/25/21 01:12	1
trans-1,3-Dichloropropene	ND	*1	1.0	0.41	ug/L			04/25/21 01:12	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/25/21 01:12	1
Tetrachloroethene	ND		1.0	0.41	ug/L			04/25/21 01:12	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/25/21 01:12	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/25/21 01:12	1
1,2-Dibromoethane	ND	*1	1.0	0.40	ug/L			04/25/21 01:12	1
Chlorobenzene	ND		1.0	0.44	ug/L			04/25/21 01:12	1
Ethylbenzene	ND		1.0	0.50	ug/L			04/25/21 01:12	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/25/21 01:12	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/25/21 01:12	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/25/21 01:12	1
o-Xylene	ND		1.0	0.39	ug/L			04/25/21 01:12	1
Styrene	ND		1.0	0.53	ug/L			04/25/21 01:12	1
Bromoform	ND		1.0	0.51	ug/L			04/25/21 01:12	1
Isopropylbenzene	ND		1.0	0.44	ug/L			04/25/21 01:12	1
Bromobenzene	ND		1.0	0.43	ug/L			04/25/21 01:12	1
N-Propylbenzene	ND		1.0	0.50	ug/L			04/25/21 01:12	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/25/21 01:12	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/25/21 01:12	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			04/25/21 01:12	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/25/21 01:12	1
t-Butylbenzene	ND		2.0	0.58	ug/L			04/25/21 01:12	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			04/25/21 01:12	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			04/25/21 01:12	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-01

Lab Sample ID: 580-102482-7

Date Collected: 04/15/21 14:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			04/25/21 01:12	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			04/25/21 01:12	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			04/25/21 01:12	1
n-Butylbenzene	ND		1.0	0.44	ug/L			04/25/21 01:12	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			04/25/21 01:12	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/25/21 01:12	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/25/21 01:12	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/25/21 01:12	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/25/21 01:12	1
Naphthalene	ND		3.0	0.93	ug/L			04/25/21 01:12	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/25/21 01:12	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		80 - 120					04/25/21 01:12	1
4-Bromofluorobenzene (Surr)	92		80 - 120					04/25/21 01:12	1
Dibromofluoromethane (Surr)	107		80 - 120					04/25/21 01:12	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 126					04/25/21 01:12	1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.62	J B	1.0	0.18	ug/L		04/17/21 16:39	04/19/21 14:37	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.087	ug/L		04/17/21 16:39	04/19/21 14:37	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	72		35 - 133				04/17/21 16:39	04/19/21 14:37	1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND	*1	4.8	1.7	ug/L		04/16/21 11:19	04/19/21 21:59	5
Bis(2-chloroethyl)ether	ND		0.48	0.14	ug/L		04/16/21 11:19	04/19/21 21:59	5
2-Chlorophenol	ND	*1	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
1,3-Dichlorobenzene	ND		1.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
1,4-Dichlorobenzene	ND		1.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzyl alcohol	ND		24	0.87	ug/L		04/16/21 11:19	04/19/21 21:59	5
1,2-Dichlorobenzene	ND		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
2-Methylphenol	ND		2.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
3 & 4 Methylphenol	ND	*1	2.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
N-Nitrosodi-n-propylamine	ND	*1	1.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5
Hexachloroethane	ND		4.8	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
Nitrobenzene	ND	*1	4.8	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Isophorone	ND	*1	1.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
2-Nitrophenol	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,4-Dimethylphenol	ND	*1	19	0.77	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzoic acid	ND		48	6.4	ug/L		04/16/21 11:19	04/19/21 21:59	5
Bis(2-chloroethoxy)methane	ND	*1	2.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,4-Dichlorophenol	ND		4.8	0.96	ug/L		04/16/21 11:19	04/19/21 21:59	5
1,2,4-Trichlorobenzene	ND		1.9	0.43	ug/L		04/16/21 11:19	04/19/21 21:59	5
Naphthalene	ND		1.9	0.77	ug/L		04/16/21 11:19	04/19/21 21:59	5
4-Chloroaniline	ND		9.6	2.8	ug/L		04/16/21 11:19	04/19/21 21:59	5
Hexachlorobutadiene	ND		4.8	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-01

Lab Sample ID: 580-102482-7

Date Collected: 04/15/21 14:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		2.9	0.63	ug/L		04/16/21 11:19	04/19/21 21:59	5
2-Methylnaphthalene	ND		1.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5
Hexachlorocyclopentadiene	ND		4.8	0.67	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,4,6-Trichlorophenol	ND		2.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,4,5-Trichlorophenol	ND		1.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
2-Chloronaphthalene	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 21:59	5
2-Nitroaniline	ND		4.8	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
Dimethyl phthalate	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5
Acenaphthylene	ND		4.8	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,6-Dinitrotoluene	ND		1.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
3-Nitroaniline	ND		14	0.77	ug/L		04/16/21 11:19	04/19/21 21:59	5
Acenaphthene	ND		1.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,4-Dinitrophenol	ND		24	7.7	ug/L		04/16/21 11:19	04/19/21 21:59	5
4-Nitrophenol	ND	*1	48	8.2	ug/L		04/16/21 11:19	04/19/21 21:59	5
Dibenzofuran	ND		1.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
2,4-Dinitrotoluene	ND		4.8	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
Diethyl phthalate	ND	*1	4.8	0.72	ug/L		04/16/21 11:19	04/19/21 21:59	5
4-Chlorophenyl phenyl ether	ND		2.9	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
Fluorene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
4-Nitroaniline	ND		9.6	1.0	ug/L		04/16/21 11:19	04/19/21 21:59	5
4,6-Dinitro-2-methylphenol	ND		9.6	2.6	ug/L		04/16/21 11:19	04/19/21 21:59	5
N-Nitrosodiphenylamine	ND		4.8	0.34	ug/L		04/16/21 11:19	04/19/21 21:59	5
4-Bromophenyl phenyl ether	ND		2.9	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5
Hexachlorobenzene	ND		2.9	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Phenanthrene	ND		4.8	0.58	ug/L		04/16/21 11:19	04/19/21 21:59	5
Anthracene	ND	*1	4.8	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
Di-n-butyl phthalate	ND		14	0.91	ug/L		04/16/21 11:19	04/19/21 21:59	5
Fluoranthene	ND		1.2	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5
Pyrene	ND	*1	4.8	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Butyl benzyl phthalate	ND		19	1.3	ug/L		04/16/21 11:19	04/19/21 21:59	5
3,3'-Dichlorobenzidine	ND		4.8	1.3	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzo[a]anthracene	ND		1.2	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
Chrysene	ND		1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Di-n-octyl phthalate	ND	*3	4.8	0.63	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzo[a]pyrene	ND	*+ *3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Indeno[1,2,3-cd]pyrene	ND	*3 *1	1.9	0.63	ug/L		04/16/21 11:19	04/19/21 21:59	5
Dibenz(a,h)anthracene	ND	*3	1.2	0.34	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzo[g,h,i]perylene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Carbazole	ND		2.9	0.48	ug/L		04/16/21 11:19	04/19/21 21:59	5
1-Methylnaphthalene	ND		4.8	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzo[b]fluoranthene	ND	*3	1.2	0.19	ug/L		04/16/21 11:19	04/19/21 21:59	5
Benzo[k]fluoranthene	ND	*+ *3	1.2	0.24	ug/L		04/16/21 11:19	04/19/21 21:59	5
bis(chloroisopropyl) ether	ND	*1	1.2	0.29	ug/L		04/16/21 11:19	04/19/21 21:59	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	37		14 - 120	04/16/21 11:19	04/19/21 21:59	5
Phenol-d5 (Surr)	31		10 - 120	04/16/21 11:19	04/19/21 21:59	5
Nitrobenzene-d5 (Surr)	63		46 - 125	04/16/21 11:19	04/19/21 21:59	5
2-Fluorobiphenyl	60		51 - 120	04/16/21 11:19	04/19/21 21:59	5
2,4,6-Tribromophenol (Surr)	83		50 - 125	04/16/21 11:19	04/19/21 21:59	5

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-01

Lab Sample ID: 580-102482-7

Date Collected: 04/15/21 14:45

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	98		63 - 122	04/16/21 11:19	04/19/21 21:59	5

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			04/27/21 03:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		50 - 150		04/27/21 03:46	1

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.5		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 23:00	1
Motor Oil (>C24-C36)	1.3		0.35	0.097	mg/L		04/16/21 11:12	04/19/21 23:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	72		50 - 150	04/16/21 11:12	04/19/21 23:00	1

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-102482-8

Date Collected: 04/15/21 00:01

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/25/21 02:30	1
Chloromethane	ND	*1	1.0	0.28	ug/L			04/25/21 02:30	1
Vinyl chloride	ND		1.0	0.22	ug/L			04/25/21 02:30	1
Bromomethane	ND		1.0	0.21	ug/L			04/25/21 02:30	1
Chloroethane	ND	*1	1.0	0.35	ug/L			04/25/21 02:30	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/25/21 02:30	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/25/21 02:30	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/25/21 02:30	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			04/25/21 02:30	1
1,1-Dichloroethane	ND	*1	1.0	0.22	ug/L			04/25/21 02:30	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/25/21 02:30	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			04/25/21 02:30	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/25/21 02:30	1
Chloroform	ND		1.0	0.26	ug/L			04/25/21 02:30	1
1,1,1-Trichloroethane	ND	*1	1.0	0.39	ug/L			04/25/21 02:30	1
Carbon tetrachloride	ND	*1	1.0	0.30	ug/L			04/25/21 02:30	1
1,1-Dichloropropene	ND	*1	1.0	0.29	ug/L			04/25/21 02:30	1
Benzene	ND	*1	1.0	0.24	ug/L			04/25/21 02:30	1
1,2-Dichloroethane	ND	*1	1.0	0.42	ug/L			04/25/21 02:30	1
Trichloroethene	ND		1.0	0.26	ug/L			04/25/21 02:30	1
1,2-Dichloropropane	ND	*1	1.0	0.18	ug/L			04/25/21 02:30	1
Dibromomethane	ND		1.0	0.34	ug/L			04/25/21 02:30	1
Bromodichloromethane	ND	*1	1.0	0.29	ug/L			04/25/21 02:30	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/25/21 02:30	1
Toluene	ND		1.0	0.39	ug/L			04/25/21 02:30	1
trans-1,3-Dichloropropene	ND	*1	1.0	0.41	ug/L			04/25/21 02:30	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/25/21 02:30	1
Tetrachloroethene	ND		1.0	0.41	ug/L			04/25/21 02:30	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/25/21 02:30	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/25/21 02:30	1
1,2-Dibromoethane	ND	*1	1.0	0.40	ug/L			04/25/21 02:30	1
Chlorobenzene	ND		1.0	0.44	ug/L			04/25/21 02:30	1
Ethylbenzene	ND		1.0	0.50	ug/L			04/25/21 02:30	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/25/21 02:30	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/25/21 02:30	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/25/21 02:30	1
o-Xylene	ND		1.0	0.39	ug/L			04/25/21 02:30	1
Styrene	ND		1.0	0.53	ug/L			04/25/21 02:30	1
Bromoform	ND		1.0	0.51	ug/L			04/25/21 02:30	1
Isopropylbenzene	ND		1.0	0.44	ug/L			04/25/21 02:30	1
Bromobenzene	ND		1.0	0.43	ug/L			04/25/21 02:30	1
N-Propylbenzene	ND		1.0	0.50	ug/L			04/25/21 02:30	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/25/21 02:30	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/25/21 02:30	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			04/25/21 02:30	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/25/21 02:30	1
t-Butylbenzene	ND		2.0	0.58	ug/L			04/25/21 02:30	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			04/25/21 02:30	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			04/25/21 02:30	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-102482-8

Date Collected: 04/15/21 00:01

Matrix: Water

Date Received: 04/15/21 15:22

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			04/25/21 02:30	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			04/25/21 02:30	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			04/25/21 02:30	1
n-Butylbenzene	ND		1.0	0.44	ug/L			04/25/21 02:30	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			04/25/21 02:30	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/25/21 02:30	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/25/21 02:30	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/25/21 02:30	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/25/21 02:30	1
Naphthalene	ND		3.0	0.93	ug/L			04/25/21 02:30	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/25/21 02:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	97		80 - 120		04/25/21 02:30	1
4-Bromofluorobenzene (Surr)	92		80 - 120		04/25/21 02:30	1
Dibromofluoromethane (Surr)	108		80 - 120		04/25/21 02:30	1
1,2-Dichloroethane-d4 (Surr)	103		80 - 126		04/25/21 02:30	1

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-355057/7
Matrix: Water
Analysis Batch: 355057

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/24/21 19:07	1
Chloromethane	ND		1.0	0.28	ug/L			04/24/21 19:07	1
Vinyl chloride	ND		1.0	0.22	ug/L			04/24/21 19:07	1
Bromomethane	ND		1.0	0.21	ug/L			04/24/21 19:07	1
Chloroethane	ND		1.0	0.35	ug/L			04/24/21 19:07	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/24/21 19:07	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/24/21 19:07	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/24/21 19:07	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			04/24/21 19:07	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			04/24/21 19:07	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/24/21 19:07	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			04/24/21 19:07	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/24/21 19:07	1
Chloroform	ND		1.0	0.26	ug/L			04/24/21 19:07	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			04/24/21 19:07	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			04/24/21 19:07	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			04/24/21 19:07	1
Benzene	ND		1.0	0.24	ug/L			04/24/21 19:07	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			04/24/21 19:07	1
Trichloroethene	ND		1.0	0.26	ug/L			04/24/21 19:07	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			04/24/21 19:07	1
Dibromomethane	ND		1.0	0.34	ug/L			04/24/21 19:07	1
Bromodichloromethane	ND		1.0	0.29	ug/L			04/24/21 19:07	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/24/21 19:07	1
Toluene	ND		1.0	0.39	ug/L			04/24/21 19:07	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			04/24/21 19:07	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/24/21 19:07	1
Tetrachloroethene	ND		1.0	0.41	ug/L			04/24/21 19:07	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/24/21 19:07	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/24/21 19:07	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			04/24/21 19:07	1
Chlorobenzene	ND		1.0	0.44	ug/L			04/24/21 19:07	1
Ethylbenzene	ND		1.0	0.50	ug/L			04/24/21 19:07	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/24/21 19:07	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/24/21 19:07	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/24/21 19:07	1
o-Xylene	ND		1.0	0.39	ug/L			04/24/21 19:07	1
Styrene	ND		1.0	0.53	ug/L			04/24/21 19:07	1
Bromoform	ND		1.0	0.51	ug/L			04/24/21 19:07	1
Isopropylbenzene	ND		1.0	0.44	ug/L			04/24/21 19:07	1
Bromobenzene	ND		1.0	0.43	ug/L			04/24/21 19:07	1
N-Propylbenzene	ND		1.0	0.50	ug/L			04/24/21 19:07	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/24/21 19:07	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/24/21 19:07	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			04/24/21 19:07	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/24/21 19:07	1
t-Butylbenzene	ND		2.0	0.58	ug/L			04/24/21 19:07	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			04/24/21 19:07	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-355057/7
Matrix: Water
Analysis Batch: 355057

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		1.0	0.49	ug/L			04/24/21 19:07	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			04/24/21 19:07	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			04/24/21 19:07	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			04/24/21 19:07	1
n-Butylbenzene	ND		1.0	0.44	ug/L			04/24/21 19:07	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			04/24/21 19:07	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/24/21 19:07	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/24/21 19:07	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/24/21 19:07	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/24/21 19:07	1
Naphthalene	ND		3.0	0.93	ug/L			04/24/21 19:07	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/24/21 19:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	922		82 - 902		21/01/09 9/02:	9
<i>1-5roB ortuorof enbene (Surr)</i>	/9		82 - 902		21/01/09 9/02:	9
<i>Dif roB ortuoroB ethane (Surr)</i>	92z		82 - 902		21/01/09 9/02:	9
<i>93-Di, hloroethane-d1 (Surr)</i>	//		82 - 90c		21/01/09 9/02:	9

Lab Sample ID: LCS 580-355057/4
Matrix: Water
Analysis Batch: 355057

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	10.0	7.69		ug/L		77	47 - 133
Chloromethane	10.0	9.30		ug/L		93	52 - 135
Vinyl chloride	10.0	9.73		ug/L		97	65 - 130
Bromomethane	10.0	9.12		ug/L		91	66 - 125
Chloroethane	10.0	8.95		ug/L		89	65 - 132
Trichlorofluoromethane	10.0	9.03		ug/L		90	64 - 130
1,1-Dichloroethene	10.0	8.27		ug/L		83	70 - 129
Methylene Chloride	10.0	8.86		ug/L		89	77 - 120
trans-1,2-Dichloroethene	10.0	8.58		ug/L		86	70 - 130
1,1-Dichloroethane	10.0	8.64		ug/L		86	81 - 129
2,2-Dichloropropane	10.0	8.61		ug/L		86	53 - 150
cis-1,2-Dichloroethene	10.0	8.97		ug/L		90	76 - 129
Bromochloromethane	10.0	9.37		ug/L		94	78 - 120
Chloroform	10.0	9.07		ug/L		91	73 - 127
1,1,1-Trichloroethane	10.0	8.56		ug/L		86	74 - 130
Carbon tetrachloride	10.0	8.83		ug/L		88	72 - 129
1,1-Dichloropropene	10.0	8.54		ug/L		85	74 - 131
Benzene	10.0	9.05		ug/L		90	82 - 122
1,2-Dichloroethane	10.0	8.42		ug/L		84	76 - 126
Trichloroethene	10.0	9.02		ug/L		90	81 - 125
1,2-Dichloropropane	10.0	9.64		ug/L		96	80 - 126
Dibromomethane	10.0	10.1		ug/L		101	80 - 120
Bromodichloromethane	10.0	9.38		ug/L		94	75 - 124
cis-1,3-Dichloropropene	10.0	9.60		ug/L		96	77 - 120

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-355057/4
Matrix: Water
Analysis Batch: 355057

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Toluene	10.0	9.35		ug/L		93	80 - 120
trans-1,3-Dichloropropene	10.0	9.33		ug/L		93	70 - 122
1,1,2-Trichloroethane	10.0	10.0		ug/L		100	80 - 121
Tetrachloroethene	10.0	9.60		ug/L		96	76 - 120
1,3-Dichloropropane	10.0	9.82		ug/L		98	79 - 120
Dibromochloromethane	10.0	10.1		ug/L		101	60 - 125
1,2-Dibromoethane	10.0	9.83		ug/L		98	79 - 120
Chlorobenzene	10.0	9.81		ug/L		98	80 - 120
Ethylbenzene	10.0	9.54		ug/L		95	80 - 120
1,1,1,2-Tetrachloroethane	10.0	9.98		ug/L		100	79 - 120
1,1,1,2,2-Tetrachloroethane	10.0	10.6		ug/L		106	74 - 124
m-Xylene & p-Xylene	10.0	9.41		ug/L		94	80 - 120
o-Xylene	10.0	9.31		ug/L		93	80 - 125
Styrene	10.0	10.1		ug/L		101	76 - 127
Bromoform	10.0	10.5		ug/L		105	28 - 139
Isopropylbenzene	10.0	9.26		ug/L		93	75 - 129
Bromobenzene	10.0	10.1		ug/L		101	80 - 120
N-Propylbenzene	10.0	9.59		ug/L		96	80 - 128
1,2,3-Trichloropropane	10.0	10.1		ug/L		101	76 - 124
2-Chlorotoluene	10.0	9.72		ug/L		97	80 - 120
1,3,5-Trimethylbenzene	10.0	9.47		ug/L		95	80 - 131
4-Chlorotoluene	10.0	9.92		ug/L		99	80 - 120
t-Butylbenzene	10.0	9.17		ug/L		92	80 - 129
1,2,4-Trimethylbenzene	10.0	9.53		ug/L		95	80 - 131
sec-Butylbenzene	10.0	9.35		ug/L		93	78 - 131
1,3-Dichlorobenzene	10.0	9.89		ug/L		99	69 - 127
4-Isopropyltoluene	10.0	9.48		ug/L		95	77 - 131
1,4-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
n-Butylbenzene	10.0	8.98		ug/L		90	78 - 120
1,2-Dichlorobenzene	10.0	10.0		ug/L		100	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	9.96		ug/L		100	65 - 125
1,2,4-Trichlorobenzene	10.0	9.63		ug/L		96	73 - 128
1,2,3-Trichlorobenzene	10.0	10.3		ug/L		103	74 - 139
Hexachlorobutadiene	10.0	10.5		ug/L		105	74 - 125
Naphthalene	10.0	9.91		ug/L		99	75 - 134
Methyl tert-butyl ether	10.0	8.84		ug/L		88	72 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	929		82 - 902
1-5roB ortuorof enbene (Surr)	92z		82 - 902
Dif roB ortuoroB ethane (Surr)	922		82 - 902
93-Di, hloroethane-d1 (Surr)	8/		82 - 90c

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-355057/5
Matrix: Water
Analysis Batch: 355057

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
Dichlorodifluoromethane	10.0	8.54		ug/L		85	47 - 133	10	15
Chloromethane	10.0	11.2	*1	ug/L		112	52 - 135	18	14
Vinyl chloride	10.0	11.0		ug/L		110	65 - 130	12	14
Bromomethane	10.0	9.97		ug/L		100	66 - 125	9	14
Chloroethane	10.0	10.9	*1	ug/L		109	65 - 132	19	18
Trichlorofluoromethane	10.0	10.2		ug/L		102	64 - 130	12	14
1,1-Dichloroethene	10.0	9.51		ug/L		95	70 - 129	14	17
Methylene Chloride	10.0	10.3		ug/L		103	77 - 120	15	18
trans-1,2-Dichloroethene	10.0	9.85		ug/L		98	70 - 130	14	21
1,1-Dichloroethane	10.0	10.3	*1	ug/L		103	81 - 129	17	15
2,2-Dichloropropane	10.0	9.88		ug/L		99	53 - 150	14	15
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	76 - 129	14	15
Bromochloromethane	10.0	10.7		ug/L		107	78 - 120	13	13
Chloroform	10.0	10.4		ug/L		104	73 - 127	14	14
1,1,1-Trichloroethane	10.0	9.86	*1	ug/L		99	74 - 130	14	11
Carbon tetrachloride	10.0	10.0	*1	ug/L		100	72 - 129	13	11
1,1-Dichloropropene	10.0	10.0	*1	ug/L		100	74 - 131	16	14
Benzene	10.0	10.5	*1	ug/L		105	82 - 122	15	14
1,2-Dichloroethane	10.0	10.0	*1	ug/L		100	76 - 126	18	11
Trichloroethene	10.0	10.3		ug/L		103	81 - 125	13	13
1,2-Dichloropropane	10.0	11.3	*1	ug/L		113	80 - 126	16	14
Dibromomethane	10.0	11.3		ug/L		113	80 - 120	11	11
Bromodichloromethane	10.0	10.8	*1	ug/L		108	75 - 124	15	13
cis-1,3-Dichloropropene	10.0	11.0		ug/L		110	77 - 120	14	20
Toluene	10.0	10.5		ug/L		105	80 - 120	12	13
trans-1,3-Dichloropropene	10.0	11.0	*1	ug/L		110	70 - 122	16	14
1,1,2-Trichloroethane	10.0	11.5		ug/L		115	80 - 121	14	14
Tetrachloroethene	10.0	10.5		ug/L		105	76 - 120	9	13
1,3-Dichloropropane	10.0	11.0		ug/L		110	79 - 120	12	13
Dibromochloromethane	10.0	11.4		ug/L		114	60 - 125	12	13
1,2-Dibromoethane	10.0	11.3	*1	ug/L		113	79 - 120	14	12
Chlorobenzene	10.0	10.9		ug/L		109	80 - 120	10	10
Ethylbenzene	10.0	10.9		ug/L		109	80 - 120	13	14
1,1,1,2-Tetrachloroethane	10.0	10.9		ug/L		109	79 - 120	8	10
1,1,2,2-Tetrachloroethane	10.0	11.9		ug/L		119	74 - 124	12	18
m-Xylene & p-Xylene	10.0	10.8		ug/L		108	80 - 120	14	14
o-Xylene	10.0	10.5		ug/L		105	80 - 125	13	16
Styrene	10.0	11.3		ug/L		113	76 - 127	12	16
Bromoform	10.0	11.5		ug/L		115	28 - 139	9	15
Isopropylbenzene	10.0	10.4		ug/L		104	75 - 129	12	12
Bromobenzene	10.0	10.9		ug/L		109	80 - 120	8	13
N-Propylbenzene	10.0	10.7		ug/L		107	80 - 128	11	13
1,2,3-Trichloropropane	10.0	11.7		ug/L		117	76 - 124	15	16
2-Chlorotoluene	10.0	10.8		ug/L		108	80 - 120	11	15
1,3,5-Trimethylbenzene	10.0	10.4		ug/L		104	80 - 131	9	14
4-Chlorotoluene	10.0	11.0		ug/L		110	80 - 120	10	14
t-Butylbenzene	10.0	10.2		ug/L		102	80 - 129	10	14
1,2,4-Trimethylbenzene	10.0	10.6		ug/L		106	80 - 131	11	16

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-355057/5
Matrix: Water
Analysis Batch: 355057

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
sec-Butylbenzene	10.0	10.3		ug/L		103	78 - 131	10	15
1,3-Dichlorobenzene	10.0	10.7		ug/L		107	69 - 127	8	14
4-Isopropyltoluene	10.0	10.4		ug/L		104	77 - 131	10	20
1,4-Dichlorobenzene	10.0	10.7		ug/L		107	80 - 120	6	17
n-Butylbenzene	10.0	10.0		ug/L		100	78 - 120	11	14
1,2-Dichlorobenzene	10.0	10.9		ug/L		109	80 - 120	8	15
1,2-Dibromo-3-Chloropropane	10.0	11.0		ug/L		110	65 - 125	10	17
1,2,4-Trichlorobenzene	10.0	10.1		ug/L		101	73 - 128	5	20
1,2,3-Trichlorobenzene	10.0	10.7		ug/L		107	74 - 139	4	26
Hexachlorobutadiene	10.0	11.0		ug/L		110	74 - 125	5	22
Naphthalene	10.0	10.9		ug/L		109	75 - 134	10	23
Methyl tert-butyl ether	10.0	10.4		ug/L		104	72 - 130	16	18

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	//		82 - 902
1-5roB ortuorof enbene (Surr)	929		82 - 902
Dif roB ortuoroB ethane (Surr)	922		82 - 902
93-Di, hloroethane-d1 (Surr)	/p		82 - 90c

Lab Sample ID: MB 580-355159/7
Matrix: Water
Analysis Batch: 355159

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			04/26/21 21:07	1
Chloromethane	ND		1.0	0.28	ug/L			04/26/21 21:07	1
Vinyl chloride	ND		1.0	0.22	ug/L			04/26/21 21:07	1
Bromomethane	ND		1.0	0.21	ug/L			04/26/21 21:07	1
Chloroethane	ND		1.0	0.35	ug/L			04/26/21 21:07	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			04/26/21 21:07	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			04/26/21 21:07	1
Methylene Chloride	ND		3.0	1.4	ug/L			04/26/21 21:07	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			04/26/21 21:07	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			04/26/21 21:07	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			04/26/21 21:07	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			04/26/21 21:07	1
Bromochloromethane	ND		1.0	0.29	ug/L			04/26/21 21:07	1
Chloroform	ND		1.0	0.26	ug/L			04/26/21 21:07	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			04/26/21 21:07	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			04/26/21 21:07	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			04/26/21 21:07	1
Benzene	ND		1.0	0.24	ug/L			04/26/21 21:07	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			04/26/21 21:07	1
Trichloroethene	ND		1.0	0.26	ug/L			04/26/21 21:07	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			04/26/21 21:07	1
Dibromomethane	ND		1.0	0.34	ug/L			04/26/21 21:07	1
Bromodichloromethane	ND		1.0	0.29	ug/L			04/26/21 21:07	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			04/26/21 21:07	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-355159/7
Matrix: Water
Analysis Batch: 355159

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		1.0	0.39	ug/L			04/26/21 21:07	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			04/26/21 21:07	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			04/26/21 21:07	1
Tetrachloroethene	ND		1.0	0.41	ug/L			04/26/21 21:07	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			04/26/21 21:07	1
Dibromochloromethane	ND		1.0	0.43	ug/L			04/26/21 21:07	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			04/26/21 21:07	1
Chlorobenzene	ND		1.0	0.44	ug/L			04/26/21 21:07	1
Ethylbenzene	ND		1.0	0.50	ug/L			04/26/21 21:07	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			04/26/21 21:07	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			04/26/21 21:07	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			04/26/21 21:07	1
o-Xylene	ND		1.0	0.39	ug/L			04/26/21 21:07	1
Styrene	ND		1.0	0.53	ug/L			04/26/21 21:07	1
Bromoform	ND		1.0	0.51	ug/L			04/26/21 21:07	1
Isopropylbenzene	ND		1.0	0.44	ug/L			04/26/21 21:07	1
Bromobenzene	ND		1.0	0.43	ug/L			04/26/21 21:07	1
N-Propylbenzene	ND		1.0	0.50	ug/L			04/26/21 21:07	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			04/26/21 21:07	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			04/26/21 21:07	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			04/26/21 21:07	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			04/26/21 21:07	1
t-Butylbenzene	ND		2.0	0.58	ug/L			04/26/21 21:07	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			04/26/21 21:07	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			04/26/21 21:07	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			04/26/21 21:07	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			04/26/21 21:07	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			04/26/21 21:07	1
n-Butylbenzene	ND		1.0	0.44	ug/L			04/26/21 21:07	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			04/26/21 21:07	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			04/26/21 21:07	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			04/26/21 21:07	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			04/26/21 21:07	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			04/26/21 21:07	1
Naphthalene	ND		3.0	0.93	ug/L			04/26/21 21:07	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			04/26/21 21:07	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	/:		82 - 902		21:0c:09 09:02:	9
1-5roB ortuoroF enbene (Surr)	/0		82 - 902		21:0c:09 09:02:	9
Dif roB ortuoroB ethane (Surr)	92:		82 - 902		21:0c:09 09:02:	9
93-Di, hloroethane-d1 (Surr)	920		82 - 90c		21:0c:09 09:02:	9

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-355159/4
Matrix: Water
Analysis Batch: 355159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorodifluoromethane	10.0	9.61		ug/L		96	47 - 133
Chloromethane	10.0	10.5		ug/L		105	52 - 135
Vinyl chloride	10.0	11.6		ug/L		116	65 - 130
Bromomethane	10.0	11.0		ug/L		110	66 - 125
Chloroethane	10.0	10.6		ug/L		106	65 - 132
Trichlorofluoromethane	10.0	10.6		ug/L		106	64 - 130
1,1-Dichloroethene	10.0	9.77		ug/L		98	70 - 129
Methylene Chloride	10.0	9.80		ug/L		98	77 - 120
trans-1,2-Dichloroethene	10.0	9.56		ug/L		96	70 - 130
1,1-Dichloroethane	10.0	9.91		ug/L		99	81 - 129
2,2-Dichloropropane	10.0	9.61		ug/L		96	53 - 150
cis-1,2-Dichloroethene	10.0	9.92		ug/L		99	76 - 129
Bromochloromethane	10.0	10.1		ug/L		101	78 - 120
Chloroform	10.0	9.97		ug/L		100	73 - 127
1,1,1-Trichloroethane	10.0	9.49		ug/L		95	74 - 130
Carbon tetrachloride	10.0	9.76		ug/L		98	72 - 129
1,1-Dichloropropene	10.0	9.48		ug/L		95	74 - 131
Benzene	10.0	10.1		ug/L		101	82 - 122
1,2-Dichloroethane	10.0	9.16		ug/L		92	76 - 126
Trichloroethene	10.0	10.1		ug/L		101	81 - 125
1,2-Dichloropropane	10.0	10.3		ug/L		103	80 - 126
Dibromomethane	10.0	11.0		ug/L		110	80 - 120
Bromodichloromethane	10.0	10.4		ug/L		104	75 - 124
cis-1,3-Dichloropropene	10.0	10.3		ug/L		103	77 - 120
Toluene	10.0	10.0		ug/L		100	80 - 120
trans-1,3-Dichloropropene	10.0	10.2		ug/L		102	70 - 122
1,1,2-Trichloroethane	10.0	10.7		ug/L		107	80 - 121
Tetrachloroethene	10.0	10.2		ug/L		102	76 - 120
1,3-Dichloropropane	10.0	10.2		ug/L		102	79 - 120
Dibromochloromethane	10.0	10.9		ug/L		109	60 - 125
1,2-Dibromoethane	10.0	10.5		ug/L		105	79 - 120
Chlorobenzene	10.0	10.4		ug/L		104	80 - 120
Ethylbenzene	10.0	10.3		ug/L		103	80 - 120
1,1,1,2-Tetrachloroethane	10.0	10.6		ug/L		106	79 - 120
1,1,2,2-Tetrachloroethane	10.0	10.9		ug/L		109	74 - 124
m-Xylene & p-Xylene	10.0	10.1		ug/L		101	80 - 120
o-Xylene	10.0	9.90		ug/L		99	80 - 125
Styrene	10.0	10.7		ug/L		107	76 - 127
Bromoform	10.0	11.7		ug/L		117	28 - 139
Isopropylbenzene	10.0	9.93		ug/L		99	75 - 129
Bromobenzene	10.0	10.5		ug/L		105	80 - 120
N-Propylbenzene	10.0	9.98		ug/L		100	80 - 128
1,2,3-Trichloropropane	10.0	11.0		ug/L		110	76 - 124
2-Chlorotoluene	10.0	10.2		ug/L		102	80 - 120
1,3,5-Trimethylbenzene	10.0	9.76		ug/L		98	80 - 131
4-Chlorotoluene	10.0	10.4		ug/L		104	80 - 120
t-Butylbenzene	10.0	9.43		ug/L		94	80 - 129
1,2,4-Trimethylbenzene	10.0	9.77		ug/L		98	80 - 131

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 580-355159/4
Matrix: Water
Analysis Batch: 355159

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
sec-Butylbenzene	10.0	9.53		ug/L		95	78 - 131
1,3-Dichlorobenzene	10.0	10.3		ug/L		103	69 - 127
4-Isopropyltoluene	10.0	9.75		ug/L		97	77 - 131
1,4-Dichlorobenzene	10.0	10.4		ug/L		104	80 - 120
n-Butylbenzene	10.0	9.33		ug/L		93	78 - 120
1,2-Dichlorobenzene	10.0	10.2		ug/L		102	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	11.0		ug/L		110	65 - 125
1,2,4-Trichlorobenzene	10.0	9.50		ug/L		95	73 - 128
1,2,3-Trichlorobenzene	10.0	10.3		ug/L		103	74 - 139
Hexachlorobutadiene	10.0	10.8		ug/L		108	74 - 125
Naphthalene	10.0	10.3		ug/L		103	75 - 134
Methyl tert-butyl ether	10.0	9.78		ug/L		98	72 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	//		82 - 902
1-5roB ortuorof enbene (Surr)	92z		82 - 902
Dif roB ortuoroB ethane (Surr)	922		82 - 902
9D-Di, hloroethane-d1 (Surr)	/0		82 - 90c

Lab Sample ID: LCSD 580-355159/5
Matrix: Water
Analysis Batch: 355159

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
Dichlorodifluoromethane	10.0	9.05		ug/L		91	47 - 133	6	15
Chloromethane	10.0	11.1		ug/L		111	52 - 135	6	14
Vinyl chloride	10.0	12.0		ug/L		120	65 - 130	3	14
Bromomethane	10.0	10.5		ug/L		105	66 - 125	5	14
Chloroethane	10.0	10.8		ug/L		108	65 - 132	2	18
Trichlorofluoromethane	10.0	10.3		ug/L		103	64 - 130	3	14
1,1-Dichloroethene	10.0	9.48		ug/L		95	70 - 129	3	17
Methylene Chloride	10.0	10.1		ug/L		101	77 - 120	3	18
trans-1,2-Dichloroethene	10.0	9.79		ug/L		98	70 - 130	2	21
1,1-Dichloroethane	10.0	10.1		ug/L		101	81 - 129	2	15
2,2-Dichloropropane	10.0	9.57		ug/L		96	53 - 150	0	15
cis-1,2-Dichloroethene	10.0	10.2		ug/L		102	76 - 129	2	15
Bromochloromethane	10.0	10.5		ug/L		105	78 - 120	4	13
Chloroform	10.0	10.2		ug/L		102	73 - 127	2	14
1,1,1-Trichloroethane	10.0	9.79		ug/L		98	74 - 130	3	11
Carbon tetrachloride	10.0	10.1		ug/L		101	72 - 129	3	11
1,1-Dichloropropene	10.0	9.91		ug/L		99	74 - 131	4	14
Benzene	10.0	10.3		ug/L		103	82 - 122	3	14
1,2-Dichloroethane	10.0	9.53		ug/L		95	76 - 126	4	11
Trichloroethene	10.0	10.4		ug/L		104	81 - 125	3	13
1,2-Dichloropropane	10.0	10.9		ug/L		109	80 - 126	5	14
Dibromomethane	10.0	11.2		ug/L		112	80 - 120	2	11
Bromodichloromethane	10.0	10.7		ug/L		107	75 - 124	3	13
cis-1,3-Dichloropropene	10.0	10.7		ug/L		107	77 - 120	4	20

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 580-355159/5
Matrix: Water
Analysis Batch: 355159

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
Toluene	10.0	10.4		ug/L		104	80 - 120	3	13
trans-1,3-Dichloropropene	10.0	10.6		ug/L		106	70 - 122	4	14
1,1,2-Trichloroethane	10.0	11.0		ug/L		110	80 - 121	3	14
Tetrachloroethene	10.0	11.0		ug/L		110	76 - 120	8	13
1,3-Dichloropropane	10.0	10.6		ug/L		106	79 - 120	4	13
Dibromochloromethane	10.0	11.5		ug/L		115	60 - 125	5	13
1,2-Dibromoethane	10.0	10.9		ug/L		109	79 - 120	4	12
Chlorobenzene	10.0	10.6		ug/L		106	80 - 120	2	10
Ethylbenzene	10.0	10.5		ug/L		105	80 - 120	2	14
1,1,1,2-Tetrachloroethane	10.0	11.0		ug/L		110	79 - 120	3	10
1,1,2,2-Tetrachloroethane	10.0	12.0		ug/L		120	74 - 124	10	18
m-Xylene & p-Xylene	10.0	10.3		ug/L		103	80 - 120	2	14
o-Xylene	10.0	10.4		ug/L		104	80 - 125	5	16
Styrene	10.0	11.2		ug/L		112	76 - 127	4	16
Bromoform	10.0	12.0		ug/L		120	28 - 139	3	15
Isopropylbenzene	10.0	10.3		ug/L		103	75 - 129	3	12
Bromobenzene	10.0	11.5		ug/L		115	80 - 120	9	13
N-Propylbenzene	10.0	11.2		ug/L		112	80 - 128	12	13
1,2,3-Trichloropropane	10.0	12.2		ug/L		122	76 - 124	11	16
2-Chlorotoluene	10.0	11.4		ug/L		114	80 - 120	11	15
1,3,5-Trimethylbenzene	10.0	10.9		ug/L		109	80 - 131	11	14
4-Chlorotoluene	10.0	11.6		ug/L		116	80 - 120	10	14
t-Butylbenzene	10.0	10.4		ug/L		104	80 - 129	10	14
1,2,4-Trimethylbenzene	10.0	10.8		ug/L		108	80 - 131	10	16
sec-Butylbenzene	10.0	10.6		ug/L		106	78 - 131	11	15
1,3-Dichlorobenzene	10.0	11.4		ug/L		114	69 - 127	10	14
4-Isopropyltoluene	10.0	11.0		ug/L		110	77 - 131	12	20
1,4-Dichlorobenzene	10.0	11.4		ug/L		114	80 - 120	9	17
n-Butylbenzene	10.0	10.1		ug/L		101	78 - 120	8	14
1,2-Dichlorobenzene	10.0	11.1		ug/L		111	80 - 120	9	15
1,2-Dibromo-3-Chloropropane	10.0	11.7		ug/L		117	65 - 125	7	17
1,2,4-Trichlorobenzene	10.0	10.3		ug/L		103	73 - 128	8	20
1,2,3-Trichlorobenzene	10.0	10.8		ug/L		108	74 - 139	5	26
Hexachlorobutadiene	10.0	11.5		ug/L		115	74 - 125	7	22
Naphthalene	10.0	10.9		ug/L		109	75 - 134	6	23
Methyl tert-butyl ether	10.0	9.91		ug/L		99	72 - 130	1	18

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	922		82 - 902
1-5roB ortuorof enbene (Surr)	920		82 - 902
Dif roB ortuoroB ethane (Surr)	929		82 - 902
93-Di, hloroethane-d1 (Surr)	79		82 - 90c

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-354492/1-A
Matrix: Water
Analysis Batch: 354571

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354492

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Phenol	ND		1.0	0.36	ug/L		04/16/21 11:19	04/19/21 13:11	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		04/16/21 11:19	04/19/21 13:11	1
2-Chlorophenol	ND		1.0	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzyl alcohol	ND		5.0	0.18	ug/L		04/16/21 11:19	04/19/21 13:11	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
2-Methylphenol	ND		0.60	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
Hexachloroethane	ND		1.0	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
Nitrobenzene	ND		1.0	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Isophorone	ND		0.40	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
2-Nitrophenol	ND		1.0	0.070	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzoic acid	ND		10	1.3	ug/L		04/16/21 11:19	04/19/21 13:11	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		04/16/21 11:19	04/19/21 13:11	1
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		04/16/21 11:19	04/19/21 13:11	1
Naphthalene	ND		0.40	0.16	ug/L		04/16/21 11:19	04/19/21 13:11	1
4-Chloroaniline	ND		2.0	0.59	ug/L		04/16/21 11:19	04/19/21 13:11	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		04/16/21 11:19	04/19/21 13:11	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		04/16/21 11:19	04/19/21 13:11	1
2-Nitroaniline	ND		1.0	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
Acenaphthylene	ND		1.0	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
3-Nitroaniline	ND		3.0	0.16	ug/L		04/16/21 11:19	04/19/21 13:11	1
Acenaphthene	ND		0.40	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		04/16/21 11:19	04/19/21 13:11	1
4-Nitrophenol	ND		10	1.7	ug/L		04/16/21 11:19	04/19/21 13:11	1
Dibenzofuran	ND		0.40	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
Diethyl phthalate	ND		1.0	0.15	ug/L		04/16/21 11:19	04/19/21 13:11	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
Fluorene	ND		0.25	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
4-Nitroaniline	ND		2.0	0.21	ug/L		04/16/21 11:19	04/19/21 13:11	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		04/16/21 11:19	04/19/21 13:11	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		04/16/21 11:19	04/19/21 13:11	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Phenanthrene	ND		1.0	0.12	ug/L		04/16/21 11:19	04/19/21 13:11	1
Anthracene	ND		1.0	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-354492/1-A
Matrix: Water
Analysis Batch: 354571

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354492

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Di-n-butyl phthalate	ND		3.0	0.19	ug/L		04/16/21 11:19	04/19/21 13:11	1
Fluoranthene	ND		0.25	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1
Pyrene	ND		1.0	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		04/16/21 11:19	04/19/21 13:11	1
3,3'-Dichlorobenzidine	ND		1.0	0.26	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
Chrysene	ND		0.25	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		04/16/21 11:19	04/19/21 13:11	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Carbazole	ND		0.60	0.10	ug/L		04/16/21 11:19	04/19/21 13:11	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		04/16/21 11:19	04/19/21 13:11	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		04/16/21 11:19	04/19/21 13:11	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		04/16/21 11:19	04/19/21 13:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
0-7luoroFhenol (Surr)	1z		91 - 902	21/0c/09 99/09/	21/0/ 09 9z/09	9
Phenol-dp (Surr)	08		92 - 902	21/0c/09 99/09/	21/0/ 09 9z/09	9
Nitrofenbene-dp (Surr)	: p		1c - 90p	21/0c/09 99/09/	21/0/ 09 9z/09	9
0-7luorof iFhenyl	: z		p9 - 902	21/0c/09 99/09/	21/0/ 09 9z/09	9
0313-Trif roB oFhenol (Surr)	: 9		p2 - 90p	21/0c/09 99/09/	21/0/ 09 9z/09	9
TerFhenyl-d91 (Surr)	92:		cz - 900	21/0c/09 99/09/	21/0/ 09 9z/09	9

Lab Sample ID: LCS 580-354492/2-A
Matrix: Water
Analysis Batch: 354571

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Phenol	2.00	0.486	J	ug/L		24	13 - 120
Bis(2-chloroethyl)ether	2.00	1.51		ug/L		75	39 - 125
2-Chlorophenol	2.00	1.30		ug/L		65	44 - 120
1,3-Dichlorobenzene	2.00	1.35		ug/L		68	25 - 120
1,4-Dichlorobenzene	2.00	1.37		ug/L		68	28 - 120
Benzyl alcohol	2.00	1.04	J	ug/L		52	10 - 120
1,2-Dichlorobenzene	2.00	1.43		ug/L		71	31 - 120
2-Methylphenol	2.00	1.09		ug/L		55	36 - 120
3 & 4 Methylphenol	2.00	0.978		ug/L		49	29 - 120
N-Nitrosodi-n-propylamine	2.00	1.43		ug/L		72	39 - 145
Hexachloroethane	2.00	1.50		ug/L		75	18 - 125
Nitrobenzene	2.00	1.32		ug/L		66	38 - 141
Isophorone	2.00	1.41		ug/L		71	41 - 143
2-Nitrophenol	2.00	1.69		ug/L		85	55 - 120
2,4-Dimethylphenol	2.00	1.39	J	ug/L		69	47 - 120
Benzoic acid	4.00	ND		ug/L		31	10 - 120
Bis(2-chloroethoxy)methane	2.00	1.37		ug/L		68	44 - 125

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 580-354492/2-A
Matrix: Water
Analysis Batch: 354571

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354492

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	2.00	1.56		ug/L		78	50 - 120
1,2,4-Trichlorobenzene	2.00	1.58		ug/L		79	31 - 120
Naphthalene	2.00	1.62		ug/L		81	42 - 120
4-Chloroaniline	2.00	1.64	J	ug/L		82	10 - 150
Hexachlorobutadiene	2.00	1.59		ug/L		79	17 - 125
4-Chloro-3-methylphenol	2.00	1.60		ug/L		80	47 - 120
2-Methylnaphthalene	2.00	1.55		ug/L		78	43 - 120
Hexachlorocyclopentadiene	2.00	1.44		ug/L		72	10 - 125
2,4,6-Trichlorophenol	2.00	1.60		ug/L		80	55 - 120
2,4,5-Trichlorophenol	2.00	1.50		ug/L		75	53 - 120
2-Chloronaphthalene	2.00	1.58		ug/L		79	43 - 120
2-Nitroaniline	2.00	1.66		ug/L		83	52 - 127
Dimethyl phthalate	2.00	1.65		ug/L		82	65 - 128
Acenaphthylene	2.00	1.64		ug/L		82	48 - 125
2,6-Dinitrotoluene	2.00	1.58		ug/L		79	60 - 128
3-Nitroaniline	2.00	1.66	J	ug/L		83	10 - 138
Acenaphthene	2.00	1.68		ug/L		84	49 - 120
2,4-Dinitrophenol	4.00	4.39	J	ug/L		110	10 - 146
4-Nitrophenol	4.00	ND		ug/L		28	10 - 120
Dibenzofuran	2.00	1.61		ug/L		80	51 - 120
2,4-Dinitrotoluene	2.00	1.71		ug/L		86	61 - 126
Diethyl phthalate	2.00	1.75		ug/L		87	60 - 134
4-Chlorophenyl phenyl ether	2.00	1.57		ug/L		79	53 - 125
Fluorene	2.00	1.60		ug/L		80	55 - 125
4-Nitroaniline	2.00	1.67	J	ug/L		84	38 - 139
4,6-Dinitro-2-methylphenol	4.00	3.42		ug/L		86	10 - 150
N-Nitrosodiphenylamine	2.00	1.61		ug/L		80	52 - 135
4-Bromophenyl phenyl ether	2.00	1.52		ug/L		76	53 - 126
Hexachlorobenzene	2.00	1.61		ug/L		80	49 - 125
Phenanthrene	2.00	1.70		ug/L		85	54 - 125
Anthracene	2.00	1.72		ug/L		86	50 - 131
Di-n-butyl phthalate	2.00	1.86	J	ug/L		93	55 - 167
Fluoranthene	2.00	1.80		ug/L		90	60 - 133
Pyrene	2.00	1.69		ug/L		85	57 - 133
Butyl benzyl phthalate	2.00	1.74	J	ug/L		87	60 - 150
3,3'-Dichlorobenzidine	4.00	3.32		ug/L		83	33 - 150
Benzo[a]anthracene	2.00	1.55		ug/L		78	56 - 131
Chrysene	2.00	1.76		ug/L		88	57 - 125
Bis(2-ethylhexyl) phthalate	2.00	2.08		ug/L		104	48 - 150
Di-n-octyl phthalate	2.00	1.84		ug/L		92	48 - 150
Benzo[a]pyrene	2.00	2.01		ug/L		101	55 - 125
Indeno[1,2,3-cd]pyrene	2.00	1.30		ug/L		65	39 - 148
Dibenz(a,h)anthracene	2.00	1.38		ug/L		69	48 - 134
Benzo[g,h,i]perylene	2.00	1.43		ug/L		71	46 - 140
Carbazole	2.00	1.99		ug/L		99	10 - 150
1-Methylnaphthalene	2.00	1.68		ug/L		84	41 - 125
Benzo[b]fluoranthene	2.00	1.82		ug/L		91	59 - 129
Benzo[k]fluoranthene	2.00	1.98		ug/L		99	57 - 123
bis(chloroisopropyl) ether	2.00	1.58		ug/L		79	35 - 124

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	LCS %Recovery	LCS Qualifier	Limits
0-7luoroFhenol (Surr)	z8		91 - 902
Phenol-dp (Surr)	Op		92 - 902
Nitrofenone-dp (Surr)	: c		1c - 90p
0-7luorof iFhenyl	: p		p9 - 902
0,3,5-Trifluorobenzene (Surr)	8z		p2 - 90p
Terphenyl-d91 (Surr)	92p		cz - 900

Lab Sample ID: LCSD 580-354492/3-A
Matrix: Water
Analysis Batch: 354571

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354492

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Phenol	2.00	0.770	J *1	ug/L		38	13 - 120	45	30
Bis(2-chloroethyl)ether	2.00	1.95		ug/L		97	39 - 125	25	30
2-Chlorophenol	2.00	1.86	*1	ug/L		93	44 - 120	36	30
1,3-Dichlorobenzene	2.00	1.84		ug/L		92	25 - 120	31	35
1,4-Dichlorobenzene	2.00	1.89		ug/L		94	28 - 120	32	35
Benzyl alcohol	2.00	1.33	J	ug/L		66	10 - 120	25	35
1,2-Dichlorobenzene	2.00	1.93		ug/L		96	31 - 120	30	35
2-Methylphenol	2.00	1.47		ug/L		73	36 - 120	29	35
3 & 4 Methylphenol	2.00	1.40	*1	ug/L		70	29 - 120	36	35
N-Nitrosodi-n-propylamine	2.00	2.06	*1	ug/L		103	39 - 145	36	30
Hexachloroethane	2.00	2.08		ug/L		104	18 - 125	32	35
Nitrobenzene	2.00	1.92	*1	ug/L		96	38 - 141	37	30
Isophorone	2.00	1.95	*1	ug/L		97	41 - 143	32	30
2-Nitrophenol	2.00	2.05		ug/L		103	55 - 120	19	30
2,4-Dimethylphenol	2.00	2.01	J *1	ug/L		100	47 - 120	37	30
Benzoic acid	4.00	1.48	J	ug/L		37	10 - 120	18	35
Bis(2-chloroethoxy)methane	2.00	1.95	*1	ug/L		97	44 - 125	35	30
2,4-Dichlorophenol	2.00	1.88		ug/L		94	50 - 120	19	30
1,2,4-Trichlorobenzene	2.00	1.90		ug/L		95	31 - 120	18	35
Naphthalene	2.00	1.97		ug/L		99	42 - 120	19	35
4-Chloroaniline	2.00	1.98	J	ug/L		99	10 - 150	19	35
Hexachlorobutadiene	2.00	1.92		ug/L		96	17 - 125	19	35
4-Chloro-3-methylphenol	2.00	2.14		ug/L		107	47 - 120	29	30
2-Methylnaphthalene	2.00	1.91		ug/L		96	43 - 120	21	35
Hexachlorocyclopentadiene	2.00	1.84		ug/L		92	10 - 125	24	35
2,4,6-Trichlorophenol	2.00	2.05		ug/L		103	55 - 120	25	30
2,4,5-Trichlorophenol	2.00	1.88		ug/L		94	53 - 120	23	35
2-Chloronaphthalene	2.00	1.97		ug/L		99	43 - 120	22	35
2-Nitroaniline	2.00	2.15		ug/L		107	52 - 127	26	30
Dimethyl phthalate	2.00	2.09		ug/L		105	65 - 128	24	30
Acenaphthylene	2.00	2.06		ug/L		103	48 - 125	23	30
2,6-Dinitrotoluene	2.00	2.05		ug/L		102	60 - 128	26	30
3-Nitroaniline	2.00	2.20	J	ug/L		110	10 - 138	28	30
Acenaphthene	2.00	2.08		ug/L		104	49 - 120	21	30
2,4-Dinitrophenol	4.00	5.16		ug/L		129	10 - 146	16	35
4-Nitrophenol	4.00	1.86	J *1	ug/L		46	10 - 120	51	35
Dibenzofuran	2.00	2.00		ug/L		100	51 - 120	22	30
2,4-Dinitrotoluene	2.00	2.13		ug/L		107	61 - 126	22	30
Diethyl phthalate	2.00	2.26	*1	ug/L		113	60 - 134	26	24

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 580-354492/3-A
Matrix: Water
Analysis Batch: 354571

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354492

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4-Chlorophenyl phenyl ether	2.00	1.97		ug/L		98	53 - 125	22	35
Fluorene	2.00	2.00		ug/L		100	55 - 125	22	30
4-Nitroaniline	2.00	2.30		ug/L		115	38 - 139	31	35
4,6-Dinitro-2-methylphenol	4.00	4.49		ug/L		112	10 - 150	27	35
N-Nitrosodiphenylamine	2.00	2.08		ug/L		104	52 - 135	26	30
4-Bromophenyl phenyl ether	2.00	1.96		ug/L		98	53 - 126	26	30
Hexachlorobenzene	2.00	2.07		ug/L		103	49 - 125	25	30
Phenanthrene	2.00	2.24		ug/L		112	54 - 125	27	30
Anthracene	2.00	2.23	*1	ug/L		111	50 - 131	26	24
Di-n-butyl phthalate	2.00	2.47	J	ug/L		123	55 - 167	28	30
Fluoranthene	2.00	2.34		ug/L		117	60 - 133	27	30
Pyrene	2.00	2.24	*1	ug/L		112	57 - 133	28	23
Butyl benzyl phthalate	2.00	2.17	J	ug/L		109	60 - 150	22	30
3,3'-Dichlorobenzidine	4.00	4.19		ug/L		105	33 - 150	23	35
Benzo[a]anthracene	2.00	1.94		ug/L		97	56 - 131	22	30
Chrysene	2.00	2.16		ug/L		108	57 - 125	21	30
Bis(2-ethylhexyl) phthalate	2.00	2.60		ug/L		130	48 - 150	22	35
Di-n-octyl phthalate	2.00	2.39		ug/L		120	48 - 150	26	30
Benzo[a]pyrene	2.00	2.54	*+	ug/L		127	55 - 125	23	30
Indeno[1,2,3-cd]pyrene	2.00	1.85	*1	ug/L		93	39 - 148	35	30
Dibenz(a,h)anthracene	2.00	1.83		ug/L		91	48 - 134	28	35
Benzo[g,h,i]perylene	2.00	1.85		ug/L		93	46 - 140	26	30
Carbazole	2.00	2.60		ug/L		130	10 - 150	26	30
1-Methylnaphthalene	2.00	1.94		ug/L		97	41 - 125	14	35
Benzo[b]fluoranthene	2.00	2.29		ug/L		115	59 - 129	23	30
Benzo[k]fluoranthene	2.00	2.50	*+	ug/L		125	57 - 123	23	35
bis(chloroisopropyl) ether	2.00	2.28	*1	ug/L		114	35 - 124	36	30

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
0-7luoroFhenol (Surr)	pp		91 - 902
Phenol-dp (Surr)	zp		92 - 902
NitroF enbene-dp (Surr)	8/		1c - 90p
0-7luorof iFhenyl	/9		p9 - 902
0313-Trif roB oFhenol (Surr)	928		p2 - 90p
TerFhenyl-d91 (Surr)	9z9 S9+		cz - 900

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-354548/1-A
Matrix: Water
Analysis Batch: 354576

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354548

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	0.440	J	1.0	0.18	ug/L		04/17/21 16:39	04/19/21 11:12	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.087	ug/L		04/17/21 16:39	04/19/21 11:12	1

Surrogate	MB %Recovery	MB Qualifier	MB Limits	Prepared	Analyzed	Dil Fac
0313-Trif roB oFhenol	: z		zp - 9zz	214: 49 9c&/	214/ 49 9900	9

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-354548/2-A
Matrix: Water
Analysis Batch: 354576

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354548
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Pentachlorophenol	8.00	8.60		ug/L		107	10 - 138
Bis(2-ethylhexyl) phthalate	4.00	3.90		ug/L		97	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
0313-Trif roB oFhenol	/ 2		zp - 9zz

Lab Sample ID: LCSD 580-354548/3-A
Matrix: Water
Analysis Batch: 354576

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354548
%Rec.
RPD

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Pentachlorophenol	8.00	7.85		ug/L		98	10 - 138	9	35
Bis(2-ethylhexyl) phthalate	4.00	3.78		ug/L		95	50 - 150	3	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
0313-Trif roB oFhenol	8c		zp - 9zz

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-355113/31
Matrix: Water
Analysis Batch: 355113

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			04/26/21 22:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-5roB ortuorof enbene (Surr)	/ :		p2 - 9p2		214c49 00@0	9

Lab Sample ID: LCS 580-355113/32
Matrix: Water
Analysis Batch: 355113

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Gasoline	1.00	0.934		mg/L		93	79 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-5roB ortuorof enbene (Surr)	//		p2 - 9p2

Lab Sample ID: LCSD 580-355113/33
Matrix: Water
Analysis Batch: 355113

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
%Rec.
RPD

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline	1.00	0.914		mg/L		91	79 - 120	2	10

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

Lab Sample ID: LCSD 580-355113/33
Matrix: Water
Analysis Batch: 355113

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1-5roB ortuorof enbene (Surr)	929		p2 - 9p2

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-354490/1-A
Matrix: Water
Analysis Batch: 354617

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 354490

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		04/16/21 11:12	04/19/21 20:01	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		04/16/21 11:12	04/19/21 20:01	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-TerFhenyl	: c		p2 - 9p2	2140c409 9900	2140/ 409 0209	9

Lab Sample ID: LCS 580-354490/2-A
Matrix: Water
Analysis Batch: 354617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 354490

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	2.00	1.75		mg/L		87	50 - 120
Motor Oil (>C24-C36)	2.00	1.72		mg/L		86	64 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-TerFhenyl	/ 1		p2 - 9p2

Lab Sample ID: LCSD 580-354490/3-A
Matrix: Water
Analysis Batch: 354617

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 354490

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
#2 Diesel (C10-C24)	2.00	1.82		mg/L		91	50 - 120	4	26
Motor Oil (>C24-C36)	2.00	1.80		mg/L		90	64 - 120	5	24

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-TerFhenyl	/ 0		p2 - 9p2

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-12-G

Lab Sample ID: 580-102482-1

Date Collected: 04/15/21 09:45

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	355159	04/26/21 21:58	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		10	354571	04/19/21 19:37	W1T	TAL SEA
Total/NA	Prep	3510C	DL		354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E	DL	50	355266	04/28/21 13:54	JKM	TAL SEA
Total/NA	Prep	3510C	DL		354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM	DL	3	355335	04/28/21 18:13	JKM	TAL SEA
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 12:19	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 00:54	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 21:01	JKM	TAL SEA

Client Sample ID: 041521-RB-RW-19-G

Lab Sample ID: 580-102482-2

Date Collected: 04/15/21 10:30

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	355159	04/26/21 22:24	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		5	354571	04/19/21 20:01	W1T	TAL SEA
Total/NA	Prep	3510C	DL		354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E	DL	50	355266	04/28/21 14:18	JKM	TAL SEA
Total/NA	Prep	3510C	DL		354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM	DL	3	355335	04/28/21 18:38	JKM	TAL SEA
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 12:42	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 01:19	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 21:21	JKM	TAL SEA

Client Sample ID: 041521-RB-GS-03

Lab Sample ID: 580-102482-3

Date Collected: 04/15/21 11:30

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	355057	04/25/21 00:46	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		1	354571	04/19/21 20:24	W1T	TAL SEA
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 13:05	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 01:44	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 21:41	JKM	TAL SEA

Eurofins FGS, Seattle

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-RW-47-D

Lab Sample ID: 580-102482-4

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		20	355057	04/24/21 23:28	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		5	354571	04/19/21 20:48	W1T	TAL SEA
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 13:28	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 02:08	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 22:01	JKM	TAL SEA

Client Sample ID: 041521-RB-GS-02

Lab Sample ID: 580-102482-5

Date Collected: 04/15/21 13:45

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		20	355057	04/25/21 00:20	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		1	354571	04/19/21 21:12	W1T	TAL SEA
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 13:51	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 02:33	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 22:21	JKM	TAL SEA

Client Sample ID: 041521-RB-RW-47-D-DUP

Lab Sample ID: 580-102482-6

Date Collected: 04/15/21 12:30

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		20	355057	04/24/21 23:54	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		5	354571	04/19/21 21:35	W1T	TAL SEA
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 14:14	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 03:22	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 22:41	JKM	TAL SEA

Client Sample ID: 041521-RB-GS-01

Lab Sample ID: 580-102482-7

Date Collected: 04/15/21 14:45

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	355057	04/25/21 01:12	CJ	TAL SEA
Total/NA	Prep	3510C			354492	04/16/21 11:19	RJL	TAL SEA
Total/NA	Analysis	8270E		5	354571	04/19/21 21:59	W1T	TAL SEA

Eurofins FGS, Seattle

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Client Sample ID: 041521-RB-GS-01

Lab Sample ID: 580-102482-7

Date Collected: 04/15/21 14:45

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			354548	04/17/21 16:39	RJL	TAL SEA
Total/NA	Analysis	8270E SIM		1	354576	04/19/21 14:37	E1L	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	355113	04/27/21 03:46	JSM	TAL SEA
Total/NA	Prep	3510C			354490	04/16/21 11:12	RJL	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	354617	04/19/21 23:00	JKM	TAL SEA

Client Sample ID: Trip Blank

Lab Sample ID: 580-102482-8

Date Collected: 04/15/21 00:01

Matrix: Water

Date Received: 04/15/21 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	355057	04/25/21 02:30	CJ	TAL SEA

Laboratory References:

TAL SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Laboratory: Eurofins FGS, Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Washington	State	C788	07-13-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E SIM	3510C	Water	Bis(2-ethylhexyl) phthalate



Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Biosparge Pilot

Job ID: 580-102482-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-102482-1	041521-RB-RW-12-G	Water	04/15/21 09:45	04/15/21 15:22	
580-102482-2	041521-RB-RW-19-G	Water	04/15/21 10:30	04/15/21 15:22	
580-102482-3	041521-RB-GS-03	Water	04/15/21 11:30	04/15/21 15:22	
580-102482-4	041521-RB-RW-47-D	Water	04/15/21 12:30	04/15/21 15:22	
580-102482-5	041521-RB-GS-02	Water	04/15/21 13:45	04/15/21 15:22	
580-102482-6	041521-RB-RW-47-D-DUP	Water	04/15/21 12:30	04/15/21 15:22	
580-102482-7	041521-RB-GS-01	Water	04/15/21 14:45	04/15/21 15:22	
580-102482-8	Trip Blank	Water	04/15/21 00:01	04/15/21 15:22	

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

102482

Regulatory Program: DW NPDES RCRA Other:

Client Contact
Geosyntec Consultants
520 Pike Street #2600
Seattle, WA 98101
(206) 496-1450 Phone
(xxx) xxx-xxxx FAX
Project Name: Lilyblad Biosparge Pilot
Site: Lilyblad Tacoma
P O #

Project Manager: Luke Smith
Email: luke.smith@geosyntec.com
Tel/Fax:

Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

Site Contact: Frank Rorie Date: 4/15/21
Lab Contact: Carrier:

COC No. of COCs
TALS Project #:
Sampler:
For Lab Use Only:
Walk-in Client:
Lab Sampling:
Job / SDG No.:

Sample Identification	Sample Date	Sample Time	Sample Type (C-Comp, G-Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs by 8260D	sVOCs by 8270E	TPH by NWTPH-GX	TPH by NWTPH-DX	Sample Specific Notes
DATE-INITIAL-WELL LABEL												
041521 - RB - RW - 12 - G	4/15/21	0945	G	W	10			XX	XX	XX	XX	(2) 250 mL are unapproved
041521 - RB - RW - 19 - G	4/15/21	1030	G	W	10			XX	XX	XX	XX	"
041521 - RB - GS - 03	4/15/21	1130	G	W	10			XX	XX	XX	XX	"
041521 - RB - RW - 47 - D	4/15/21	1230	G	W	10			XX	XX	XX	XX	"
041521 - RB - GS - 02	4/15/21	1345	G	W	10			XX	XX	XX	XX	" one vva broke
041521 - RB - RW - 47 - D - Dup	4/15/21	1230	G	W	10			XX	XX	XX	XX	"
041521 - RB - GS - 01	4/15/21	1445	G	W	10			XX	XX	XX	XX	"
TRIP blank	4/15/21							X				

Preservation Used: 1-Ice, 2-HCl, 3-H2SO4, 4-HNO3, 5-NAOH, 6-Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Return to Client Disposal by Lab Archive for _____ Months

580-102482 Chain of Custody

Special Instructions/QC Requirements & Comments:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Custody Seals Intact: Yes No

Relinquished by: Rose Bier 1522 4/15/21
Company: Geosyntec

Relinquished by: _____
Company: _____

Relinquished by: _____
Company: _____

Custody Seal No.: _____
Company: _____

Received by: _____
Company: _____

Received by: _____
Company: _____

Received in laboratory by: _____
Company: _____

Therm ID No.: _____
Date/Time: 4/15/21 1522

Date/Time: 4/15/21 1522

Date/Time: 4/15/21 1522

Date/Time: 4/15/21 1522

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Therm. ID: 308 Cor: 0.3 ° Inc: 10.6 °
Cooler Desc: LB
Packing: W/ice
FedEx: _____
Cust. Seal: Yes No
Lab Cour: _____
Blue Ice: Wet Dry, None
Other: Properly

Therm. ID: 308 Cor: 7.5 ° Inc: 7.8 °
Cooler Desc: LR
Packing: W/ice
FedEx: _____
Cust. Seal: Yes No
Lab Cour: _____
Blue Ice: Wet Dry, None
Other: Properly

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-102482-1

Login Number: 102482

List Number: 1

Creator: Blankinship, Tom X

List Source: Eurofins TestAmerica, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
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	Received same day of collection; chilling process has begun.
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?	False	Refer to Job Narrative for details.
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	Refer to Job Narrative for details.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



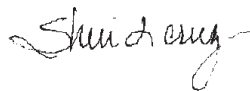
ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-103598-1
Client Project/Site: Lilyblad Site Remediation

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
6/21/2021 10:09:44 AM

Sheri Cruz, Project Manager I
(253)922-2310
Sheri.Cruz@Eurofinset.com

LINKS

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results through
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Visit us at:

www.eurofinsus.com/Env

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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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative 580-103598-1

Comments

No additional comments.

Receipt

The samples were received on 6/4/2021 3:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 5.7° C and 20.4° C.

GC/MS VOA

Method 8260D: For batch 580-358759, the flag for CCVIS %D out of criteria was removed by the analyst for the compound n-Butylbenzene. The value - 20.1 %D (Limit=t20) meets the +/- 20% criteria. 060421-NT-GS01 (580-103598-7), Trip Blank (580-103598-8) and (CCVIS 580-358759/3)

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-358759 recovered outside acceptance criteria, low biased, for Chloromethane, Bromomethane and cis-1,3-Dichloropropene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The method blank for preparation batch 358759 contained Methylene Chloride above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 8260D: The method blank for analytical batch 580-358759 contained 1,2,3-Trichlorobenzene above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The laboratory control sample duplicate (LCSD) for analytical batch 580-358759 recovered outside control limits for the following analytes: Methylene Chloride. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-358885 recovered above the upper control limit for 1,1,1-Trichloroethane, 1,1-Dichloroethene, 1,2,4-Trichlorobenzene, Bromoform, Carbon tetrachloride, Chlorodibromomethane, Ethylene Dibromide, Tetrachloroethene and Trichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-RW12G (580-103598-1), 060421-NT-RW19G (580-103598-2), 060421-NT-GS03 (580-103598-3), 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5) and (CCVIS 580-358885/3).

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-358885 recovered outside acceptance criteria, low biased, for Bromomethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The laboratory control sample (LCS) for analytical batch 580-358885 recovered outside control limits for the following analytes: Dichlorodifluoromethane, Ethylene Dibromide, Tetrachloroethene and Trichloroethene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-358885 recovered outside control limits for the following analytes: 1,1,1,2-Tetrachloroethane, Dichlorodifluoromethane, Tetrachloroethene and Trichloroethene.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-359179 recovered outside acceptance criteria, low biased, for 1,1,1,2-Tetrachloroethane, Chloromethane, Vinyl chloride and Bromomethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-359179 recovered above the upper control limit for

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

Carbon tetrachloride, Bromoform, 1,2,4-Trichlorobenzene and Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-GS02 (580-103598-6) and (CCVIS 580-359179/3).

Method 8260D: The method blank for analytical batch 580-359179 contained 1,2,3-Trichlorobenzene above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-359251 recovered outside acceptance criteria, low biased, for 4-Chlorotoluene and cis-1,3-Dichloropropene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: 060421-NT-RW47D-DUP (580-103598-5). Elevated reporting limits (RLs) are provided.

Method 8260D: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: 060421-NT-RW47D (580-103598-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-358672 and analytical batch 580-358799 recovered outside control limits for the following analytes: Hexachlorobutadiene.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-359080 recovered above the upper control limit for 3,3'-Dichlorobenzidine and Carbazole. The LCS/LCSD associated with this CCV recovered within control limits for these analytes with or without accounting for the high bias. The samples associated with the LCS/LCSD were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (CCVIS 580-359383/3), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A), 580-103598-4, 580-103598-5, 580-103598-6 and 580-103598-7.

Method 8270E: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 580-358945 and analytical batch 580-359080 recovered outside upper control limits for the following analyte: Di-n-butyl phthalate. This analyte was biased high in the LCS and were below reporting limit (RL) in the associated samples; therefore, the data have been reported. The following samples are associated with this LCSD/LCSD: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A), 580-103598-4, 580-103598-5, 580-103598-6 and 580-103598-7.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-359080 recovered above the upper control limit for 1,2,4-Trichlorobenzene, Bis(chloroisopropyl)ether, 3,3'-Dichlorobenzidine, Benzo[k]fluoranthene, Carbazole, Hexachlorobutadiene, Hexachlorocyclopentadiene and Hexachloroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7) and (CCVIS 580-359080/3).

Method 8270E: The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Hexachlorocyclopentadiene. These analytes may have a %D <50%. Affected samples: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5) and (CCVIS 580-359635/3)

Method 8270E: The following analyte has been identified, in the reference method and/or via historical data, to be poor and/or erratic performer: Hexachlorocyclopentadiene. This analyte may have a %D <50%. The following samples are impacted: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (CCVIS 580-359383/3), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A).

Method 8270E: Surrogate recovery for the following samples were outside control limits: 060421-NT-RW12G (580-103598-1) and

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

060421-NT-RW19G (580-103598-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270E: Due to sample matrix interference on the internal standard Acenaphthene-d10, a dilution was required for the following samples: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5).

Method 8270E: Surrogate recovery for the following sample was outside control limits: 060421-NT-RW47D (580-103598-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270E: The following samples required a dilution due to the nature of the sample matrix: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 8270E: The following samples was diluted due to the nature of the sample matrix negatively affecting internal standard recoveries: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5). Elevated reporting limits (RLs) are provided.

Method 8270E SIM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-358945 and analytical batch 580-359077 recovered outside control limits for the following analytes: Pentachlorophenol. The following samples are associated with this LCS/LCSD: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A), 580-103598-4, 580-103598-5, 580-103598-6 and 580-103598-7.

Method 8270E SIM: Due to sample matrix interference on the internal standard, Acenaphthene-d10, a dilution was required for the following sample: 060421-NT-RW19G (580-103598-2), 060421-NT-GS03 (580-103598-3), 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5).

Method 8270E SIM: The following samples were diluted due to the nature of the sample matrix: 060421-NT-RW19G (580-103598-2) and 060421-NT-GS03 (580-103598-3). Elevated reporting limits (RLs) are provided.

Method 8270E SIM: The following samples were diluted to 10X due to the nature of the sample matrix: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5). There was matrix interference on the internal standard, Acenaphthene-d10, which is associated with Pentachlorophenol and its surrogate, 2,4,6-Tribromophenol. This interference persisted at 3X dilution, therefore these samples were diluted to 10X to bring internal standard recovery within control limits and thus data has been reported and elevated reporting limits (RLs) have been provided per client's instruction.

Method 8270E SIM: Surrogate recovery for the following sample was outside control limits: 060421-NT-RW47D-DUP (580-103598-5). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Methods 3510C, CWA_Prep: The following samples formed large emulsions during the extraction procedure: 060421-NT-RW12G (580-103598-1), 060421-NT-RW19G (580-103598-2) and 060421-NT-GS03 (580-103598-3). The emulsions were broken up using sodium sulfate and rinsed with solvent.

Methods 3510C, CWA_Prep: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-358945, so a LCS and LCSD were used instead.

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

(MS/MSD/DUP) associated with preparation batch 580-358516, so a LCS and LCSD were used instead.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD 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/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

GC 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.

GC 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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)

Eurofins FGS, Seattle

Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	1.0	0.53	ug/L			06/10/21 23:07	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 23:07	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 23:07	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 23:07	1
Chloroethane	1.9		1.0	0.35	ug/L			06/10/21 23:07	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 23:07	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 23:07	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 23:07	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 23:07	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 23:07	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 23:07	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 23:07	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 23:07	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 23:07	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 23:07	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 23:07	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 23:07	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 23:07	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 23:07	1
Trichloroethene	ND	*+ *1	1.0	0.26	ug/L			06/10/21 23:07	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 23:07	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 23:07	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 23:07	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 23:07	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 23:07	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 23:07	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 23:07	1
Tetrachloroethene	ND	*+ *1	1.0	0.41	ug/L			06/10/21 23:07	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 23:07	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 23:07	1
1,2-Dibromoethane	ND	*+	1.0	0.40	ug/L			06/10/21 23:07	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 23:07	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:07	1
1,1,1,2-Tetrachloroethane	ND	*1	1.0	0.18	ug/L			06/10/21 23:07	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 23:07	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 23:07	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 23:07	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 23:07	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 23:07	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:07	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 23:07	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:07	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 23:07	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 23:07	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 23:07	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 23:07	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 23:07	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 23:07	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 23:07	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 23:07	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 23:07	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:07	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:07	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:07	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 23:07	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 23:07	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 23:07	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 23:07	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 23:07	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 23:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	920		82 - 912		24/92/19 10:02	9
5-Bromofluorobenzene (Surr)	929		82 - 912		24/92/19 10:02	9
Dibromofluoromethane (Surr)	923		82 - 912		24/92/19 10:02	9
9,1-Dichloroethane-d5 (Surr)	990		82 - 914		24/92/19 10:02	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		0.96	0.17	ug/L		06/09/21 09:02	06/11/21 17:49	1
Bis(2-ethylhexyl) phthalate	ND		0.19	0.084	ug/L		06/09/21 09:02	06/11/21 17:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	: 5		07 - 900	24/23/19 23:02	24/99/19 9: 03	9
Terphenyl-d95	: 8		13 - 972	24/23/19 23:02	24/99/19 9: 03	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		0.96	0.35	ug/L		06/09/21 09:02	06/10/21 15:52	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,3-Dichlorobenzene	ND		0.39	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,4-Dichlorobenzene	ND		0.39	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,2-Dichlorobenzene	ND		0.39	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Methylphenol	ND		0.58	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
3 & 4 Methylphenol	ND		0.58	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
N-Nitrosodi-n-propylamine	ND		0.39	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Nitrobenzene	ND		0.96	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Isophorone	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dimethylphenol	ND		3.9	0.15	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzoic acid	ND		9.6	1.3	ug/L		06/09/21 09:02	06/10/21 15:52	1
Bis(2-chloroethoxy)methane	ND		0.58	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,2,4-Trichlorobenzene	ND		0.39	0.087	ug/L		06/09/21 09:02	06/10/21 15:52	1
Naphthalene	ND		0.39	0.15	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Chloroaniline	ND		1.9	0.57	ug/L		06/09/21 09:02	06/10/21 15:52	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND	*1	0.96	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Chloro-3-methylphenol	ND		0.58	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Methylnaphthalene	ND		0.39	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4,6-Trichlorophenol	ND		0.58	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4,5-Trichlorophenol	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Nitroaniline	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
Dimethyl phthalate	ND		0.58	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Acenaphthylene	ND		0.96	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,6-Dinitrotoluene	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/09/21 09:02	06/10/21 15:52	1
Acenaphthene	ND		0.39	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Nitrophenol	ND		9.6	1.6	ug/L		06/09/21 09:02	06/10/21 15:52	1
Dibenzofuran	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
Diethyl phthalate	ND		0.96	0.14	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Chlorophenyl phenyl ether	ND		0.58	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Fluorene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/09/21 09:02	06/10/21 15:52	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/09/21 09:02	06/10/21 15:52	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Bromophenyl phenyl ether	ND		0.58	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Hexachlorobenzene	ND		0.58	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Phenanthrene	ND		0.96	0.12	ug/L		06/09/21 09:02	06/10/21 15:52	1
Anthracene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Di-n-butyl phthalate	11		2.9	0.18	ug/L		06/09/21 09:02	06/10/21 15:52	1
Fluoranthene	ND		0.24	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Pyrene	ND		0.96	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Butyl benzyl phthalate	0.33 J		3.9	0.26	ug/L		06/09/21 09:02	06/10/21 15:52	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Chrysene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/09/21 09:02	06/10/21 15:52	1
Di-n-octyl phthalate	ND		0.96	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[a]pyrene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Indeno[1,2,3-cd]pyrene	ND		0.39	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[g,h,i]perylene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Carbazole	ND		0.58	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[b]fluoranthene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
bis(chloroisopropyl) ether	ND		0.24	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	1:		95 - 912	24/23/19 23Ø1	24/92/19 97Ø1	9
Nhenol-d7 (Surr)	12		92 - 912	24/23/19 23Ø1	24/92/19 97Ø1	9
yitrobenzene-d7 (Surr)	42		54 - 917	24/23/19 23Ø1	24/92/19 97Ø1	9

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorobiphenyl	53	S9-	79 - 912	24/23/19 23@1	24/92/19 97@1	9
1,5,4-Tribromophenol (Surr)	: 5		72 - 917	24/23/19 23@1	24/92/19 97@1	9
Terphenyl-d95 (Surr)	82		40 - 911	24/23/19 23@1	24/92/19 97@1	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/09/21 06:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	83		72 - 972		24/23/19 24@7	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	3.1		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 15:07	1
Motor Oil (>C24-C36)	1.4		0.35	0.096	mg/L		06/07/21 14:58	06/13/21 15:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	: 8		72 - 972	24/2: /19 95@8	24/90/19 97@:	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	1.0	0.53	ug/L			06/10/21 23:32	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 23:32	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 23:32	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 23:32	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 23:32	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 23:32	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 23:32	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 23:32	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 23:32	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 23:32	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 23:32	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 23:32	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 23:32	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 23:32	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 23:32	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 23:32	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 23:32	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 23:32	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 23:32	1
Trichloroethene	ND	*+ *1	1.0	0.26	ug/L			06/10/21 23:32	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 23:32	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 23:32	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 23:32	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 23:32	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 23:32	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 23:32	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 23:32	1
Tetrachloroethene	ND	*+ *1	1.0	0.41	ug/L			06/10/21 23:32	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 23:32	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 23:32	1
1,2-Dibromoethane	ND	*+	1.0	0.40	ug/L			06/10/21 23:32	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 23:32	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:32	1
1,1,1,2-Tetrachloroethane	ND	*1	1.0	0.18	ug/L			06/10/21 23:32	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 23:32	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 23:32	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 23:32	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 23:32	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 23:32	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:32	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 23:32	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:32	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 23:32	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 23:32	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 23:32	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 23:32	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 23:32	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 23:32	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 23:32	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 23:32	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 23:32	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:32	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:32	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:32	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 23:32	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 23:32	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 23:32	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 23:32	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 23:32	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 23:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	920		82 - 912					24/92/19 10@1	9
5-Bromofluorobenzene (Surr)	37		82 - 912					24/92/19 10@1	9
Dibromofluoromethane (Surr)	921		82 - 912					24/92/19 10@1	9
9,1-Dichloroethane-d5 (Surr)	923		82 - 914					24/92/19 10@1	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/09/21 09:02	06/11/21 18:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d95	30		13 - 972				24/23/19 23@1	24/99/19 98@9	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		2.9	0.52	ug/L		06/09/21 09:02	06/18/21 15:10	3
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	58		07 - 900				24/23/19 23@1	24/98/19 97@2	0

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		0.96	0.34	ug/L		06/09/21 09:02	06/10/21 16:15	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Isophorone	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzoic acid	ND		9.6	1.3	ug/L		06/09/21 09:02	06/10/21 16:15	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/09/21 09:02	06/10/21 16:15	1
Naphthalene	ND		0.38	0.15	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachlorobutadiene	ND	*1	0.96	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Nitroaniline	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Acenaphthylene	ND		0.96	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,6-Dinitrotoluene	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/09/21 09:02	06/10/21 16:15	1
Acenaphthene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Nitrophenol	ND		9.6	1.6	ug/L		06/09/21 09:02	06/10/21 16:15	1
Dibenzofuran	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
Diethyl phthalate	0.54	J	0.96	0.14	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Fluorene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/09/21 09:02	06/10/21 16:15	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/09/21 09:02	06/10/21 16:15	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Phenanthrene	ND		0.96	0.11	ug/L		06/09/21 09:02	06/10/21 16:15	1
Anthracene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Di-n-butyl phthalate	6.2		2.9	0.18	ug/L		06/09/21 09:02	06/10/21 16:15	1
Fluoranthene	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Pyrene	ND		0.96	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/09/21 09:02	06/10/21 16:15	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Chrysene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/09/21 09:02	06/10/21 16:15	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/09/21 09:02	06/10/21 16:15	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Carbazole	ND		0.57	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	09		95 - 912	24/23/19 23@21	24/92/19 94@7	9
Nhenol-d7 (Surr)	14		92 - 912	24/23/19 23@21	24/92/19 94@7	9
yitrobenzene-d7 (Surr)	78		54 - 917	24/23/19 23@21	24/92/19 94@7	9
1-Fluorobiphenyl	51	S9-	79 - 912	24/23/19 23@21	24/92/19 94@7	9
1,5,4-Tribromophenol (Surr)	991		72 - 917	24/23/19 23@21	24/92/19 94@7	9
Terphenyl-d95 (Surr)	35		40 - 911	24/23/19 23@21	24/92/19 94@7	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/09/21 06:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	88		72 - 972		24/23/19 24@52	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2.1		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 15:28	1
Motor Oil (>C24-C36)	0.47		0.35	0.097	mg/L		06/07/21 14:58	06/13/21 15:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	::		72 - 972	24/2: /19 95@78	24/90/19 97@8	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	1.0	0.53	ug/L			06/10/21 23:57	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 23:57	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 23:57	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 23:57	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 23:57	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 23:57	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 23:57	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 23:57	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 23:57	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 23:57	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 23:57	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 23:57	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 23:57	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 23:57	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 23:57	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 23:57	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 23:57	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 23:57	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 23:57	1
Trichloroethene	ND	*+ *1	1.0	0.26	ug/L			06/10/21 23:57	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 23:57	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 23:57	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 23:57	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 23:57	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 23:57	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 23:57	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 23:57	1
Tetrachloroethene	ND	*+ *1	1.0	0.41	ug/L			06/10/21 23:57	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 23:57	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 23:57	1
1,2-Dibromoethane	ND	*+	1.0	0.40	ug/L			06/10/21 23:57	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 23:57	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:57	1
1,1,1,2-Tetrachloroethane	ND	*1	1.0	0.18	ug/L			06/10/21 23:57	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 23:57	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 23:57	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 23:57	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 23:57	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 23:57	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:57	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 23:57	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:57	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 23:57	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 23:57	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 23:57	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 23:57	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 23:57	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 23:57	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 23:57	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 23:57	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 23:57	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:57	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:57	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:57	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 23:57	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 23:57	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 23:57	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 23:57	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 23:57	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 23:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	929		82 - 912		24/92/19 1067	9
5-Bromofluorobenzene (Surr)	35		82 - 912		24/92/19 1067	9
Dibromofluoromethane (Surr)	924		82 - 912		24/92/19 1067	9
9,1-Dichloroethane-d5 (Surr)	995		82 - 914		24/92/19 1067	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/09/21 09:02	06/11/21 18:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d95	929		13 - 972	24/23/19 23621	24/99/19 98605	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		2.9	0.51	ug/L		06/09/21 09:02	06/18/21 15:32	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	41		07 - 900	24/23/19 23621	24/98/19 97601	0

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.57	J	0.95	0.34	ug/L		06/09/21 09:02	06/10/21 16:38	1
Bis(2-chloroethyl)ether	ND		0.095	0.029	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Chlorophenol	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachloroethane	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Nitrobenzene	ND		0.95	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Isophorone	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Nitrophenol	ND		0.95	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzoic acid	ND		9.5	1.3	ug/L		06/09/21 09:02	06/10/21 16:38	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/09/21 09:02	06/10/21 16:38	1
Naphthalene	ND		0.38	0.15	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachlorobutadiene	ND	*1	0.95	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachlorocyclopentadiene	ND		0.95	0.13	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Chloronaphthalene	ND		0.95	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Nitroaniline	ND		0.95	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Acenaphthylene	ND		0.95	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,6-Dinitrotoluene	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/09/21 09:02	06/10/21 16:38	1
Acenaphthene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Nitrophenol	ND		9.5	1.6	ug/L		06/09/21 09:02	06/10/21 16:38	1
Dibenzofuran	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
Diethyl phthalate	ND		0.95	0.14	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Fluorene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/09/21 09:02	06/10/21 16:38	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		06/09/21 09:02	06/10/21 16:38	1
N-Nitrosodiphenylamine	ND		0.95	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Phenanthrene	ND		0.95	0.11	ug/L		06/09/21 09:02	06/10/21 16:38	1
Anthracene	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Di-n-butyl phthalate	0.19	J	2.9	0.18	ug/L		06/09/21 09:02	06/10/21 16:38	1
Fluoranthene	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Pyrene	ND		0.95	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/09/21 09:02	06/10/21 16:38	1
3,3'-Dichlorobenzidine	ND		0.95	0.25	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Chrysene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/09/21 09:02	06/10/21 16:38	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/09/21 09:02	06/10/21 16:38	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Carbazole	ND		0.57	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
1-Methylnaphthalene	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	0:		95 - 912	24/23/19 23@1	24/92/19 94@8	9
Nhenol-d7 (Surr)	02		92 - 912	24/23/19 23@1	24/92/19 94@8	9
y itrobenzene-d7 (Surr)	44		54 - 917	24/23/19 23@1	24/92/19 94@8	9
1-Fluorobiphenyl	45		79 - 912	24/23/19 23@1	24/92/19 94@8	9
1,5,4-Tribromophenol (Surr)	995		72 - 917	24/23/19 23@1	24/92/19 94@8	9
Terphenyl-d95 (Surr)	921		40 - 911	24/23/19 23@1	24/92/19 94@8	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/18/21 12:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	3:		72 - 972		24/98/19 91@1	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.1		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 15:48	1
Motor Oil (>C24-C36)	0.30	J	0.35	0.097	mg/L		06/07/21 14:58	06/13/21 15:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	82		72 - 972	24/2: /19 95@8	24/90/19 97@8	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	20	11	ug/L			06/11/21 00:22	20
Chloromethane	ND		20	5.6	ug/L			06/11/21 00:22	20
Vinyl chloride	ND		20	4.4	ug/L			06/11/21 00:22	20
Bromomethane	ND		20	4.2	ug/L			06/11/21 00:22	20
Chloroethane	ND		20	7.0	ug/L			06/11/21 00:22	20
Trichlorofluoromethane	ND		20	7.2	ug/L			06/11/21 00:22	20
1,1-Dichloroethene	ND		20	5.6	ug/L			06/11/21 00:22	20
Methylene Chloride	ND		60	29	ug/L			06/11/21 00:22	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			06/11/21 00:22	20
1,1-Dichloroethane	ND		20	4.4	ug/L			06/11/21 00:22	20
2,2-Dichloropropane	ND		20	6.4	ug/L			06/11/21 00:22	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			06/11/21 00:22	20
Bromochloromethane	ND		20	5.8	ug/L			06/11/21 00:22	20
Chloroform	ND		20	5.2	ug/L			06/11/21 00:22	20
1,1,1-Trichloroethane	ND		20	7.8	ug/L			06/11/21 00:22	20
Carbon tetrachloride	ND		20	6.0	ug/L			06/11/21 00:22	20
1,1-Dichloropropene	ND		20	5.8	ug/L			06/11/21 00:22	20
Benzene	ND		20	4.8	ug/L			06/11/21 00:22	20
1,2-Dichloroethane	ND		20	8.4	ug/L			06/11/21 00:22	20
Trichloroethene	ND	*+ *1	20	5.2	ug/L			06/11/21 00:22	20
1,2-Dichloropropane	ND		20	3.6	ug/L			06/11/21 00:22	20
Dibromomethane	ND		20	6.8	ug/L			06/11/21 00:22	20
Bromodichloromethane	ND		20	5.8	ug/L			06/11/21 00:22	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			06/11/21 00:22	20
Toluene	ND		20	7.8	ug/L			06/11/21 00:22	20
trans-1,3-Dichloropropene	ND		20	8.2	ug/L			06/11/21 00:22	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			06/11/21 00:22	20
Tetrachloroethene	ND	*+ *1	20	8.2	ug/L			06/11/21 00:22	20
1,3-Dichloropropane	ND		20	7.0	ug/L			06/11/21 00:22	20
Dibromochloromethane	ND		20	8.6	ug/L			06/11/21 00:22	20
1,2-Dibromoethane	ND	*+	20	8.0	ug/L			06/11/21 00:22	20
Chlorobenzene	ND		20	8.8	ug/L			06/11/21 00:22	20
Ethylbenzene	ND		20	10	ug/L			06/11/21 00:22	20
1,1,1,2-Tetrachloroethane	ND	*1	20	3.6	ug/L			06/11/21 00:22	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			06/11/21 00:22	20
m-Xylene & p-Xylene	ND		40	11	ug/L			06/11/21 00:22	20
o-Xylene	ND		20	7.8	ug/L			06/11/21 00:22	20
Styrene	ND		20	11	ug/L			06/11/21 00:22	20
Bromoform	ND		20	10	ug/L			06/11/21 00:22	20
Isopropylbenzene	ND		20	8.8	ug/L			06/11/21 00:22	20
Bromobenzene	ND		20	8.6	ug/L			06/11/21 00:22	20
N-Propylbenzene	ND		20	10	ug/L			06/11/21 00:22	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			06/11/21 00:22	20
2-Chlorotoluene	ND		20	10	ug/L			06/11/21 00:22	20
1,3,5-Trimethylbenzene	ND		20	11	ug/L			06/11/21 00:22	20
4-Chlorotoluene	ND		20	7.6	ug/L			06/11/21 00:22	20
t-Butylbenzene	ND		40	12	ug/L			06/11/21 00:22	20
1,2,4-Trimethylbenzene	ND		60	12	ug/L			06/11/21 00:22	20
sec-Butylbenzene	ND		20	9.8	ug/L			06/11/21 00:22	20

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			06/11/21 00:22	20
4-Isopropyltoluene	ND		20	5.6	ug/L			06/11/21 00:22	20
1,4-Dichlorobenzene	ND		20	9.2	ug/L			06/11/21 00:22	20
n-Butylbenzene	ND		20	8.8	ug/L			06/11/21 00:22	20
1,2-Dichlorobenzene	ND		20	9.2	ug/L			06/11/21 00:22	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			06/11/21 00:22	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			06/11/21 00:22	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			06/11/21 00:22	20
Hexachlorobutadiene	ND		60	16	ug/L			06/11/21 00:22	20
Naphthalene	ND		60	19	ug/L			06/11/21 00:22	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			06/11/21 00:22	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	922		82 - 912					24/99/19 2261	12
5-Bromofluorobenzene (Surr)	34		82 - 912					24/99/19 2261	12
Dibromofluoromethane (Surr)	92		82 - 912					24/99/19 2261	12
9,1-Dichloroethane-d5 (Surr)	990		82 - 914					24/99/19 2261	12

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/11/21 08:45	06/12/21 17:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d95	::		13 - 972				24/99/19 2867	24/91/19 9: 67	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	9.6	1.7	ug/L		06/11/21 08:45	06/18/21 17:07	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	71		07 - 900				24/99/19 2867	24/98/19 9: 62	92

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.91	J	0.96	0.34	ug/L		06/11/21 08:45	06/12/21 16:20	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,3-Dichlorobenzene	0.11	J	0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,4-Dichlorobenzene	1.1		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,2-Dichlorobenzene	2.1		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 16:20	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Isophorone	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:20	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzoic acid	ND		9.6	1.3	ug/L		06/11/21 08:45	06/12/21 16:20	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/11/21 08:45	06/12/21 16:20	1
Naphthalene	0.43		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 16:20	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/11/21 08:45	06/12/21 16:20	1
Hexachlorobutadiene	ND		0.96	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Methylnaphthalene	0.22	J	0.38	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/11/21 08:45	06/12/21 16:20	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:20	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Phenanthrene	ND		0.96	0.11	ug/L		06/11/21 08:45	06/12/21 16:20	1
Anthracene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Di-n-butyl phthalate	1.3	J B +	2.9	0.18	ug/L		06/11/21 08:45	06/12/21 16:20	1
Fluoranthene	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
Pyrene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 16:20	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/11/21 08:45	06/12/21 16:20	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 16:20	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Carbazole	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 16:20	1
1-Methylnaphthalene	0.18	J	0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	08		95 - 912	24/99/19 2857	24/91/19 9462	9
Nhenol-d7 (Surr)	: 2		92 - 912	24/99/19 2857	24/91/19 9462	9
yitrobenzene-d7 (Surr)	50	S9-	54 - 917	24/99/19 2857	24/91/19 9462	9
1,5,4-Tribromophenol (Surr)	82		72 - 917	24/99/19 2857	24/91/19 9462	9
Terphenyl-d95 (Surr)	: 0		40 - 911	24/99/19 2857	24/91/19 9462	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		29	6.2	ug/L		06/11/21 08:45	06/18/21 15:03	50
Hexachlorocyclopentadiene	ND		48	6.7	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4,6-Trichlorophenol	ND		29	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4,5-Trichlorophenol	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
2-Chloronaphthalene	ND		48	3.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
2-Nitroaniline	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
Dimethyl phthalate	ND		29	2.9	ug/L		06/11/21 08:45	06/18/21 15:03	50
Acenaphthylene	ND		48	2.9	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,6-Dinitrotoluene	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
3-Nitroaniline	ND		140	7.7	ug/L		06/11/21 08:45	06/18/21 15:03	50

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		19	2.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4-Dinitrophenol	ND		240	77	ug/L		06/11/21 08:45	06/18/21 15:03	50
4-Nitrophenol	ND		480	81	ug/L		06/11/21 08:45	06/18/21 15:03	50
Dibenzofuran	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4-Dinitrotoluene	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
Diethyl phthalate	ND		48	7.2	ug/L		06/11/21 08:45	06/18/21 15:03	50
4-Chlorophenyl phenyl ether	ND		29	2.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
Fluorene	ND		12	2.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
4-Nitroaniline	ND		96	10	ug/L		06/11/21 08:45	06/18/21 15:03	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	2	S9-	95 - 912	24/99/19 2867	24/98/19 9760	72
Nhenol-d7 (Surr)	2	S9-	92 - 912	24/99/19 2867	24/98/19 9760	72
yitrobenzene-d7 (Surr)	2	S9-	54 - 917	24/99/19 2867	24/98/19 9760	72
1-Fluorobiphenyl	01	S9-	79 - 912	24/99/19 2867	24/98/19 9760	72
1,5,4-Tribromophenol (Surr)	959	S9+	72 - 917	24/99/19 2867	24/98/19 9760	72
Terphenyl-d95 (Surr)	49	S9-	40 - 911	24/99/19 2867	24/98/19 9760	72

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.12	J	0.25	0.10	mg/L			06/18/21 12:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	33		72 - 972		24/98/19 9169	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	4.2		0.11	0.068	mg/L		06/07/21 14:58	06/13/21 16:08	1
Motor Oil (>C24-C36)	0.76		0.37	0.10	mg/L		06/07/21 14:58	06/13/21 16:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	82		72 - 972	24/2: /19 9568	24/90/19 9468	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	20	11	ug/L			06/11/21 00:47	20
Chloromethane	ND		20	5.6	ug/L			06/11/21 00:47	20
Vinyl chloride	ND		20	4.4	ug/L			06/11/21 00:47	20
Bromomethane	ND		20	4.2	ug/L			06/11/21 00:47	20
Chloroethane	ND		20	7.0	ug/L			06/11/21 00:47	20
Trichlorofluoromethane	ND		20	7.2	ug/L			06/11/21 00:47	20
1,1-Dichloroethene	ND		20	5.6	ug/L			06/11/21 00:47	20
Methylene Chloride	ND		60	29	ug/L			06/11/21 00:47	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			06/11/21 00:47	20
1,1-Dichloroethane	ND		20	4.4	ug/L			06/11/21 00:47	20
2,2-Dichloropropane	ND		20	6.4	ug/L			06/11/21 00:47	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			06/11/21 00:47	20
Bromochloromethane	ND		20	5.8	ug/L			06/11/21 00:47	20
Chloroform	ND		20	5.2	ug/L			06/11/21 00:47	20
1,1,1-Trichloroethane	ND		20	7.8	ug/L			06/11/21 00:47	20
Carbon tetrachloride	ND		20	6.0	ug/L			06/11/21 00:47	20
1,1-Dichloropropene	ND		20	5.8	ug/L			06/11/21 00:47	20
Benzene	7.5	J	20	4.8	ug/L			06/11/21 00:47	20
1,2-Dichloroethane	ND		20	8.4	ug/L			06/11/21 00:47	20
Trichloroethene	ND	*+ *1	20	5.2	ug/L			06/11/21 00:47	20
1,2-Dichloropropane	ND		20	3.6	ug/L			06/11/21 00:47	20
Dibromomethane	ND		20	6.8	ug/L			06/11/21 00:47	20
Bromodichloromethane	ND		20	5.8	ug/L			06/11/21 00:47	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			06/11/21 00:47	20
Toluene	140		20	7.8	ug/L			06/11/21 00:47	20
trans-1,3-Dichloropropene	ND		20	8.2	ug/L			06/11/21 00:47	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			06/11/21 00:47	20
Tetrachloroethene	ND	*+ *1	20	8.2	ug/L			06/11/21 00:47	20
1,3-Dichloropropane	ND		20	7.0	ug/L			06/11/21 00:47	20
Dibromochloromethane	ND		20	8.6	ug/L			06/11/21 00:47	20
1,2-Dibromoethane	ND	*+	20	8.0	ug/L			06/11/21 00:47	20
Chlorobenzene	ND		20	8.8	ug/L			06/11/21 00:47	20
Ethylbenzene	62		20	10	ug/L			06/11/21 00:47	20
1,1,1,2-Tetrachloroethane	ND	*1	20	3.6	ug/L			06/11/21 00:47	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			06/11/21 00:47	20
m-Xylene & p-Xylene	150		40	11	ug/L			06/11/21 00:47	20
o-Xylene	64		20	7.8	ug/L			06/11/21 00:47	20
Styrene	ND		20	11	ug/L			06/11/21 00:47	20
Bromoform	ND		20	10	ug/L			06/11/21 00:47	20
Isopropylbenzene	ND		20	8.8	ug/L			06/11/21 00:47	20
Bromobenzene	ND		20	8.6	ug/L			06/11/21 00:47	20
N-Propylbenzene	ND		20	10	ug/L			06/11/21 00:47	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			06/11/21 00:47	20
2-Chlorotoluene	ND		20	10	ug/L			06/11/21 00:47	20
1,3,5-Trimethylbenzene	ND		20	11	ug/L			06/11/21 00:47	20
4-Chlorotoluene	ND		20	7.6	ug/L			06/11/21 00:47	20
t-Butylbenzene	ND		40	12	ug/L			06/11/21 00:47	20
1,2,4-Trimethylbenzene	23	J	60	12	ug/L			06/11/21 00:47	20
sec-Butylbenzene	ND		20	9.8	ug/L			06/11/21 00:47	20

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			06/11/21 00:47	20
4-Isopropyltoluene	9.6	J	20	5.6	ug/L			06/11/21 00:47	20
1,4-Dichlorobenzene	9.6	J	20	9.2	ug/L			06/11/21 00:47	20
n-Butylbenzene	ND		20	8.8	ug/L			06/11/21 00:47	20
1,2-Dichlorobenzene	ND		20	9.2	ug/L			06/11/21 00:47	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			06/11/21 00:47	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			06/11/21 00:47	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			06/11/21 00:47	20
Hexachlorobutadiene	ND		60	16	ug/L			06/11/21 00:47	20
Naphthalene	270		60	19	ug/L			06/11/21 00:47	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			06/11/21 00:47	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	929		82 - 912		24/99/19 22:55	12
5-Bromofluorobenzene (Surr)	924		82 - 912		24/99/19 22:55	12
Dibromofluoromethane (Surr)	929		82 - 912		24/99/19 22:55	12
9,1-Dichloroethane-d5 (Surr)	927		82 - 914		24/99/19 22:55	12

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/11/21 08:45	06/12/21 18:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d95	::		13 - 972	24/99/19 28:57	24/91/19 98:12	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	9.6	1.7	ug/L		06/11/21 08:45	06/18/21 17:29	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	70		07 - 900	24/99/19 28:57	24/98/19 9: 51:3	92

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	1.0		0.96	0.35	ug/L		06/11/21 08:45	06/12/21 16:44	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,3-Dichlorobenzene	0.091	J	0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,4-Dichlorobenzene	0.86		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,2-Dichlorobenzene	1.6		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Methylphenol	0.41	J	0.58	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
3 & 4 Methylphenol	ND		0.58	0.096	ug/L		06/11/21 08:45	06/12/21 16:44	1
N-Nitrosodi-n-propylamine	ND		0.38	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Isophorone	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Nitrophenol	0.77	J	0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:44	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzoic acid	ND		9.6	1.3	ug/L		06/11/21 08:45	06/12/21 16:44	1
Bis(2-chloroethoxy)methane	ND		0.58	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	0.52	J	0.96	0.19	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/11/21 08:45	06/12/21 16:44	1
Naphthalene	0.48		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 16:44	1
4-Chloroaniline	ND		1.9	0.57	ug/L		06/11/21 08:45	06/12/21 16:44	1
Hexachlorobutadiene	ND		0.96	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Methylnaphthalene	0.22	J	0.38	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/11/21 08:45	06/12/21 16:44	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:44	1
4-Bromophenyl phenyl ether	ND		0.58	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
Hexachlorobenzene	ND		0.58	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Phenanthrene	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 16:44	1
Anthracene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Di-n-butyl phthalate	2.0	J B +	2.9	0.18	ug/L		06/11/21 08:45	06/12/21 16:44	1
Fluoranthene	ND		0.24	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
Pyrene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 16:44	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/11/21 08:45	06/12/21 16:44	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 16:44	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Carbazole	ND		0.58	0.096	ug/L		06/11/21 08:45	06/12/21 16:44	1
1-Methylnaphthalene	0.20	J	0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
bis(chloroisopropyl) ether	ND		0.24	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	79		95 - 912	24/99/19 2857	24/91/19 9455	9
Nhenol-d7 (Surr)	84		92 - 912	24/99/19 2857	24/91/19 9455	9
yitrobenzene-d7 (Surr)	79		54 - 917	24/99/19 2857	24/91/19 9455	9
1,5,4-Tribromophenol (Surr)	89		72 - 917	24/99/19 2857	24/91/19 9455	9
Terphenyl-d95 (Surr)	: 0		40 - 911	24/99/19 2857	24/91/19 9455	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		29	6.2	ug/L		06/11/21 08:45	06/18/21 15:27	50
Hexachlorocyclopentadiene	ND		48	6.7	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4,6-Trichlorophenol	ND		29	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4,5-Trichlorophenol	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
2-Chloronaphthalene	ND		48	3.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
2-Nitroaniline	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
Dimethyl phthalate	ND		29	2.9	ug/L		06/11/21 08:45	06/18/21 15:27	50
Acenaphthylene	ND		48	2.9	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,6-Dinitrotoluene	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
3-Nitroaniline	ND		140	7.7	ug/L		06/11/21 08:45	06/18/21 15:27	50

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		19	2.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4-Dinitrophenol	ND		240	77	ug/L		06/11/21 08:45	06/18/21 15:27	50
4-Nitrophenol	ND		480	82	ug/L		06/11/21 08:45	06/18/21 15:27	50
Dibenzofuran	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4-Dinitrotoluene	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
Diethyl phthalate	ND		48	7.2	ug/L		06/11/21 08:45	06/18/21 15:27	50
4-Chlorophenyl phenyl ether	ND		29	2.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
Fluorene	ND		12	2.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
4-Nitroaniline	ND		96	10	ug/L		06/11/21 08:45	06/18/21 15:27	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	2	S9-	95 - 912	24/99/19 2867	24/98/19 976:	72
Nhenol-d7 (Surr)	2	S9-	92 - 912	24/99/19 2867	24/98/19 976:	72
y itrobenzene-d7 (Surr)	2	S9-	54 - 917	24/99/19 2867	24/98/19 976:	72
1-Fluorobiphenyl	09	S9-	79 - 912	24/99/19 2867	24/98/19 976:	72
1,5,4-Tribromophenol (Surr)	911		72 - 917	24/99/19 2867	24/98/19 976:	72
Terphenyl-d95 (Surr)	41	S9-	40 - 911	24/99/19 2867	24/98/19 976:	72

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/18/21 13:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	37		72 - 972		24/98/19 9064	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	4.9		0.11	0.067	mg/L		06/07/21 14:58	06/13/21 16:28	1
Motor Oil (>C24-C36)	0.72		0.36	0.10	mg/L		06/07/21 14:58	06/13/21 16:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	85		72 - 972	24/2: /19 9568	24/90/19 9468	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/14/21 21:03	1
Chloromethane	ND		1.0	0.28	ug/L			06/14/21 21:03	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/14/21 21:03	1
Bromomethane	ND		1.0	0.21	ug/L			06/14/21 21:03	1
Chloroethane	ND		1.0	0.35	ug/L			06/14/21 21:03	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/14/21 21:03	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/14/21 21:03	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/14/21 21:03	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/14/21 21:03	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/14/21 21:03	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/14/21 21:03	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/14/21 21:03	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/14/21 21:03	1
Chloroform	ND		1.0	0.26	ug/L			06/14/21 21:03	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/14/21 21:03	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/14/21 21:03	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/14/21 21:03	1
Benzene	ND		1.0	0.24	ug/L			06/14/21 21:03	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/14/21 21:03	1
Trichloroethene	ND		1.0	0.26	ug/L			06/14/21 21:03	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/14/21 21:03	1
Dibromomethane	ND		1.0	0.34	ug/L			06/14/21 21:03	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/14/21 21:03	1
Toluene	ND		1.0	0.39	ug/L			06/14/21 21:03	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/14/21 21:03	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/14/21 21:03	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/14/21 21:03	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/14/21 21:03	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/14/21 21:03	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/14/21 21:03	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/14/21 21:03	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/14/21 21:03	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/14/21 21:03	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/14/21 21:03	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/14/21 21:03	1
o-Xylene	ND		1.0	0.39	ug/L			06/14/21 21:03	1
Styrene	ND		1.0	0.53	ug/L			06/14/21 21:03	1
Bromoform	ND		1.0	0.51	ug/L			06/14/21 21:03	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/14/21 21:03	1
Bromobenzene	ND		1.0	0.43	ug/L			06/14/21 21:03	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/14/21 21:03	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/14/21 21:03	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/14/21 21:03	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/14/21 21:03	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/14/21 21:03	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/14/21 21:03	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/14/21 21:03	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/14/21 21:03	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/14/21 21:03	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/14/21 21:03	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/14/21 21:03	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/14/21 21:03	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/14/21 21:03	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/14/21 21:03	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/14/21 21:03	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/14/21 21:03	1
Naphthalene	ND		3.0	0.93	ug/L			06/14/21 21:03	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/14/21 21:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	922		82 - 912					24/95/19 1900	9
5-Bromofluorobenzene (Surr)	3		82 - 912					24/95/19 1900	9
Dibromofluoromethane (Surr)	920		82 - 912					24/95/19 1900	9
9,1-Dichloroethane-d5 (Surr)	990		82 - 914					24/95/19 1900	9

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/15/21 13:52	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/15/21 13:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	33		82 - 912					24/97/19 90671	9
5-Bromofluorobenzene (Surr)	30		82 - 912					24/97/19 90671	9
Dibromofluoromethane (Surr)	924		82 - 912					24/97/19 90671	9
9,1-Dichloroethane-d5 (Surr)	992		82 - 914					24/97/19 90671	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	0.95	0.17	ug/L		06/11/21 08:45	06/12/21 18:43	1
Bis(2-ethylhexyl) phthalate	ND		0.19	0.082	ug/L		06/11/21 08:45	06/12/21 18:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	0		07 - 900				24/99/19 2807	24/91/19 9800	9
Terphenyl-d95	84		13 - 972				24/99/19 2807	24/91/19 9800	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	2.3		0.95	0.34	ug/L		06/11/21 08:45	06/12/21 17:07	1
Bis(2-chloroethyl)ether	ND		0.095	0.028	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Chlorophenol	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzyl alcohol	0.84	J	4.7	0.17	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,2-Dichlorobenzene	ND		0.38	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Methylphenol	ND		0.57	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachloroethane	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Nitrobenzene	ND		0.95	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Isophorone	0.21	J	0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Nitrophenol	ND		0.95	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzoic acid	5.2	J	9.5	1.3	ug/L		06/11/21 08:45	06/12/21 17:07	1
Bis(2-chloroethoxy)methane	ND		0.57	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,2,4-Trichlorobenzene	ND		0.38	0.085	ug/L		06/11/21 08:45	06/12/21 17:07	1
Naphthalene	ND		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachlorobutadiene	ND		0.95	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachlorocyclopentadiene	ND		0.95	0.13	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Chloronaphthalene	ND		0.95	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Nitroaniline	ND		0.95	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Acenaphthylene	ND		0.95	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,6-Dinitrotoluene	0.95		0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
3-Nitroaniline	ND		2.8	0.15	ug/L		06/11/21 08:45	06/12/21 17:07	1
Acenaphthene	ND		0.38	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dinitrophenol	ND		4.7	1.5	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Nitrophenol	ND		9.5	1.6	ug/L		06/11/21 08:45	06/12/21 17:07	1
Dibenzofuran	ND		0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
Diethyl phthalate	ND		0.95	0.14	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Chlorophenyl phenyl ether	ND		0.57	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Fluorene	ND		0.24	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/11/21 08:45	06/12/21 17:07	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		06/11/21 08:45	06/12/21 17:07	1
N-Nitrosodiphenylamine	ND		0.95	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Phenanthrene	ND		0.95	0.11	ug/L		06/11/21 08:45	06/12/21 17:07	1
Anthracene	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Di-n-butyl phthalate	2.3	J B *+	2.8	0.18	ug/L		06/11/21 08:45	06/12/21 17:07	1
Fluoranthene	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Pyrene	ND		0.95	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 17:07	1
3,3'-Dichlorobenzidine	ND		0.95	0.25	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[a]anthracene	ND		0.24	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.70	ug/L		06/11/21 08:45	06/12/21 17:07	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 17:07	1
Dibenz(a,h)anthracene	ND		0.24	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Carbazole	ND		0.57	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[k]fluoranthene	ND		0.24	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	53		95 - 912	24/99/19 2867	24/91/19 9: 0:	9
Nhenol-d7 (Surr)	: 9		92 - 912	24/99/19 2867	24/91/19 9: 0:	9
yitrobenzene-d7 (Surr)	42		54 - 917	24/99/19 2867	24/91/19 9: 0:	9
1-Fluorobiphenyl	40		79 - 912	24/99/19 2867	24/91/19 9: 0:	9
1,5,4-Tribromophenol (Surr)	925		72 - 917	24/99/19 2867	24/91/19 9: 0:	9
Terphenyl-d95 (Surr)	30		40 - 911	24/99/19 2867	24/91/19 9: 0:	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/12/21 01:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	35		72 - 972		24/91/19 2969	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.64		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 17:08	1
Motor Oil (>C24-C36)	0.13	J	0.35	0.096	mg/L		06/07/21 14:58	06/13/21 17:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	: 7		72 - 972	24/2: /19 9568	24/90/19 9: 0:	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/10/21 06:11	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 06:11	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 06:11	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 06:11	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 06:11	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 06:11	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 06:11	1
Methylene Chloride	ND	*+	3.0	1.4	ug/L			06/10/21 06:11	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 06:11	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 06:11	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 06:11	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 06:11	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 06:11	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 06:11	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 06:11	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 06:11	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 06:11	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 06:11	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 06:11	1
Trichloroethene	ND		1.0	0.26	ug/L			06/10/21 06:11	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 06:11	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 06:11	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 06:11	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 06:11	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 06:11	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 06:11	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 06:11	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/10/21 06:11	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 06:11	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 06:11	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/10/21 06:11	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 06:11	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:11	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/10/21 06:11	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 06:11	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 06:11	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 06:11	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 06:11	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 06:11	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:11	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 06:11	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:11	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 06:11	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 06:11	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 06:11	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 06:11	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 06:11	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 06:11	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 06:11	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 06:11	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 06:11	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:11	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:11	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:11	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 06:11	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 06:11	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 06:11	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 06:11	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 06:11	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 06:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	922		82 - 912		24/92/19 24609	9
5-Bromofluorobenzene (Surr)	31		82 - 912		24/92/19 24609	9
Dibromofluoromethane (Surr)	992		82 - 912		24/92/19 24609	9
9,1-Dichloroethane-d5 (Surr)	997		82 - 914		24/92/19 24609	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	0.96	0.17	ug/L		06/11/21 08:45	06/12/21 19:05	1
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/11/21 08:45	06/12/21 19:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	82		07 - 900	24/99/19 28657	24/91/19 93627	9
Terphenyl-d95	31		13 - 972	24/99/19 28657	24/91/19 93627	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		0.96	0.34	ug/L		06/11/21 08:45	06/12/21 17:31	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Isophorone	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzoic acid	1.4	J	9.6	1.3	ug/L		06/11/21 08:45	06/12/21 17:31	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/11/21 08:45	06/12/21 17:31	1
Naphthalene	ND		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/11/21 08:45	06/12/21 17:31	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND		0.96	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Nitroaniline	ND		0.96	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Acenaphthylene	ND		0.96	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,6-Dinitrotoluene	0.77		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/11/21 08:45	06/12/21 17:31	1
Acenaphthene	ND		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Nitrophenol	ND		9.6	1.6	ug/L		06/11/21 08:45	06/12/21 17:31	1
Dibenzofuran	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
Diethyl phthalate	ND		0.96	0.14	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Fluorene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/11/21 08:45	06/12/21 17:31	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/11/21 08:45	06/12/21 17:31	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Phenanthrene	ND		0.96	0.11	ug/L		06/11/21 08:45	06/12/21 17:31	1
Anthracene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Di-n-butyl phthalate	2.1	J B *+	2.9	0.18	ug/L		06/11/21 08:45	06/12/21 17:31	1
Fluoranthene	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Pyrene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 17:31	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/11/21 08:45	06/12/21 17:31	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 17:31	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Carbazole	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	57		95 - 912	24/99/19 28657	24/91/19 9: 009	9
Nhenol-d7 (Surr)	00		92 - 912	24/99/19 28657	24/91/19 9: 009	9
ytrobenzene-d7 (Surr)	74		54 - 917	24/99/19 28657	24/91/19 9: 009	9

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorobiphenyl	48		79 - 912	24/99/19 2867	24/91/19 9: 09	9
1,5,4-Tribromophenol (Surr)	927		72 - 917	24/99/19 2867	24/91/19 9: 09	9
Terphenyl-d95 (Surr)	84		40 - 911	24/99/19 2867	24/91/19 9: 09	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/12/21 02:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	3:		72 - 972		24/91/19 2104	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2.7		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 17:28	1
Motor Oil (>C24-C36)	1.1		0.35	0.097	mg/L		06/07/21 14:58	06/13/21 17:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	: 7		72 - 972	24/2: /19 9568	24/90/19 9: 08	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-103598-8

Date Collected: 06/04/21 00:01

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/10/21 06:35	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 06:35	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 06:35	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 06:35	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 06:35	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 06:35	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 06:35	1
Methylene Chloride	ND	*+	3.0	1.4	ug/L			06/10/21 06:35	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 06:35	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 06:35	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 06:35	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 06:35	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 06:35	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 06:35	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 06:35	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 06:35	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 06:35	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 06:35	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 06:35	1
Trichloroethene	ND		1.0	0.26	ug/L			06/10/21 06:35	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 06:35	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 06:35	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 06:35	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 06:35	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 06:35	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 06:35	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 06:35	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/10/21 06:35	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 06:35	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 06:35	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/10/21 06:35	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 06:35	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:35	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/10/21 06:35	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 06:35	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 06:35	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 06:35	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 06:35	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 06:35	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:35	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 06:35	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:35	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 06:35	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 06:35	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 06:35	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 06:35	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 06:35	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 06:35	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 06:35	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-103598-8

Date Collected: 06/04/21 00:01

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 06:35	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 06:35	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:35	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:35	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:35	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 06:35	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 06:35	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 06:35	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 06:35	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 06:35	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 06:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	929		82 - 912					24/92/19 2407	9
<i>5-Bromofluorobenzene (Surr)</i>	35		82 - 912					24/92/19 2407	9
<i>Dibromofluoromethane (Surr)</i>	992		82 - 912					24/92/19 2407	9
<i>9,1-Dichloroethane-d5 (Surr)</i>	995		82 - 914					24/92/19 2407	9

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-35875x/7
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUbd	Dil zac
Dichlorodifluoromethane	ND		1.0	0.53	u*/L			0+/10/g1 00:66	1
Chloromethane	ND		1.0	0.g8	u*/L			0+/10/g1 00:66	1
2inyl chloride	ND		1.0	0.gg	u*/L			0+/10/g1 00:66	1
7 romomethane	ND		1.0	0.g1	u*/L			0+/10/g1 00:66	1
Chloroethane	ND		1.0	0.35	u*/L			0+/10/g1 00:66	1
Vrichlorofluoromethane	ND		1.0	0.3+	u*/L			0+/10/g1 00:66	1
1,1-Dichloroethene	ND		1.0	0.g8	u*/L			0+/10/g1 00:66	1
T ethylene Chloride	3.5B		3.0	1.6	u*/L			0+/10/g1 00:66	1
trans-1,g-Dichloroethene	ND		1.0	0.39	u*/L			0+/10/g1 00:66	1
1,1-Dichloroethane	ND		1.0	0.gg	u*/L			0+/10/g1 00:66	1
g,g-Dichloro4ro4ane	ND		1.0	0.3g	u*/L			0+/10/g1 00:66	1
cis-1,g-Dichloroethene	ND		1.0	0.35	u*/L			0+/10/g1 00:66	1
7 romochloromethane	ND		1.0	0.g9	u*/L			0+/10/g1 00:66	1
Chloroform	ND		1.0	0.g+	u*/L			0+/10/g1 00:66	1
1,1,1-Vrichloroethane	ND		1.0	0.39	u*/L			0+/10/g1 00:66	1
Carbon tetrachloride	ND		1.0	0.30	u*/L			0+/10/g1 00:66	1
1,1-Dichloro4ro4ene	ND		1.0	0.g9	u*/L			0+/10/g1 00:66	1
7 enMene	ND		1.0	0.g6	u*/L			0+/10/g1 00:66	1
1,g-Dichloroethane	ND		1.0	0.6g	u*/L			0+/10/g1 00:66	1
Vrichloroethene	ND		1.0	0.g+	u*/L			0+/10/g1 00:66	1
1,g-Dichloro4ro4ane	ND		1.0	0.18	u*/L			0+/10/g1 00:66	1
Dibromomethane	ND		1.0	0.36	u*/L			0+/10/g1 00:66	1
7 romodichloromethane	ND		1.0	0.g9	u*/L			0+/10/g1 00:66	1
cis-1,3-Dichloro4ro4ene	ND		1.0	0.g0	u*/L			0+/10/g1 00:66	1
Voluene	ND		1.0	0.39	u*/L			0+/10/g1 00:66	1
trans-1,3-Dichloro4ro4ene	ND		1.0	0.61	u*/L			0+/10/g1 00:66	1
1,1,g-Vrichloroethane	ND		1.0	0.g6	u*/L			0+/10/g1 00:66	1
Vetrachloroethene	ND		1.0	0.61	u*/L			0+/10/g1 00:66	1
1,3-Dichloro4ro4ane	ND		1.0	0.35	u*/L			0+/10/g1 00:66	1
Dibromochloromethane	ND		1.0	0.63	u*/L			0+/10/g1 00:66	1
1,g-Dibromoethane	ND		1.0	0.60	u*/L			0+/10/g1 00:66	1
ChlorobenMene	ND		1.0	0.66	u*/L			0+/10/g1 00:66	1
pthylbenMene	ND		1.0	0.50	u*/L			0+/10/g1 00:66	1
1,1,1,g-Vetrachloroethane	ND		1.0	0.18	u*/L			0+/10/g1 00:66	1
1,1,g,g-Vetrachloroethane	ND		1.0	0.5g	u*/L			0+/10/g1 00:66	1
m-z ylene E 4-z ylene	ND		g.0	0.53	u*/L			0+/10/g1 00:66	1
o-z ylene	ND		1.0	0.39	u*/L			0+/10/g1 00:66	1
Styrene	ND		1.0	0.53	u*/L			0+/10/g1 00:66	1
7 romoform	ND		1.0	0.51	u*/L			0+/10/g1 00:66	1
Iso4ro4ylbenMene	ND		1.0	0.66	u*/L			0+/10/g1 00:66	1
7 romobenMene	ND		1.0	0.63	u*/L			0+/10/g1 00:66	1
N-Pro4ylbenMene	ND		1.0	0.50	u*/L			0+/10/g1 00:66	1
1,g,3-Vrichloro4ro4ane	ND		1.0	0.61	u*/L			0+/10/g1 00:66	1
g-Chlorotoluene	ND		1.0	0.51	u*/L			0+/10/g1 00:66	1
1,3,5-VrimethylbenMene	ND		1.0	0.55	u*/L			0+/10/g1 00:66	1
6-Chlorotoluene	ND		1.0	0.38	u*/L			0+/10/g1 00:66	1
t-7 utylbenMene	ND		g.0	0.58	u*/L			0+/10/g1 00:66	1
1,g,6-VrimethylbenMene	ND		3.0	0.+1	u*/L			0+/10/g1 00:66	1

purofins XGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-35875x/7
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
sec-7 utylbenMene	ND		1.0	0.69	u*/L			0+/10/g1 00:66	1
1,3-DichlorobenMene	ND		1.0	0.68	u*/L			0+/10/g1 00:66	1
6-Iso4ro4yltoluene	ND		1.0	0.g8	u*/L			0+/10/g1 00:66	1
1,6-DichlorobenMene	ND		1.0	0.6+	u*/L			0+/10/g1 00:66	1
n-7 utylbenMene	ND		1.0	0.66	u*/L			0+/10/g1 00:66	1
1,g-DichlorobenMene	ND		1.0	0.6+	u*/L			0+/10/g1 00:66	1
1,g-Dibromo-3-Chloro4ro4ane	ND		3.0	0.5B	u*/L			0+/10/g1 00:66	1
1,g,6-VrichlorobenMene	ND		1.0	0.33	u*/L			0+/10/g1 00:66	1
1,g,3-VrichlorobenMene	0.533	J	g.0	0.63	u*/L			0+/10/g1 00:66	1
&eFachlorobutadiene	ND		3.0	0.B9	u*/L			0+/10/g1 00:66	1
Na4hthalene	ND		3.0	0.93	u*/L			0+/10/g1 00:66	1
T ethyl tert-butyl ether	ND		1.0	0.66	u*/L			0+/10/g1 00:66	1

Surrogate	MB %Recovery	MB Qualiifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		06/10/21 00:44	1
4-Bromofluorobenzene (Surr)	96		80 - 120		06/10/21 00:44	1
Dibromofluoromethane (Surr)	108		80 - 120		06/10/21 00:44	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 126		06/10/21 00:44	1

Lab Sample ID: LCS 580-35875x/%
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
Dichlorodifluoromethane	10.0	1g.1		u*/L		1g1	6B- 133
Chloromethane	10.0	8.B+		u*/L		88	5g - 135
2inyl chloride	10.0	8.+B		u*/L		8B	+5 - 130
7romomethane	10.0	8.61		u*/L		86	++ - 1g5
Chloroethane	10.0	8.86		u*/L		88	+5 - 13g
Vrichlorofluoromethane	10.0	9.+3		u*/L		9+	+6 - 130
1,1-Dichloroethene	10.0	11.8		u*/L		118	B0 - 1g9
T ethylene Chloride	10.0	11.9		u*/L		119	BB- 1g0
trans-1,g-Dichloroethene	10.0	10.+		u*/L		10+	B0 - 130
1,1-Dichloroethane	10.0	10.6		u*/L		106	81 - 1g9
g,g-Dichloro4ro4ane	10.0	9.31		u*/L		93	53 - 150
cis-1,g-Dichloroethene	10.0	10.1		u*/L		101	B+ - 1g9
7romochloromethane	10.0	10.g		u*/L		10g	B8 - 1g0
Chloroform	10.0	11.0		u*/L		110	B3 - 1gB
1,1,1-Vrichloroethane	10.0	11.3		u*/L		113	B6 - 130
Carbon tetrachloride	10.0	11.g		u*/L		11g	Bg - 1g9
1,1-Dichloro4ro4ene	10.0	10.+		u*/L		10+	B6 - 131
7 enMene	10.0	10.6		u*/L		106	8g - 1gg
1,g-Dichloroethane	10.0	10.5		u*/L		105	B+ - 1g+
Vrichloroethene	10.0	10.+		u*/L		10+	81 - 1g5
1,g-Dichloro4ro4ane	10.0	9.85		u*/L		99	80 - 1g+
Dibromomethane	10.0	10.3		u*/L		103	80 - 1g0
7romodichloromethane	10.0	10.6		u*/L		106	B5 - 1g6
cis-1,3-Dichloro4ro4ene	10.0	8.00		u*/L		80	BB- 1g0

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-35875x/%
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Qual(ier	f nit	D . Rec	. Rec1 Limits
Voluene	10.0	10.1		u*/L	101	80 - 1g0
trans-1,3-Dichloro4ro4ene	10.0	9.6B		u*/L	95	B0 - 1gg
1,1,g-Vrichloroethane	10.0	10.6		u*/L	106	80 - 1g1
Vetrachloroethene	10.0	10.B		u*/L	10B	B+ - 1g0
1,3-Dichloro4ro4ane	10.0	10.3		u*/L	103	B9 - 1g0
Dibromochloromethane	10.0	10.g		u*/L	10g	+0 - 1g5
1,g-Dibromoethane	10.0	10.+		u*/L	10+	B9 - 1g0
ChlorobenMene	10.0	9.86		u*/L	98	80 - 1g0
p thylbenMene	10.0	9.98		u*/L	100	80 - 1g0
1,1,1,g-Vetrachloroethane	10.0	9.88		u*/L	99	B9 - 1g0
1,1,g,g-Vetrachloroethane	10.0	8.+6		u*/L	8+	B6 - 1g6
m-z ylene E 4-z ylene	10.0	10.g		u*/L	10g	80 - 1g0
o-z ylene	10.0	9.BB		u*/L	98	80 - 1g5
Styrene	10.0	10.0		u*/L	100	B+ - 1gB
7 romoform	10.0	9.9+		u*/L	100	g8 - 139
Iso4ro4ylbenMene	10.0	10.g		u*/L	10g	B5 - 1g9
7 romobenMene	10.0	8.B9		u*/L	88	80 - 1g0
N-Pro4ylbenMene	10.0	8.+9		u*/L	8B	80 - 1g8
1,g,3-Vrichloro4ro4ane	10.0	9.g0		u*/L	9g	B+ - 1g6
g-Chlorotoluene	10.0	8.89		u*/L	89	80 - 1g0
1,3,5-VrimethylbenMene	10.0	8.91		u*/L	89	80 - 131
6-Chlorotoluene	10.0	9.15		u*/L	9g	80 - 1g0
t-7 utylbenMene	10.0	8.89		u*/L	89	80 - 1g9
1,g,6-VrimethylbenMene	10.0	9.09		u*/L	91	80 - 131
sec-7 utylbenMene	10.0	9.56		u*/L	95	B8 - 131
1,3-DichlorobenMene	10.0	11.3		u*/L	113	+9 - 1gB
6-Iso4ro4yltoluene	10.0	8.9g		u*/L	89	BB - 131
1,6-DichlorobenMene	10.0	9.+0		u*/L	9+	80 - 1g0
n-7 utylbenMene	10.0	8.61		u*/L	86	B8 - 1g0
1,g-DichlorobenMene	10.0	10.3		u*/L	103	80 - 1g0
1,g-Dibromo-3-Chloro4ro4ane	10.0	10.9		u*/L	109	+5 - 1g5
1,g,6-VrichlorobenMene	10.0	1g.B		u*/L	1gB	B3 - 1g8
1,g,3-VrichlorobenMene	10.0	11.+		u*/L	11+	B6 - 139
&eFachlorobutadiene	10.0	10.8		u*/L	108	B6 - 1g5
Na4hthalene	10.0	11.5		u*/L	115	B5 - 136
T ethyl tert-butyl ether	10.0	10.1		u*/L	101	Bg - 130

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35875x/5
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	RTD Limit
Dichlorodifluoromethane	10.0	1g.3		u*/L	1g3	6B- 133	g	15
Chloromethane	10.0	B.B0		u*/L	BB	5g - 135	13	16
2inyl chloride	10.0	8.68		u*/L	85	+5 - 130	g	16
7 romomethane	10.0	8.3B		u*/L	86	++ - 1g5	0	16
Chloroethane	10.0	8.B0		u*/L	8B	+5 - 13g	g	18
Vrichlorofluoromethane	10.0	9.B6		u*/L	9B	+6 - 130	1	16
1,1-Dichloroethene	10.0	1g.0		u*/L	1g0	B0 - 1g9	g	1B
T ethylene Chloride	10.0	1g.g	Hk	u*/L	1gg	BB- 1g0	g	18
trans-1,g-Dichloroethene	10.0	10.9		u*/L	109	B0 - 130	3	g1
1,1-Dichloroethane	10.0	10.9		u*/L	109	81 - 1g9	5	15
g,g-Dichloro4ro4ane	10.0	9.B0		u*/L	9B	53 - 150	6	15
cis-1,g-Dichloroethene	10.0	10.6		u*/L	106	B+ - 1g9	6	15
7 romochloromethane	10.0	10.9		u*/L	109	B8 - 1g0	+	13
Chloroform	10.0	1g.0		u*/L	1g0	B3 - 1gB	9	16
1,1,1-Vrichloroethane	10.0	11.5		u*/L	115	B6 - 130	g	11
Carbon tetrachloride	10.0	11.5		u*/L	115	Bg - 1g9	3	11
1,1-Dichloro4ro4ene	10.0	10.9		u*/L	109	B6 - 131	3	16
7 enMene	10.0	11.1		u*/L	111	8g - 1gg	B	16
1,g-Dichloroethane	10.0	11.g		u*/L	11g	B+ - 1g+	B	11
Vrichloroethene	10.0	11.1		u*/L	111	81 - 1g5	5	13
1,g-Dichloro4ro4ane	10.0	10.+		u*/L	10+	80 - 1g+	B	16
Dibromomethane	10.0	10.8		u*/L	108	80 - 1g0	5	11
7 romodichloromethane	10.0	11.g		u*/L	11g	B5 - 1g6	B	13
cis-1,3-Dichloro4ro4ene	10.0	8.16		u*/L	81	BB- 1g0	g	g0
Voluene	10.0	10.5		u*/L	105	80 - 1g0	6	13
trans-1,3-Dichloro4ro4ene	10.0	10.g		u*/L	10g	B0 - 1gg	B	16
1,1,g-Vrichloroethane	10.0	11.1		u*/L	111	80 - 1g1	+	16
Vetrachloroethene	10.0	10.9		u*/L	109	B+ - 1g0	g	13
1,3-Dichloro4ro4ane	10.0	11.0		u*/L	110	B9 - 1g0	B	13
Dibromochloromethane	10.0	11.0		u*/L	110	+0 - 1g5	B	13
1,g-Dibromoethane	10.0	11.6		u*/L	116	B9 - 1g0	B	1g
ChlorobenMene	10.0	10.6		u*/L	106	80 - 1g0	+	10
p thylbenMene	10.0	10.+		u*/L	10+	80 - 1g0	+	16
1,1,1,g-Vetrachloroethane	10.0	10.+		u*/L	10+	B9 - 1g0	B	10
1,1,g,g-Vetrachloroethane	10.0	8.B+		u*/L	88	B6 - 1g6	1	18
m-z ylene E 4-z ylene	10.0	10.8		u*/L	108	80 - 1g0	+	16
o-z ylene	10.0	10.6		u*/L	106	80 - 1g5	+	1+
Styrene	10.0	10.+		u*/L	10+	B+ - 1gB	+	1+
7 romoform	10.0	10.+		u*/L	10+	g8 - 139	+	15
Iso4ro4ylbenMene	10.0	10.B		u*/L	10B	B5 - 1g9	5	1g
7 romobenMene	10.0	8.83		u*/L	88	80 - 1g0	0	13
N-Pro4ylbenMene	10.0	8.B5		u*/L	8B	80 - 1g8	1	13
1,g,3-Vrichloro4ro4ane	10.0	9.33		u*/L	93	B+ - 1g6	1	1+
g-Chlorotoluene	10.0	8.9B		u*/L	90	80 - 1g0	1	15
1,3,5-VrimethylbenMene	10.0	9.03		u*/L	90	80 - 131	1	16
6-Chlorotoluene	10.0	9.16		u*/L	91	80 - 1g0	0	16
t-7 utylbenMene	10.0	8.8B		u*/L	89	80 - 1g9	0	16
1,g,6-VrimethylbenMene	10.0	9.00		u*/L	90	80 - 131	1	1+

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35875x/5
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
sec-7 utylbenMene	10.0	9.+9		u*/L		9B	B8 - 131	1	15
1,3-DichlorobenMene	10.0	11.8		u*/L		118	+9 - 1gB	6	16
6-Iso4ro4yltoluene	10.0	9.00		u*/L		90	BB - 131	1	g0
1,6-DichlorobenMene	10.0	9.83		u*/L		98	80 - 1g0	g	1B
n-7 utylbenMene	10.0	8.31		u*/L		83	B8 - 1g0	1	16
1,g-DichlorobenMene	10.0	10.8		u*/L		108	80 - 1g0	6	15
1,g-Dibromo-3-Chloro4ro4ane	10.0	10.6		u*/L		106	+5 - 1g5	5	1B
1,g,6-VrichlorobenMene	10.0	1g.+		u*/L		1g+	B3 - 1g8	1	g0
1,g,3-VrichlorobenMene	10.0	11.0		u*/L		110	B6 - 139	5	g+
&eFachlorobutadiene	10.0	10.3		u*/L		103	B6 - 1g5	5	gg
Na4hthalene	10.0	10.B		u*/L		10B	B5 - 136	B	g3
T ethyl tert-butyl ether	10.0	10.+		u*/L		10+	Bg - 130	+	18

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

Lab Sample ID: MB 580-358885/7
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Dichlorodifluoromethane	ND		1.0	0.53	u*/L			0+/10/g1 1B:13	1
Chloromethane	ND		1.0	0.g8	u*/L			0+/10/g1 1B:13	1
2inyl chloride	ND		1.0	0.gg	u*/L			0+/10/g1 1B:13	1
7romomethane	ND		1.0	0.g1	u*/L			0+/10/g1 1B:13	1
Chloroethane	ND		1.0	0.35	u*/L			0+/10/g1 1B:13	1
Vrichlorofluoromethane	ND		1.0	0.3+	u*/L			0+/10/g1 1B:13	1
1,1-Dichloroethene	ND		1.0	0.g8	u*/L			0+/10/g1 1B:13	1
T ethylene Chloride	ND		3.0	1.6	u*/L			0+/10/g1 1B:13	1
trans-1,g-Dichloroethene	ND		1.0	0.39	u*/L			0+/10/g1 1B:13	1
1,1-Dichloroethane	ND		1.0	0.gg	u*/L			0+/10/g1 1B:13	1
g,g-Dichloro4ro4ane	ND		1.0	0.3g	u*/L			0+/10/g1 1B:13	1
cis-1,g-Dichloroethene	ND		1.0	0.35	u*/L			0+/10/g1 1B:13	1
7romochloromethane	ND		1.0	0.g9	u*/L			0+/10/g1 1B:13	1
Chloroform	ND		1.0	0.g+	u*/L			0+/10/g1 1B:13	1
1,1,1-Vrichloroethane	ND		1.0	0.39	u*/L			0+/10/g1 1B:13	1
Carbon tetrachloride	ND		1.0	0.30	u*/L			0+/10/g1 1B:13	1
1,1-Dichloro4ro4ene	ND		1.0	0.g9	u*/L			0+/10/g1 1B:13	1
7enMene	ND		1.0	0.g6	u*/L			0+/10/g1 1B:13	1
1,g-Dichloroethane	ND		1.0	0.6g	u*/L			0+/10/g1 1B:13	1
Vrichloroethene	ND		1.0	0.g+	u*/L			0+/10/g1 1B:13	1
1,g-Dichloro4ro4ane	ND		1.0	0.18	u*/L			0+/10/g1 1B:13	1
Dibromomethane	ND		1.0	0.36	u*/L			0+/10/g1 1B:13	1
7romodichloromethane	ND		1.0	0.g9	u*/L			0+/10/g1 1B:13	1
cis-1,3-Dichloro4ro4ene	ND		1.0	0.g0	u*/L			0+/10/g1 1B:13	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-358885/7
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Voluene	ND		1.0	0.39	u*/L			0+/10/g1 1B:13	1
trans-1,3-Dichloro4ro4ene	ND		1.0	0.61	u*/L			0+/10/g1 1B:13	1
1,1,g-Vrichloroethane	ND		1.0	0.g6	u*/L			0+/10/g1 1B:13	1
Vetrachloroethene	ND		1.0	0.61	u*/L			0+/10/g1 1B:13	1
1,3-Dichloro4ro4ane	ND		1.0	0.35	u*/L			0+/10/g1 1B:13	1
Dibromochloromethane	ND		1.0	0.63	u*/L			0+/10/g1 1B:13	1
1,g-Dibromoethane	ND		1.0	0.60	u*/L			0+/10/g1 1B:13	1
ChlorobenMene	ND		1.0	0.66	u*/L			0+/10/g1 1B:13	1
p thylbenMene	ND		1.0	0.50	u*/L			0+/10/g1 1B:13	1
1,1,1,g-Vetrachloroethane	ND		1.0	0.18	u*/L			0+/10/g1 1B:13	1
1,1,g,g-Vetrachloroethane	ND		1.0	0.5g	u*/L			0+/10/g1 1B:13	1
m-z ylene E 4-z ylene	ND		g.0	0.53	u*/L			0+/10/g1 1B:13	1
o-z ylene	ND		1.0	0.39	u*/L			0+/10/g1 1B:13	1
Styrene	ND		1.0	0.53	u*/L			0+/10/g1 1B:13	1
7 romoform	ND		1.0	0.51	u*/L			0+/10/g1 1B:13	1
Iso4ro4ylbenMene	ND		1.0	0.66	u*/L			0+/10/g1 1B:13	1
7 romobenMene	ND		1.0	0.63	u*/L			0+/10/g1 1B:13	1
N-Pro4ylbenMene	ND		1.0	0.50	u*/L			0+/10/g1 1B:13	1
1,g,3-Vrichloro4ro4ane	ND		1.0	0.61	u*/L			0+/10/g1 1B:13	1
g-Chlorotoluene	ND		1.0	0.51	u*/L			0+/10/g1 1B:13	1
1,3,5-VrimethylbenMene	ND		1.0	0.55	u*/L			0+/10/g1 1B:13	1
6-Chlorotoluene	ND		1.0	0.38	u*/L			0+/10/g1 1B:13	1
t-7 utylbenMene	ND		g.0	0.58	u*/L			0+/10/g1 1B:13	1
1,g,6-VrimethylbenMene	ND		3.0	0.+1	u*/L			0+/10/g1 1B:13	1
sec-7 utylbenMene	ND		1.0	0.69	u*/L			0+/10/g1 1B:13	1
1,3-DichlorobenMene	ND		1.0	0.68	u*/L			0+/10/g1 1B:13	1
6-Iso4ro4yltoluene	ND		1.0	0.g8	u*/L			0+/10/g1 1B:13	1
1,6-DichlorobenMene	ND		1.0	0.6+	u*/L			0+/10/g1 1B:13	1
n-7 utylbenMene	ND		1.0	0.66	u*/L			0+/10/g1 1B:13	1
1,g-DichlorobenMene	ND		1.0	0.6+	u*/L			0+/10/g1 1B:13	1
1,g-Dibromo-3-Chloro4ro4ane	ND		3.0	0.5B	u*/L			0+/10/g1 1B:13	1
1,g,6-VrichlorobenMene	ND		1.0	0.33	u*/L			0+/10/g1 1B:13	1
1,g,3-VrichlorobenMene	ND		g.0	0.63	u*/L			0+/10/g1 1B:13	1
&eFachlorobutadiene	ND		3.0	0.B9	u*/L			0+/10/g1 1B:13	1
Na4hthalene	ND		3.0	0.93	u*/L			0+/10/g1 1B:13	1
T ethyl tert-butyl ether	ND		1.0	0.66	u*/L			0+/10/g1 1B:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120		06/10/21 17:13	1
4-Bromofluorobenzene (Surr)	83		80 - 120		06/10/21 17:13	1
Dibromofluoromethane (Surr)	107		80 - 120		06/10/21 17:13	1
1,2-Dichloroethane-d4 (Surr)	113		80 - 126		06/10/21 17:13	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-358885/%
MatriW P ater
Fnalysis Batch: 358885

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

Fnyalte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D . Rec	. Rec1 Limits
Dichlorodifluoromethane	10.0	13.+	Hx	u*/L	13+	6B- 133
Chloromethane	10.0	8.+g		u*/L	8+	5g - 135
2inyl chloride	10.0	8.55		u*/L	85	+5 - 130
7romomethane	10.0	B.9g		u*/L	B9	++ - 1g5
Chloroethane	10.0	8.59		u*/L	8+	+5 - 13g
Vrichlorofluoromethane	10.0	9.08		u*/L	91	+6 - 130
1,1-Dichloroethene	10.0	1g.g		u*/L	1gg	B0 - 1g9
T ethylene Chloride	10.0	11.8		u*/L	118	BB- 1g0
trans-1,g-Dichloroethene	10.0	10.9		u*/L	109	B0 - 130
1,1-Dichloroethane	10.0	10.9		u*/L	109	81 - 1g9
g,g-Dichloro4ro4ane	10.0	10.9		u*/L	109	53 - 150
cis-1,g-Dichloroethene	10.0	10.+		u*/L	10+	B+ - 1g9
7romochloromethane	10.0	10.8		u*/L	108	B8 - 1g0
Chloroform	10.0	1g.0		u*/L	1g0	B3 - 1gB
1,1,1-Vrichloroethane	10.0	1g.0		u*/L	1g0	B6 - 130
Carbon tetrachloride	10.0	1g.1		u*/L	1g1	Bg - 1g9
1,1-Dichloro4ro4ene	10.0	11.0		u*/L	110	B6 - 131
7enMene	10.0	11.3		u*/L	113	8g - 1gg
1,g-Dichloroethane	10.0	10.6		u*/L	106	B+ - 1g+
Vrichloroethene	10.0	1g.B	Hx	u*/L	1gB	81 - 1g5
1,g-Dichloro4ro4ane	10.0	10.g		u*/L	10g	80 - 1g+
Dibromomethane	10.0	10.9		u*/L	109	80 - 1g0
7romodichloromethane	10.0	11.0		u*/L	110	B5 - 1g6
cis-1,3-Dichloro4ro4ene	10.0	8.56		u*/L	85	BB- 1g0
Voluene	10.0	10.B		u*/L	10B	80 - 1g0
trans-1,3-Dichloro4ro4ene	10.0	9.8g		u*/L	98	B0 - 1gg
1,1,g-Vrichloroethane	10.0	11.+		u*/L	11+	80 - 1g1
Vetrachloroethene	10.0	1g.B	Hx	u*/L	1gB	B+ - 1g0
1,3-Dichloro4ro4ane	10.0	10.6		u*/L	106	B9 - 1g0
Dibromochloromethane	10.0	11.8		u*/L	118	+0 - 1g5
1,g-Dibromoethane	10.0	1g.g	Hx	u*/L	1gg	B9 - 1g0
ChlorobenMene	10.0	11.+		u*/L	11+	80 - 1g0
pthylbenMene	10.0	11.3		u*/L	113	80 - 1g0
1,1,1,g-Vetrachloroethane	10.0	11.B		u*/L	11B	B9 - 1g0
1,1,g,g-Vetrachloroethane	10.0	8.8B		u*/L	89	B6 - 1g6
m-z ylene E 4-z ylene	10.0	11.g		u*/L	11g	80 - 1g0
o-z ylene	10.0	10.9		u*/L	109	80 - 1g5
Styrene	10.0	10.9		u*/L	109	B+ - 1gB
7romoform	10.0	11.B		u*/L	11B	g8 - 139
Iso4ro4ylbenMene	10.0	11.6		u*/L	116	B5 - 1g9
7romobenMene	10.0	10.+		u*/L	10+	80 - 1g0
N-Pro4ylbenMene	10.0	10.+		u*/L	10+	80 - 1g8
1,g,3-Vrichloro4ro4ane	10.0	10.g		u*/L	10g	B+ - 1g6
g-Chlorotoluene	10.0	10.6		u*/L	106	80 - 1g0
1,3,5-VrimethylbenMene	10.0	9.98		u*/L	100	80 - 131
6-Chlorotoluene	10.0	9.6g		u*/L	96	80 - 1g0
t-7 utylbenMene	10.0	9.B5		u*/L	98	80 - 1g9
1,g,6-VrimethylbenMene	10.0	9.B6		u*/L	9B	80 - 131

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-358885/%
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits
sec-7 utylbenMene	10.0	9.B+		u*/L		98	B8 - 131
1,3-DichlorobenMene	10.0	11.5		u*/L		115	+9 - 1gB
6-Iso4ro4yltoluene	10.0	9.86		u*/L		98	BB - 131
1,6-DichlorobenMene	10.0	10.1		u*/L		101	80 - 1g0
n-7 utylbenMene	10.0	9.00		u*/L		90	B8 - 1g0
1,g-DichlorobenMene	10.0	11.0		u*/L		110	80 - 1g0
1,g-Dibromo-3-Chloro4ro4ane	10.0	10.B		u*/L		10B	+5 - 1g5
1,g,6-VrichlorobenMene	10.0	1g.+		u*/L		1g+	B3 - 1g8
1,g,3-VrichlorobenMene	10.0	11.5		u*/L		115	B6 - 139
&eFachlorobutadiene	10.0	11.1		u*/L		111	B6 - 1g5
Na4hthalene	10.0	11.1		u*/L		111	B5 - 136
T ethyl tert-butyl ether	10.0	9.93		u*/L		99	Bg - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	109		80 - 120
4-Bromofluorobenzene (Surr)	112		80 - 120
Dibromofluoromethane (Surr)	104		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 126

Lab Sample ID: LCSD 580-358885/5
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	RTD Limit
Dichlorodifluoromethane	10.0	11.0	HI	u*/L		110	6B - 133	g1	15
Chloromethane	10.0	8.1B		u*/L		8g	5g - 135	5	16
2inyl chloride	10.0	B.+9		u*/L		BB	+5 - 130	11	16
7romomethane	10.0	B.g0		u*/L		Bg	++ - 1g5	9	16
Chloroethane	10.0	B.93		u*/L		B9	+5 - 13g	8	18
Vrichlorofluoromethane	10.0	8.B0		u*/L		8B	+6 - 130	6	16
1,1-Dichloroethene	10.0	11.+		u*/L		11+	B0 - 1g9	5	1B
T ethylene Chloride	10.0	11.g		u*/L		11g	BB - 1g0	+	18
trans-1,g-Dichloroethene	10.0	10.+		u*/L		10+	B0 - 130	3	g1
1,1-Dichloroethane	10.0	10.3		u*/L		103	81 - 1g9	5	15
g,g-Dichloro4ro4ane	10.0	10.8		u*/L		108	53 - 150	1	15
cis-1,g-Dichloroethene	10.0	10.3		u*/L		103	B+ - 1g9	3	15
7romochloromethane	10.0	10.5		u*/L		105	B8 - 1g0	3	13
Chloroform	10.0	11.g		u*/L		11g	B3 - 1gB	+	16
1,1,1-Vrichloroethane	10.0	11.5		u*/L		115	B6 - 130	6	11
Carbon tetrachloride	10.0	11.6		u*/L		116	Bg - 1g9	+	11
1,1-Dichloro4ro4ene	10.0	10.8		u*/L		108	B6 - 131	g	16
7 enMene	10.0	10.B		u*/L		10B	8g - 1gg	+	16
1,g-Dichloroethane	10.0	10.1		u*/L		101	B+ - 1g+	g	11
Vrichloroethene	10.0	10.B	HI	u*/L		10B	81 - 1g5	1B	13
1,g-Dichloro4ro4ane	10.0	10.0		u*/L		100	80 - 1g+	g	16
Dibromomethane	10.0	10.6		u*/L		106	80 - 1g0	6	11
7romodichloromethane	10.0	10.8		u*/L		108	B5 - 1g6	g	13
cis-1,3-Dichloro4ro4ene	10.0	8.81		u*/L		88	BB - 1g0	3	g0

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-358885/5
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	RTD Limit
Voluene	10.0	10.+		u*/L	10+	80 - 1g0	1	13
trans-1,3-Dichloro4ro4ene	10.0	9.9B		u*/L	100	B0 - 1gg	g	16
1,1,g-Vrichloroethane	10.0	10.9		u*/L	109	80 - 1g1	B	16
Vetrachloroethene	10.0	10.B	H	u*/L	10B	B+ - 1g0	1B	13
1,3-Dichloro4ro4ane	10.0	10.+		u*/L	10+	B9 - 1g0	1	13
Dibromochloromethane	10.0	10.5		u*/L	105	+0 - 1g5	11	13
1,g-Dibromoethane	10.0	11.g		u*/L	11g	B9 - 1g0	8	1g
ChlorobenMene	10.0	10.5		u*/L	105	80 - 1g0	10	10
p thylbenMene	10.0	10.5		u*/L	105	80 - 1g0	8	16
1,1,1,g-Vetrachloroethane	10.0	10.0	H	u*/L	100	B9 - 1g0	15	10
1,1,g,g-Vetrachloroethane	10.0	8.30		u*/L	83	B6 - 1g6	B	18
m-z ylene E 4-z ylene	10.0	10.B		u*/L	10B	80 - 1g0	6	16
o-z ylene	10.0	10.6		u*/L	106	80 - 1g5	5	1+
Styrene	10.0	10.6		u*/L	106	B+ - 1gB	5	1+
7 romoform	10.0	11.0		u*/L	110	g8 - 139	+	15
Iso4ro4ylbenMene	10.0	10.+		u*/L	10+	B5 - 1g9	B	1g
7 romobenMene	10.0	10.6		u*/L	106	80 - 1g0	g	13
N-Pro4ylbenMene	10.0	10.0		u*/L	100	80 - 1g8	5	13
1,g,3-Vrichloro4ro4ane	10.0	9.9B		u*/L	100	B+ - 1g6	g	1+
g-Chlorotoluene	10.0	10.3		u*/L	103	80 - 1g0	0	15
1,3,5-VrimethylbenMene	10.0	9.B0		u*/L	9B	80 - 131	3	16
6-Chlorotoluene	10.0	9.60		u*/L	96	80 - 1g0	0	16
t-7 utylbenMene	10.0	9.55		u*/L	9+	80 - 1g9	g	16
1,g,6-VrimethylbenMene	10.0	9.6+		u*/L	95	80 - 131	3	1+
sec-7 utylbenMene	10.0	9.63		u*/L	96	B8 - 131	3	15
1,3-DichlorobenMene	10.0	10.+		u*/L	10+	+9 - 1gB	8	16
6-Iso4ro4yltoluene	10.0	9.g3		u*/L	9g	BB - 131	+	g0
1,6-DichlorobenMene	10.0	10.0		u*/L	100	80 - 1g0	1	1B
n-7 utylbenMene	10.0	8.5B		u*/L	8+	B8 - 1g0	5	16
1,g-DichlorobenMene	10.0	10.0		u*/L	100	80 - 1g0	9	15
1,g-Dibromo-3-Chloro4ro4ane	10.0	9.15		u*/L	9g	+5 - 1g5	15	1B
1,g,6-VrichlorobenMene	10.0	11.6		u*/L	116	B3 - 1g8	10	g0
1,g,3-VrichlorobenMene	10.0	10.+		u*/L	10+	B6 - 139	9	g+
&eFachlorobutadiene	10.0	10.6		u*/L	106	B6 - 1g5	+	gg
Na4hthalene	10.0	9.91		u*/L	99	B5 - 136	11	g3
T ethyl tert-butyl ether	10.0	9.56		u*/L	95	Bg - 130	6	18

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 120
4-Bromofluorobenzene (Surr)	107		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	95		80 - 126

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-35x97x/7
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUbd	Dil zac
Dichlorodifluoromethane	ND		1.0	0.53	u*/L			0+/16/g1 16:6g	1
Chloromethane	ND		1.0	0.g8	u*/L			0+/16/g1 16:6g	1
2inyl chloride	ND		1.0	0.gg	u*/L			0+/16/g1 16:6g	1
7 romomethane	ND		1.0	0.g1	u*/L			0+/16/g1 16:6g	1
Chloroethane	ND		1.0	0.35	u*/L			0+/16/g1 16:6g	1
Vrichlorofluoromethane	ND		1.0	0.3+	u*/L			0+/16/g1 16:6g	1
1,1-Dichloroethene	ND		1.0	0.g8	u*/L			0+/16/g1 16:6g	1
T ethylene Chloride	ND		3.0	1.6	u*/L			0+/16/g1 16:6g	1
trans-1,g-Dichloroethene	ND		1.0	0.39	u*/L			0+/16/g1 16:6g	1
1,1-Dichloroethane	ND		1.0	0.gg	u*/L			0+/16/g1 16:6g	1
g,g-Dichloro4ro4ane	ND		1.0	0.3g	u*/L			0+/16/g1 16:6g	1
cis-1,g-Dichloroethene	ND		1.0	0.35	u*/L			0+/16/g1 16:6g	1
7 romochloromethane	ND		1.0	0.g9	u*/L			0+/16/g1 16:6g	1
Chloroform	ND		1.0	0.g+	u*/L			0+/16/g1 16:6g	1
1,1,1-Vrichloroethane	ND		1.0	0.39	u*/L			0+/16/g1 16:6g	1
Carbon tetrachloride	ND		1.0	0.30	u*/L			0+/16/g1 16:6g	1
1,1-Dichloro4ro4ene	ND		1.0	0.g9	u*/L			0+/16/g1 16:6g	1
7 enMene	ND		1.0	0.g6	u*/L			0+/16/g1 16:6g	1
1,g-Dichloroethane	ND		1.0	0.6g	u*/L			0+/16/g1 16:6g	1
Vrichloroethene	ND		1.0	0.g+	u*/L			0+/16/g1 16:6g	1
1,g-Dichloro4ro4ane	ND		1.0	0.18	u*/L			0+/16/g1 16:6g	1
Dibromomethane	ND		1.0	0.36	u*/L			0+/16/g1 16:6g	1
7 romodichloromethane	ND		1.0	0.g9	u*/L			0+/16/g1 16:6g	1
Voluene	ND		1.0	0.39	u*/L			0+/16/g1 16:6g	1
trans-1,3-Dichloro4ro4ene	ND		1.0	0.61	u*/L			0+/16/g1 16:6g	1
1,1,g-Vrichloroethane	ND		1.0	0.g6	u*/L			0+/16/g1 16:6g	1
Vetrachloroethene	ND		1.0	0.61	u*/L			0+/16/g1 16:6g	1
1,3-Dichloro4ro4ane	ND		1.0	0.35	u*/L			0+/16/g1 16:6g	1
Dibromochloromethane	ND		1.0	0.63	u*/L			0+/16/g1 16:6g	1
1,g-Dibromoethane	ND		1.0	0.60	u*/L			0+/16/g1 16:6g	1
ChlorobenMene	ND		1.0	0.66	u*/L			0+/16/g1 16:6g	1
pthylbenMene	ND		1.0	0.50	u*/L			0+/16/g1 16:6g	1
1,1,1,g-Vetrachloroethane	ND		1.0	0.18	u*/L			0+/16/g1 16:6g	1
1,1,g,g-Vetrachloroethane	ND		1.0	0.5g	u*/L			0+/16/g1 16:6g	1
m-z ylene E 4-z ylene	ND		g.0	0.53	u*/L			0+/16/g1 16:6g	1
o-z ylene	ND		1.0	0.39	u*/L			0+/16/g1 16:6g	1
Styrene	ND		1.0	0.53	u*/L			0+/16/g1 16:6g	1
7 romoform	ND		1.0	0.51	u*/L			0+/16/g1 16:6g	1
Iso4ro4ylbenMene	ND		1.0	0.66	u*/L			0+/16/g1 16:6g	1
7 romobenMene	ND		1.0	0.63	u*/L			0+/16/g1 16:6g	1
N-Pro4ylbenMene	ND		1.0	0.50	u*/L			0+/16/g1 16:6g	1
1,g,3-Vrichloro4ro4ane	ND		1.0	0.61	u*/L			0+/16/g1 16:6g	1
g-Chlorotoluene	ND		1.0	0.51	u*/L			0+/16/g1 16:6g	1
1,3,5-VrimethylbenMene	ND		1.0	0.55	u*/L			0+/16/g1 16:6g	1
t-7 utylbenMene	ND		g.0	0.58	u*/L			0+/16/g1 16:6g	1
1,g,6-VrimethylbenMene	ND		3.0	0.+1	u*/L			0+/16/g1 16:6g	1
sec-7 utylbenMene	ND		1.0	0.69	u*/L			0+/16/g1 16:6g	1
1,3-DichlorobenMene	ND		1.0	0.68	u*/L			0+/16/g1 16:6g	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-35x97x/7
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
6-Iso4ro4yltoluene	ND		1.0	0.g8	u*/L			0+/16/g1 16:6g	1
1,6-DichlorobenMene	ND		1.0	0.6+	u*/L			0+/16/g1 16:6g	1
n-7 utylbenMene	ND		1.0	0.66	u*/L			0+/16/g1 16:6g	1
1,g-DichlorobenMene	ND		1.0	0.6+	u*/L			0+/16/g1 16:6g	1
1,g-Dibromo-3-Chloro4ro4ane	ND		3.0	0.5B	u*/L			0+/16/g1 16:6g	1
1,g,6-VrichlorobenMene	ND		1.0	0.33	u*/L			0+/16/g1 16:6g	1
1,g,3-VrichlorobenMene	0.68g	J	g.0	0.63	u*/L			0+/16/g1 16:6g	1
&eFachlorobutadiene	ND		3.0	0.B9	u*/L			0+/16/g1 16:6g	1
Na4hthalene	ND		3.0	0.93	u*/L			0+/16/g1 16:6g	1
T ethyl tert-butyl ether	ND		1.0	0.66	u*/L			0+/16/g1 16:6g	1

Surrogate	MB %Recovery	MB Quali(ier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		06/14/21 14:42	1
4-Bromofluorobenzene (Surr)	99		80 - 120		06/14/21 14:42	1
Dibromofluoromethane (Surr)	105		80 - 120		06/14/21 14:42	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126		06/14/21 14:42	1

Lab Sample ID: LCS 580-35x97x/%
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
Dichlorodifluoromethane	10.0	9.6B		u*/L		95	6B - 133
Chloromethane	10.0	B.B3		u*/L		BB	5g - 135
2inyl chloride	10.0	B.g1		u*/L		Bg	+5 - 130
7romomethane	10.0	B.00		u*/L		B0	++ - 1g5
Chloroethane	10.0	B.B3		u*/L		BB	+5 - 13g
Vrichlorofluoromethane	10.0	B.93		u*/L		B9	+6 - 130
1,1-Dichloroethene	10.0	11.3		u*/L		113	B0 - 1g9
T ethylene Chloride	10.0	10.5		u*/L		105	BB - 1g0
trans-1,g-Dichloroethene	10.0	10.1		u*/L		101	B0 - 130
1,1-Dichloroethane	10.0	9.Bg		u*/L		9B	81 - 1g9
g,g-Dichloro4ro4ane	10.0	9.93		u*/L		99	53 - 150
cis-1,g-Dichloroethene	10.0	10.0		u*/L		100	B+ - 1g9
7romochloromethane	10.0	10.g		u*/L		10g	B8 - 1g0
Chloroform	10.0	10.g		u*/L		10g	B3 - 1gB
1,1,1-Vrichloroethane	10.0	10.8		u*/L		108	B6 - 130
Carbon tetrachloride	10.0	11.+		u*/L		11+	Bg - 1g9
1,1-Dichloro4ro4ene	10.0	9.63		u*/L		96	B6 - 131
7enMene	10.0	9.5B		u*/L		9+	8g - 1gg
1,g-Dichloroethane	10.0	9.35		u*/L		93	B+ - 1g+
Vrichloroethene	10.0	11.+		u*/L		11+	81 - 1g5
1,g-Dichloro4ro4ane	10.0	8.B1		u*/L		8B	80 - 1g+
Dibromomethane	10.0	10.0		u*/L		100	80 - 1g0
7romodichloromethane	10.0	10.1		u*/L		101	B5 - 1g6
Voluene	10.0	9.B9		u*/L		98	80 - 1g0
trans-1,3-Dichloro4ro4ene	10.0	9.38		u*/L		96	B0 - 1gg
1,1,g-Vrichloroethane	10.0	10.+		u*/L		10+	80 - 1g1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-35x97x/%
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D . Rec	. Rec1 Limits
Vetrachloroethene	10.0	1g.0		u*/L	1g0	B+ - 1g0
1,3-Dichloro4ro4ane	10.0	9.B8		u*/L	98	B9 - 1g0
Dibromochloromethane	10.0	11.6		u*/L	116	+0 - 1g5
1,g-Dibromoethane	10.0	11.6		u*/L	116	B9 - 1g0
ChlorobenMene	10.0	10.3		u*/L	103	80 - 1g0
p thylbenMene	10.0	10.3		u*/L	103	80 - 1g0
1,1,1,g-Vetrachloroethane	10.0	10.+		u*/L	10+	B9 - 1g0
1,1,g,g-Vetrachloroethane	10.0	8.g9		u*/L	83	B6 - 1g6
m-z ylene E 4-z ylene	10.0	10.1		u*/L	101	80 - 1g0
o-z ylene	10.0	10.1		u*/L	101	80 - 1g5
Styrene	10.0	9.99		u*/L	100	B+ - 1gB
7romoform	10.0	11.1		u*/L	111	g8 - 139
Iso4ro4ylbenMene	10.0	10.3		u*/L	103	B5 - 1g9
7romobenMene	10.0	9.56		u*/L	95	80 - 1g0
N-Pro4ylbenMene	10.0	9.3g		u*/L	93	80 - 1g8
1,g,3-Vrichloro4ro4ane	10.0	9.+0		u*/L	9+	B+ - 1g6
g-Chlorotoluene	10.0	9.3+		u*/L	96	80 - 1g0
1,3,5-VrimethylbenMene	10.0	8.B3		u*/L	8B	80 - 131
t-7 utylbenMene	10.0	8.51		u*/L	85	80 - 1g9
1,g,6-VrimethylbenMene	10.0	8.68		u*/L	85	80 - 131
sec-7 utylbenMene	10.0	8.3B		u*/L	86	B8 - 131
1,3-DichlorobenMene	10.0	11.1		u*/L	111	+9 - 1gB
6-Iso4ro4yltoluene	10.0	8.66		u*/L	86	BB - 131
1,6-DichlorobenMene	10.0	9.56		u*/L	95	80 - 1g0
n-7 utylbenMene	10.0	B.91		u*/L	B9	B8 - 1g0
1,g-DichlorobenMene	10.0	10.0		u*/L	100	80 - 1g0
1,g-Dibromo-3-Chloro4ro4ane	10.0	9.91		u*/L	99	+5 - 1g5
1,g,6-VrichlorobenMene	10.0	11.B		u*/L	11B	B3 - 1g8
1,g,3-VrichlorobenMene	10.0	10.+		u*/L	10+	B6 - 139
&eFachlorobutadiene	10.0	9.69		u*/L	95	B6 - 1g5
Na4hthalene	10.0	10.3		u*/L	103	B5 - 136
T ethyl tert-butyl ether	10.0	9.+g		u*/L	9+	Bg - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 120
4-Bromofluorobenzene (Surr)	112		80 - 120
Dibromofluoromethane (Surr)	110		80 - 120
1,2-Dichloroethane-d4 (Surr)	94		80 - 126

Lab Sample ID: LCSD 580-35x97x/5
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	Limit
Dichlorodifluoromethane	10.0	9.69		u*/L	95	6B - 133	0	15
Chloromethane	10.0	B.0+		u*/L	B1	5g - 135	9	16
2inyl chloride	10.0	+5.5		u*/L	++	+5 - 130	10	16
7romomethane	10.0	+8.6		u*/L	+8	++ - 1g5	g	16

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35x97x/5
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	RTD Limit
Chloroethane	10.0	B.35		u*/L	B6	+5 - 13g	5	18
Vrichlorofluoromethane	10.0	B.B1		u*/L	BB	+6 - 130	3	16
1,1-Dichloroethene	10.0	10.9		u*/L	109	B0 - 1g9	6	1B
T ethylene Chloride	10.0	10.5		u*/L	105	BB - 1g0	0	18
trans-1,g-Dichloroethene	10.0	10.3		u*/L	103	B0 - 130	g	g1
1,1-Dichloroethane	10.0	9.B1		u*/L	9B	81 - 1g9	0	15
g,g-Dichloro4ro4ane	10.0	9.+5		u*/L	9B	53 - 150	3	15
cis-1,g-Dichloroethene	10.0	10.g		u*/L	10g	B+ - 1g9	g	15
7romochloromethane	10.0	11.g		u*/L	11g	B8 - 1g0	9	13
Chloroform	10.0	10.g		u*/L	10g	B3 - 1gB	1	16
1,1,1-Vrichloroethane	10.0	10.5		u*/L	105	B6 - 130	3	11
Carbon tetrachloride	10.0	11.6		u*/L	116	Bg - 1g9	3	11
1,1-Dichloro4ro4ene	10.0	9.gB		u*/L	93	B6 - 131	g	16
7enMene	10.0	9.B6		u*/L	9B	8g - 1gg	g	16
1,g-Dichloroethane	10.0	9.6+		u*/L	95	B+ - 1g+	1	11
Vrichloroethene	10.0	11.+		u*/L	11+	81 - 1g5	1	13
1,g-Dichloro4ro4ane	10.0	9.3B		u*/L	96	80 - 1g+	B	16
Dibromomethane	10.0	10.g		u*/L	10g	80 - 1g0	1	11
7romodichloromethane	10.0	9.95		u*/L	99	B5 - 1g6	1	13
Voluene	10.0	9.8B		u*/L	99	80 - 1g0	1	13
trans-1,3-Dichloro4ro4ene	10.0	9.58		u*/L	9+	B0 - 1gg	g	16
1,1,g-Vrichloroethane	10.0	11.0		u*/L	110	80 - 1g1	5	16
Vetrachloroethene	10.0	11.B		u*/L	11B	B+ - 1g0	g	13
1,3-Dichloro4ro4ane	10.0	10.1		u*/L	101	B9 - 1g0	3	13
Dibromochloromethane	10.0	1g.0		u*/L	1g0	+0 - 1g5	5	13
1,g-Dibromoethane	10.0	11.B		u*/L	11B	B9 - 1g0	3	1g
ChlorobenMene	10.0	10.+		u*/L	10+	80 - 1g0	3	10
p thylbenMene	10.0	10.3		u*/L	103	80 - 1g0	0	16
1,1,1,g-Vetrachloroethane	10.0	11.1		u*/L	111	B9 - 1g0	5	10
1,1,g,g-Vetrachloroethane	10.0	8.01		u*/L	80	B6 - 1g6	3	18
m-z ylene E 4-z ylene	10.0	10.0		u*/L	100	80 - 1g0	1	16
o-z ylene	10.0	10.0		u*/L	100	80 - 1g5	0	1+
Styrene	10.0	10.0		u*/L	100	B+ - 1gB	0	1+
7romoform	10.0	1g.3		u*/L	1g3	g8 - 139	10	15
Iso4ro4ylbenMene	10.0	10.g		u*/L	10g	B5 - 1g9	1	1g
7romobenMene	10.0	9.53		u*/L	95	80 - 1g0	0	13
N-Pro4ylbenMene	10.0	8.8B		u*/L	89	80 - 1g8	5	13
1,g,3-Vrichloro4ro4ane	10.0	9.+5		u*/L	9B	B+ - 1g6	1	1+
g-Chlorotoluene	10.0	9.06		u*/L	90	80 - 1g0	3	15
1,3,5-VrimethylbenMene	10.0	8.39		u*/L	86	80 - 131	6	16
t-7 utylbenMene	10.0	8.18		u*/L	8g	80 - 1g9	6	16
1,g,6-VrimethylbenMene	10.0	8.1B		u*/L	8g	80 - 131	6	1+
sec-7 utylbenMene	10.0	8.0+		u*/L	81	B8 - 131	6	15
1,3-DichlorobenMene	10.0	11.0		u*/L	110	+9 - 1gB	1	16
6-Iso4ro4yltoluene	10.0	8.1g		u*/L	81	BB - 131	6	g0
1,6-DichlorobenMene	10.0	9.g6		u*/L	9g	80 - 1g0	3	1B
n-7 utylbenMene	10.0	B.90		u*/L	B9	B8 - 1g0	0	16
1,g-DichlorobenMene	10.0	9.+3		u*/L	9+	80 - 1g0	6	15
1,g-Dibromo-3-Chloro4ro4ane	10.0	9.98		u*/L	100	+5 - 1g5	1	1B

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35x97x/5
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
1,g,6-VrichlorobenMene	10.0	1g.g		u*/L		1gg	B3 - 1g8	6	g0
1,g,3-VrichlorobenMene	10.0	10.6		u*/L		106	B6 - 139	g	g+
&eFachlorobutadiene	10.0	9.B6		u*/L		9B	B6 - 1g5	3	gg
Na4hthalene	10.0	9.B6		u*/L		9B	B5 - 136	+	g3
T ethyl tert-butyl ether	10.0	9.91		u*/L		99	Bg - 130	3	18

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	109		80 - 120
4-Bromofluorobenzene (Surr)	113		80 - 120
Dibromofluoromethane (Surr)	110		80 - 120
1,2-Dichloroethane-d4 (Surr)	93		80 - 126

Lab Sample ID: MB 580-35x259/7
MatriW P ater
F nalysis Batch: 35x259

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
cis-1,3-Dichloro4ro4ene	ND		1.0	0.g0	u*/L			0+/15/g1 1g:11	1
6-Chlorotoluene	ND		1.0	0.38	u*/L			0+/15/g1 1g:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		06/15/21 12:11	1
4-Bromofluorobenzene (Surr)	96		80 - 120		06/15/21 12:11	1
Dibromofluoromethane (Surr)	108		80 - 120		06/15/21 12:11	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 126		06/15/21 12:11	1

Lab Sample ID: LCS 580-35x259/%
MatriW P ater
F nalysis Batch: 35x259

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
cis-1,3-Dichloro4ro4ene	10.0	8.09		u*/L		81	BB- 1g0
6-Chlorotoluene	10.0	8.83		u*/L		88	80 - 1g0

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	110		80 - 120
4-Bromofluorobenzene (Surr)	112		80 - 120
Dibromofluoromethane (Surr)	108		80 - 120
1,2-Dichloroethane-d4 (Surr)	92		80 - 126

Lab Sample ID: LCSD 580-35x259/5
MatriW P ater
F nalysis Batch: 35x259

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
cis-1,3-Dichloro4ro4ene	10.0	8.+5		u*/L		8+	BB- 1g0	B	g0
6-Chlorotoluene	10.0	8.+B		u*/L		8B	80 - 1g0	g	16

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35x259/5
MatriW P ater
Fnlalysis Batch: 35x259

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 120
4-Bromofluorobenzene (Surr)	107		80 - 120
Dibromofluoromethane (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	95		80 - 126

Method: 8270E - Semivolatile Organic Compounds)GC/MS4

Lab Sample ID: MB 580-358672/9-F
MatriW P ater
Fnlalysis Batch: 3587xx

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358672

Fnalyste	MB Result	MB Quali(ier	RL	MDL	f nit	D	Trepared	Fnalyste	Dil zac
Phenol	ND		1.0	0.3+	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7is(g-chloroethyl)ether	ND		0.10	0.030	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g-Chloro4henol	ND		1.0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
1,3-DichlorobenMene	ND		0.60	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
1,6-DichlorobenMene	ND		0.60	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enMyl alcohol	ND		5.0	0.18	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
1,g-DichlorobenMene	ND		0.60	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g-T ethyl4henol	ND		0.+0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
3 E 6 T ethyl4henol	ND		0.+0	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
N-Nitrosodi-n-4ro4ylamine	ND		0.60	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
&eFachloroethane	ND		1.0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
NitrobenMene	ND		1.0	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Iso4horone	ND		0.60	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g-Nitro4henol	ND		1.0	0.0B0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g,6-Dimethyl4henol	ND		6.0	0.1+	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enMbic acid	ND		10	1.3	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7is(g-chloroethoFy)methane	ND		0.+0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g,6-Dichloro4henol	ND		1.0	0.g0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
1,g,6-VrichlorobenMene	ND		0.60	0.090	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Na4hthalene	ND		0.60	0.1+	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6-Chloroaniline	ND		g.0	0.59	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
&eFachlorobutadiene	ND		1.0	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6-Chloro-3-methyl4henol	ND		0.+0	0.13	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g-T ethylna4hthalene	ND		0.60	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
&eFachlorocyclo4entadiene	ND		1.0	0.16	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g,6,+Vrichloro4henol	ND		0.+0	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g,6,5-Vrichloro4henol	ND		0.60	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g-Chlorona4hthalene	ND		1.0	0.0B0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g-Nitroaniline	ND		1.0	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Dimethyl 4hthalate	ND		0.+0	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Acena4hthylene	ND		1.0	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g,+Dinitrotoluene	ND		0.60	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
3-Nitroaniline	ND		3.0	0.1+	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Acena4hthene	ND		0.60	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
g,6-Dinitro4henol	ND		5.0	1.+	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6-Nitro4henol	ND		10	1.B	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
DibenMofuran	ND		0.60	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: MB 580-358672/9-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
g,6-Dinitrotoluene	ND		1.0	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Diethyl 4hthalate	ND		1.0	0.15	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6-Chloro4henyl 4henyl ether	ND		0.+0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Xluorene	ND		0.g5	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6-Nitroaniline	ND		g.0	0.g1	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6,+Dinitro-g-methyl4henol	ND		g.0	0.55	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
N-Nitrosodi4henylamine	ND		1.0	0.0B0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
6-7romo4henyl 4henyl ether	ND		0.+0	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
&eFachlorobenMene	ND		0.+0	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Phenanthrene	ND		1.0	0.1g	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Anthracene	ND		1.0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Di-n-butyl 4hthalate	ND		3.0	0.19	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Xluoranthene	ND		0.g5	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Pyrene	ND		1.0	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 utyl benMyl 4hthalate	ND		6.0	0.gB	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
3,3'-DichlorobenMdine	ND		1.0	0.g+	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enM[a]anthracene	ND		0.g5	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Chrysene	ND		0.g5	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 is(g-ethylheFyl) 4hthalate	ND		g.0	0.B6	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Di-n-octyl 4hthalate	ND		1.0	0.13	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enM[a]4yrene	ND		0.g5	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
Indeno[1,g,3-cd]4yrene	ND		0.60	0.13	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
DibenM(a,h)anthracene	ND		0.g5	0.0B0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enM[* ,h,i]4erylene	ND		0.g5	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
CarbaMble	ND		0.+0	0.10	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
1-T ethylna4hthalene	ND		1.0	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enM[b]fluoranthene	ND		0.g5	0.060	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
7 enM[k]fluoranthene	ND		0.g5	0.050	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1
bis(chloroiso4ro4yl) ether	ND		0.g5	0.0+0	u*/L		0+/09/g1 09:0g	0+/10/g1 11:g+	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	49		14 - 120	06/09/21 09:02	06/10/21 11:26	1
Phenol-d5 (Surr)	32		10 - 120	06/09/21 09:02	06/10/21 11:26	1
Nitrobenzene-d5 (Surr)	84		46 - 125	06/09/21 09:02	06/10/21 11:26	1
2-Fluorobiphenyl	69		51 - 120	06/09/21 09:02	06/10/21 11:26	1
2,4,6-Tribromophenol (Surr)	81		50 - 125	06/09/21 09:02	06/10/21 11:26	1
Terphenyl-d14 (Surr)	98		63 - 122	06/09/21 09:02	06/10/21 11:26	1

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Phenol	g.00	0.B9B	J	u*/L		60	13 - 1g0
7 is(g-chloroethyl)ether	g.00	1.55		u*/L		BB	39 - 1g5
g-Chloro4henol	g.00	1.61		u*/L		B1	66 - 1g0
1,3-DichlorobenMene	g.00	0.BB+		u*/L		39	g5 - 1g0
1,6-DichlorobenMene	g.00	0.891		u*/L		65	g8 - 1g0

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds)GC/MS4)Continued4

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike F dded	LCS Result	LCS Qual(ier	f nit	D . Rec	Rec1 Limits
7enMyl alcohol	g.00	1.13	J	u*/L	5+	10 - 1g0
1,g-DichlorobenMene	g.00	0.908		u*/L	65	31 - 1g0
g-T ethyl4henol	g.00	1.g9		u*/L	+5	3+ - 1g0
3 E 6 T ethyl4henol	g.00	1.33		u*/L	+B	g9 - 1g0
N-Nitrosodi-n-4ro4ylamine	g.00	1.65		u*/L	Bg	39 - 165
&eFachloroethane	g.00	0.BB1	J	u*/L	39	18 - 1g5
NitrobenMene	g.00	1.gB		u*/L	+3	38 - 161
Iso4horone	g.00	1.5+		u*/L	B8	61 - 163
g-Nitro4henol	g.00	1.53		u*/L	B+	55 - 1g0
g,6-Dimethyl4henol	g.00	1.51	J	u*/L	B+	6B - 1g0
7enMbic acid	6.00	ND		u*/L	31	10 - 1g0
7is(g-chloroethoFy)methane	g.00	1.+6		u*/L	8g	66 - 1g5
g,6-Dichloro4henol	g.00	1.+6		u*/L	8g	50 - 1g0
1,g,6-VrichlorobenMene	g.00	1.00		u*/L	50	31 - 1g0
Na4hthalene	g.00	1.gB		u*/L	+3	6g - 1g0
6-Chloroaniline	g.00	1.86	J	u*/L	9g	10 - 150
&eFachlorobutadiene	g.00	0.B55	J	u*/L	38	1B - 1g5
6-Chloro-3-methyl4henol	g.00	1.++		u*/L	83	6B - 1g0
g-T ethylna4hthalene	g.00	1.gB		u*/L	+6	63 - 1g0
&eFachlorocyclo4entadiene	g.00	0.509	J	u*/L	g5	10 - 1g5
g,6,+ -Vrichloro4henol	g.00	1.B1		u*/L	85	55 - 1g0
g,6,5-Vrichloro4henol	g.00	1.BB		u*/L	88	53 - 1g0
g-Chlorona4hthalene	g.00	1.31		u*/L	++	63 - 1g0
g-Nitroaniline	g.00	1.+g		u*/L	81	5g - 1gB
Dimethyl 4hthalate	g.00	1.+g		u*/L	81	+5 - 1g8
Acena4hthylene	g.00	1.68		u*/L	B6	68 - 1g5
g,+ -Dinitrotoluene	g.00	1.B1		u*/L	85	+0 - 1g8
3-Nitroaniline	g.00	1.93	J	u*/L	9B	10 - 138
Acena4hthene	g.00	1.66		u*/L	Bg	69 - 1g0
g,6-Dinitro4henol	6.00	3.+g	J	u*/L	91	10 - 16+
6-Nitro4henol	6.00	ND		u*/L	61	10 - 1g0
DibenMbfuran	g.00	1.50		u*/L	B5	51 - 1g0
g,6-Dinitrotoluene	g.00	1.5B		u*/L	B9	+1 - 1g+
Diethyl 4hthalate	g.00	1.58		u*/L	B9	+0 - 136
6-Chloro4henyl 4henyl ether	g.00	1.3B		u*/L	+9	53 - 1g5
Xluorene	g.00	1.6+		u*/L	B3	55 - 1g5
6-Nitroaniline	g.00	1.B3	J	u*/L	8+	38 - 139
6,+ -Dinitro-g-methyl4henol	6.00	3.61		u*/L	85	10 - 150
N-Nitrosodi4henylamine	g.00	1.5+		u*/L	B8	5g - 135
6-7romo4henyl 4henyl ether	g.00	1.50		u*/L	B5	53 - 1g+
&eFachlorobenMene	g.00	1.5B		u*/L	B9	69 - 1g5
Phenanthrene	g.00	1.55		u*/L	BB	56 - 1g5
Anthracene	g.00	1.55		u*/L	BB	50 - 131
Di-n-butyl 4hthalate	g.00	1.B1	J	u*/L	85	55 - 1+B
Xluoranthene	g.00	1.5g		u*/L	B+	+0 - 133
Pyrene	g.00	1.53		u*/L	BB	5B - 133
7 utyl benMyl 4hthalate	g.00	1.B5	J	u*/L	88	+0 - 150
3,3'-DichlorobenMdine	6.00	6.6g		u*/L	110	33 - 150
7enMb[ajanthracene	g.00	1.56		u*/L	BB	5+ - 131

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4) Continued 4

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Chrysene	g.00	1.BB		u*/L		88	5B- 1g5
7 is(g-ethylheFyl) 4hthalate	g.00	1.8g	J	u*/L		91	68 - 150
Di-n-octyl 4hthalate	g.00	1.61		u*/L		B1	68 - 150
7 enMb[a]4yrene	g.00	1.+5		u*/L		8g	55 - 1g5
Indeno[1,g,3-cd]4yrene	g.00	1.5+		u*/L		B8	39 - 168
DibenMa,h)anthracene	g.00	1.5+		u*/L		B8	68 - 136
7 enMb[* ,h,i]4erylene	g.00	1.+1		u*/L		80	6+ - 160
CarbaMble	g.00	g.18		u*/L		109	10 - 150
1-T ethylNa4hthalene	g.00	1.36		u*/L		+B	61 - 1g5
7 enMb[b]fluoranthene	g.00	1.6B		u*/L		B3	59 - 1g9
7 enMb[k]fluoranthene	g.00	1.65		u*/L		B3	5B- 1g3
bis(chloroiso4ro4yl) ether	g.00	1.++		u*/L		83	35 - 1g6

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	47		14 - 120
Phenol-d5 (Surr)	33		10 - 120
Nitrobenzene-d5 (Surr)	80		46 - 125
2-Fluorobiphenyl	72		51 - 120
2,4,6-Tribromophenol (Surr)	99		50 - 125
Terphenyl-d14 (Surr)	92		63 - 122

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier)	f nit	D	Rec	Rec1 Limits	RTD Limit
Phenol	g.00	0.860	J	u*/L		6g	13 - 1g0	5 30
7 is(g-chloroethyl)ether	g.00	1.86		u*/L		9g	39 - 1g5	1B 30
g-Chloro4henol	g.00	1.+5		u*/L		8g	66 - 1g0	15 30
1,3-DichlorobenMene	g.00	0.+B6		u*/L		36	g5 - 1g0	16 35
1,6-DichlorobenMene	g.00	0.BB1		u*/L		39	g8 - 1g0	16 35
7 enMyl alcohol	g.00	1.6+	J	u*/L		B3	10 - 1g0	g+ 35
1,g-DichlorobenMene	g.00	0.8g8		u*/L		61	31 - 1g0	9 35
g-T ethyl4henol	g.00	1.+g		u*/L		81	3+ - 1g0	g3 35
3 E 6 T ethyl4henol	g.00	1.83		u*/L		9g	g9 - 1g0	3g 35
N-Nitrosodi-n-4ro4ylamine	g.00	1.B5		u*/L		8B	39 - 165	19 30
&eFachloroethane	g.00	0.5+g	J	u*/L		g8	18 - 1g5	31 35
NitrobenMene	g.00	1.++		u*/L		83	38 - 161	gB 30
Iso4horone	g.00	1.B9		u*/L		90	61 - 163	16 30
g-Nitro4henol	g.00	1.83		u*/L		91	55 - 1g0	18 30
g,6-Dimethyl4henol	g.00	1.+9	J	u*/L		85	6B- 1g0	11 30
7 enMbic acid	6.00	1.B5	J	u*/L		66	10 - 1g0	36 35
7 is(g-chloroethoFy)methane	g.00	1.89		u*/L		96	66 - 1g5	16 30
g,6-Dichloro4henol	g.00	1.89		u*/L		95	50 - 1g0	16 30
1,g,6-VrichlorobenMene	g.00	0.890		u*/L		65	31 - 1g0	1g 35
Na4hthalene	g.00	1.g1		u*/L		+0	6g - 1g0	5 35
6-Chloroaniline	g.00	1.8+	J	u*/L		93	10 - 150	1 35
&eFachlorobutadiene	g.00	0.518	J HI	u*/L		g+	1B- 1g5	3B 35

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike F dded	LCSD Result	LCSD Qual(ier)	f nit	D .	Rec	. Rec1		RTD	Limit
							Limits	RTD		
6-Chloro-3-methyl4henol	g.00	1.B8		u*/L		89	6B-1g0	B	30	
g-T ethylna4hthalene	g.00	1.gg		u*/L		+1	63-1g0	6	35	
&eFachlorocyclo4entadiene	g.00	0.399	J	u*/L		g0	10-1g5	g6	35	
g,6,+Vrichloro4henol	g.00	1.91		u*/L		95	55-1g0	11	30	
g,6,5-Vrichloro4henol	g.00	1.89		u*/L		95	53-1g0	B	35	
g-Chlorona4hthalene	g.00	1.35		u*/L		+8	63-1g0	3	35	
g-Nitroaniline	g.00	1.90		u*/L		95	5g-1gB	1+	30	
Dimethyl 4hthalate	g.00	1.80		u*/L		90	+5-1g8	11	30	
Acena4hthylene	g.00	1.+3		u*/L		8g	68-1g5	10	30	
g,+Dinitrotoluene	g.00	1.90		u*/L		95	+0-1g8	11	30	
3-Nitroaniline	g.00	g.13	J	u*/L		10B	10-138	10	30	
Acena4hthene	g.00	1.5B		u*/L		B8	69-1g0	8	30	
g,6-Dinitro4henol	6.00	3.88	J	u*/L		9B	10-16+	B	35	
6-Nitro4henol	6.00	1.B5	J	u*/L		66	10-1g0	+	35	
DibenMofuran	g.00	1.+6		u*/L		8g	51-1g0	9	30	
g,6-Dinitrotoluene	g.00	1.8B		u*/L		96	+1-1g+	1B	30	
Diethyl 4hthalate	g.00	1.80		u*/L		90	+0-136	13	g6	
6-Chloro4henyl 4henyl ether	g.00	1.50		u*/L		B5	53-1g5	9	35	
Xluorene	g.00	1.++		u*/L		83	55-1g5	13	30	
6-Nitroaniline	g.00	g.05		u*/L		103	38-139	1B	35	
6,+Dinitro-g-methyl4henol	6.00	6.00		u*/L		100	10-150	1+	35	
N-Nitrosodi4henylamine	g.00	1.80		u*/L		90	5g-135	15	30	
6-7romo4henyl 4henyl ether	g.00	1.+g		u*/L		81	53-1g+	8	30	
&eFachlorobenMene	g.00	1.B5		u*/L		88	69-1g5	11	30	
Phenanthrene	g.00	1.B9		u*/L		89	56-1g5	16	30	
Anthracene	g.00	1.+9		u*/L		85	50-131	9	g6	
Di-n-butyl 4hthalate	g.00	1.90	J	u*/L		95	55-1+B	11	30	
Xluoranthene	g.00	1.B8		u*/L		89	+0-133	15	30	
Pyrene	g.00	1.B8		u*/L		89	5B-133	15	g3	
7 utyl benMyl 4hthalate	g.00	1.B9	J	u*/L		89	+0-150	g	30	
3,3'-DichlorobenMdine	6.00	6.+6		u*/L		11+	33-150	5	35	
7 enM[a]anthracene	g.00	1.58		u*/L		B9	5+-131	3	30	
Chrysene	g.00	1.83		u*/L		9g	5B-1g5	6	30	
7 is(g-ethylheFyl) 4hthalate	g.00	1.8B	J	u*/L		96	68-150	3	35	
Di-n-octyl 4hthalate	g.00	1.+6		u*/L		8g	68-150	15	30	
7 enM[a]4yrene	g.00	1.98		u*/L		99	55-1g5	19	30	
Indeno[1,g,3-cd]4yrene	g.00	1.BB		u*/L		89	39-168	13	30	
DibenM(a,h)anthracene	g.00	1.B9		u*/L		89	68-136	16	35	
7 enM[* ,h,i]4erylene	g.00	1.90		u*/L		95	6+-160	1B	30	
CarbaMble	g.00	g.6+		u*/L		1g3	10-150	1g	30	
1-T ethylna4hthalene	g.00	1.g+		u*/L		+3	61-1g5	+	35	
7 enM[b]fluoranthene	g.00	1.B0		u*/L		85	59-1g9	15	30	
7 enM[k]fluoranthene	g.00	1.81		u*/L		91	5B-1g3	gg	35	
bis(chloroiso4ro4yl) ether	g.00	1.8+		u*/L		93	35-1g6	11	30	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
2-Fluorophenol (Surr)	48		14 - 120
Phenol-d5 (Surr)	36		10 - 120

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358672

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5 (Surr)	77		46 - 125
2-Fluorobiphenyl	69		51 - 120
2,4,6-Tribromophenol (Surr)	99		50 - 125
Terphenyl-d14 (Surr)	96		63 - 122

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x080

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Phenol	ND		1.0	0.3+	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7is(g-chloroethyl)ether	ND		0.10	0.030	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g-Chloro4henol	ND		1.0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
1,3-DichlorobenMene	ND		0.60	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
1,6-DichlorobenMene	ND		0.60	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7enMyl alcohol	ND		5.0	0.18	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
1,g-DichlorobenMene	ND		0.60	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g-T ethyl4henol	ND		0.+0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
3 E 6 T ethyl4henol	ND		0.+0	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
N-Nitrosodi-n-4ro4ylamine	ND		0.60	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
&eFachloroethane	ND		1.0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
NitrobenMene	ND		1.0	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Iso4horone	ND		0.60	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g-Nitro4henol	ND		1.0	0.0B0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,6-Dimethyl4henol	ND		6.0	0.1+	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7enMbic acid	ND		10	1.3	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7is(g-chloroethoFy)methane	ND		0.+0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,6-Dichloro4henol	ND		1.0	0.g0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
1,g,6-VrichlorobenMene	ND		0.60	0.090	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Na4hthalene	ND		0.60	0.1+	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6-Chloroaniline	ND		g.0	0.59	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
&eFachlorobutadiene	ND		1.0	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6-Chloro-3-methyl4henol	ND		0.+0	0.13	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g-T ethylna4hthalene	ND		0.60	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
&eFachlorocyclo4entadiene	ND		1.0	0.16	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,6,+Vrichloro4henol	ND		0.+0	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,6,5-Vrichloro4henol	ND		0.60	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g-Chlorona4hthalene	ND		1.0	0.0B0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g-Nitroaniline	ND		1.0	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Dimethyl 4hthalate	ND		0.+0	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Acena4hthylene	ND		1.0	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,+Dinitrotoluene	ND		0.60	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
3-Nitroaniline	ND		3.0	0.1+	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Acena4hthene	ND		0.60	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,6-Dinitro4henol	ND		5.0	1.+	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6-Nitro4henol	ND		10	1.B	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
DibenMofuran	ND		0.60	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
g,6-Dinitrotoluene	ND		1.0	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x080

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Diethyl 4hthalate	ND		1.0	0.15	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6-Chloro4henyl 4henyl ether	ND		0.+0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Xluorene	ND		0.g5	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6-Nitroaniline	ND		g.0	0.g1	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6,+ -Dinitro-g-methyl4henol	ND		g.0	0.55	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
N-Nitrosodi4henylamine	ND		1.0	0.0B0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
6-7romo4henyl 4henyl ether	ND		0.+0	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
&eFachlorobenMene	ND		0.+0	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Phenanthrene	ND		1.0	0.1g	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Anthracene	ND		1.0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Di-n-butyl 4hthalate	g.+3	J	3.0	0.19	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Xluoranthene	ND		0.g5	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Pyrene	ND		1.0	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 utyl benMyl 4hthalate	ND		6.0	0.gB	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
3,3'-DichlorobenMdine	ND		1.0	0.g+	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 enM[a]anthracene	ND		0.g5	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Chrysene	ND		0.g5	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 is(g-ethylheFyl) 4hthalate	ND		g.0	0.B6	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Di-n-octyl 4hthalate	ND		1.0	0.13	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 enM[a]4yrene	ND		0.g5	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
Indeno[1.g,3-cd]4yrene	ND		0.60	0.13	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
DibenM(a,h)anthracene	ND		0.g5	0.0B0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 enM[* ,h,i]4erylene	ND		0.g5	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
CarbaMble	ND		0.+0	0.10	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
1-T ethylna4hthalene	ND		1.0	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 enM[b]fluoranthene	ND		0.g5	0.060	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
7 enM[k]fluoranthene	ND		0.g5	0.050	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1
bis(chloroiso4ro4yl) ether	ND		0.g5	0.0+0	u*/L		0+/11/g1 08:65	0+/1g/g1 16:g1	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	34		14 - 120	06/11/21 08:45	06/12/21 14:21	1
Phenol-d5 (Surr)	18		10 - 120	06/11/21 08:45	06/12/21 14:21	1
Nitrobenzene-d5 (Surr)	60		46 - 125	06/11/21 08:45	06/12/21 14:21	1
2-Fluorobiphenyl	51		51 - 120	06/11/21 08:45	06/12/21 14:21	1
2,4,6-Tribromophenol (Surr)	67		50 - 125	06/11/21 08:45	06/12/21 14:21	1
Terphenyl-d14 (Surr)	80		63 - 122	06/11/21 08:45	06/12/21 14:21	1

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Phenol	g.00	0.+91	J	u*/L		35	13 - 1g0
7 is(g-chloroethyl)ether	g.00	1.58		u*/L		B9	39 - 1g5
g-Chloro4henol	g.00	1.53		u*/L		B+	66 - 1g0
1,3-DichlorobenMene	g.00	1.+1		u*/L		81	g5 - 1g0
1,6-DichlorobenMene	g.00	1.B3		u*/L		8+	g8 - 1g0
7 enMyl alcohol	g.00	1.61	J	u*/L		B0	10 - 1g0

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds)GC/MS4)Continued4

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D . Rec	Rec1 Limits
1,g-DichlorobenMene	g.00	1.83		u*/L	9g	31 - 1g0
g-T ethyl4henol	g.00	1.+B		u*/L	86	3+ - 1g0
3 E 6 T ethyl4henol	g.00	1.69		u*/L	B6	g9 - 1g0
N-Nitrosodi-n-4ro4ylamine	g.00	1.53		u*/L	BB	39 - 165
&eFachloroethane	g.00	1.85		u*/L	93	18 - 1g5
NitrobenMene	g.00	1.51		u*/L	B+	38 - 161
Iso4horone	g.00	1.+8		u*/L	86	61 - 163
g-Nitro4henol	g.00	1.80		u*/L	90	55 - 1g0
g,6-Dimethyl4henol	g.00	1.++ J		u*/L	83	6B- 1g0
7 enMbic acid	6.00	g.15 J		u*/L	56	10 - 1g0
7 is(g-chloroethoFy)methane	g.00	1.B8		u*/L	89	66 - 1g5
g,6-Dichloro4henol	g.00	1.81		u*/L	91	50 - 1g0
1,g,6-VrichlorobenMene	g.00	1.B5		u*/L	8B	31 - 1g0
Na4hthalene	g.00	1.5B		u*/L	B9	6g - 1g0
6-Chloroaniline	g.00	g.09		u*/L	105	10 - 150
&eFachlorobutadiene	g.00	1.+B		u*/L	83	1B- 1g5
6-Chloro-3-methyl4henol	g.00	1.89		u*/L	96	6B- 1g0
g-T ethylna4hthalene	g.00	1.5+		u*/L	B8	63 - 1g0
&eFachlorocyclo4entadiene	g.00	1.15		u*/L	5B	10 - 1g5
g,6,+ -Vrichloro4henol	g.00	1.88		u*/L	96	55 - 1g0
g,6,5-Vrichloro4henol	g.00	g.00		u*/L	100	53 - 1g0
g-Chlorona4hthalene	g.00	1.56		u*/L	BB	63 - 1g0
g-Nitroaniline	g.00	1.88		u*/L	96	5g - 1gB
Dimethyl 4hthalate	g.00	1.B0		u*/L	85	+5 - 1g8
Acena4hthylene	g.00	1.5B		u*/L	B9	68 - 1g5
g,+ -Dinitrotoluene	g.00	1.B+		u*/L	88	+0 - 1g8
3-Nitroaniline	g.00	g.65 J		u*/L	1g3	10 - 138
Acena4hthene	g.00	1.53		u*/L	BB	69 - 1g0
g,6-Dinitro4henol	6.00	6.59 J		u*/L	115	10 - 16+
6-Nitro4henol	6.00	g.g6 J		u*/L	5+	10 - 1g0
DibenMbfuran	g.00	1.+9		u*/L	85	51 - 1g0
g,6-Dinitrotoluene	g.00	1.81		u*/L	90	+1 - 1g+
Diethyl 4hthalate	g.00	1.81		u*/L	90	+0 - 136
6-Chloro4henyl 4henyl ether	g.00	1.+6		u*/L	8g	53 - 1g5
Xluorene	g.00	1.+5		u*/L	8g	55 - 1g5
6-Nitroaniline	g.00	g.g5		u*/L	11g	38 - 139
6,+ -Dinitro-g-methyl4henol	6.00	6.66		u*/L	111	10 - 150
N-Nitrosodi4henylamine	g.00	1.86		u*/L	9g	5g - 135
6-7romo4henyl 4henyl ether	g.00	1.B5		u*/L	88	53 - 1g+
&eFachlorobenMene	g.00	1.9+		u*/L	98	69 - 1g5
Phenanthrene	g.00	1.8+		u*/L	93	56 - 1g5
Anthracene	g.00	1.8B		u*/L	93	50 - 131
Di-n-butyl 4hthalate	g.00	5.3g Hk		u*/L	g++	55 - 1+B
Xluoranthene	g.00	1.93		u*/L	9B	+0 - 133
Pyrene	g.00	1.9+		u*/L	98	5B- 133
7 utyl benMyl 4hthalate	g.00	1.9B J		u*/L	98	+0 - 150
3,3'-DichlorobenMdiene	6.00	5.5g		u*/L	138	33 - 150
7 enMbjanthracene	g.00	1.8+		u*/L	93	5+ - 131
Chrysene	g.00	g.06		u*/L	10g	5B- 1g5

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
7is(g-ethylheFyl) 4hthalate	g.00	g.19		u*/L		109	68 - 150
Di-n-octyl 4hthalate	g.00	1.B8		u*/L		89	68 - 150
7 enMb[a]4yrene	g.00	g.18		u*/L		109	55 - 1g5
Indeno[1,g,3-cd]4yrene	g.00	1.95		u*/L		9B	39 - 168
DibenMa,h)anthracene	g.00	g.00		u*/L		100	68 - 136
7 enMb[* ,h,i]4erylene	g.00	g.09		u*/L		105	6+ - 160
CarbaMble	g.00	g.++		u*/L		133	10 - 150
1-T ethylna4hthalene	g.00	1.+3		u*/L		81	61 - 1g5
7 enMb[b]fluoranthene	g.00	1.89		u*/L		96	59 - 1g9
7 enMb[k]fluoranthene	g.00	1.9+		u*/L		98	5B- 1g3
bis(chloroiso4ro4yl) ether	g.00	1.90		u*/L		95	35 - 1g6

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Fluorophenol (Surr)	47		14 - 120
Phenol-d5 (Surr)	26		10 - 120
Nitrobenzene-d5 (Surr)	74		46 - 125
2-Fluorobiphenyl	70		51 - 120
2,4,6-Tribromophenol (Surr)	107		50 - 125
Terphenyl-d14 (Surr)	108		63 - 122

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier)	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
Phenol	g.00	0.B06	J	u*/L		35	13 - 1g0	g	30
7is(g-chloroethyl)ether	g.00	1.+5		u*/L		83	39 - 1g5	5	30
g-Chloro4henol	g.00	1.59		u*/L		B9	66 - 1g0	6	30
1,3-DichlorobenMene	g.00	1.6B		u*/L		B6	g5 - 1g0	9	35
1,6-DichlorobenMene	g.00	1.58		u*/L		B9	g8 - 1g0	9	35
7 enMyl alcohol	g.00	1.66	J	u*/L		Bg	10 - 1g0	g	35
1,g-DichlorobenMene	g.00	1.+3		u*/L		81	31 - 1g0	1g	35
g-T ethyl4henol	g.00	1.+0		u*/L		80	3+ - 1g0	6	35
3 E 6 T ethyl4henol	g.00	1.gB		u*/L		+6	g9 - 1g0	1+	35
N-Nitrosodi-n-4ro4ylamine	g.00	1.53		u*/L		B+	39 - 165	0	30
&eFachloroethane	g.00	1.+g		u*/L		81	18 - 1g5	13	35
NitrobenMene	g.00	1.51		u*/L		B+	38 - 161	0	30
Iso4horone	g.00	1.+6		u*/L		8g	61 - 163	g	30
g-Nitro4henol	g.00	1.+8		u*/L		86	55 - 1g0	B	30
g,6-Dimethyl4henol	g.00	1.66	J	u*/L		Bg	6B- 1g0	16	30
7 enMbic acid	6.00	1.+8	J	u*/L		6g	10 - 1g0	g5	35
7is(g-chloroethoFy)methane	g.00	1.Bg		u*/L		8+	66 - 1g5	3	30
g,6-Dichloro4henol	g.00	1.+1		u*/L		80	50 - 1g0	1g	30
1,g,6-VrichlorobenMene	g.00	1.6+		u*/L		B3	31 - 1g0	18	35
Na4hthalene	g.00	1.36		u*/L		+B	6g - 1g0	1+	35
6-Chloroaniline	g.00	g.gB		u*/L		116	10 - 150	8	35
&eFachlorobutadiene	g.00	1.g9		u*/L		+5	1B- 1g5	g5	35
6-Chloro-3-methyl4henol	g.00	1.++		u*/L		83	6B- 1g0	13	30

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
Fnlalysis Batch: 35x383

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCSD Result	LCSD Qual(ier)	f nit	D . Rec	. Rec1		RTD	Limit
						Limits	RTD		
g-T ethylna4hthalene	g.00	1.38		u*/L	+9	63 - 1g0	13	35	
&eFachlorocyclo4entadiene	g.00	1.06		u*/L	5g	10 - 1g5	10	35	
g,6,+Vrichloro4henol	g.00	1.B1		u*/L	8+	55 - 1g0	10	30	
g,6,5-Vrichloro4henol	g.00	1.B5		u*/L	88	53 - 1g0	13	35	
g-Chlorona4hthalene	g.00	1.6+		u*/L	B3	63 - 1g0	5	35	
g-Nitroaniline	g.00	1.+6		u*/L	8g	5g - 1gB	16	30	
Dimethyl 4hthalate	g.00	1.51		u*/L	B+	+5 - 1g8	1g	30	
Acena4hthylene	g.00	1.6B		u*/L	B6	68 - 1g5	+	30	
g,+Dinitrotoluene	g.00	1.5+		u*/L	B8	+0 - 1g8	1g	30	
3-Nitroaniline	g.00	g.38	J	u*/L	119	10 - 138	3	30	
Acena4hthene	g.00	1.38		u*/L	+9	69 - 1g0	11	30	
g,6-Dinitro4henol	6.00	3.86	J	u*/L	9+	10 - 16+	18	35	
6-Nitro4henol	6.00	1.8+	J	u*/L	6+	10 - 1g0	18	35	
DibenMofuran	g.00	1.6+		u*/L	B3	51 - 1g0	16	30	
g,6-Dinitrotoluene	g.00	1.5B		u*/L	B9	+1 - 1g+	16	30	
Diethyl 4hthalate	g.00	1.69		u*/L	B6	+0 - 136	19	g6	
6-Chloro4henyl 4henyl ether	g.00	1.36		u*/L	+B	53 - 1g5	g0	35	
Xluorene	g.00	1.60		u*/L	B0	55 - 1g5	1B	30	
6-Nitroaniline	g.00	g.0g		u*/L	101	38 - 139	10	35	
6,+Dinitro-g-methyl4henol	6.00	3.63		u*/L	8+	10 - 150	g+	35	
N-Nitrosodi4henylamine	g.00	1.+1		u*/L	80	5g - 135	16	30	
6-7romo4henyl 4henyl ether	g.00	1.6B		u*/L	B3	53 - 1g+	1B	30	
&eFachlorobenMene	g.00	1.59		u*/L	80	69 - 1g5	g1	30	
Phenanthrene	g.00	1.5+		u*/L	B8	56 - 1g5	18	30	
Anthracene	g.00	1.58		u*/L	B9	50 - 131	1B	g6	
Di-n-butyl 4hthalate	g.00	+19	Hk	u*/L	310	55 - 1+B	15	30	
Xluoranthene	g.00	1.58		u*/L	B9	+0 - 133	g0	30	
Pyrene	g.00	1.+3		u*/L	81	5B - 133	18	g3	
7 utyl benMyl 4hthalate	g.00	1.69	J	u*/L	B5	+0 - 150	g8	30	
3,3'-DichlorobenMdine	6.00	6.55		u*/L	116	33 - 150	19	35	
7 enM[a]anthracene	g.00	1.6B		u*/L	B6	5+ - 131	g3	30	
Chrysene	g.00	1.5g		u*/L	B+	5B - 1g5	g9	30	
7 is(g-ethylheFyl) 4hthalate	g.00	1.B3	J	u*/L	8B	68 - 150	g3	35	
Di-n-octyl 4hthalate	g.00	1.39		u*/L	+9	68 - 150	g5	30	
7 enM[a]4yrene	g.00	1.+1		u*/L	81	55 - 1g5	30	30	
Indeno[1,g,3-cd]4yrene	g.00	1.58		u*/L	B9	39 - 168	g1	30	
DibenM(a,h)anthracene	g.00	1.65		u*/L	B3	68 - 136	3g	35	
7 enM[* ,h,i]4erylene	g.00	1.5+		u*/L	B8	6+ - 160	g9	30	
CarbaMble	g.00	g.gB		u*/L	116	10 - 150	1+	30	
1-T ethylna4hthalene	g.00	1.6g		u*/L	B1	61 - 1g5	13	35	
7 enM[b]fluoranthene	g.00	1.6g		u*/L	B1	59 - 1g9	g8	30	
7 enM[k]fluoranthene	g.00	1.68		u*/L	B6	5B - 1g3	g8	35	
bis(chloroiso4ro4yl) ether	g.00	1.B9		u*/L	89	35 - 1g6	+	30	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
2-Fluorophenol (Surr)	51		14 - 120
Phenol-d5 (Surr)	40		10 - 120
Nitrobenzene-d5 (Surr)	68		46 - 125

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds)GC/MS4)Continued4

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample Dup
Trep Ntpe: Notal/AF
Trep Batch: 358x%5

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
2-Fluorobiphenyl	71		51 - 120
2,4,6-Tribromophenol (Surr)	101		50 - 125
Terphenyl-d14 (Surr)	94		63 - 122

Method: 8270E SIM - Semivolatile Organic Compounds)GC/MS SIM4

Lab Sample ID: MB 580-358672/9-F
MatriW P ater
F nalysis Batch: 35x008

Client Sample ID: Method Blank
Trep Ntpe: Notal/AF
Trep Batch: 358672

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Pentachloro4henol	ND		1.0	0.18	u*/L		0+/09/g1 09:0g	0+/11/g1 15:3B	1
7is(g-ethylheFyl) 4hthalate	ND		0.g0	0.08B	u*/L		0+/09/g1 09:0g	0+/11/g1 15:3B	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	72		35 - 133	06/09/21 09:02	06/11/21 15:37	1
Terphenyl-d14	92		29 - 150	06/09/21 09:02	06/11/21 15:37	1

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 35x008

Client Sample ID: Lab Control Sample
Trep Ntpe: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
Pentachloro4henol	6.00	g.+1		u*/L		+5	10 - 138
7is(g-ethylheFyl) 4hthalate	g.00	1.B9		u*/L		89	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	96		35 - 133
Terphenyl-d14	93		29 - 150

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 35x008

Client Sample ID: Lab Control Sample Dup
Trep Ntpe: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	Limit
Pentachloro4henol	6.00	g.90		u*/L		B3	10 - 138	11	35
7is(g-ethylheFyl) 4hthalate	g.00	1.8B		u*/L		96	50 - 150	5	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	94		35 - 133
Terphenyl-d14	95		29 - 150

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x077

Client Sample ID: Method Blank
Trep Ntpe: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Pentachloro4henol	ND		1.0	0.18	u*/L		0+/11/g1 08:65	0+/1g/g1 16:5+	1

purofins XGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E SIM - Semivolatile Organic Compounds)GC/MS SIM4)Continued4

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x077

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
7is(g-ethylheFyl) 4hthalate	ND		0.g0	0.08B	u*/L		0+/11/g1 08:65	0+/1g/g1 16:5+	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
2,4,6-Tribromophenol	68		35 - 133	06/11/21 08:45	06/12/21 14:56	1			
2,4,6-Tribromophenol (Surr)	68		35 - 133	06/11/21 08:45	06/12/21 14:56	1			
Terphenyl-d14	75		29 - 150	06/11/21 08:45	06/12/21 14:56	1			
Terphenyl-d14 (Surr)	75		29 - 150	06/11/21 08:45	06/12/21 14:56	1			

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x9%5

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits		
Pentachloro4henol	6.00	g.85		u*/L		B1	10 - 138		
7is(g-ethylheFyl) 4hthalate	g.00	1.90		u*/L		95	50 - 150		
Surrogate	%Recovery	Qualifier	Limits						
2,4,6-Tribromophenol	92		35 - 133						
Terphenyl-d14	95		29 - 150						

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x9%5

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	Limit
Pentachloro4henol	6.00	1.9+	H	u*/L		69	10 - 138	3B	35
7is(g-ethylheFyl) 4hthalate	g.00	1.39		u*/L		B0	50 - 150	31	35
Surrogate	%Recovery	Qualifier	Limits						
2,4,6-Tribromophenol	73		35 - 133						
Terphenyl-d14	70		29 - 150						

Method: AP NTH-GW- Aorthwest - Volatile Tetroleum Troducts)GC4

Lab Sample ID: MB 580-358550/39
MatriW P ater
F nalysis Batch: 358550

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Gasoline	ND		0.g5	0.10	m*/L			0+/08/g1 g0:53	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
4-Bromofluorobenzene (Surr)	84		50 - 150		06/08/21 20:53	1			

purofins XGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: AP NTH-GW- Aorthwest - Volatile Tetroleum Troducts)GC4)Continued4

Lab Sample ID: LCS 580-358550/32
MatriW P ater
Fnalysis Batch: 358550

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

Fnalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits
Gasoline	1.00	0.858		m*/L		8+	B9 - 1g0
Surrogate	%Recovery	LCS	Qualifier	Limits			
4-Bromofluorobenzene (Surr)	93			50 - 150			

Lab Sample ID: LCSD 580-358550/33
MatriW P ater
Fnalysis Batch: 358550

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Fnalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	Limit
Gasoline	1.00	0.85g		m*/L		85	B9 - 1g0	1	10
Surrogate	%Recovery	LCSD	Qualifier	Limits					
4-Bromofluorobenzene (Surr)	93			50 - 150					

Lab Sample ID: MB 580-35x095/93
MatriW P ater
Fnalysis Batch: 35x095

Client Sample ID: Method Blank
Trep Nype: Notal/AF

Fnalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Prepared	FnalyUed	Dil zac
Gasoline	ND		0.g5	0.10	m*/L			0+/11/g1 g0:08	1
Surrogate	%Recovery	MB	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90			50 - 150				06/11/21 20:08	1

Lab Sample ID: LCS 580-35x095/9%
MatriW P ater
Fnalysis Batch: 35x095

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

Fnalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits
Gasoline	1.00	0.991		m*/L		99	B9 - 1g0
Surrogate	%Recovery	LCS	Qualifier	Limits			
4-Bromofluorobenzene (Surr)	98			50 - 150			

Lab Sample ID: LCSD 580-35x095/95
MatriW P ater
Fnalysis Batch: 35x095

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Fnalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	Limit
Gasoline	1.00	1.0g		m*/L		10g	B9 - 1g0	g	10
Surrogate	%Recovery	LCSD	Qualifier	Limits					
4-Bromofluorobenzene (Surr)	102			50 - 150					

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: AP NTH-GW- Aorthwest - Volatile Tetroleum Troducts)GC4)Continued4

Lab Sample ID: MB 580-35x5x2/3
MatriW P ater
F nalysis Batch: 35x5x2

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUbd	Dil zac
Gasoline	ND		0.95	0.10	m*/L			0+/18/g1 03:29	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		50 - 150					06/18/21 03:29	1

Lab Sample ID: LCS 580-35x5x2/4
MatriW P ater
F nalysis Batch: 35x5x2

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits		
Gasoline	1.00	0.9+8		m*/L		9B	B9 - 1g0		
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	100		50 - 150						

Lab Sample ID: LCSD 580-35x5x2/5
MatriW P ater
F nalysis Batch: 35x5x2

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	Limit
Gasoline	1.00	0.99g		m*/L		99	B9 - 1g0	g	10
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	100		50 - 150						

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 040152-RB-WG 258

Lab Sample ID: Mk0-20dM x-2

Date CollecteT: 04y01y52 0/ :M5

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DiIFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANt	Lab
Total/NA	Analysis	8260D		1	358885	06/10/21 23:07	T1W	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E		1	358799	06/10/21 15:52	W1T	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359008	06/11/21 17:49	W1T	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	358550	06/09/21 06:15	JSM	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 15:07	T1W	FGS SEA

Client Sample ID: 040152-RB-WG 2/ 8

Lab Sample ID: Mk0-20dM x-5

Date CollecteT: 04y01y52 20:10

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DiIFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANt	Lab
Total/NA	Analysis	8260D		1	358885	06/10/21 23:32	T1W	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E		1	358799	06/10/21 16:15	W1T	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359008	06/11/21 18:11	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	3	359632	06/18/21 15:10	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	358550	06/09/21 06:40	JSM	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 15:28	T1W	FGS SEA

Client Sample ID: 040152-RB-8 S0d

Lab Sample ID: Mk0-20dM x-d

Date CollecteT: 04y01y52 22:0d

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DiIFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANt	Lab
Total/NA	Analysis	8260D		1	358885	06/10/21 23:57	T1W	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E		1	358799	06/10/21 16:38	W1T	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359008	06/11/21 18:34	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	3	359632	06/18/21 15:32	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359592	06/18/21 12:27	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 15:48	T1W	FGS SEA

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 040152-RB-WG 1UD

Lab Sample ID: Mx0-20dM x-1

Date CollecteT: 04y01y52 25:50

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		20	358885	06/11/21 00:22	T1W	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 16:20	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E	DL	50	359635	06/18/21 15:03	ADB	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 17:57	TL1	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	10	359632	06/18/21 17:07	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359592	06/18/21 12:51	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 16:08	T1W	FGS SEA

Client Sample ID: 040152-RB-WG 1UD-D6 u

Lab Sample ID: Mx0-20dM x-M

Date CollecteT: 04y01y52 25:50

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		20	358885	06/11/21 00:47	T1W	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 16:44	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E	DL	50	359635	06/18/21 15:27	ADB	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 18:20	TL1	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	10	359632	06/18/21 17:29	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359592	06/18/21 13:16	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 16:28	T1W	FGS SEA

Client Sample ID: 040152-RB-8 S05

Lab Sample ID: Mx0-20dM x-4

Date CollecteT: 04y01y52 2d:MD

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		1	359179	06/14/21 21:03	CJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	359251	06/15/21 13:52	RJF	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 17:07	W1T	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 18:43	TL1	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359015	06/12/21 01:51	JBT	FGS SEA

Eurofins FGS, Seattle

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 040152-RB-8 S05

Lab Sample ID: Mk0-20dM x-4

Date CollecteT: 04y01y52 2d:M0

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 17:08	T1W	FGS SEA

Client Sample ID: 040152-RB-8 S02

Lab Sample ID: Mk0-20dM x-U

Date CollecteT: 04y01y52 21:dM

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		1	358759	06/10/21 06:11	RJF	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 17:31	W1T	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 19:05	TL1	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359015	06/12/21 02:16	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 17:28	T1W	FGS SEA

Client Sample ID: Brip s lank

Lab Sample ID: Mk0-20dM x-x

Date CollecteT: 04y01y52 00:02

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		1	358759	06/10/21 06:35	RJF	FGS SEA

LaboratorA WeferenceN

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Laboratory: Eurofins FGS, Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Washington	State	C788	07-13-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E SIM	3510C	Water	Bis(2-ethylhexyl) phthalate

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-103598-1	060421-NT-RW12G	Water	06/04/21 09:52	06/04/21 15:30	
580-103598-2	060421-NT-RW19G	Water	06/04/21 10:40	06/04/21 15:30	
580-103598-3	060421-NT-GS03	Water	06/04/21 11:03	06/04/21 15:30	
580-103598-4	060421-NT-RW47D	Water	06/04/21 12:20	06/04/21 15:30	
580-103598-5	060421-NT-RW47D-DUP	Water	06/04/21 12:20	06/04/21 15:30	
580-103598-6	060421-NT-GS02	Water	06/04/21 13:50	06/04/21 15:30	
580-103598-7	060421-NT-GS01	Water	06/04/21 14:35	06/04/21 15:30	
580-103598-8	Trip Blank	Water	06/04/21 00:01	06/04/21 15:30	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-103598-1

Login Number: 103598

List Source: Eurofins FGS, Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
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	Received same day of collection; chilling process has begun.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



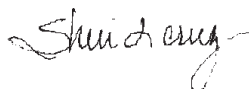
ANALYTICAL REPORT

Eurofins FGS, Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-103598-1
Client Project/Site: Lilyblad Site Remediation
Revision: 1

For:
Geosyntec Consultants, Inc.
520 Pike Street
Suite 2600
Seattle, Washington 98101

Attn: Dottie Metcalf-Lindenburger



Authorized for release by:
6/25/2021 5:00:09 PM

Sheri Cruz, Project Manager I
(253)922-2310
Sheri.Cruz@Eurofinset.com

LINKS

Review your project
results through
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Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1

Laboratory: Eurofins FGS, Seattle

Narrative

Job Narrative 580-103598-1

Comments

Revised report for missing QC for NWTPH-Dx on 6/25/21.

Receipt

The samples were received on 6/4/2021 3:30 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 5.7° C and 20.4° C.

GC/MS VOA

Method 8260D: For batch 580-358759, the flag for CCVIS %D out of criteria was removed by the analyst for the compound n-Butylbenzene. The value - 20.1 %D (Limit=t20) meets the +/- 20% criteria. 060421-NT-GS01 (580-103598-7), Trip Blank (580-103598-8) and (CCVIS 580-358759/3)

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-358759 recovered outside acceptance criteria, low biased, for Chloromethane, Bromomethane and cis-1,3-Dichloropropene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The method blank for preparation batch 358759 contained Methylene Chloride above the reporting limit (RL). None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

Method 8260D: The method blank for analytical batch 580-358759 contained 1,2,3-Trichlorobenzene above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The laboratory control sample duplicate (LCSD) for analytical batch 580-358759 recovered outside control limits for the following analytes: Methylene Chloride. These analytes were biased high in the LCSD and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-358885 recovered above the upper control limit for 1,1,1-Trichloroethane, 1,1-Dichloroethene, 1,2,4-Trichlorobenzene, Bromoform, Carbon tetrachloride, Chlorodibromomethane, Ethylene Dibromide, Tetrachloroethene and Trichloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-RW12G (580-103598-1), 060421-NT-RW19G (580-103598-2), 060421-NT-GS03 (580-103598-3), 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5) and (CCVIS 580-358885/3).

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-358885 recovered outside acceptance criteria, low biased, for Bromomethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The laboratory control sample (LCS) for analytical batch 580-358885 recovered outside control limits for the following analytes: Dichlorodifluoromethane, Ethylene Dibromide, Tetrachloroethene and Trichloroethene. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method 8260D: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for analytical batch 580-358885 recovered outside control limits for the following analytes: 1,1,1,2-Tetrachloroethane, Dichlorodifluoromethane, Tetrachloroethene and Trichloroethene.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-359179 recovered outside acceptance criteria, low biased, for 1,1,1,2-Tetrachloroethane, Chloromethane, Vinyl chloride and Bromomethane. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-359179 recovered above the upper control limit for

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

Carbon tetrachloride, Bromoform, 1,2,4-Trichlorobenzene and Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-GS02 (580-103598-6) and (CCVIS 580-359179/3).

Method 8260D: The method blank for analytical batch 580-359179 contained 1,2,3-Trichlorobenzene above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 8260D: The continuing calibration verification (CCV) associated with batch 580-359251 recovered outside acceptance criteria, low biased, for 4-Chlorotoluene and cis-1,3-Dichloropropene. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method 8260D: The following sample was diluted to bring the concentration of target analytes within the calibration range: 060421-NT-RW47D-DUP (580-103598-5). Elevated reporting limits (RLs) are provided.

Method 8260D: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: 060421-NT-RW47D (580-103598-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA

Method 8270E: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-358672 and analytical batch 580-358799 recovered outside control limits for the following analytes: Hexachlorobutadiene.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-359080 recovered above the upper control limit for 3,3'-Dichlorobenzidine and Carbazole. The LCS/LCSD associated with this CCV recovered within control limits for these analytes with or without accounting for the high bias. The samples associated with the LCS/LCSD were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (CCVIS 580-359383/3), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A), 580-103598-4, 580-103598-5, 580-103598-6 and 580-103598-7.

Method 8270E: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for preparation batch 580-358945 and analytical batch 580-359080 recovered outside upper control limits for the following analyte: Di-n-butyl phthalate. This analyte was biased high in the LCS and were below reporting limit (RL) in the associated samples; therefore, the data have been reported. The following samples are associated with this LCSD/LCSD: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A), 580-103598-4, 580-103598-5, 580-103598-6 and 580-103598-7.

Method 8270E: The continuing calibration verification (CCV) associated with batch 580-359080 recovered above the upper control limit for 1,2,4-Trichlorobenzene, Bis(chloroisopropyl)ether, 3,3'-Dichlorobenzidine, Benzo[k]fluoranthene, Carbazole, Hexachlorobutadiene, Hexachlorocyclopentadiene and Hexachloroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7) and (CCVIS 580-359080/3).

Method 8270E: The following analytes have been identified, in the reference method and/or via historical data, to be poor and/or erratic performers: Hexachlorocyclopentadiene. These analytes may have a %D <50%. Affected samples: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5) and (CCVIS 580-359635/3)

Method 8270E: The following analyte has been identified, in the reference method and/or via historical data, to be poor and/or erratic performer: Hexachlorocyclopentadiene. This analyte may have a %D <50%. The following samples are impacted: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (CCVIS 580-359383/3), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A).

Method 8270E: Surrogate recovery for the following samples were outside control limits: 060421-NT-RW12G (580-103598-1) and

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Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

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Laboratory: Eurofins FGS, Seattle (Continued)

060421-NT-RW19G (580-103598-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270E: Due to sample matrix interference on the internal standard Acenaphthene-d10, a dilution was required for the following samples: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5).

Method 8270E: Surrogate recovery for the following sample was outside control limits: 060421-NT-RW47D (580-103598-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270E: The following samples required a dilution due to the nature of the sample matrix: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 8270E: The following samples was diluted due to the nature of the sample matrix negatively affecting internal standard recoveries: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5). Elevated reporting limits (RLs) are provided.

Method 8270E SIM: The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 580-358945 and analytical batch 580-359077 recovered outside control limits for the following analytes: Pentachlorophenol. The following samples are associated with this LCS/LCSD: 060421-NT-RW47D (580-103598-4), 060421-NT-RW47D-DUP (580-103598-5), 060421-NT-GS02 (580-103598-6), 060421-NT-GS01 (580-103598-7), (LCS 580-358945/2-A) and (LCSD 580-358945/3-A), 580-103598-4, 580-103598-5, 580-103598-6 and 580-103598-7.

Method 8270E SIM: Due to sample matrix interference on the internal standard, Acenaphthene-d10, a dilution was required for the following sample: 060421-NT-RW19G (580-103598-2), 060421-NT-GS03 (580-103598-3), 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5).

Method 8270E SIM: The following samples were diluted due to the nature of the sample matrix: 060421-NT-RW19G (580-103598-2) and 060421-NT-GS03 (580-103598-3). Elevated reporting limits (RLs) are provided.

Method 8270E SIM: The following samples were diluted to 10X due to the nature of the sample matrix: 060421-NT-RW47D (580-103598-4) and 060421-NT-RW47D-DUP (580-103598-5). There was matrix interference on the internal standard, Acenaphthene-d10, which is associated with Pentachlorophenol and its surrogate, 2,4,6-Tribromophenol. This interference persisted at 3X dilution, therefore these samples were diluted to 10X to bring internal standard recovery within control limits and thus data has been reported and elevated reporting limits (RLs) have been provided per client's instruction.

Method 8270E SIM: Surrogate recovery for the following sample was outside control limits: 060421-NT-RW47D-DUP (580-103598-5). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep

Methods 3510C, CWA_Prep: The following samples formed large emulsions during the extraction procedure: 060421-NT-RW12G (580-103598-1), 060421-NT-RW19G (580-103598-2) and 060421-NT-GS03 (580-103598-3). The emulsions were broken up using sodium sulfate and rinsed with solvent.

Methods 3510C, CWA_Prep: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate (MS/MSD/DUP) associated with preparation batch 580-358945, so a LCS and LCSD were used instead.

Method 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate/sample duplicate

Case Narrative

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Job ID: 580-103598-1 (Continued)

Laboratory: Eurofins FGS, Seattle (Continued)

(MS/MSD/DUP) associated with preparation batch 580-358516, so a LCS and LCSD were used instead.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD 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/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.
S1+	Surrogate recovery exceeds control limits, high biased.

GC 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.

GC 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.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)

Eurofins FGS, Seattle

Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	1.0	0.53	ug/L			06/10/21 23:07	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 23:07	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 23:07	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 23:07	1
Chloroethane	1.9		1.0	0.35	ug/L			06/10/21 23:07	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 23:07	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 23:07	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 23:07	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 23:07	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 23:07	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 23:07	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 23:07	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 23:07	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 23:07	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 23:07	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 23:07	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 23:07	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 23:07	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 23:07	1
Trichloroethene	ND	*+ *1	1.0	0.26	ug/L			06/10/21 23:07	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 23:07	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 23:07	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 23:07	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 23:07	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 23:07	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 23:07	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 23:07	1
Tetrachloroethene	ND	*+ *1	1.0	0.41	ug/L			06/10/21 23:07	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 23:07	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 23:07	1
1,2-Dibromoethane	ND	*+	1.0	0.40	ug/L			06/10/21 23:07	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 23:07	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:07	1
1,1,1,2-Tetrachloroethane	ND	*1	1.0	0.18	ug/L			06/10/21 23:07	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 23:07	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 23:07	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 23:07	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 23:07	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 23:07	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:07	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 23:07	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:07	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 23:07	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 23:07	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 23:07	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 23:07	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 23:07	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 23:07	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 23:07	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 23:07	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 23:07	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:07	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:07	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:07	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 23:07	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 23:07	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 23:07	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 23:07	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 23:07	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 23:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	920		82 - 912		24/92/19 10:02	9
5-Bromofluorobenzene (Surr)	929		82 - 912		24/92/19 10:02	9
Dibromofluoromethane (Surr)	923		82 - 912		24/92/19 10:02	9
9,1-Dichloroethane-d5 (Surr)	990		82 - 914		24/92/19 10:02	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		0.96	0.17	ug/L		06/09/21 09:02	06/11/21 17:49	1
Bis(2-ethylhexyl) phthalate	ND		0.19	0.084	ug/L		06/09/21 09:02	06/11/21 17:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	: 5		07 - 900	24/23/19 23:02	24/99/19 9: 05	9
Terphenyl-d95	: 8		13 - 972	24/23/19 23:02	24/99/19 9: 05	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		0.96	0.35	ug/L		06/09/21 09:02	06/10/21 15:52	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,3-Dichlorobenzene	ND		0.39	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,4-Dichlorobenzene	ND		0.39	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,2-Dichlorobenzene	ND		0.39	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Methylphenol	ND		0.58	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
3 & 4 Methylphenol	ND		0.58	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
N-Nitrosodi-n-propylamine	ND		0.39	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Nitrobenzene	ND		0.96	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Isophorone	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dimethylphenol	ND		3.9	0.15	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzoic acid	ND		9.6	1.3	ug/L		06/09/21 09:02	06/10/21 15:52	1
Bis(2-chloroethoxy)methane	ND		0.58	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/09/21 09:02	06/10/21 15:52	1
1,2,4-Trichlorobenzene	ND		0.39	0.087	ug/L		06/09/21 09:02	06/10/21 15:52	1
Naphthalene	ND		0.39	0.15	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Chloroaniline	ND		1.9	0.57	ug/L		06/09/21 09:02	06/10/21 15:52	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND	*1	0.96	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Chloro-3-methylphenol	ND		0.58	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Methylnaphthalene	ND		0.39	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4,6-Trichlorophenol	ND		0.58	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4,5-Trichlorophenol	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
2-Nitroaniline	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
Dimethyl phthalate	ND		0.58	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Acenaphthylene	ND		0.96	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,6-Dinitrotoluene	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/09/21 09:02	06/10/21 15:52	1
Acenaphthene	ND		0.39	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Nitrophenol	ND		9.6	1.6	ug/L		06/09/21 09:02	06/10/21 15:52	1
Dibenzofuran	ND		0.39	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
Diethyl phthalate	ND		0.96	0.14	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Chlorophenyl phenyl ether	ND		0.58	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Fluorene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/09/21 09:02	06/10/21 15:52	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/09/21 09:02	06/10/21 15:52	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
4-Bromophenyl phenyl ether	ND		0.58	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Hexachlorobenzene	ND		0.58	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Phenanthrene	ND		0.96	0.12	ug/L		06/09/21 09:02	06/10/21 15:52	1
Anthracene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Di-n-butyl phthalate	11		2.9	0.18	ug/L		06/09/21 09:02	06/10/21 15:52	1
Fluoranthene	ND		0.24	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1
Pyrene	ND		0.96	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Butyl benzyl phthalate	0.33 J		3.9	0.26	ug/L		06/09/21 09:02	06/10/21 15:52	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Chrysene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/09/21 09:02	06/10/21 15:52	1
Di-n-octyl phthalate	ND		0.96	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[a]pyrene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Indeno[1,2,3-cd]pyrene	ND		0.39	0.13	ug/L		06/09/21 09:02	06/10/21 15:52	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[g,h,i]perylene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Carbazole	ND		0.58	0.096	ug/L		06/09/21 09:02	06/10/21 15:52	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[b]fluoranthene	ND		0.24	0.039	ug/L		06/09/21 09:02	06/10/21 15:52	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 15:52	1
bis(chloroisopropyl) ether	ND		0.24	0.058	ug/L		06/09/21 09:02	06/10/21 15:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	1:		95 - 912	24/23/19 23Ø1	24/92/19 97Ø1	9
Nhenol-d7 (Surr)	12		92 - 912	24/23/19 23Ø1	24/92/19 97Ø1	9
yitrobenzene-d7 (Surr)	42		54 - 917	24/23/19 23Ø1	24/92/19 97Ø1	9

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Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW12G

Lab Sample ID: 580-103598-1

Date Collected: 06/04/21 09:52

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorobiphenyl	53	S9-	79 - 912	24/23/19 23@1	24/92/19 97@1	9
1,5,4-Tribromophenol (Surr)	: 5		72 - 917	24/23/19 23@1	24/92/19 97@1	9
Terphenyl-d95 (Surr)	82		40 - 911	24/23/19 23@1	24/92/19 97@1	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/09/21 06:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	83		72 - 972		24/23/19 24@7	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	3.1		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 15:07	1
Motor Oil (>C24-C36)	1.4		0.35	0.096	mg/L		06/07/21 14:58	06/13/21 15:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	: 8		72 - 972	24/2: /19 95@8	24/90/19 97@:	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	1.0	0.53	ug/L			06/10/21 23:32	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 23:32	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 23:32	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 23:32	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 23:32	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 23:32	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 23:32	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 23:32	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 23:32	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 23:32	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 23:32	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 23:32	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 23:32	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 23:32	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 23:32	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 23:32	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 23:32	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 23:32	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 23:32	1
Trichloroethene	ND	*+ *1	1.0	0.26	ug/L			06/10/21 23:32	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 23:32	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 23:32	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 23:32	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 23:32	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 23:32	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 23:32	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 23:32	1
Tetrachloroethene	ND	*+ *1	1.0	0.41	ug/L			06/10/21 23:32	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 23:32	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 23:32	1
1,2-Dibromoethane	ND	*+	1.0	0.40	ug/L			06/10/21 23:32	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 23:32	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:32	1
1,1,1,2-Tetrachloroethane	ND	*1	1.0	0.18	ug/L			06/10/21 23:32	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 23:32	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 23:32	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 23:32	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 23:32	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 23:32	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:32	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 23:32	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:32	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 23:32	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 23:32	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 23:32	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 23:32	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 23:32	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 23:32	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 23:32	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 23:32	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 23:32	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:32	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:32	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:32	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 23:32	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 23:32	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 23:32	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 23:32	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 23:32	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 23:32	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	920		82 - 912					24/92/19 10@1	9
5-Bromofluorobenzene (Surr)	37		82 - 912					24/92/19 10@1	9
Dibromofluoromethane (Surr)	921		82 - 912					24/92/19 10@1	9
9,1-Dichloroethane-d5 (Surr)	923		82 - 914					24/92/19 10@1	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/09/21 09:02	06/11/21 18:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d95	30		13 - 972				24/23/19 23@1	24/99/19 98@9	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		2.9	0.52	ug/L		06/09/21 09:02	06/18/21 15:10	3
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	58		07 - 900				24/23/19 23@1	24/98/19 97@2	0

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		0.96	0.34	ug/L		06/09/21 09:02	06/10/21 16:15	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Isophorone	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzoic acid	ND		9.6	1.3	ug/L		06/09/21 09:02	06/10/21 16:15	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/09/21 09:02	06/10/21 16:15	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/09/21 09:02	06/10/21 16:15	1
Naphthalene	ND		0.38	0.15	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachlorobutadiene	ND	*1	0.96	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
2-Nitroaniline	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Acenaphthylene	ND		0.96	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,6-Dinitrotoluene	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/09/21 09:02	06/10/21 16:15	1
Acenaphthene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Nitrophenol	ND		9.6	1.6	ug/L		06/09/21 09:02	06/10/21 16:15	1
Dibenzofuran	ND		0.38	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
Diethyl phthalate	0.54	J	0.96	0.14	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Fluorene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/09/21 09:02	06/10/21 16:15	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/09/21 09:02	06/10/21 16:15	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Phenanthrene	ND		0.96	0.11	ug/L		06/09/21 09:02	06/10/21 16:15	1
Anthracene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Di-n-butyl phthalate	6.2		2.9	0.18	ug/L		06/09/21 09:02	06/10/21 16:15	1
Fluoranthene	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1
Pyrene	ND		0.96	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/09/21 09:02	06/10/21 16:15	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Chrysene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/09/21 09:02	06/10/21 16:15	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/09/21 09:02	06/10/21 16:15	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Carbazole	ND		0.57	0.096	ug/L		06/09/21 09:02	06/10/21 16:15	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:15	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:15	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:15	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW19G

Lab Sample ID: 580-103598-2

Date Collected: 06/04/21 10:40

Matrix: Water

Date Received: 06/04/21 15:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	09		95 - 912	24/23/19 23@21	24/92/19 94@7	9
Nhenol-d7 (Surr)	14		92 - 912	24/23/19 23@21	24/92/19 94@7	9
y itrobenzene-d7 (Surr)	78		54 - 917	24/23/19 23@21	24/92/19 94@7	9
1-Fluorobiphenyl	51	S9-	79 - 912	24/23/19 23@21	24/92/19 94@7	9
1,5,4-Tribromophenol (Surr)	991		72 - 917	24/23/19 23@21	24/92/19 94@7	9
Terphenyl-d95 (Surr)	35		40 - 911	24/23/19 23@21	24/92/19 94@7	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/09/21 06:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	88		72 - 972		24/23/19 24@52	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2.1		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 15:28	1
Motor Oil (>C24-C36)	0.47		0.35	0.097	mg/L		06/07/21 14:58	06/13/21 15:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	::		72 - 972	24/2: /19 95@78	24/90/19 97@8	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	1.0	0.53	ug/L			06/10/21 23:57	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 23:57	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 23:57	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 23:57	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 23:57	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 23:57	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 23:57	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 23:57	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 23:57	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 23:57	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 23:57	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 23:57	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 23:57	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 23:57	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 23:57	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 23:57	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 23:57	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 23:57	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 23:57	1
Trichloroethene	ND	*+ *1	1.0	0.26	ug/L			06/10/21 23:57	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 23:57	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 23:57	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 23:57	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 23:57	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 23:57	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 23:57	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 23:57	1
Tetrachloroethene	ND	*+ *1	1.0	0.41	ug/L			06/10/21 23:57	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 23:57	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 23:57	1
1,2-Dibromoethane	ND	*+	1.0	0.40	ug/L			06/10/21 23:57	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 23:57	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:57	1
1,1,1,2-Tetrachloroethane	ND	*1	1.0	0.18	ug/L			06/10/21 23:57	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 23:57	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 23:57	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 23:57	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 23:57	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 23:57	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:57	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 23:57	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 23:57	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 23:57	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 23:57	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 23:57	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 23:57	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 23:57	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 23:57	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 23:57	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 23:57	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 23:57	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:57	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 23:57	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 23:57	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 23:57	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 23:57	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 23:57	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 23:57	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 23:57	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 23:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	929		82 - 912		24/92/19 1067	9
5-Bromofluorobenzene (Surr)	35		82 - 912		24/92/19 1067	9
Dibromofluoromethane (Surr)	924		82 - 912		24/92/19 1067	9
9,1-Dichloroethane-d5 (Surr)	995		82 - 914		24/92/19 1067	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/09/21 09:02	06/11/21 18:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d95	929		13 - 972	24/23/19 23621	24/99/19 98605	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND		2.9	0.51	ug/L		06/09/21 09:02	06/18/21 15:32	3

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	41		07 - 900	24/23/19 23621	24/98/19 97601	0

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.57	J	0.95	0.34	ug/L		06/09/21 09:02	06/10/21 16:38	1
Bis(2-chloroethyl)ether	ND		0.095	0.029	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Chlorophenol	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachloroethane	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Nitrobenzene	ND		0.95	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Isophorone	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Nitrophenol	ND		0.95	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzoic acid	ND		9.5	1.3	ug/L		06/09/21 09:02	06/10/21 16:38	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		06/09/21 09:02	06/10/21 16:38	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/09/21 09:02	06/10/21 16:38	1
Naphthalene	ND		0.38	0.15	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachlorobutadiene	ND	*1	0.95	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachlorocyclopentadiene	ND		0.95	0.13	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Chloronaphthalene	ND		0.95	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
2-Nitroaniline	ND		0.95	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Acenaphthylene	ND		0.95	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,6-Dinitrotoluene	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/09/21 09:02	06/10/21 16:38	1
Acenaphthene	ND		0.38	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Nitrophenol	ND		9.5	1.6	ug/L		06/09/21 09:02	06/10/21 16:38	1
Dibenzofuran	ND		0.38	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
Diethyl phthalate	ND		0.95	0.14	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Fluorene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/09/21 09:02	06/10/21 16:38	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		06/09/21 09:02	06/10/21 16:38	1
N-Nitrosodiphenylamine	ND		0.95	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Phenanthrene	ND		0.95	0.11	ug/L		06/09/21 09:02	06/10/21 16:38	1
Anthracene	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Di-n-butyl phthalate	0.19	J	2.9	0.18	ug/L		06/09/21 09:02	06/10/21 16:38	1
Fluoranthene	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1
Pyrene	ND		0.95	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/09/21 09:02	06/10/21 16:38	1
3,3'-Dichlorobenzidine	ND		0.95	0.25	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Chrysene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/09/21 09:02	06/10/21 16:38	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/09/21 09:02	06/10/21 16:38	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Carbazole	ND		0.57	0.095	ug/L		06/09/21 09:02	06/10/21 16:38	1
1-Methylnaphthalene	ND		0.95	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/09/21 09:02	06/10/21 16:38	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/09/21 09:02	06/10/21 16:38	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/09/21 09:02	06/10/21 16:38	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS03

Lab Sample ID: 580-103598-3

Date Collected: 06/04/21 11:03

Matrix: Water

Date Received: 06/04/21 15:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	0:		95 - 912	24/23/19 23@21	24/92/19 94@8	9
Nhenol-d7 (Surr)	02		92 - 912	24/23/19 23@21	24/92/19 94@8	9
y itrobenzene-d7 (Surr)	44		54 - 917	24/23/19 23@21	24/92/19 94@8	9
1-Fluorobiphenyl	45		79 - 912	24/23/19 23@21	24/92/19 94@8	9
1,5,4-Tribromophenol (Surr)	995		72 - 917	24/23/19 23@21	24/92/19 94@8	9
Terphenyl-d95 (Surr)	921		40 - 911	24/23/19 23@21	24/92/19 94@8	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/18/21 12:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	3:		72 - 972		24/98/19 91@1	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	1.1		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 15:48	1
Motor Oil (>C24-C36)	0.30	J	0.35	0.097	mg/L		06/07/21 14:58	06/13/21 15:48	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	82		72 - 972	24/2: /19 95@8	24/90/19 97@8	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	20	11	ug/L			06/11/21 00:22	20
Chloromethane	ND		20	5.6	ug/L			06/11/21 00:22	20
Vinyl chloride	ND		20	4.4	ug/L			06/11/21 00:22	20
Bromomethane	ND		20	4.2	ug/L			06/11/21 00:22	20
Chloroethane	ND		20	7.0	ug/L			06/11/21 00:22	20
Trichlorofluoromethane	ND		20	7.2	ug/L			06/11/21 00:22	20
1,1-Dichloroethene	ND		20	5.6	ug/L			06/11/21 00:22	20
Methylene Chloride	ND		60	29	ug/L			06/11/21 00:22	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			06/11/21 00:22	20
1,1-Dichloroethane	ND		20	4.4	ug/L			06/11/21 00:22	20
2,2-Dichloropropane	ND		20	6.4	ug/L			06/11/21 00:22	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			06/11/21 00:22	20
Bromochloromethane	ND		20	5.8	ug/L			06/11/21 00:22	20
Chloroform	ND		20	5.2	ug/L			06/11/21 00:22	20
1,1,1-Trichloroethane	ND		20	7.8	ug/L			06/11/21 00:22	20
Carbon tetrachloride	ND		20	6.0	ug/L			06/11/21 00:22	20
1,1-Dichloropropene	ND		20	5.8	ug/L			06/11/21 00:22	20
Benzene	ND		20	4.8	ug/L			06/11/21 00:22	20
1,2-Dichloroethane	ND		20	8.4	ug/L			06/11/21 00:22	20
Trichloroethene	ND	*+ *1	20	5.2	ug/L			06/11/21 00:22	20
1,2-Dichloropropane	ND		20	3.6	ug/L			06/11/21 00:22	20
Dibromomethane	ND		20	6.8	ug/L			06/11/21 00:22	20
Bromodichloromethane	ND		20	5.8	ug/L			06/11/21 00:22	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			06/11/21 00:22	20
Toluene	ND		20	7.8	ug/L			06/11/21 00:22	20
trans-1,3-Dichloropropene	ND		20	8.2	ug/L			06/11/21 00:22	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			06/11/21 00:22	20
Tetrachloroethene	ND	*+ *1	20	8.2	ug/L			06/11/21 00:22	20
1,3-Dichloropropane	ND		20	7.0	ug/L			06/11/21 00:22	20
Dibromochloromethane	ND		20	8.6	ug/L			06/11/21 00:22	20
1,2-Dibromoethane	ND	*+	20	8.0	ug/L			06/11/21 00:22	20
Chlorobenzene	ND		20	8.8	ug/L			06/11/21 00:22	20
Ethylbenzene	ND		20	10	ug/L			06/11/21 00:22	20
1,1,1,2-Tetrachloroethane	ND	*1	20	3.6	ug/L			06/11/21 00:22	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			06/11/21 00:22	20
m-Xylene & p-Xylene	ND		40	11	ug/L			06/11/21 00:22	20
o-Xylene	ND		20	7.8	ug/L			06/11/21 00:22	20
Styrene	ND		20	11	ug/L			06/11/21 00:22	20
Bromoform	ND		20	10	ug/L			06/11/21 00:22	20
Isopropylbenzene	ND		20	8.8	ug/L			06/11/21 00:22	20
Bromobenzene	ND		20	8.6	ug/L			06/11/21 00:22	20
N-Propylbenzene	ND		20	10	ug/L			06/11/21 00:22	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			06/11/21 00:22	20
2-Chlorotoluene	ND		20	10	ug/L			06/11/21 00:22	20
1,3,5-Trimethylbenzene	ND		20	11	ug/L			06/11/21 00:22	20
4-Chlorotoluene	ND		20	7.6	ug/L			06/11/21 00:22	20
t-Butylbenzene	ND		40	12	ug/L			06/11/21 00:22	20
1,2,4-Trimethylbenzene	ND		60	12	ug/L			06/11/21 00:22	20
sec-Butylbenzene	ND		20	9.8	ug/L			06/11/21 00:22	20

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			06/11/21 00:22	20
4-Isopropyltoluene	ND		20	5.6	ug/L			06/11/21 00:22	20
1,4-Dichlorobenzene	ND		20	9.2	ug/L			06/11/21 00:22	20
n-Butylbenzene	ND		20	8.8	ug/L			06/11/21 00:22	20
1,2-Dichlorobenzene	ND		20	9.2	ug/L			06/11/21 00:22	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			06/11/21 00:22	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			06/11/21 00:22	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			06/11/21 00:22	20
Hexachlorobutadiene	ND		60	16	ug/L			06/11/21 00:22	20
Naphthalene	ND		60	19	ug/L			06/11/21 00:22	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			06/11/21 00:22	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	922		82 - 912		24/99/19 2261	12
5-Bromofluorobenzene (Surr)	34		82 - 912		24/99/19 2261	12
Dibromofluoromethane (Surr)	92		82 - 912		24/99/19 2261	12
9,1-Dichloroethane-d5 (Surr)	990		82 - 914		24/99/19 2261	12

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/11/21 08:45	06/12/21 17:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d95	::		13 - 972	24/99/19 2867	24/91/19 9: 67	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	9.6	1.7	ug/L		06/11/21 08:45	06/18/21 17:07	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	71		07 - 900	24/99/19 2867	24/98/19 9: 82	92

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	0.91	J	0.96	0.34	ug/L		06/11/21 08:45	06/12/21 16:20	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,3-Dichlorobenzene	0.11	J	0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,4-Dichlorobenzene	1.1		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,2-Dichlorobenzene	2.1		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 16:20	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Isophorone	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:20	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzoic acid	ND		9.6	1.3	ug/L		06/11/21 08:45	06/12/21 16:20	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/11/21 08:45	06/12/21 16:20	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/11/21 08:45	06/12/21 16:20	1
Naphthalene	0.43		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 16:20	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/11/21 08:45	06/12/21 16:20	1
Hexachlorobutadiene	ND		0.96	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
2-Methylnaphthalene	0.22	J	0.38	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/11/21 08:45	06/12/21 16:20	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:20	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Phenanthrene	ND		0.96	0.11	ug/L		06/11/21 08:45	06/12/21 16:20	1
Anthracene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Di-n-butyl phthalate	1.3	J B *+	2.9	0.18	ug/L		06/11/21 08:45	06/12/21 16:20	1
Fluoranthene	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1
Pyrene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 16:20	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/11/21 08:45	06/12/21 16:20	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 16:20	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Carbazole	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 16:20	1
1-Methylnaphthalene	0.18	J	0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:20	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:20	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 16:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	08		95 - 912	24/99/19 2857	24/91/19 9462	9
Nhenol-d7 (Surr)	: 2		92 - 912	24/99/19 2857	24/91/19 9462	9
yitrobenzene-d7 (Surr)	50	S9-	54 - 917	24/99/19 2857	24/91/19 9462	9
1,5,4-Tribromophenol (Surr)	82		72 - 917	24/99/19 2857	24/91/19 9462	9
Terphenyl-d95 (Surr)	: 0		40 - 911	24/99/19 2857	24/91/19 9462	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		29	6.2	ug/L		06/11/21 08:45	06/18/21 15:03	50
Hexachlorocyclopentadiene	ND		48	6.7	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4,6-Trichlorophenol	ND		29	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4,5-Trichlorophenol	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
2-Chloronaphthalene	ND		48	3.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
2-Nitroaniline	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
Dimethyl phthalate	ND		29	2.9	ug/L		06/11/21 08:45	06/18/21 15:03	50
Acenaphthylene	ND		48	2.9	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,6-Dinitrotoluene	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
3-Nitroaniline	ND		140	7.7	ug/L		06/11/21 08:45	06/18/21 15:03	50

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D

Lab Sample ID: 580-103598-4

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		19	2.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4-Dinitrophenol	ND		240	77	ug/L		06/11/21 08:45	06/18/21 15:03	50
4-Nitrophenol	ND		480	81	ug/L		06/11/21 08:45	06/18/21 15:03	50
Dibenzofuran	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
2,4-Dinitrotoluene	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:03	50
Diethyl phthalate	ND		48	7.2	ug/L		06/11/21 08:45	06/18/21 15:03	50
4-Chlorophenyl phenyl ether	ND		29	2.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
Fluorene	ND		12	2.4	ug/L		06/11/21 08:45	06/18/21 15:03	50
4-Nitroaniline	ND		96	10	ug/L		06/11/21 08:45	06/18/21 15:03	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	2	S9-	95 - 912	24/99/19 2867	24/98/19 9760	72
Nhenol-d7 (Surr)	2	S9-	92 - 912	24/99/19 2867	24/98/19 9760	72
yitrobenzene-d7 (Surr)	2	S9-	54 - 917	24/99/19 2867	24/98/19 9760	72
1-Fluorobiphenyl	01	S9-	79 - 912	24/99/19 2867	24/98/19 9760	72
1,5,4-Tribromophenol (Surr)	959	S9+	72 - 917	24/99/19 2867	24/98/19 9760	72
Terphenyl-d95 (Surr)	49	S9-	40 - 911	24/99/19 2867	24/98/19 9760	72

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	0.12	J	0.25	0.10	mg/L			06/18/21 12:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	33		72 - 972		24/98/19 9169	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	4.2		0.11	0.068	mg/L		06/07/21 14:58	06/13/21 16:08	1
Motor Oil (>C24-C36)	0.76		0.37	0.10	mg/L		06/07/21 14:58	06/13/21 16:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	82		72 - 972	24/2: /19 9568	24/90/19 9468	9

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Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND	*+ *1	20	11	ug/L			06/11/21 00:47	20
Chloromethane	ND		20	5.6	ug/L			06/11/21 00:47	20
Vinyl chloride	ND		20	4.4	ug/L			06/11/21 00:47	20
Bromomethane	ND		20	4.2	ug/L			06/11/21 00:47	20
Chloroethane	ND		20	7.0	ug/L			06/11/21 00:47	20
Trichlorofluoromethane	ND		20	7.2	ug/L			06/11/21 00:47	20
1,1-Dichloroethene	ND		20	5.6	ug/L			06/11/21 00:47	20
Methylene Chloride	ND		60	29	ug/L			06/11/21 00:47	20
trans-1,2-Dichloroethene	ND		20	7.8	ug/L			06/11/21 00:47	20
1,1-Dichloroethane	ND		20	4.4	ug/L			06/11/21 00:47	20
2,2-Dichloropropane	ND		20	6.4	ug/L			06/11/21 00:47	20
cis-1,2-Dichloroethene	ND		20	7.0	ug/L			06/11/21 00:47	20
Bromochloromethane	ND		20	5.8	ug/L			06/11/21 00:47	20
Chloroform	ND		20	5.2	ug/L			06/11/21 00:47	20
1,1,1-Trichloroethane	ND		20	7.8	ug/L			06/11/21 00:47	20
Carbon tetrachloride	ND		20	6.0	ug/L			06/11/21 00:47	20
1,1-Dichloropropene	ND		20	5.8	ug/L			06/11/21 00:47	20
Benzene	7.5	J	20	4.8	ug/L			06/11/21 00:47	20
1,2-Dichloroethane	ND		20	8.4	ug/L			06/11/21 00:47	20
Trichloroethene	ND	*+ *1	20	5.2	ug/L			06/11/21 00:47	20
1,2-Dichloropropane	ND		20	3.6	ug/L			06/11/21 00:47	20
Dibromomethane	ND		20	6.8	ug/L			06/11/21 00:47	20
Bromodichloromethane	ND		20	5.8	ug/L			06/11/21 00:47	20
cis-1,3-Dichloropropene	ND		20	4.0	ug/L			06/11/21 00:47	20
Toluene	140		20	7.8	ug/L			06/11/21 00:47	20
trans-1,3-Dichloropropene	ND		20	8.2	ug/L			06/11/21 00:47	20
1,1,2-Trichloroethane	ND		20	4.8	ug/L			06/11/21 00:47	20
Tetrachloroethene	ND	*+ *1	20	8.2	ug/L			06/11/21 00:47	20
1,3-Dichloropropane	ND		20	7.0	ug/L			06/11/21 00:47	20
Dibromochloromethane	ND		20	8.6	ug/L			06/11/21 00:47	20
1,2-Dibromoethane	ND	*+	20	8.0	ug/L			06/11/21 00:47	20
Chlorobenzene	ND		20	8.8	ug/L			06/11/21 00:47	20
Ethylbenzene	62		20	10	ug/L			06/11/21 00:47	20
1,1,1,2-Tetrachloroethane	ND	*1	20	3.6	ug/L			06/11/21 00:47	20
1,1,2,2-Tetrachloroethane	ND		20	10	ug/L			06/11/21 00:47	20
m-Xylene & p-Xylene	150		40	11	ug/L			06/11/21 00:47	20
o-Xylene	64		20	7.8	ug/L			06/11/21 00:47	20
Styrene	ND		20	11	ug/L			06/11/21 00:47	20
Bromoform	ND		20	10	ug/L			06/11/21 00:47	20
Isopropylbenzene	ND		20	8.8	ug/L			06/11/21 00:47	20
Bromobenzene	ND		20	8.6	ug/L			06/11/21 00:47	20
N-Propylbenzene	ND		20	10	ug/L			06/11/21 00:47	20
1,2,3-Trichloropropane	ND		20	8.2	ug/L			06/11/21 00:47	20
2-Chlorotoluene	ND		20	10	ug/L			06/11/21 00:47	20
1,3,5-Trimethylbenzene	ND		20	11	ug/L			06/11/21 00:47	20
4-Chlorotoluene	ND		20	7.6	ug/L			06/11/21 00:47	20
t-Butylbenzene	ND		40	12	ug/L			06/11/21 00:47	20
1,2,4-Trimethylbenzene	23	J	60	12	ug/L			06/11/21 00:47	20
sec-Butylbenzene	ND		20	9.8	ug/L			06/11/21 00:47	20

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		20	9.6	ug/L			06/11/21 00:47	20
4-Isopropyltoluene	9.6	J	20	5.6	ug/L			06/11/21 00:47	20
1,4-Dichlorobenzene	9.6	J	20	9.2	ug/L			06/11/21 00:47	20
n-Butylbenzene	ND		20	8.8	ug/L			06/11/21 00:47	20
1,2-Dichlorobenzene	ND		20	9.2	ug/L			06/11/21 00:47	20
1,2-Dibromo-3-Chloropropane	ND		60	11	ug/L			06/11/21 00:47	20
1,2,4-Trichlorobenzene	ND		20	6.6	ug/L			06/11/21 00:47	20
1,2,3-Trichlorobenzene	ND		40	8.6	ug/L			06/11/21 00:47	20
Hexachlorobutadiene	ND		60	16	ug/L			06/11/21 00:47	20
Naphthalene	270		60	19	ug/L			06/11/21 00:47	20
Methyl tert-butyl ether	ND		20	8.8	ug/L			06/11/21 00:47	20
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	929		82 - 912					24/99/19 2265	12
5-Bromofluorobenzene (Surr)	924		82 - 912					24/99/19 2265	12
Dibromofluoromethane (Surr)	929		82 - 912					24/99/19 2265	12
9,1-Dichloroethane-d5 (Surr)	927		82 - 914					24/99/19 2265	12

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/11/21 08:45	06/12/21 18:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d95	::		13 - 972				24/99/19 2867	24/91/19 98612	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	9.6	1.7	ug/L		06/11/21 08:45	06/18/21 17:29	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	70		07 - 900				24/99/19 2867	24/98/19 9: 613	92

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	1.0		0.96	0.35	ug/L		06/11/21 08:45	06/12/21 16:44	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,3-Dichlorobenzene	0.091	J	0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,4-Dichlorobenzene	0.86		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,2-Dichlorobenzene	1.6		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Methylphenol	0.41	J	0.58	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
3 & 4 Methylphenol	ND		0.58	0.096	ug/L		06/11/21 08:45	06/12/21 16:44	1
N-Nitrosodi-n-propylamine	ND		0.38	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Isophorone	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Nitrophenol	0.77	J	0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:44	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzoic acid	ND		9.6	1.3	ug/L		06/11/21 08:45	06/12/21 16:44	1
Bis(2-chloroethoxy)methane	ND		0.58	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1

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Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenol	0.52	J	0.96	0.19	ug/L		06/11/21 08:45	06/12/21 16:44	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/11/21 08:45	06/12/21 16:44	1
Naphthalene	0.48		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 16:44	1
4-Chloroaniline	ND		1.9	0.57	ug/L		06/11/21 08:45	06/12/21 16:44	1
Hexachlorobutadiene	ND		0.96	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
2-Methylnaphthalene	0.22	J	0.38	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/11/21 08:45	06/12/21 16:44	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 16:44	1
4-Bromophenyl phenyl ether	ND		0.58	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
Hexachlorobenzene	ND		0.58	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Phenanthrene	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 16:44	1
Anthracene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Di-n-butyl phthalate	2.0	J B +	2.9	0.18	ug/L		06/11/21 08:45	06/12/21 16:44	1
Fluoranthene	ND		0.24	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1
Pyrene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 16:44	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/11/21 08:45	06/12/21 16:44	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 16:44	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Carbazole	ND		0.58	0.096	ug/L		06/11/21 08:45	06/12/21 16:44	1
1-Methylnaphthalene	0.20	J	0.96	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 16:44	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 16:44	1
bis(chloroisopropyl) ether	ND		0.24	0.058	ug/L		06/11/21 08:45	06/12/21 16:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	79		95 - 912	24/99/19 2867	24/91/19 9465	9
Nhenol-d7 (Surr)	84		92 - 912	24/99/19 2867	24/91/19 9465	9
yitrobenzene-d7 (Surr)	79		54 - 917	24/99/19 2867	24/91/19 9465	9
1,5,4-Tribromophenol (Surr)	89		72 - 917	24/99/19 2867	24/91/19 9465	9
Terphenyl-d95 (Surr)	: 0		40 - 911	24/99/19 2867	24/91/19 9465	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chloro-3-methylphenol	ND		29	6.2	ug/L		06/11/21 08:45	06/18/21 15:27	50
Hexachlorocyclopentadiene	ND		48	6.7	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4,6-Trichlorophenol	ND		29	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4,5-Trichlorophenol	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
2-Chloronaphthalene	ND		48	3.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
2-Nitroaniline	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
Dimethyl phthalate	ND		29	2.9	ug/L		06/11/21 08:45	06/18/21 15:27	50
Acenaphthylene	ND		48	2.9	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,6-Dinitrotoluene	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
3-Nitroaniline	ND		140	7.7	ug/L		06/11/21 08:45	06/18/21 15:27	50

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-RW47D-DUP

Lab Sample ID: 580-103598-5

Date Collected: 06/04/21 12:20

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		19	2.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4-Dinitrophenol	ND		240	77	ug/L		06/11/21 08:45	06/18/21 15:27	50
4-Nitrophenol	ND		480	82	ug/L		06/11/21 08:45	06/18/21 15:27	50
Dibenzofuran	ND		19	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
2,4-Dinitrotoluene	ND		48	4.8	ug/L		06/11/21 08:45	06/18/21 15:27	50
Diethyl phthalate	ND		48	7.2	ug/L		06/11/21 08:45	06/18/21 15:27	50
4-Chlorophenyl phenyl ether	ND		29	2.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
Fluorene	ND		12	2.4	ug/L		06/11/21 08:45	06/18/21 15:27	50
4-Nitroaniline	ND		96	10	ug/L		06/11/21 08:45	06/18/21 15:27	50

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	2	S9-	95 - 912	24/99/19 2867	24/98/19 976:	72
Nhenol-d7 (Surr)	2	S9-	92 - 912	24/99/19 2867	24/98/19 976:	72
yitrobenzene-d7 (Surr)	2	S9-	54 - 917	24/99/19 2867	24/98/19 976:	72
1-Fluorobiphenyl	09	S9-	79 - 912	24/99/19 2867	24/98/19 976:	72
1,5,4-Tribromophenol (Surr)	911		72 - 917	24/99/19 2867	24/98/19 976:	72
Terphenyl-d95 (Surr)	41	S9-	40 - 911	24/99/19 2867	24/98/19 976:	72

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/18/21 13:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	37		72 - 972		24/98/19 9064	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	4.9		0.11	0.067	mg/L		06/07/21 14:58	06/13/21 16:28	1
Motor Oil (>C24-C36)	0.72		0.36	0.10	mg/L		06/07/21 14:58	06/13/21 16:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	85		72 - 972	24/2: /19 9568	24/90/19 9468	9

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/14/21 21:03	1
Chloromethane	ND		1.0	0.28	ug/L			06/14/21 21:03	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/14/21 21:03	1
Bromomethane	ND		1.0	0.21	ug/L			06/14/21 21:03	1
Chloroethane	ND		1.0	0.35	ug/L			06/14/21 21:03	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/14/21 21:03	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/14/21 21:03	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/14/21 21:03	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/14/21 21:03	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/14/21 21:03	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/14/21 21:03	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/14/21 21:03	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/14/21 21:03	1
Chloroform	ND		1.0	0.26	ug/L			06/14/21 21:03	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/14/21 21:03	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/14/21 21:03	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/14/21 21:03	1
Benzene	ND		1.0	0.24	ug/L			06/14/21 21:03	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/14/21 21:03	1
Trichloroethene	ND		1.0	0.26	ug/L			06/14/21 21:03	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/14/21 21:03	1
Dibromomethane	ND		1.0	0.34	ug/L			06/14/21 21:03	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/14/21 21:03	1
Toluene	ND		1.0	0.39	ug/L			06/14/21 21:03	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/14/21 21:03	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/14/21 21:03	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/14/21 21:03	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/14/21 21:03	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/14/21 21:03	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/14/21 21:03	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/14/21 21:03	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/14/21 21:03	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/14/21 21:03	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/14/21 21:03	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/14/21 21:03	1
o-Xylene	ND		1.0	0.39	ug/L			06/14/21 21:03	1
Styrene	ND		1.0	0.53	ug/L			06/14/21 21:03	1
Bromoform	ND		1.0	0.51	ug/L			06/14/21 21:03	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/14/21 21:03	1
Bromobenzene	ND		1.0	0.43	ug/L			06/14/21 21:03	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/14/21 21:03	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/14/21 21:03	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/14/21 21:03	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/14/21 21:03	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/14/21 21:03	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/14/21 21:03	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/14/21 21:03	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/14/21 21:03	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/14/21 21:03	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/14/21 21:03	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/14/21 21:03	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/14/21 21:03	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/14/21 21:03	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/14/21 21:03	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/14/21 21:03	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/14/21 21:03	1
Naphthalene	ND		3.0	0.93	ug/L			06/14/21 21:03	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/14/21 21:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	922		82 - 912					24/95/19 1900	9
5-Bromofluorobenzene (Surr)	3		82 - 912					24/95/19 1900	9
Dibromofluoromethane (Surr)	920		82 - 912					24/95/19 1900	9
9,1-Dichloroethane-d5 (Surr)	990		82 - 914					24/95/19 1900	9

Method: 8260D - Volatile Organic Compounds by GC/MS - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/15/21 13:52	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/15/21 13:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	33		82 - 912					24/97/19 9067	9
5-Bromofluorobenzene (Surr)	30		82 - 912					24/97/19 9067	9
Dibromofluoromethane (Surr)	924		82 - 912					24/97/19 9067	9
9,1-Dichloroethane-d5 (Surr)	992		82 - 914					24/97/19 9067	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	0.95	0.17	ug/L		06/11/21 08:45	06/12/21 18:43	1
Bis(2-ethylhexyl) phthalate	ND		0.19	0.082	ug/L		06/11/21 08:45	06/12/21 18:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	0		07 - 900				24/99/19 2807	24/91/19 9800	9
Terphenyl-d95	84		13 - 972				24/99/19 2807	24/91/19 9800	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	2.3		0.95	0.34	ug/L		06/11/21 08:45	06/12/21 17:07	1
Bis(2-chloroethyl)ether	ND		0.095	0.028	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Chlorophenol	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzyl alcohol	0.84	J	4.7	0.17	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,2-Dichlorobenzene	ND		0.38	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Methylphenol	ND		0.57	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
3 & 4 Methylphenol	ND		0.57	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachloroethane	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Nitrobenzene	ND		0.95	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Isophorone	0.21	J	0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Nitrophenol	ND		0.95	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzoic acid	5.2	J	9.5	1.3	ug/L		06/11/21 08:45	06/12/21 17:07	1
Bis(2-chloroethoxy)methane	ND		0.57	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dichlorophenol	ND		0.95	0.19	ug/L		06/11/21 08:45	06/12/21 17:07	1
1,2,4-Trichlorobenzene	ND		0.38	0.085	ug/L		06/11/21 08:45	06/12/21 17:07	1
Naphthalene	ND		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachlorobutadiene	ND		0.95	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachlorocyclopentadiene	ND		0.95	0.13	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4,6-Trichlorophenol	ND		0.57	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4,5-Trichlorophenol	ND		0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Chloronaphthalene	ND		0.95	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
2-Nitroaniline	ND		0.95	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Acenaphthylene	ND		0.95	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,6-Dinitrotoluene	0.95		0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
3-Nitroaniline	ND		2.8	0.15	ug/L		06/11/21 08:45	06/12/21 17:07	1
Acenaphthene	ND		0.38	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dinitrophenol	ND		4.7	1.5	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Nitrophenol	ND		9.5	1.6	ug/L		06/11/21 08:45	06/12/21 17:07	1
Dibenzofuran	ND		0.38	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
2,4-Dinitrotoluene	ND		0.95	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1
Diethyl phthalate	ND		0.95	0.14	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Chlorophenyl phenyl ether	ND		0.57	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Fluorene	ND		0.24	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/11/21 08:45	06/12/21 17:07	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.52	ug/L		06/11/21 08:45	06/12/21 17:07	1
N-Nitrosodiphenylamine	ND		0.95	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Phenanthrene	ND		0.95	0.11	ug/L		06/11/21 08:45	06/12/21 17:07	1
Anthracene	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Di-n-butyl phthalate	2.3	J B *+	2.8	0.18	ug/L		06/11/21 08:45	06/12/21 17:07	1
Fluoranthene	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1
Pyrene	ND		0.95	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 17:07	1
3,3'-Dichlorobenzidine	ND		0.95	0.25	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[a]anthracene	ND		0.24	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.70	ug/L		06/11/21 08:45	06/12/21 17:07	1
Di-n-octyl phthalate	ND		0.95	0.12	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 17:07	1
Dibenz(a,h)anthracene	ND		0.24	0.066	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Carbazole	ND		0.57	0.095	ug/L		06/11/21 08:45	06/12/21 17:07	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS02

Lab Sample ID: 580-103598-6

Date Collected: 06/04/21 13:50

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.95	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:07	1
Benzo[k]fluoranthene	ND		0.24	0.047	ug/L		06/11/21 08:45	06/12/21 17:07	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:07	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	53		95 - 912	24/99/19 2867	24/91/19 9: 0:	9
Nhenol-d7 (Surr)	: 9		92 - 912	24/99/19 2867	24/91/19 9: 0:	9
yitrobenzene-d7 (Surr)	42		54 - 917	24/99/19 2867	24/91/19 9: 0:	9
1-Fluorobiphenyl	40		79 - 912	24/99/19 2867	24/91/19 9: 0:	9
1,5,4-Tribromophenol (Surr)	925		72 - 917	24/99/19 2867	24/91/19 9: 0:	9
Terphenyl-d95 (Surr)	30		40 - 911	24/99/19 2867	24/91/19 9: 0:	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/12/21 01:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	35		72 - 972		24/91/19 2969	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	0.64		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 17:08	1
Motor Oil (>C24-C36)	0.13	J	0.35	0.096	mg/L		06/07/21 14:58	06/13/21 17:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	: 7		72 - 972	24/2: /19 9568	24/90/19 9: 0:	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/10/21 06:11	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 06:11	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 06:11	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 06:11	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 06:11	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 06:11	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 06:11	1
Methylene Chloride	ND	*+	3.0	1.4	ug/L			06/10/21 06:11	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 06:11	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 06:11	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 06:11	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 06:11	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 06:11	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 06:11	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 06:11	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 06:11	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 06:11	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 06:11	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 06:11	1
Trichloroethene	ND		1.0	0.26	ug/L			06/10/21 06:11	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 06:11	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 06:11	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 06:11	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 06:11	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 06:11	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 06:11	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 06:11	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/10/21 06:11	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 06:11	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 06:11	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/10/21 06:11	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 06:11	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:11	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/10/21 06:11	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 06:11	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 06:11	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 06:11	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 06:11	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 06:11	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:11	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 06:11	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:11	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 06:11	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 06:11	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 06:11	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 06:11	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 06:11	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 06:11	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 06:11	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 06:11	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 06:11	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:11	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:11	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:11	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 06:11	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 06:11	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 06:11	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 06:11	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 06:11	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 06:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	922		82 - 912					24/92/19 24609	9
5-Bromofluorobenzene (Surr)	31		82 - 912					24/92/19 24609	9
Dibromofluoromethane (Surr)	992		82 - 912					24/92/19 24609	9
9,1-Dichloroethane-d5 (Surr)	997		82 - 914					24/92/19 24609	9

Method: 8270E SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pentachlorophenol	ND	*1	0.96	0.17	ug/L		06/11/21 08:45	06/12/21 19:05	1
Bis(2-ethylhexyl) phthalate	ND		0.19	0.083	ug/L		06/11/21 08:45	06/12/21 19:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,5,4-Tribromophenol	82		07 - 900				24/99/19 28657	24/91/19 93627	9
Terphenyl-d95	31		13 - 972				24/99/19 28657	24/91/19 93627	9

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenol	ND		0.96	0.34	ug/L		06/11/21 08:45	06/12/21 17:31	1
Bis(2-chloroethyl)ether	ND		0.096	0.029	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Chlorophenol	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,3-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,4-Dichlorobenzene	ND		0.38	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzyl alcohol	ND		4.8	0.17	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,2-Dichlorobenzene	ND		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Methylphenol	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
3 & 4 Methylphenol	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
N-Nitrosodi-n-propylamine	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Hexachloroethane	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Nitrobenzene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Isophorone	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Nitrophenol	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dimethylphenol	ND		3.8	0.15	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzoic acid	1.4	J	9.6	1.3	ug/L		06/11/21 08:45	06/12/21 17:31	1
Bis(2-chloroethoxy)methane	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dichlorophenol	ND		0.96	0.19	ug/L		06/11/21 08:45	06/12/21 17:31	1
1,2,4-Trichlorobenzene	ND		0.38	0.086	ug/L		06/11/21 08:45	06/12/21 17:31	1
Naphthalene	ND		0.38	0.15	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Chloroaniline	ND		1.9	0.56	ug/L		06/11/21 08:45	06/12/21 17:31	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexachlorobutadiene	ND		0.96	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Chloro-3-methylphenol	ND		0.57	0.12	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Methylnaphthalene	ND		0.38	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Hexachlorocyclopentadiene	ND		0.96	0.13	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4,6-Trichlorophenol	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4,5-Trichlorophenol	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Chloronaphthalene	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
2-Nitroaniline	ND		0.96	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
Dimethyl phthalate	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Acenaphthylene	ND		0.96	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,6-Dinitrotoluene	0.77		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
3-Nitroaniline	ND		2.9	0.15	ug/L		06/11/21 08:45	06/12/21 17:31	1
Acenaphthene	ND		0.38	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dinitrophenol	ND		4.8	1.5	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Nitrophenol	ND		9.6	1.6	ug/L		06/11/21 08:45	06/12/21 17:31	1
Dibenzofuran	ND		0.38	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
2,4-Dinitrotoluene	ND		0.96	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
Diethyl phthalate	ND		0.96	0.14	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Chlorophenyl phenyl ether	ND		0.57	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Fluorene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Nitroaniline	ND		1.9	0.20	ug/L		06/11/21 08:45	06/12/21 17:31	1
4,6-Dinitro-2-methylphenol	ND		1.9	0.53	ug/L		06/11/21 08:45	06/12/21 17:31	1
N-Nitrosodiphenylamine	ND		0.96	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
4-Bromophenyl phenyl ether	ND		0.57	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Hexachlorobenzene	ND		0.57	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Phenanthrene	ND		0.96	0.11	ug/L		06/11/21 08:45	06/12/21 17:31	1
Anthracene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Di-n-butyl phthalate	2.1	J B *+	2.9	0.18	ug/L		06/11/21 08:45	06/12/21 17:31	1
Fluoranthene	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1
Pyrene	ND		0.96	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Butyl benzyl phthalate	ND		3.8	0.26	ug/L		06/11/21 08:45	06/12/21 17:31	1
3,3'-Dichlorobenzidine	ND		0.96	0.25	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[a]anthracene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Chrysene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Bis(2-ethylhexyl) phthalate	ND		1.9	0.71	ug/L		06/11/21 08:45	06/12/21 17:31	1
Di-n-octyl phthalate	ND		0.96	0.12	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[a]pyrene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Indeno[1,2,3-cd]pyrene	ND		0.38	0.12	ug/L		06/11/21 08:45	06/12/21 17:31	1
Dibenz(a,h)anthracene	ND		0.24	0.067	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[g,h,i]perylene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Carbazole	ND		0.57	0.096	ug/L		06/11/21 08:45	06/12/21 17:31	1
1-Methylnaphthalene	ND		0.96	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[b]fluoranthene	ND		0.24	0.038	ug/L		06/11/21 08:45	06/12/21 17:31	1
Benzo[k]fluoranthene	ND		0.24	0.048	ug/L		06/11/21 08:45	06/12/21 17:31	1
bis(chloroisopropyl) ether	ND		0.24	0.057	ug/L		06/11/21 08:45	06/12/21 17:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorophenol (Surr)	57		95 - 912	24/99/19 28657	24/91/19 9: 09	9
Nhenol-d7 (Surr)	00		92 - 912	24/99/19 28657	24/91/19 9: 09	9
ytrobenzene-d7 (Surr)	74		54 - 917	24/99/19 28657	24/91/19 9: 09	9

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 060421-NT-GS01

Lab Sample ID: 580-103598-7

Date Collected: 06/04/21 14:35

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1-Fluorobiphenyl	48		79 - 912	24/99/19 2867	24/91/19 9: 09	9
1,5,4-Tribromophenol (Surr)	927		72 - 917	24/99/19 2867	24/91/19 9: 09	9
Terphenyl-d95 (Surr)	84		40 - 911	24/99/19 2867	24/91/19 9: 09	9

Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		0.25	0.10	mg/L			06/12/21 02:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
5-Bromofluorobenzene (Surr)	3:		72 - 972		24/91/19 2104	9

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	2.7		0.11	0.065	mg/L		06/07/21 14:58	06/13/21 17:28	1
Motor Oil (>C24-C36)	1.1		0.35	0.097	mg/L		06/07/21 14:58	06/13/21 17:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	: 7		72 - 972	24/2: /19 9568	24/90/19 9: 08	9

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-103598-8

Date Collected: 06/04/21 00:01

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/10/21 06:35	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 06:35	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 06:35	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 06:35	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 06:35	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 06:35	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 06:35	1
Methylene Chloride	ND	*+	3.0	1.4	ug/L			06/10/21 06:35	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 06:35	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 06:35	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 06:35	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 06:35	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 06:35	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 06:35	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 06:35	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 06:35	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 06:35	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 06:35	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 06:35	1
Trichloroethene	ND		1.0	0.26	ug/L			06/10/21 06:35	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 06:35	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 06:35	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 06:35	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 06:35	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 06:35	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 06:35	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 06:35	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/10/21 06:35	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 06:35	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 06:35	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/10/21 06:35	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 06:35	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:35	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/10/21 06:35	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 06:35	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 06:35	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 06:35	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 06:35	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 06:35	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:35	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 06:35	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 06:35	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 06:35	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 06:35	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 06:35	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 06:35	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 06:35	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 06:35	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 06:35	1

Eurofins FGS, Seattle

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: Trip Blank

Lab Sample ID: 580-103598-8

Date Collected: 06/04/21 00:01

Matrix: Water

Date Received: 06/04/21 15:30

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 06:35	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 06:35	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:35	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 06:35	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 06:35	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 06:35	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 06:35	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 06:35	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 06:35	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 06:35	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 06:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	929		82 - 912		24/92/19 2407	9
5-Bromofluorobenzene (Surr)	35		82 - 912		24/92/19 2407	9
Dibromofluoromethane (Surr)	992		82 - 912		24/92/19 2407	9
9,1-Dichloroethane-d5 (Surr)	995		82 - 914		24/92/19 2407	9

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-35875x/7
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUbd	Dil zac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/10/21 00:44	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 00:44	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 00:44	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 00:44	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 00:44	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 00:44	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 00:44	1
Methylene Chloride	3.57		3.0	1.4	ug/L			06/10/21 00:44	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 00:44	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 00:44	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 00:44	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 00:44	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 00:44	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 00:44	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 00:44	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 00:44	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 00:44	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 00:44	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 00:44	1
Trichloroethene	ND		1.0	0.26	ug/L			06/10/21 00:44	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 00:44	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 00:44	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 00:44	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 00:44	1
Toluene	ND		1.0	0.39	ug/L			06/10/21 00:44	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 00:44	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 00:44	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/10/21 00:44	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 00:44	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 00:44	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/10/21 00:44	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 00:44	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 00:44	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/10/21 00:44	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 00:44	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 00:44	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 00:44	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 00:44	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 00:44	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 00:44	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 00:44	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 00:44	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 00:44	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 00:44	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 00:44	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 00:44	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 00:44	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 00:44	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-35875x/7
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 00:44	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 00:44	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 00:44	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 00:44	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 00:44	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 00:44	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 00:44	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 00:44	1
1,2,3-Trichlorobenzene	0.533	J	2.0	0.43	ug/L			06/10/21 00:44	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 00:44	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 00:44	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 00:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		06/10/21 00:44	1
4-Bromofluorobenzene (Surr)	96		80 - 120		06/10/21 00:44	1
Dibromofluoromethane (Surr)	108		80 - 120		06/10/21 00:44	1
1,2-Dichloroethane-d4 (Surr)	108		80 - 126		06/10/21 00:44	1

Lab Sample ID: LCS 580-35875x/%
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
Dichlorodifluoromethane	10.0	12.1		ug/L		121	47 - 133
Chloromethane	10.0	8.76		ug/L		88	52 - 135
Vinyl chloride	10.0	8.67		ug/L		87	65 - 130
Bromomethane	10.0	8.41		ug/L		84	66 - 125
Chloroethane	10.0	8.84		ug/L		88	65 - 132
Trichlorofluoromethane	10.0	9.63		ug/L		96	64 - 130
1,1-Dichloroethene	10.0	11.8		ug/L		118	70 - 129
Methylene Chloride	10.0	11.9		ug/L		119	77 - 120
trans-1,2-Dichloroethene	10.0	10.6		ug/L		106	70 - 130
1,1-Dichloroethane	10.0	10.4		ug/L		104	81 - 129
2,2-Dichloropropane	10.0	9.31		ug/L		93	53 - 150
cis-1,2-Dichloroethene	10.0	10.1		ug/L		101	76 - 129
Bromochloromethane	10.0	10.2		ug/L		102	78 - 120
Chloroform	10.0	11.0		ug/L		110	73 - 127
1,1,1-Trichloroethane	10.0	11.3		ug/L		113	74 - 130
Carbon tetrachloride	10.0	11.2		ug/L		112	72 - 129
1,1-Dichloropropene	10.0	10.6		ug/L		106	74 - 131
Benzene	10.0	10.4		ug/L		104	82 - 122
1,2-Dichloroethane	10.0	10.5		ug/L		105	76 - 126
Trichloroethene	10.0	10.6		ug/L		106	81 - 125
1,2-Dichloropropane	10.0	9.85		ug/L		99	80 - 126
Dibromomethane	10.0	10.3		ug/L		103	80 - 120
Bromodichloromethane	10.0	10.4		ug/L		104	75 - 124
cis-1,3-Dichloropropene	10.0	8.00		ug/L		80	77 - 120

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-35875x/%
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D .	Rec	. Rec1 Limits
Toluene	10.0	10.1		ug/L		101	80 - 120
trans-1,3-Dichloropropene	10.0	9.47		ug/L		95	70 - 122
1,1,2-Trichloroethane	10.0	10.4		ug/L		104	80 - 121
Tetrachloroethene	10.0	10.7		ug/L		107	76 - 120
1,3-Dichloropropane	10.0	10.3		ug/L		103	79 - 120
Dibromochloromethane	10.0	10.2		ug/L		102	60 - 125
1,2-Dibromoethane	10.0	10.6		ug/L		106	79 - 120
Chlorobenzene	10.0	9.84		ug/L		98	80 - 120
Ethylbenzene	10.0	9.98		ug/L		100	80 - 120
1,1,1,2-Tetrachloroethane	10.0	9.88		ug/L		99	79 - 120
1,1,1,2-Tetrachloroethane	10.0	8.64		ug/L		86	74 - 124
m-Xylene & p-Xylene	10.0	10.2		ug/L		102	80 - 120
o-Xylene	10.0	9.77		ug/L		98	80 - 125
Styrene	10.0	10.0		ug/L		100	76 - 127
Bromoform	10.0	9.96		ug/L		100	28 - 139
Isopropylbenzene	10.0	10.2		ug/L		102	75 - 129
Bromobenzene	10.0	8.79		ug/L		88	80 - 120
N-Propylbenzene	10.0	8.69		ug/L		87	80 - 128
1,2,3-Trichloropropane	10.0	9.20		ug/L		92	76 - 124
2-Chlorotoluene	10.0	8.89		ug/L		89	80 - 120
1,3,5-Trimethylbenzene	10.0	8.91		ug/L		89	80 - 131
4-Chlorotoluene	10.0	9.15		ug/L		92	80 - 120
t-Butylbenzene	10.0	8.89		ug/L		89	80 - 129
1,2,4-Trimethylbenzene	10.0	9.09		ug/L		91	80 - 131
sec-Butylbenzene	10.0	9.54		ug/L		95	78 - 131
1,3-Dichlorobenzene	10.0	11.3		ug/L		113	69 - 127
4-Isopropyltoluene	10.0	8.92		ug/L		89	77 - 131
1,4-Dichlorobenzene	10.0	9.60		ug/L		96	80 - 120
n-Butylbenzene	10.0	8.41		ug/L		84	78 - 120
1,2-Dichlorobenzene	10.0	10.3		ug/L		103	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	10.9		ug/L		109	65 - 125
1,2,4-Trichlorobenzene	10.0	12.7		ug/L		127	73 - 128
1,2,3-Trichlorobenzene	10.0	11.6		ug/L		116	74 - 139
Hexachlorobutadiene	10.0	10.8		ug/L		108	74 - 125
Naphthalene	10.0	11.5		ug/L		115	75 - 134
Methyl tert-butyl ether	10.0	10.1		ug/L		101	72 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35875x/5
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	RTD Limit
Dichlorodifluoromethane	10.0	12.3		ug/L	123	47 - 133	2	15
Chloromethane	10.0	7.70		ug/L	77	52 - 135	13	14
Vinyl chloride	10.0	8.48		ug/L	85	65 - 130	2	14
Bromomethane	10.0	8.37		ug/L	84	66 - 125	0	14
Chloroethane	10.0	8.70		ug/L	87	65 - 132	2	18
Trichlorofluoromethane	10.0	9.74		ug/L	97	64 - 130	1	14
1,1-Dichloroethene	10.0	12.0		ug/L	120	70 - 129	2	17
Methylene Chloride	10.0	12.2	*+	ug/L	122	77 - 120	2	18
trans-1,2-Dichloroethene	10.0	10.9		ug/L	109	70 - 130	3	21
1,1-Dichloroethane	10.0	10.9		ug/L	109	81 - 129	5	15
2,2-Dichloropropane	10.0	9.70		ug/L	97	53 - 150	4	15
cis-1,2-Dichloroethene	10.0	10.4		ug/L	104	76 - 129	4	15
Bromochloromethane	10.0	10.9		ug/L	109	78 - 120	6	13
Chloroform	10.0	12.0		ug/L	120	73 - 127	9	14
1,1,1-Trichloroethane	10.0	11.5		ug/L	115	74 - 130	2	11
Carbon tetrachloride	10.0	11.5		ug/L	115	72 - 129	3	11
1,1-Dichloropropene	10.0	10.9		ug/L	109	74 - 131	3	14
Benzene	10.0	11.1		ug/L	111	82 - 122	7	14
1,2-Dichloroethane	10.0	11.2		ug/L	112	76 - 126	7	11
Trichloroethene	10.0	11.1		ug/L	111	81 - 125	5	13
1,2-Dichloropropane	10.0	10.6		ug/L	106	80 - 126	7	14
Dibromomethane	10.0	10.8		ug/L	108	80 - 120	5	11
Bromodichloromethane	10.0	11.2		ug/L	112	75 - 124	7	13
cis-1,3-Dichloropropene	10.0	8.14		ug/L	81	77 - 120	2	20
Toluene	10.0	10.5		ug/L	105	80 - 120	4	13
trans-1,3-Dichloropropene	10.0	10.2		ug/L	102	70 - 122	7	14
1,1,2-Trichloroethane	10.0	11.1		ug/L	111	80 - 121	6	14
Tetrachloroethene	10.0	10.9		ug/L	109	76 - 120	2	13
1,3-Dichloropropane	10.0	11.0		ug/L	110	79 - 120	7	13
Dibromochloromethane	10.0	11.0		ug/L	110	60 - 125	7	13
1,2-Dibromoethane	10.0	11.4		ug/L	114	79 - 120	7	12
Chlorobenzene	10.0	10.4		ug/L	104	80 - 120	6	10
Ethylbenzene	10.0	10.6		ug/L	106	80 - 120	6	14
1,1,1,2-Tetrachloroethane	10.0	10.6		ug/L	106	79 - 120	7	10
1,1,2,2-Tetrachloroethane	10.0	8.76		ug/L	88	74 - 124	1	18
m-Xylene & p-Xylene	10.0	10.8		ug/L	108	80 - 120	6	14
o-Xylene	10.0	10.4		ug/L	104	80 - 125	6	16
Styrene	10.0	10.6		ug/L	106	76 - 127	6	16
Bromoform	10.0	10.6		ug/L	106	28 - 139	6	15
Isopropylbenzene	10.0	10.7		ug/L	107	75 - 129	5	12
Bromobenzene	10.0	8.83		ug/L	88	80 - 120	0	13
N-Propylbenzene	10.0	8.75		ug/L	87	80 - 128	1	13
1,2,3-Trichloropropane	10.0	9.33		ug/L	93	76 - 124	1	16
2-Chlorotoluene	10.0	8.97		ug/L	90	80 - 120	1	15
1,3,5-Trimethylbenzene	10.0	9.03		ug/L	90	80 - 131	1	14
4-Chlorotoluene	10.0	9.14		ug/L	91	80 - 120	0	14
t-Butylbenzene	10.0	8.87		ug/L	89	80 - 129	0	14
1,2,4-Trimethylbenzene	10.0	9.00		ug/L	90	80 - 131	1	16

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35875x/5
MatriW P ater
F nalysis Batch: 35875x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
sec-Butylbenzene	10.0	9.69		ug/L		97	78 - 131	1	15
1,3-Dichlorobenzene	10.0	11.8		ug/L		118	69 - 127	4	14
4-Isopropyltoluene	10.0	9.00		ug/L		90	77 - 131	1	20
1,4-Dichlorobenzene	10.0	9.83		ug/L		98	80 - 120	2	17
n-Butylbenzene	10.0	8.31		ug/L		83	78 - 120	1	14
1,2-Dichlorobenzene	10.0	10.8		ug/L		108	80 - 120	4	15
1,2-Dibromo-3-Chloropropane	10.0	10.4		ug/L		104	65 - 125	5	17
1,2,4-Trichlorobenzene	10.0	12.6		ug/L		126	73 - 128	1	20
1,2,3-Trichlorobenzene	10.0	11.0		ug/L		110	74 - 139	5	26
Hexachlorobutadiene	10.0	10.3		ug/L		103	74 - 125	5	22
Naphthalene	10.0	10.7		ug/L		107	75 - 134	7	23
Methyl tert-butyl ether	10.0	10.6		ug/L		106	72 - 130	6	18

Surrogate	LCSD %Recovery	LCSD Quali(ier	Limits
Toluene-d8 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		80 - 126

Lab Sample ID: MB 580-358885/7
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/10/21 17:13	1
Chloromethane	ND		1.0	0.28	ug/L			06/10/21 17:13	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/10/21 17:13	1
Bromomethane	ND		1.0	0.21	ug/L			06/10/21 17:13	1
Chloroethane	ND		1.0	0.35	ug/L			06/10/21 17:13	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/10/21 17:13	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/10/21 17:13	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/10/21 17:13	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/10/21 17:13	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/10/21 17:13	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/10/21 17:13	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/10/21 17:13	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/10/21 17:13	1
Chloroform	ND		1.0	0.26	ug/L			06/10/21 17:13	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/10/21 17:13	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/10/21 17:13	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/10/21 17:13	1
Benzene	ND		1.0	0.24	ug/L			06/10/21 17:13	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/10/21 17:13	1
Trichloroethene	ND		1.0	0.26	ug/L			06/10/21 17:13	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/10/21 17:13	1
Dibromomethane	ND		1.0	0.34	ug/L			06/10/21 17:13	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/10/21 17:13	1
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/10/21 17:13	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-358885/7
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Qualifier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil z ac
Toluene	ND		1.0	0.39	ug/L			06/10/21 17:13	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/10/21 17:13	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/10/21 17:13	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/10/21 17:13	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/10/21 17:13	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/10/21 17:13	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/10/21 17:13	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/10/21 17:13	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/10/21 17:13	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/10/21 17:13	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/10/21 17:13	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/10/21 17:13	1
o-Xylene	ND		1.0	0.39	ug/L			06/10/21 17:13	1
Styrene	ND		1.0	0.53	ug/L			06/10/21 17:13	1
Bromoform	ND		1.0	0.51	ug/L			06/10/21 17:13	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/10/21 17:13	1
Bromobenzene	ND		1.0	0.43	ug/L			06/10/21 17:13	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/10/21 17:13	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/10/21 17:13	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/10/21 17:13	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/10/21 17:13	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/10/21 17:13	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/10/21 17:13	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/10/21 17:13	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/10/21 17:13	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/10/21 17:13	1
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/10/21 17:13	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 17:13	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/10/21 17:13	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/10/21 17:13	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/10/21 17:13	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/10/21 17:13	1
1,2,3-Trichlorobenzene	ND		2.0	0.43	ug/L			06/10/21 17:13	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/10/21 17:13	1
Naphthalene	ND		3.0	0.93	ug/L			06/10/21 17:13	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/10/21 17:13	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		80 - 120		06/10/21 17:13	1
4-Bromofluorobenzene (Surr)	83		80 - 120		06/10/21 17:13	1
Dibromofluoromethane (Surr)	107		80 - 120		06/10/21 17:13	1
1,2-Dichloroethane-d4 (Surr)	113		80 - 126		06/10/21 17:13	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-358885/%
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D . Rec	. Rec1 Limits
Dichlorodifluoromethane	10.0	13.6	*+	ug/L	136	47 - 133
Chloromethane	10.0	8.62		ug/L	86	52 - 135
Vinyl chloride	10.0	8.55		ug/L	85	65 - 130
Bromomethane	10.0	7.92		ug/L	79	66 - 125
Chloroethane	10.0	8.59		ug/L	86	65 - 132
Trichlorofluoromethane	10.0	9.08		ug/L	91	64 - 130
1,1-Dichloroethene	10.0	12.2		ug/L	122	70 - 129
Methylene Chloride	10.0	11.8		ug/L	118	77 - 120
trans-1,2-Dichloroethene	10.0	10.9		ug/L	109	70 - 130
1,1-Dichloroethane	10.0	10.9		ug/L	109	81 - 129
2,2-Dichloropropane	10.0	10.9		ug/L	109	53 - 150
cis-1,2-Dichloroethene	10.0	10.6		ug/L	106	76 - 129
Bromochloromethane	10.0	10.8		ug/L	108	78 - 120
Chloroform	10.0	12.0		ug/L	120	73 - 127
1,1,1-Trichloroethane	10.0	12.0		ug/L	120	74 - 130
Carbon tetrachloride	10.0	12.1		ug/L	121	72 - 129
1,1-Dichloropropene	10.0	11.0		ug/L	110	74 - 131
Benzene	10.0	11.3		ug/L	113	82 - 122
1,2-Dichloroethane	10.0	10.4		ug/L	104	76 - 126
Trichloroethene	10.0	12.7	*+	ug/L	127	81 - 125
1,2-Dichloropropane	10.0	10.2		ug/L	102	80 - 126
Dibromomethane	10.0	10.9		ug/L	109	80 - 120
Bromodichloromethane	10.0	11.0		ug/L	110	75 - 124
cis-1,3-Dichloropropene	10.0	8.54		ug/L	85	77 - 120
Toluene	10.0	10.7		ug/L	107	80 - 120
trans-1,3-Dichloropropene	10.0	9.82		ug/L	98	70 - 122
1,1,2-Trichloroethane	10.0	11.6		ug/L	116	80 - 121
Tetrachloroethene	10.0	12.7	*+	ug/L	127	76 - 120
1,3-Dichloropropane	10.0	10.4		ug/L	104	79 - 120
Dibromochloromethane	10.0	11.8		ug/L	118	60 - 125
1,2-Dibromoethane	10.0	12.2	*+	ug/L	122	79 - 120
Chlorobenzene	10.0	11.6		ug/L	116	80 - 120
Ethylbenzene	10.0	11.3		ug/L	113	80 - 120
1,1,1,2-Tetrachloroethane	10.0	11.7		ug/L	117	79 - 120
1,1,2,2-Tetrachloroethane	10.0	8.87		ug/L	89	74 - 124
m-Xylene & p-Xylene	10.0	11.2		ug/L	112	80 - 120
o-Xylene	10.0	10.9		ug/L	109	80 - 125
Styrene	10.0	10.9		ug/L	109	76 - 127
Bromoform	10.0	11.7		ug/L	117	28 - 139
Isopropylbenzene	10.0	11.4		ug/L	114	75 - 129
Bromobenzene	10.0	10.6		ug/L	106	80 - 120
N-Propylbenzene	10.0	10.6		ug/L	106	80 - 128
1,2,3-Trichloropropane	10.0	10.2		ug/L	102	76 - 124
2-Chlorotoluene	10.0	10.4		ug/L	104	80 - 120
1,3,5-Trimethylbenzene	10.0	9.98		ug/L	100	80 - 131
4-Chlorotoluene	10.0	9.42		ug/L	94	80 - 120
t-Butylbenzene	10.0	9.75		ug/L	98	80 - 129
1,2,4-Trimethylbenzene	10.0	9.74		ug/L	97	80 - 131

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-358885/%
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits
sec-Butylbenzene	10.0	9.76		ug/L		98	78 - 131
1,3-Dichlorobenzene	10.0	11.5		ug/L		115	69 - 127
4-Isopropyltoluene	10.0	9.84		ug/L		98	77 - 131
1,4-Dichlorobenzene	10.0	10.1		ug/L		101	80 - 120
n-Butylbenzene	10.0	9.00		ug/L		90	78 - 120
1,2-Dichlorobenzene	10.0	11.0		ug/L		110	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	10.7		ug/L		107	65 - 125
1,2,4-Trichlorobenzene	10.0	12.6		ug/L		126	73 - 128
1,2,3-Trichlorobenzene	10.0	11.5		ug/L		115	74 - 139
Hexachlorobutadiene	10.0	11.1		ug/L		111	74 - 125
Naphthalene	10.0	11.1		ug/L		111	75 - 134
Methyl tert-butyl ether	10.0	9.93		ug/L		99	72 - 130

Surrogate	LCS %Recovery	LCS Quali(ier	Limits
Toluene-d8 (Surr)	109		80 - 120
4-Bromofluorobenzene (Surr)	112		80 - 120
Dibromofluoromethane (Surr)	104		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 126

Lab Sample ID: LCSD 580-358885/5
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	Limit
Dichlorodifluoromethane	10.0	11.0	*1	ug/L		110	47 - 133	21	15
Chloromethane	10.0	8.17		ug/L		82	52 - 135	5	14
Vinyl chloride	10.0	7.69		ug/L		77	65 - 130	11	14
Bromomethane	10.0	7.20		ug/L		72	66 - 125	9	14
Chloroethane	10.0	7.93		ug/L		79	65 - 132	8	18
Trichlorofluoromethane	10.0	8.70		ug/L		87	64 - 130	4	14
1,1-Dichloroethene	10.0	11.6		ug/L		116	70 - 129	5	17
Methylene Chloride	10.0	11.2		ug/L		112	77 - 120	6	18
trans-1,2-Dichloroethene	10.0	10.6		ug/L		106	70 - 130	3	21
1,1-Dichloroethane	10.0	10.3		ug/L		103	81 - 129	5	15
2,2-Dichloropropane	10.0	10.8		ug/L		108	53 - 150	1	15
cis-1,2-Dichloroethene	10.0	10.3		ug/L		103	76 - 129	3	15
Bromochloromethane	10.0	10.5		ug/L		105	78 - 120	3	13
Chloroform	10.0	11.2		ug/L		112	73 - 127	6	14
1,1,1-Trichloroethane	10.0	11.5		ug/L		115	74 - 130	4	11
Carbon tetrachloride	10.0	11.4		ug/L		114	72 - 129	6	11
1,1-Dichloropropene	10.0	10.8		ug/L		108	74 - 131	2	14
Benzene	10.0	10.7		ug/L		107	82 - 122	6	14
1,2-Dichloroethane	10.0	10.1		ug/L		101	76 - 126	2	11
Trichloroethene	10.0	10.7	*1	ug/L		107	81 - 125	17	13
1,2-Dichloropropane	10.0	10.0		ug/L		100	80 - 126	2	14
Dibromomethane	10.0	10.4		ug/L		104	80 - 120	4	11
Bromodichloromethane	10.0	10.8		ug/L		108	75 - 124	2	13
cis-1,3-Dichloropropene	10.0	8.81		ug/L		88	77 - 120	3	20

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-358885/5
MatriW P ater
F nalysis Batch: 358885

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Qualifier	f nit	D . Rec	. Rec1 Limits	RTD	RTD Limit
Toluene	10.0	10.6		ug/L	106	80 - 120	1	13
trans-1,3-Dichloropropene	10.0	9.97		ug/L	100	70 - 122	2	14
1,1,2-Trichloroethane	10.0	10.9		ug/L	109	80 - 121	7	14
Tetrachloroethene	10.0	10.7	*1	ug/L	107	76 - 120	17	13
1,3-Dichloropropane	10.0	10.6		ug/L	106	79 - 120	1	13
Dibromochloromethane	10.0	10.5		ug/L	105	60 - 125	11	13
1,2-Dibromoethane	10.0	11.2		ug/L	112	79 - 120	8	12
Chlorobenzene	10.0	10.5		ug/L	105	80 - 120	10	10
Ethylbenzene	10.0	10.5		ug/L	105	80 - 120	8	14
1,1,1,2-Tetrachloroethane	10.0	10.0	*1	ug/L	100	79 - 120	15	10
1,1,1,2,2-Tetrachloroethane	10.0	8.30		ug/L	83	74 - 124	7	18
m-Xylene & p-Xylene	10.0	10.7		ug/L	107	80 - 120	4	14
o-Xylene	10.0	10.4		ug/L	104	80 - 125	5	16
Styrene	10.0	10.4		ug/L	104	76 - 127	5	16
Bromoform	10.0	11.0		ug/L	110	28 - 139	6	15
Isopropylbenzene	10.0	10.6		ug/L	106	75 - 129	7	12
Bromobenzene	10.0	10.4		ug/L	104	80 - 120	2	13
N-Propylbenzene	10.0	10.0		ug/L	100	80 - 128	5	13
1,2,3-Trichloropropane	10.0	9.97		ug/L	100	76 - 124	2	16
2-Chlorotoluene	10.0	10.3		ug/L	103	80 - 120	0	15
1,3,5-Trimethylbenzene	10.0	9.70		ug/L	97	80 - 131	3	14
4-Chlorotoluene	10.0	9.40		ug/L	94	80 - 120	0	14
t-Butylbenzene	10.0	9.55		ug/L	96	80 - 129	2	14
1,2,4-Trimethylbenzene	10.0	9.46		ug/L	95	80 - 131	3	16
sec-Butylbenzene	10.0	9.43		ug/L	94	78 - 131	3	15
1,3-Dichlorobenzene	10.0	10.6		ug/L	106	69 - 127	8	14
4-Isopropyltoluene	10.0	9.23		ug/L	92	77 - 131	6	20
1,4-Dichlorobenzene	10.0	10.0		ug/L	100	80 - 120	1	17
n-Butylbenzene	10.0	8.57		ug/L	86	78 - 120	5	14
1,2-Dichlorobenzene	10.0	10.0		ug/L	100	80 - 120	9	15
1,2-Dibromo-3-Chloropropane	10.0	9.15		ug/L	92	65 - 125	15	17
1,2,4-Trichlorobenzene	10.0	11.4		ug/L	114	73 - 128	10	20
1,2,3-Trichlorobenzene	10.0	10.6		ug/L	106	74 - 139	9	26
Hexachlorobutadiene	10.0	10.4		ug/L	104	74 - 125	6	22
Naphthalene	10.0	9.91		ug/L	99	75 - 134	11	23
Methyl tert-butyl ether	10.0	9.54		ug/L	95	72 - 130	4	18

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 120
4-Bromofluorobenzene (Surr)	107		80 - 120
Dibromofluoromethane (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	95		80 - 126

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-35x97x/7
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUbd	Dil zac
Dichlorodifluoromethane	ND		1.0	0.53	ug/L			06/14/21 14:42	1
Chloromethane	ND		1.0	0.28	ug/L			06/14/21 14:42	1
Vinyl chloride	ND		1.0	0.22	ug/L			06/14/21 14:42	1
Bromomethane	ND		1.0	0.21	ug/L			06/14/21 14:42	1
Chloroethane	ND		1.0	0.35	ug/L			06/14/21 14:42	1
Trichlorofluoromethane	ND		1.0	0.36	ug/L			06/14/21 14:42	1
1,1-Dichloroethene	ND		1.0	0.28	ug/L			06/14/21 14:42	1
Methylene Chloride	ND		3.0	1.4	ug/L			06/14/21 14:42	1
trans-1,2-Dichloroethene	ND		1.0	0.39	ug/L			06/14/21 14:42	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			06/14/21 14:42	1
2,2-Dichloropropane	ND		1.0	0.32	ug/L			06/14/21 14:42	1
cis-1,2-Dichloroethene	ND		1.0	0.35	ug/L			06/14/21 14:42	1
Bromochloromethane	ND		1.0	0.29	ug/L			06/14/21 14:42	1
Chloroform	ND		1.0	0.26	ug/L			06/14/21 14:42	1
1,1,1-Trichloroethane	ND		1.0	0.39	ug/L			06/14/21 14:42	1
Carbon tetrachloride	ND		1.0	0.30	ug/L			06/14/21 14:42	1
1,1-Dichloropropene	ND		1.0	0.29	ug/L			06/14/21 14:42	1
Benzene	ND		1.0	0.24	ug/L			06/14/21 14:42	1
1,2-Dichloroethane	ND		1.0	0.42	ug/L			06/14/21 14:42	1
Trichloroethene	ND		1.0	0.26	ug/L			06/14/21 14:42	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			06/14/21 14:42	1
Dibromomethane	ND		1.0	0.34	ug/L			06/14/21 14:42	1
Bromodichloromethane	ND		1.0	0.29	ug/L			06/14/21 14:42	1
Toluene	ND		1.0	0.39	ug/L			06/14/21 14:42	1
trans-1,3-Dichloropropene	ND		1.0	0.41	ug/L			06/14/21 14:42	1
1,1,2-Trichloroethane	ND		1.0	0.24	ug/L			06/14/21 14:42	1
Tetrachloroethene	ND		1.0	0.41	ug/L			06/14/21 14:42	1
1,3-Dichloropropane	ND		1.0	0.35	ug/L			06/14/21 14:42	1
Dibromochloromethane	ND		1.0	0.43	ug/L			06/14/21 14:42	1
1,2-Dibromoethane	ND		1.0	0.40	ug/L			06/14/21 14:42	1
Chlorobenzene	ND		1.0	0.44	ug/L			06/14/21 14:42	1
Ethylbenzene	ND		1.0	0.50	ug/L			06/14/21 14:42	1
1,1,1,2-Tetrachloroethane	ND		1.0	0.18	ug/L			06/14/21 14:42	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.52	ug/L			06/14/21 14:42	1
m-Xylene & p-Xylene	ND		2.0	0.53	ug/L			06/14/21 14:42	1
o-Xylene	ND		1.0	0.39	ug/L			06/14/21 14:42	1
Styrene	ND		1.0	0.53	ug/L			06/14/21 14:42	1
Bromoform	ND		1.0	0.51	ug/L			06/14/21 14:42	1
Isopropylbenzene	ND		1.0	0.44	ug/L			06/14/21 14:42	1
Bromobenzene	ND		1.0	0.43	ug/L			06/14/21 14:42	1
N-Propylbenzene	ND		1.0	0.50	ug/L			06/14/21 14:42	1
1,2,3-Trichloropropane	ND		1.0	0.41	ug/L			06/14/21 14:42	1
2-Chlorotoluene	ND		1.0	0.51	ug/L			06/14/21 14:42	1
1,3,5-Trimethylbenzene	ND		1.0	0.55	ug/L			06/14/21 14:42	1
t-Butylbenzene	ND		2.0	0.58	ug/L			06/14/21 14:42	1
1,2,4-Trimethylbenzene	ND		3.0	0.61	ug/L			06/14/21 14:42	1
sec-Butylbenzene	ND		1.0	0.49	ug/L			06/14/21 14:42	1
1,3-Dichlorobenzene	ND		1.0	0.48	ug/L			06/14/21 14:42	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: MB 580-35x97x/7
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
4-Isopropyltoluene	ND		1.0	0.28	ug/L			06/14/21 14:42	1
1,4-Dichlorobenzene	ND		1.0	0.46	ug/L			06/14/21 14:42	1
n-Butylbenzene	ND		1.0	0.44	ug/L			06/14/21 14:42	1
1,2-Dichlorobenzene	ND		1.0	0.46	ug/L			06/14/21 14:42	1
1,2-Dibromo-3-Chloropropane	ND		3.0	0.57	ug/L			06/14/21 14:42	1
1,2,4-Trichlorobenzene	ND		1.0	0.33	ug/L			06/14/21 14:42	1
1,2,3-Trichlorobenzene	0.482	J	2.0	0.43	ug/L			06/14/21 14:42	1
Hexachlorobutadiene	ND		3.0	0.79	ug/L			06/14/21 14:42	1
Naphthalene	ND		3.0	0.93	ug/L			06/14/21 14:42	1
Methyl tert-butyl ether	ND		1.0	0.44	ug/L			06/14/21 14:42	1

Surrogate	MB %Recovery	MB Quali(ier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	99		80 - 120		06/14/21 14:42	1
4-Bromofluorobenzene (Surr)	99		80 - 120		06/14/21 14:42	1
Dibromofluoromethane (Surr)	105		80 - 120		06/14/21 14:42	1
1,2-Dichloroethane-d4 (Surr)	109		80 - 126		06/14/21 14:42	1

Lab Sample ID: LCS 580-35x97x/%
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
Dichlorodifluoromethane	10.0	9.47		ug/L		95	47 - 133
Chloromethane	10.0	7.73		ug/L		77	52 - 135
Vinyl chloride	10.0	7.21		ug/L		72	65 - 130
Bromomethane	10.0	7.00		ug/L		70	66 - 125
Chloroethane	10.0	7.73		ug/L		77	65 - 132
Trichlorofluoromethane	10.0	7.93		ug/L		79	64 - 130
1,1-Dichloroethene	10.0	11.3		ug/L		113	70 - 129
Methylene Chloride	10.0	10.5		ug/L		105	77 - 120
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	70 - 130
1,1-Dichloroethane	10.0	9.72		ug/L		97	81 - 129
2,2-Dichloropropane	10.0	9.93		ug/L		99	53 - 150
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	76 - 129
Bromochloromethane	10.0	10.2		ug/L		102	78 - 120
Chloroform	10.0	10.2		ug/L		102	73 - 127
1,1,1-Trichloroethane	10.0	10.8		ug/L		108	74 - 130
Carbon tetrachloride	10.0	11.6		ug/L		116	72 - 129
1,1-Dichloropropene	10.0	9.43		ug/L		94	74 - 131
Benzene	10.0	9.57		ug/L		96	82 - 122
1,2-Dichloroethane	10.0	9.35		ug/L		93	76 - 126
Trichloroethene	10.0	11.6		ug/L		116	81 - 125
1,2-Dichloropropane	10.0	8.71		ug/L		87	80 - 126
Dibromomethane	10.0	10.0		ug/L		100	80 - 120
Bromodichloromethane	10.0	10.1		ug/L		101	75 - 124
Toluene	10.0	9.79		ug/L		98	80 - 120
trans-1,3-Dichloropropene	10.0	9.38		ug/L		94	70 - 122
1,1,2-Trichloroethane	10.0	10.6		ug/L		106	80 - 121

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCS 580-35x97x/%
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D . Rec	. Rec1 Limits
Tetrachloroethene	10.0	12.0		ug/L	120	76 - 120
1,3-Dichloropropane	10.0	9.78		ug/L	98	79 - 120
Dibromochloromethane	10.0	11.4		ug/L	114	60 - 125
1,2-Dibromoethane	10.0	11.4		ug/L	114	79 - 120
Chlorobenzene	10.0	10.3		ug/L	103	80 - 120
Ethylbenzene	10.0	10.3		ug/L	103	80 - 120
1,1,1,2-Tetrachloroethane	10.0	10.6		ug/L	106	79 - 120
1,1,2,2-Tetrachloroethane	10.0	8.29		ug/L	83	74 - 124
m-Xylene & p-Xylene	10.0	10.1		ug/L	101	80 - 120
o-Xylene	10.0	10.1		ug/L	101	80 - 125
Styrene	10.0	9.99		ug/L	100	76 - 127
Bromoform	10.0	11.1		ug/L	111	28 - 139
Isopropylbenzene	10.0	10.3		ug/L	103	75 - 129
Bromobenzene	10.0	9.54		ug/L	95	80 - 120
N-Propylbenzene	10.0	9.32		ug/L	93	80 - 128
1,2,3-Trichloropropane	10.0	9.60		ug/L	96	76 - 124
2-Chlorotoluene	10.0	9.36		ug/L	94	80 - 120
1,3,5-Trimethylbenzene	10.0	8.73		ug/L	87	80 - 131
t-Butylbenzene	10.0	8.51		ug/L	85	80 - 129
1,2,4-Trimethylbenzene	10.0	8.48		ug/L	85	80 - 131
sec-Butylbenzene	10.0	8.37		ug/L	84	78 - 131
1,3-Dichlorobenzene	10.0	11.1		ug/L	111	69 - 127
4-Isopropyltoluene	10.0	8.44		ug/L	84	77 - 131
1,4-Dichlorobenzene	10.0	9.54		ug/L	95	80 - 120
n-Butylbenzene	10.0	7.91		ug/L	79	78 - 120
1,2-Dichlorobenzene	10.0	10.0		ug/L	100	80 - 120
1,2-Dibromo-3-Chloropropane	10.0	9.91		ug/L	99	65 - 125
1,2,4-Trichlorobenzene	10.0	11.7		ug/L	117	73 - 128
1,2,3-Trichlorobenzene	10.0	10.6		ug/L	106	74 - 139
Hexachlorobutadiene	10.0	9.49		ug/L	95	74 - 125
Naphthalene	10.0	10.3		ug/L	103	75 - 134
Methyl tert-butyl ether	10.0	9.62		ug/L	96	72 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 120
4-Bromofluorobenzene (Surr)	112		80 - 120
Dibromofluoromethane (Surr)	110		80 - 120
1,2-Dichloroethane-d4 (Surr)	94		80 - 126

Lab Sample ID: LCSD 580-35x97x/5
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	Limit
Dichlorodifluoromethane	10.0	9.49		ug/L	95	47 - 133	0	15
Chloromethane	10.0	7.06		ug/L	71	52 - 135	9	14
Vinyl chloride	10.0	6.55		ug/L	66	65 - 130	10	14
Bromomethane	10.0	6.84		ug/L	68	66 - 125	2	14

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35x97x/5
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D . Rec	. Rec1 Limits	RTD	RTD Limit
Chloroethane	10.0	7.35		ug/L	74	65 - 132	5	18
Trichlorofluoromethane	10.0	7.71		ug/L	77	64 - 130	3	14
1,1-Dichloroethene	10.0	10.9		ug/L	109	70 - 129	4	17
Methylene Chloride	10.0	10.5		ug/L	105	77 - 120	0	18
trans-1,2-Dichloroethene	10.0	10.3		ug/L	103	70 - 130	2	21
1,1-Dichloroethane	10.0	9.71		ug/L	97	81 - 129	0	15
2,2-Dichloropropane	10.0	9.65		ug/L	97	53 - 150	3	15
cis-1,2-Dichloroethene	10.0	10.2		ug/L	102	76 - 129	2	15
Bromochloromethane	10.0	11.2		ug/L	112	78 - 120	9	13
Chloroform	10.0	10.2		ug/L	102	73 - 127	1	14
1,1,1-Trichloroethane	10.0	10.5		ug/L	105	74 - 130	3	11
Carbon tetrachloride	10.0	11.4		ug/L	114	72 - 129	3	11
1,1-Dichloropropene	10.0	9.27		ug/L	93	74 - 131	2	14
Benzene	10.0	9.74		ug/L	97	82 - 122	2	14
1,2-Dichloroethane	10.0	9.46		ug/L	95	76 - 126	1	11
Trichloroethene	10.0	11.6		ug/L	116	81 - 125	1	13
1,2-Dichloropropane	10.0	9.37		ug/L	94	80 - 126	7	14
Dibromomethane	10.0	10.2		ug/L	102	80 - 120	1	11
Bromodichloromethane	10.0	9.95		ug/L	99	75 - 124	1	13
Toluene	10.0	9.87		ug/L	99	80 - 120	1	13
trans-1,3-Dichloropropene	10.0	9.58		ug/L	96	70 - 122	2	14
1,1,2-Trichloroethane	10.0	11.0		ug/L	110	80 - 121	5	14
Tetrachloroethene	10.0	11.7		ug/L	117	76 - 120	2	13
1,3-Dichloropropane	10.0	10.1		ug/L	101	79 - 120	3	13
Dibromochloromethane	10.0	12.0		ug/L	120	60 - 125	5	13
1,2-Dibromoethane	10.0	11.7		ug/L	117	79 - 120	3	12
Chlorobenzene	10.0	10.6		ug/L	106	80 - 120	3	10
Ethylbenzene	10.0	10.3		ug/L	103	80 - 120	0	14
1,1,1,2-Tetrachloroethane	10.0	11.1		ug/L	111	79 - 120	5	10
1,1,1,2,2-Tetrachloroethane	10.0	8.01		ug/L	80	74 - 124	3	18
m-Xylene & p-Xylene	10.0	10.0		ug/L	100	80 - 120	1	14
o-Xylene	10.0	10.0		ug/L	100	80 - 125	0	16
Styrene	10.0	10.0		ug/L	100	76 - 127	0	16
Bromoform	10.0	12.3		ug/L	123	28 - 139	10	15
Isopropylbenzene	10.0	10.2		ug/L	102	75 - 129	1	12
Bromobenzene	10.0	9.53		ug/L	95	80 - 120	0	13
N-Propylbenzene	10.0	8.87		ug/L	89	80 - 128	5	13
1,2,3-Trichloropropane	10.0	9.65		ug/L	97	76 - 124	1	16
2-Chlorotoluene	10.0	9.04		ug/L	90	80 - 120	3	15
1,3,5-Trimethylbenzene	10.0	8.39		ug/L	84	80 - 131	4	14
t-Butylbenzene	10.0	8.18		ug/L	82	80 - 129	4	14
1,2,4-Trimethylbenzene	10.0	8.17		ug/L	82	80 - 131	4	16
sec-Butylbenzene	10.0	8.06		ug/L	81	78 - 131	4	15
1,3-Dichlorobenzene	10.0	11.0		ug/L	110	69 - 127	1	14
4-Isopropyltoluene	10.0	8.12		ug/L	81	77 - 131	4	20
1,4-Dichlorobenzene	10.0	9.24		ug/L	92	80 - 120	3	17
n-Butylbenzene	10.0	7.90		ug/L	79	78 - 120	0	14
1,2-Dichlorobenzene	10.0	9.63		ug/L	96	80 - 120	4	15
1,2-Dibromo-3-Chloropropane	10.0	9.98		ug/L	100	65 - 125	1	17

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35x97x/5
MatriW P ater
F nalysis Batch: 35x97x

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
1,2,4-Trichlorobenzene	10.0	12.2		ug/L		122	73 - 128	4	20
1,2,3-Trichlorobenzene	10.0	10.4		ug/L		104	74 - 139	2	26
Hexachlorobutadiene	10.0	9.74		ug/L		97	74 - 125	3	22
Naphthalene	10.0	9.74		ug/L		97	75 - 134	6	23
Methyl tert-butyl ether	10.0	9.91		ug/L		99	72 - 130	3	18

Surrogate	LCSD %Recovery	LCSD Quali(ier	Limits
Toluene-d8 (Surr)	109		80 - 120
4-Bromofluorobenzene (Surr)	113		80 - 120
Dibromofluoromethane (Surr)	110		80 - 120
1,2-Dichloroethane-d4 (Surr)	93		80 - 126

Lab Sample ID: MB 580-35x259/7
MatriW P ater
F nalysis Batch: 35x259

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
cis-1,3-Dichloropropene	ND		1.0	0.20	ug/L			06/15/21 12:11	1
4-Chlorotoluene	ND		1.0	0.38	ug/L			06/15/21 12:11	1

Surrogate	MB %Recovery	MB Quali(ier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		06/15/21 12:11	1
4-Bromofluorobenzene (Surr)	96		80 - 120		06/15/21 12:11	1
Dibromofluoromethane (Surr)	108		80 - 120		06/15/21 12:11	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 126		06/15/21 12:11	1

Lab Sample ID: LCS 580-35x259/%
MatriW P ater
F nalysis Batch: 35x259

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
cis-1,3-Dichloropropene	10.0	8.09		ug/L		81	77 - 120
4-Chlorotoluene	10.0	8.83		ug/L		88	80 - 120

Surrogate	LCS %Recovery	LCS Quali(ier	Limits
Toluene-d8 (Surr)	110		80 - 120
4-Bromofluorobenzene (Surr)	112		80 - 120
Dibromofluoromethane (Surr)	108		80 - 120
1,2-Dichloroethane-d4 (Surr)	92		80 - 126

Lab Sample ID: LCSD 580-35x259/5
MatriW P ater
F nalysis Batch: 35x259

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
cis-1,3-Dichloropropene	10.0	8.65		ug/L		86	77 - 120	7	20
4-Chlorotoluene	10.0	8.67		ug/L		87	80 - 120	2	14

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8260D - Volatile Organic Compounds by GC/MS)Continued4

Lab Sample ID: LCSD 580-35x259/5
MatriW P ater
Fnlalysis Batch: 35x259

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
Toluene-d8 (Surr)	106		80 - 120
4-Bromofluorobenzene (Surr)	107		80 - 120
Dibromofluoromethane (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	95		80 - 126

Method: 8270E - Semivolatile Organic Compounds)GC/MS4

Lab Sample ID: MB 580-358672/9-F
MatriW P ater
Fnlalysis Batch: 3587xx

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358672

Fnalyste	MB Result	MB Quali(ier	RL	MDL	f nit	D	Trepared	Fnalyled	Dil zac
Phenol	ND		1.0	0.36	ug/L		06/09/21 09:02	06/10/21 11:26	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		06/09/21 09:02	06/10/21 11:26	1
2-Chlorophenol	ND		1.0	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzyl alcohol	ND		5.0	0.18	ug/L		06/09/21 09:02	06/10/21 11:26	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
2-Methylphenol	ND		0.60	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
Hexachloroethane	ND		1.0	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
Nitrobenzene	ND		1.0	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Isophorone	ND		0.40	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
2-Nitrophenol	ND		1.0	0.070	ug/L		06/09/21 09:02	06/10/21 11:26	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzoic acid	ND		10	1.3	ug/L		06/09/21 09:02	06/10/21 11:26	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		06/09/21 09:02	06/10/21 11:26	1
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		06/09/21 09:02	06/10/21 11:26	1
Naphthalene	ND		0.40	0.16	ug/L		06/09/21 09:02	06/10/21 11:26	1
4-Chloroaniline	ND		2.0	0.59	ug/L		06/09/21 09:02	06/10/21 11:26	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		06/09/21 09:02	06/10/21 11:26	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		06/09/21 09:02	06/10/21 11:26	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		06/09/21 09:02	06/10/21 11:26	1
2-Nitroaniline	ND		1.0	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
Acenaphthylene	ND		1.0	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
3-Nitroaniline	ND		3.0	0.16	ug/L		06/09/21 09:02	06/10/21 11:26	1
Acenaphthene	ND		0.40	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		06/09/21 09:02	06/10/21 11:26	1
4-Nitrophenol	ND		10	1.7	ug/L		06/09/21 09:02	06/10/21 11:26	1
Dibenzofuran	ND		0.40	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: MB 580-358672/9-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
Diethyl phthalate	ND		1.0	0.15	ug/L		06/09/21 09:02	06/10/21 11:26	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
Fluorene	ND		0.25	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
4-Nitroaniline	ND		2.0	0.21	ug/L		06/09/21 09:02	06/10/21 11:26	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		06/09/21 09:02	06/10/21 11:26	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		06/09/21 09:02	06/10/21 11:26	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Phenanthrene	ND		1.0	0.12	ug/L		06/09/21 09:02	06/10/21 11:26	1
Anthracene	ND		1.0	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
Di-n-butyl phthalate	ND		3.0	0.19	ug/L		06/09/21 09:02	06/10/21 11:26	1
Fluoranthene	ND		0.25	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1
Pyrene	ND		1.0	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		06/09/21 09:02	06/10/21 11:26	1
3,3'-Dichlorobenzidine	ND		1.0	0.26	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
Chrysene	ND		0.25	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Bis(2-ethylhexyl) phthalate	ND		2.0	0.74	ug/L		06/09/21 09:02	06/10/21 11:26	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		06/09/21 09:02	06/10/21 11:26	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Carbazole	ND		0.60	0.10	ug/L		06/09/21 09:02	06/10/21 11:26	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		06/09/21 09:02	06/10/21 11:26	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		06/09/21 09:02	06/10/21 11:26	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		06/09/21 09:02	06/10/21 11:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	49		14 - 120	06/09/21 09:02	06/10/21 11:26	1
Phenol-d5 (Surr)	32		10 - 120	06/09/21 09:02	06/10/21 11:26	1
Nitrobenzene-d5 (Surr)	84		46 - 125	06/09/21 09:02	06/10/21 11:26	1
2-Fluorobiphenyl	69		51 - 120	06/09/21 09:02	06/10/21 11:26	1
2,4,6-Tribromophenol (Surr)	81		50 - 125	06/09/21 09:02	06/10/21 11:26	1
Terphenyl-d14 (Surr)	98		63 - 122	06/09/21 09:02	06/10/21 11:26	1

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike F dded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Phenol	2.00	0.797	J	ug/L		40	13 - 120
Bis(2-chloroethyl)ether	2.00	1.55		ug/L		77	39 - 125
2-Chlorophenol	2.00	1.41		ug/L		71	44 - 120
1,3-Dichlorobenzene	2.00	0.776		ug/L		39	25 - 120
1,4-Dichlorobenzene	2.00	0.891		ug/L		45	28 - 120

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds)GC/MS4)Continued4

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCS Result	LCS Qual(ier	f nit	D . Rec	. Rec1 Limits
Benzyl alcohol	2.00	1.13	J	ug/L	56	10 - 120
1,2-Dichlorobenzene	2.00	0.908		ug/L	45	31 - 120
2-Methylphenol	2.00	1.29		ug/L	65	36 - 120
3 & 4 Methylphenol	2.00	1.33		ug/L	67	29 - 120
N-Nitrosodi-n-propylamine	2.00	1.45		ug/L	72	39 - 145
Hexachloroethane	2.00	0.771	J	ug/L	39	18 - 125
Nitrobenzene	2.00	1.27		ug/L	63	38 - 141
Isophorone	2.00	1.56		ug/L	78	41 - 143
2-Nitrophenol	2.00	1.53		ug/L	76	55 - 120
2,4-Dimethylphenol	2.00	1.51	J	ug/L	76	47 - 120
Benzoic acid	4.00	ND		ug/L	31	10 - 120
Bis(2-chloroethoxy)methane	2.00	1.64		ug/L	82	44 - 125
2,4-Dichlorophenol	2.00	1.64		ug/L	82	50 - 120
1,2,4-Trichlorobenzene	2.00	1.00		ug/L	50	31 - 120
Naphthalene	2.00	1.27		ug/L	63	42 - 120
4-Chloroaniline	2.00	1.84	J	ug/L	92	10 - 150
Hexachlorobutadiene	2.00	0.755	J	ug/L	38	17 - 125
4-Chloro-3-methylphenol	2.00	1.66		ug/L	83	47 - 120
2-Methylnaphthalene	2.00	1.27		ug/L	64	43 - 120
Hexachlorocyclopentadiene	2.00	0.509	J	ug/L	25	10 - 125
2,4,6-Trichlorophenol	2.00	1.71		ug/L	85	55 - 120
2,4,5-Trichlorophenol	2.00	1.77		ug/L	88	53 - 120
2-Chloronaphthalene	2.00	1.31		ug/L	66	43 - 120
2-Nitroaniline	2.00	1.62		ug/L	81	52 - 127
Dimethyl phthalate	2.00	1.62		ug/L	81	65 - 128
Acenaphthylene	2.00	1.48		ug/L	74	48 - 125
2,6-Dinitrotoluene	2.00	1.71		ug/L	85	60 - 128
3-Nitroaniline	2.00	1.93	J	ug/L	97	10 - 138
Acenaphthene	2.00	1.44		ug/L	72	49 - 120
2,4-Dinitrophenol	4.00	3.62	J	ug/L	91	10 - 146
4-Nitrophenol	4.00	ND		ug/L	41	10 - 120
Dibenzofuran	2.00	1.50		ug/L	75	51 - 120
2,4-Dinitrotoluene	2.00	1.57		ug/L	79	61 - 126
Diethyl phthalate	2.00	1.58		ug/L	79	60 - 134
4-Chlorophenyl phenyl ether	2.00	1.37		ug/L	69	53 - 125
Fluorene	2.00	1.46		ug/L	73	55 - 125
4-Nitroaniline	2.00	1.73	J	ug/L	86	38 - 139
4,6-Dinitro-2-methylphenol	4.00	3.41		ug/L	85	10 - 150
N-Nitrosodiphenylamine	2.00	1.56		ug/L	78	52 - 135
4-Bromophenyl phenyl ether	2.00	1.50		ug/L	75	53 - 126
Hexachlorobenzene	2.00	1.57		ug/L	79	49 - 125
Phenanthrene	2.00	1.55		ug/L	77	54 - 125
Anthracene	2.00	1.55		ug/L	77	50 - 131
Di-n-butyl phthalate	2.00	1.71	J	ug/L	85	55 - 167
Fluoranthene	2.00	1.52		ug/L	76	60 - 133
Pyrene	2.00	1.53		ug/L	77	57 - 133
Butyl benzyl phthalate	2.00	1.75	J	ug/L	88	60 - 150
3,3'-Dichlorobenzidine	4.00	4.42		ug/L	110	33 - 150
Benzo[a]anthracene	2.00	1.54		ug/L	77	56 - 131

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Chrysene	2.00	1.77		ug/L		88	57 - 125
Bis(2-ethylhexyl) phtalate	2.00	1.82	J	ug/L		91	48 - 150
Di-n-octyl phtalate	2.00	1.41		ug/L		71	48 - 150
Benzo[a]pyrene	2.00	1.65		ug/L		82	55 - 125
Indeno[1,2,3-cd]pyrene	2.00	1.56		ug/L		78	39 - 148
Dibenz(a,h)anthracene	2.00	1.56		ug/L		78	48 - 134
Benzo[g,h,i]perylene	2.00	1.61		ug/L		80	46 - 140
Carbazole	2.00	2.18		ug/L		109	10 - 150
1-Methylnaphthalene	2.00	1.34		ug/L		67	41 - 125
Benzo[b]fluoranthene	2.00	1.47		ug/L		73	59 - 129
Benzo[k]fluoranthene	2.00	1.45		ug/L		73	57 - 123
bis(chloroisopropyl) ether	2.00	1.66		ug/L		83	35 - 124

Surrogate	LCS %Recovery	LCS Quali(ier)	Limits
2-Fluorophenol (Surr)	47		14 - 120
Phenol-d5 (Surr)	33		10 - 120
Nitrobenzene-d5 (Surr)	80		46 - 125
2-Fluorobiphenyl	72		51 - 120
2,4,6-Tribromophenol (Surr)	99		50 - 125
Terphenyl-d14 (Surr)	92		63 - 122

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier)	f nit	D	Rec	Rec1 Limits	RTD	Limit
Phenol	2.00	0.840	J	ug/L		42	13 - 120	5	30
Bis(2-chloroethyl)ether	2.00	1.84		ug/L		92	39 - 125	17	30
2-Chlorophenol	2.00	1.65		ug/L		82	44 - 120	15	30
1,3-Dichlorobenzene	2.00	0.674		ug/L		34	25 - 120	14	35
1,4-Dichlorobenzene	2.00	0.771		ug/L		39	28 - 120	14	35
Benzyl alcohol	2.00	1.46	J	ug/L		73	10 - 120	26	35
1,2-Dichlorobenzene	2.00	0.828		ug/L		41	31 - 120	9	35
2-Methylphenol	2.00	1.62		ug/L		81	36 - 120	23	35
3 & 4 Methylphenol	2.00	1.83		ug/L		92	29 - 120	32	35
N-Nitrosodi-n-propylamine	2.00	1.75		ug/L		87	39 - 145	19	30
Hexachloroethane	2.00	0.562	J	ug/L		28	18 - 125	31	35
Nitrobenzene	2.00	1.66		ug/L		83	38 - 141	27	30
Isophorone	2.00	1.79		ug/L		90	41 - 143	14	30
2-Nitrophenol	2.00	1.83		ug/L		91	55 - 120	18	30
2,4-Dimethylphenol	2.00	1.69	J	ug/L		85	47 - 120	11	30
Benzoic acid	4.00	1.75	J	ug/L		44	10 - 120	34	35
Bis(2-chloroethoxy)methane	2.00	1.89		ug/L		94	44 - 125	14	30
2,4-Dichlorophenol	2.00	1.89		ug/L		95	50 - 120	14	30
1,2,4-Trichlorobenzene	2.00	0.890		ug/L		45	31 - 120	12	35
Naphthalene	2.00	1.21		ug/L		60	42 - 120	5	35
4-Chloroaniline	2.00	1.86	J	ug/L		93	10 - 150	1	35
Hexachlorobutadiene	2.00	0.518	J *1	ug/L		26	17 - 125	37	35

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds)GC/MS4)Continued4

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358672

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D .	Rec	. Rec1		RTD	Limit
							Limits	RTD		
4-Chloro-3-methylphenol	2.00	1.78		ug/L		89	47 - 120	7	30	
2-Methylnaphthalene	2.00	1.22		ug/L		61	43 - 120	4	35	
Hexachlorocyclopentadiene	2.00	0.399	J	ug/L		20	10 - 125	24	35	
2,4,6-Trichlorophenol	2.00	1.91		ug/L		95	55 - 120	11	30	
2,4,5-Trichlorophenol	2.00	1.89		ug/L		95	53 - 120	7	35	
2-Chloronaphthalene	2.00	1.35		ug/L		68	43 - 120	3	35	
2-Nitroaniline	2.00	1.90		ug/L		95	52 - 127	16	30	
Dimethyl phthalate	2.00	1.80		ug/L		90	65 - 128	11	30	
Acenaphthylene	2.00	1.63		ug/L		82	48 - 125	10	30	
2,6-Dinitrotoluene	2.00	1.90		ug/L		95	60 - 128	11	30	
3-Nitroaniline	2.00	2.13	J	ug/L		107	10 - 138	10	30	
Acenaphthene	2.00	1.57		ug/L		78	49 - 120	8	30	
2,4-Dinitrophenol	4.00	3.88	J	ug/L		97	10 - 146	7	35	
4-Nitrophenol	4.00	1.75	J	ug/L		44	10 - 120	6	35	
Dibenzofuran	2.00	1.64		ug/L		82	51 - 120	9	30	
2,4-Dinitrotoluene	2.00	1.87		ug/L		94	61 - 126	17	30	
Diethyl phthalate	2.00	1.80		ug/L		90	60 - 134	13	24	
4-Chlorophenyl phenyl ether	2.00	1.50		ug/L		75	53 - 125	9	35	
Fluorene	2.00	1.66		ug/L		83	55 - 125	13	30	
4-Nitroaniline	2.00	2.05		ug/L		103	38 - 139	17	35	
4,6-Dinitro-2-methylphenol	4.00	4.00		ug/L		100	10 - 150	16	35	
N-Nitrosodiphenylamine	2.00	1.80		ug/L		90	52 - 135	15	30	
4-Bromophenyl phenyl ether	2.00	1.62		ug/L		81	53 - 126	8	30	
Hexachlorobenzene	2.00	1.75		ug/L		88	49 - 125	11	30	
Phenanthrene	2.00	1.79		ug/L		89	54 - 125	14	30	
Anthracene	2.00	1.69		ug/L		85	50 - 131	9	24	
Di-n-butyl phthalate	2.00	1.90	J	ug/L		95	55 - 167	11	30	
Fluoranthene	2.00	1.78		ug/L		89	60 - 133	15	30	
Pyrene	2.00	1.78		ug/L		89	57 - 133	15	23	
Butyl benzyl phthalate	2.00	1.79	J	ug/L		89	60 - 150	2	30	
3,3'-Dichlorobenzidine	4.00	4.64		ug/L		116	33 - 150	5	35	
Benzo[a]anthracene	2.00	1.58		ug/L		79	56 - 131	3	30	
Chrysene	2.00	1.83		ug/L		92	57 - 125	4	30	
Bis(2-ethylhexyl) phthalate	2.00	1.87	J	ug/L		94	48 - 150	3	35	
Di-n-octyl phthalate	2.00	1.64		ug/L		82	48 - 150	15	30	
Benzo[a]pyrene	2.00	1.98		ug/L		99	55 - 125	19	30	
Indeno[1,2,3-cd]pyrene	2.00	1.77		ug/L		89	39 - 148	13	30	
Dibenz(a,h)anthracene	2.00	1.79		ug/L		89	48 - 134	14	35	
Benzo[g,h,i]perylene	2.00	1.90		ug/L		95	46 - 140	17	30	
Carbazole	2.00	2.46		ug/L		123	10 - 150	12	30	
1-Methylnaphthalene	2.00	1.26		ug/L		63	41 - 125	6	35	
Benzo[b]fluoranthene	2.00	1.70		ug/L		85	59 - 129	15	30	
Benzo[k]fluoranthene	2.00	1.81		ug/L		91	57 - 123	22	35	
bis(chloroisopropyl) ether	2.00	1.86		ug/L		93	35 - 124	11	30	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
2-Fluorophenol (Surr)	48		14 - 120
Phenol-d5 (Surr)	36		10 - 120

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 3587xx

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358672

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Nitrobenzene-d5 (Surr)	77		46 - 125
2-Fluorobiphenyl	69		51 - 120
2,4,6-Tribromophenol (Surr)	99		50 - 125
Terphenyl-d14 (Surr)	96		63 - 122

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x080

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Phenol	ND		1.0	0.36	ug/L		06/11/21 08:45	06/12/21 14:21	1
Bis(2-chloroethyl)ether	ND		0.10	0.030	ug/L		06/11/21 08:45	06/12/21 14:21	1
2-Chlorophenol	ND		1.0	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
1,3-Dichlorobenzene	ND		0.40	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
1,4-Dichlorobenzene	ND		0.40	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzyl alcohol	ND		5.0	0.18	ug/L		06/11/21 08:45	06/12/21 14:21	1
1,2-Dichlorobenzene	ND		0.40	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
2-Methylphenol	ND		0.60	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
3 & 4 Methylphenol	ND		0.60	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
N-Nitrosodi-n-propylamine	ND		0.40	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
Hexachloroethane	ND		1.0	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
Nitrobenzene	ND		1.0	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Isophorone	ND		0.40	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
2-Nitrophenol	ND		1.0	0.070	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,4-Dimethylphenol	ND		4.0	0.16	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzoic acid	ND		10	1.3	ug/L		06/11/21 08:45	06/12/21 14:21	1
Bis(2-chloroethoxy)methane	ND		0.60	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,4-Dichlorophenol	ND		1.0	0.20	ug/L		06/11/21 08:45	06/12/21 14:21	1
1,2,4-Trichlorobenzene	ND		0.40	0.090	ug/L		06/11/21 08:45	06/12/21 14:21	1
Naphthalene	ND		0.40	0.16	ug/L		06/11/21 08:45	06/12/21 14:21	1
4-Chloroaniline	ND		2.0	0.59	ug/L		06/11/21 08:45	06/12/21 14:21	1
Hexachlorobutadiene	ND		1.0	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
4-Chloro-3-methylphenol	ND		0.60	0.13	ug/L		06/11/21 08:45	06/12/21 14:21	1
2-Methylnaphthalene	ND		0.40	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
Hexachlorocyclopentadiene	ND		1.0	0.14	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,4,6-Trichlorophenol	ND		0.60	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,4,5-Trichlorophenol	ND		0.40	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
2-Chloronaphthalene	ND		1.0	0.070	ug/L		06/11/21 08:45	06/12/21 14:21	1
2-Nitroaniline	ND		1.0	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
Dimethyl phthalate	ND		0.60	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
Acenaphthylene	ND		1.0	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,6-Dinitrotoluene	ND		0.40	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
3-Nitroaniline	ND		3.0	0.16	ug/L		06/11/21 08:45	06/12/21 14:21	1
Acenaphthene	ND		0.40	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,4-Dinitrophenol	ND		5.0	1.6	ug/L		06/11/21 08:45	06/12/21 14:21	1
4-Nitrophenol	ND		10	1.7	ug/L		06/11/21 08:45	06/12/21 14:21	1
Dibenzofuran	ND		0.40	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
2,4-Dinitrotoluene	ND		1.0	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x080

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Diethyl phthalate	ND		1.0	0.15	ug/L		06/11/21 08:45	06/12/21 14:21	1
4-Chlorophenyl phenyl ether	ND		0.60	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
Fluorene	ND		0.25	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
4-Nitroaniline	ND		2.0	0.21	ug/L		06/11/21 08:45	06/12/21 14:21	1
4,6-Dinitro-2-methylphenol	ND		2.0	0.55	ug/L		06/11/21 08:45	06/12/21 14:21	1
N-Nitrosodiphenylamine	ND		1.0	0.070	ug/L		06/11/21 08:45	06/12/21 14:21	1
4-Bromophenyl phenyl ether	ND		0.60	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
Hexachlorobenzene	ND		0.60	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Phenanthrene	ND		1.0	0.12	ug/L		06/11/21 08:45	06/12/21 14:21	1
Anthracene	ND		1.0	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
Di-n-butyl phthalate	2.63	J	3.0	0.19	ug/L		06/11/21 08:45	06/12/21 14:21	1
Fluoranthene	ND		0.25	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1
Pyrene	ND		1.0	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Butyl benzyl phthalate	ND		4.0	0.27	ug/L		06/11/21 08:45	06/12/21 14:21	1
3,3'-Dichlorobenzidine	ND		1.0	0.26	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzo[a]anthracene	ND		0.25	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
Chrysene	ND		0.25	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Bis(2-ethylhexyl) phthalate	ND		2.0	0.74	ug/L		06/11/21 08:45	06/12/21 14:21	1
Di-n-octyl phthalate	ND		1.0	0.13	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzo[a]pyrene	ND		0.25	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Indeno[1,2,3-cd]pyrene	ND		0.40	0.13	ug/L		06/11/21 08:45	06/12/21 14:21	1
Dibenz(a,h)anthracene	ND		0.25	0.070	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzo[g,h,i]perylene	ND		0.25	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Carbazole	ND		0.60	0.10	ug/L		06/11/21 08:45	06/12/21 14:21	1
1-Methylnaphthalene	ND		1.0	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzo[b]fluoranthene	ND		0.25	0.040	ug/L		06/11/21 08:45	06/12/21 14:21	1
Benzo[k]fluoranthene	ND		0.25	0.050	ug/L		06/11/21 08:45	06/12/21 14:21	1
bis(chloroisopropyl) ether	ND		0.25	0.060	ug/L		06/11/21 08:45	06/12/21 14:21	1

Surrogate	MB %Recovery	MB Quali(ier)	Limits	Prepared	Analyzed	Dil Fac
2-Fluorophenol (Surr)	34		14 - 120	06/11/21 08:45	06/12/21 14:21	1
Phenol-d5 (Surr)	18		10 - 120	06/11/21 08:45	06/12/21 14:21	1
Nitrobenzene-d5 (Surr)	60		46 - 125	06/11/21 08:45	06/12/21 14:21	1
2-Fluorobiphenyl	51		51 - 120	06/11/21 08:45	06/12/21 14:21	1
2,4,6-Tribromophenol (Surr)	67		50 - 125	06/11/21 08:45	06/12/21 14:21	1
Terphenyl-d14 (Surr)	80		63 - 122	06/11/21 08:45	06/12/21 14:21	1

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike F dded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Phenol	2.00	0.691	J	ug/L		35	13 - 120
Bis(2-chloroethyl)ether	2.00	1.58		ug/L		79	39 - 125
2-Chlorophenol	2.00	1.53		ug/L		76	44 - 120
1,3-Dichlorobenzene	2.00	1.61		ug/L		81	25 - 120
1,4-Dichlorobenzene	2.00	1.73		ug/L		86	28 - 120
Benzyl alcohol	2.00	1.41	J	ug/L		70	10 - 120

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QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample
Trep Ntpe: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike F dded	LCS Result	LCS Qual(ier	f nit	D . Rec	Rec1 Limits
1,2-Dichlorobenzene	2.00	1.83		ug/L	92	31 - 120
2-Methylphenol	2.00	1.67		ug/L	84	36 - 120
3 & 4 Methylphenol	2.00	1.49		ug/L	74	29 - 120
N-Nitrosodi-n-propylamine	2.00	1.53		ug/L	77	39 - 145
Hexachloroethane	2.00	1.85		ug/L	93	18 - 125
Nitrobenzene	2.00	1.51		ug/L	76	38 - 141
Isophorone	2.00	1.68		ug/L	84	41 - 143
2-Nitrophenol	2.00	1.80		ug/L	90	55 - 120
2,4-Dimethylphenol	2.00	1.66	J	ug/L	83	47 - 120
Benzoic acid	4.00	2.15	J	ug/L	54	10 - 120
Bis(2-chloroethoxy)methane	2.00	1.78		ug/L	89	44 - 125
2,4-Dichlorophenol	2.00	1.81		ug/L	91	50 - 120
1,2,4-Trichlorobenzene	2.00	1.75		ug/L	87	31 - 120
Naphthalene	2.00	1.57		ug/L	79	42 - 120
4-Chloroaniline	2.00	2.09		ug/L	105	10 - 150
Hexachlorobutadiene	2.00	1.67		ug/L	83	17 - 125
4-Chloro-3-methylphenol	2.00	1.89		ug/L	94	47 - 120
2-Methylnaphthalene	2.00	1.56		ug/L	78	43 - 120
Hexachlorocyclopentadiene	2.00	1.15		ug/L	57	10 - 125
2,4,6-Trichlorophenol	2.00	1.88		ug/L	94	55 - 120
2,4,5-Trichlorophenol	2.00	2.00		ug/L	100	53 - 120
2-Chloronaphthalene	2.00	1.54		ug/L	77	43 - 120
2-Nitroaniline	2.00	1.88		ug/L	94	52 - 127
Dimethyl phthalate	2.00	1.70		ug/L	85	65 - 128
Acenaphthylene	2.00	1.57		ug/L	79	48 - 125
2,6-Dinitrotoluene	2.00	1.76		ug/L	88	60 - 128
3-Nitroaniline	2.00	2.45	J	ug/L	123	10 - 138
Acenaphthene	2.00	1.53		ug/L	77	49 - 120
2,4-Dinitrophenol	4.00	4.59	J	ug/L	115	10 - 146
4-Nitrophenol	4.00	2.24	J	ug/L	56	10 - 120
Dibenzofuran	2.00	1.69		ug/L	85	51 - 120
2,4-Dinitrotoluene	2.00	1.81		ug/L	90	61 - 126
Diethyl phthalate	2.00	1.81		ug/L	90	60 - 134
4-Chlorophenyl phenyl ether	2.00	1.64		ug/L	82	53 - 125
Fluorene	2.00	1.65		ug/L	82	55 - 125
4-Nitroaniline	2.00	2.25		ug/L	112	38 - 139
4,6-Dinitro-2-methylphenol	4.00	4.44		ug/L	111	10 - 150
N-Nitrosodiphenylamine	2.00	1.84		ug/L	92	52 - 135
4-Bromophenyl phenyl ether	2.00	1.75		ug/L	88	53 - 126
Hexachlorobenzene	2.00	1.96		ug/L	98	49 - 125
Phenanthrene	2.00	1.86		ug/L	93	54 - 125
Anthracene	2.00	1.87		ug/L	93	50 - 131
Di-n-butyl phthalate	2.00	5.32	*+	ug/L	266	55 - 167
Fluoranthene	2.00	1.93		ug/L	97	60 - 133
Pyrene	2.00	1.96		ug/L	98	57 - 133
Butyl benzyl phthalate	2.00	1.97	J	ug/L	98	60 - 150
3,3'-Dichlorobenzidine	4.00	5.52		ug/L	138	33 - 150
Benzo[a]anthracene	2.00	1.86		ug/L	93	56 - 131
Chrysene	2.00	2.04		ug/L	102	57 - 125

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4) Continued 4

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Bis(2-ethylhexyl) phtalate	2.00	2.19		ug/L		109	48 - 150
Di-n-octyl phtalate	2.00	1.78		ug/L		89	48 - 150
Benzo[a]pyrene	2.00	2.18		ug/L		109	55 - 125
Indeno[1,2,3-cd]pyrene	2.00	1.95		ug/L		97	39 - 148
Dibenz(a,h)anthracene	2.00	2.00		ug/L		100	48 - 134
Benzo[g,h,i]perylene	2.00	2.09		ug/L		105	46 - 140
Carbazole	2.00	2.66		ug/L		133	10 - 150
1-Methylnaphthalene	2.00	1.63		ug/L		81	41 - 125
Benzo[b]fluoranthene	2.00	1.89		ug/L		94	59 - 129
Benzo[k]fluoranthene	2.00	1.96		ug/L		98	57 - 123
bis(chloroisopropyl) ether	2.00	1.90		ug/L		95	35 - 124

Surrogate	LCS %Recovery	LCS Quali(ier)	Limits
2-Fluorophenol (Surr)	47		14 - 120
Phenol-d5 (Surr)	26		10 - 120
Nitrobenzene-d5 (Surr)	74		46 - 125
2-Fluorobiphenyl	70		51 - 120
2,4,6-Tribromophenol (Surr)	107		50 - 125
Terphenyl-d14 (Surr)	108		63 - 122

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier)	f nit	D	Rec	Rec1 Limits	RTD	RTD Limit
Phenol	2.00	0.704	J	ug/L		35	13 - 120	2	30
Bis(2-chloroethyl)ether	2.00	1.65		ug/L		83	39 - 125	5	30
2-Chlorophenol	2.00	1.59		ug/L		79	44 - 120	4	30
1,3-Dichlorobenzene	2.00	1.47		ug/L		74	25 - 120	9	35
1,4-Dichlorobenzene	2.00	1.58		ug/L		79	28 - 120	9	35
Benzyl alcohol	2.00	1.44	J	ug/L		72	10 - 120	2	35
1,2-Dichlorobenzene	2.00	1.63		ug/L		81	31 - 120	12	35
2-Methylphenol	2.00	1.60		ug/L		80	36 - 120	4	35
3 & 4 Methylphenol	2.00	1.27		ug/L		64	29 - 120	16	35
N-Nitrosodi-n-propylamine	2.00	1.53		ug/L		76	39 - 145	0	30
Hexachloroethane	2.00	1.62		ug/L		81	18 - 125	13	35
Nitrobenzene	2.00	1.51		ug/L		76	38 - 141	0	30
Isophorone	2.00	1.64		ug/L		82	41 - 143	2	30
2-Nitrophenol	2.00	1.68		ug/L		84	55 - 120	7	30
2,4-Dimethylphenol	2.00	1.44	J	ug/L		72	47 - 120	14	30
Benzoic acid	4.00	1.68	J	ug/L		42	10 - 120	25	35
Bis(2-chloroethoxy)methane	2.00	1.72		ug/L		86	44 - 125	3	30
2,4-Dichlorophenol	2.00	1.61		ug/L		80	50 - 120	12	30
1,2,4-Trichlorobenzene	2.00	1.46		ug/L		73	31 - 120	18	35
Naphthalene	2.00	1.34		ug/L		67	42 - 120	16	35
4-Chloroaniline	2.00	2.27		ug/L		114	10 - 150	8	35
Hexachlorobutadiene	2.00	1.29		ug/L		65	17 - 125	25	35
4-Chloro-3-methylphenol	2.00	1.66		ug/L		83	47 - 120	13	30

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds (GC/MS4)Continued4

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCSD Result	LCSD Qual(ier	f nit	D . Rec	Rec1 Limits	RTD	RTD Limit
2-Methylnaphthalene	2.00	1.38		ug/L	69	43 - 120	13	35
Hexachlorocyclopentadiene	2.00	1.04		ug/L	52	10 - 125	10	35
2,4,6-Trichlorophenol	2.00	1.71		ug/L	86	55 - 120	10	30
2,4,5-Trichlorophenol	2.00	1.75		ug/L	88	53 - 120	13	35
2-Chloronaphthalene	2.00	1.46		ug/L	73	43 - 120	5	35
2-Nitroaniline	2.00	1.64		ug/L	82	52 - 127	14	30
Dimethyl phthalate	2.00	1.51		ug/L	76	65 - 128	12	30
Acenaphthylene	2.00	1.47		ug/L	74	48 - 125	6	30
2,6-Dinitrotoluene	2.00	1.56		ug/L	78	60 - 128	12	30
3-Nitroaniline	2.00	2.38	J	ug/L	119	10 - 138	3	30
Acenaphthene	2.00	1.38		ug/L	69	49 - 120	11	30
2,4-Dinitrophenol	4.00	3.84	J	ug/L	96	10 - 146	18	35
4-Nitrophenol	4.00	1.86	J	ug/L	46	10 - 120	18	35
Dibenzofuran	2.00	1.46		ug/L	73	51 - 120	14	30
2,4-Dinitrotoluene	2.00	1.57		ug/L	79	61 - 126	14	30
Diethyl phthalate	2.00	1.49		ug/L	74	60 - 134	19	24
4-Chlorophenyl phenyl ether	2.00	1.34		ug/L	67	53 - 125	20	35
Fluorene	2.00	1.40		ug/L	70	55 - 125	17	30
4-Nitroaniline	2.00	2.02		ug/L	101	38 - 139	10	35
4,6-Dinitro-2-methylphenol	4.00	3.43		ug/L	86	10 - 150	26	35
N-Nitrosodiphenylamine	2.00	1.61		ug/L	80	52 - 135	14	30
4-Bromophenyl phenyl ether	2.00	1.47		ug/L	73	53 - 126	17	30
Hexachlorobenzene	2.00	1.59		ug/L	80	49 - 125	21	30
Phenanthrene	2.00	1.56		ug/L	78	54 - 125	18	30
Anthracene	2.00	1.58		ug/L	79	50 - 131	17	24
Di-n-butyl phthalate	2.00	6.19	*+	ug/L	310	55 - 167	15	30
Fluoranthene	2.00	1.58		ug/L	79	60 - 133	20	30
Pyrene	2.00	1.63		ug/L	81	57 - 133	18	23
Butyl benzyl phthalate	2.00	1.49	J	ug/L	75	60 - 150	28	30
3,3'-Dichlorobenzidine	4.00	4.55		ug/L	114	33 - 150	19	35
Benzo[a]anthracene	2.00	1.47		ug/L	74	56 - 131	23	30
Chrysene	2.00	1.52		ug/L	76	57 - 125	29	30
Bis(2-ethylhexyl) phthalate	2.00	1.73	J	ug/L	87	48 - 150	23	35
Di-n-octyl phthalate	2.00	1.39		ug/L	69	48 - 150	25	30
Benzo[a]pyrene	2.00	1.61		ug/L	81	55 - 125	30	30
Indeno[1,2,3-cd]pyrene	2.00	1.58		ug/L	79	39 - 148	21	30
Dibenz(a,h)anthracene	2.00	1.45		ug/L	73	48 - 134	32	35
Benzo[g,h,i]perylene	2.00	1.56		ug/L	78	46 - 140	29	30
Carbazole	2.00	2.27		ug/L	114	10 - 150	16	30
1-Methylnaphthalene	2.00	1.42		ug/L	71	41 - 125	13	35
Benzo[b]fluoranthene	2.00	1.42		ug/L	71	59 - 129	28	30
Benzo[k]fluoranthene	2.00	1.48		ug/L	74	57 - 123	28	35
bis(chloroisopropyl) ether	2.00	1.79		ug/L	89	35 - 124	6	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2-Fluorophenol (Surr)	51		14 - 120
Phenol-d5 (Surr)	40		10 - 120
Nitrobenzene-d5 (Surr)	68		46 - 125

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E - Semivolatile Organic Compounds)GC/MS4)Continued4

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x383

Client Sample ID: Lab Control Sample Dup
Trep Ntpe: Notal/AF
Trep Batch: 358x%5

Surrogate	LCS D %Recovery	LCS D Qualifier	Limits
2-Fluorobiphenyl	71		51 - 120
2,4,6-Tribromophenol (Surr)	101		50 - 125
Terphenyl-d14 (Surr)	94		63 - 122

Method: 8270E SIM - Semivolatile Organic Compounds)GC/MS SIM4

Lab Sample ID: MB 580-358672/9-F
MatriW P ater
F nalysis Batch: 35x008

Client Sample ID: Method Blank
Trep Ntpe: Notal/AF
Trep Batch: 358672

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Pentachlorophenol	ND		1.0	0.18	ug/L		06/09/21 09:02	06/11/21 15:37	1
Bis(2-ethylhexyl) phthalate	ND		0.20	0.087	ug/L		06/09/21 09:02	06/11/21 15:37	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	72		35 - 133	06/09/21 09:02	06/11/21 15:37	1
Terphenyl-d14	92		29 - 150	06/09/21 09:02	06/11/21 15:37	1

Lab Sample ID: LCS 580-358672/2-F
MatriW P ater
F nalysis Batch: 35x008

Client Sample ID: Lab Control Sample
Trep Ntpe: Notal/AF
Trep Batch: 358672

F nalyte	Spike F dded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Pentachlorophenol	4.00	2.61		ug/L		65	10 - 138
Bis(2-ethylhexyl) phthalate	2.00	1.79		ug/L		89	50 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4,6-Tribromophenol	96		35 - 133
Terphenyl-d14	93		29 - 150

Lab Sample ID: LCSD 580-358672/3-F
MatriW P ater
F nalysis Batch: 35x008

Client Sample ID: Lab Control Sample Dup
Trep Ntpe: Notal/AF
Trep Batch: 358672

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier)	f nit	D	Rec	Rec1 Limits	RTD	Limit
Pentachlorophenol	4.00	2.90		ug/L		73	10 - 138	11	35
Bis(2-ethylhexyl) phthalate	2.00	1.87		ug/L		94	50 - 150	5	35

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
2,4,6-Tribromophenol	94		35 - 133
Terphenyl-d14	95		29 - 150

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x077

Client Sample ID: Method Blank
Trep Ntpe: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Pentachlorophenol	ND		1.0	0.18	ug/L		06/11/21 08:45	06/12/21 14:56	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: 8270E SIM - Semivolatile Organic Compounds)GC/MS SIM4)Continued4

Lab Sample ID: MB 580-358x%5/9-F
MatriW P ater
F nalysis Batch: 35x077

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Bis(2-ethylhexyl) phthalate	ND		0.20	0.087	ug/L		06/11/21 08:45	06/12/21 14:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol	68		35 - 133				06/11/21 08:45	06/12/21 14:56	1
2,4,6-Tribromophenol (Surr)	68		35 - 133				06/11/21 08:45	06/12/21 14:56	1
Terphenyl-d14	75		29 - 150				06/11/21 08:45	06/12/21 14:56	1
Terphenyl-d14 (Surr)	75		29 - 150				06/11/21 08:45	06/12/21 14:56	1

Lab Sample ID: LCS 580-358x%5/2-F
MatriW P ater
F nalysis Batch: 35x9%5

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	Rec	Rec1 Limits
Pentachlorophenol	4.00	2.85		ug/L		71	10 - 138
Bis(2-ethylhexyl) phthalate	2.00	1.90		ug/L		95	50 - 150
Surrogate	%Recovery	Qualifier	Limits				
2,4,6-Tribromophenol	92		35 - 133				
Terphenyl-d14	95		29 - 150				

Lab Sample ID: LCSD 580-358x%5/3-F
MatriW P ater
F nalysis Batch: 35x9%5

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF
Trep Batch: 358x%5

F nalyte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	Rec	Rec1 Limits	RTD	Limit
Pentachlorophenol	4.00	1.96	*1	ug/L		49	10 - 138	37	35
Bis(2-ethylhexyl) phthalate	2.00	1.39		ug/L		70	50 - 150	31	35
Surrogate	%Recovery	Qualifier	Limits						
2,4,6-Tribromophenol	73		35 - 133						
Terphenyl-d14	70		29 - 150						

Method: AP NTH-GW- Aorthwest - Volatile Tetroleum Troducts)GC4

Lab Sample ID: MB 580-358550/39
MatriW P ater
F nalysis Batch: 358550

Client Sample ID: Method Blank
Trep Nype: Notal/AF

F nalyte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Tprepared	F nalyUed	Dil zac
Gasoline	ND		0.25	0.10	mg/L			06/08/21 20:53	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	84		50 - 150					06/08/21 20:53	1

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: AP NTH-GW- Aorthwest - Volatile Tetroleum Troducts)GC4)Continued4

Lab Sample ID: LCS 580-358550/32
MatriW P ater
Fnalysis Batch: 358550

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

Fnyalte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits
Gasoline	1.00	0.858		mg/L		86	79 - 120
Surrogate	%Recovery	LCS	Qualifier	Limits			
4-Bromofluorobenzene (Surr)	93			50 - 150			

Lab Sample ID: LCSD 580-358550/33
MatriW P ater
Fnalysis Batch: 358550

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Fnyalte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	Limit
Gasoline	1.00	0.852		mg/L		85	79 - 120	1	10
Surrogate	%Recovery	LCSD	Qualifier	Limits					
4-Bromofluorobenzene (Surr)	93			50 - 150					

Lab Sample ID: MB 580-35x095/93
MatriW P ater
Fnalysis Batch: 35x095

Client Sample ID: Method Blank
Trep Nype: Notal/AF

Fnyalte	MB Result	MB Quali(ier	RL	MDL	f nit	D	Prepared	FnyalteD	Dil zac
Gasoline	ND		0.25	0.10	mg/L			06/11/21 20:08	1
Surrogate	%Recovery	MB	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90			50 - 150				06/11/21 20:08	1

Lab Sample ID: LCS 580-35x095/9%
MatriW P ater
Fnalysis Batch: 35x095

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

Fnyalte	Spike Fdded	LCS Result	LCS Quali(ier	f nit	D	. Rec	. Rec1 Limits
Gasoline	1.00	0.991		mg/L		99	79 - 120
Surrogate	%Recovery	LCS	Qualifier	Limits			
4-Bromofluorobenzene (Surr)	98			50 - 150			

Lab Sample ID: LCSD 580-35x095/95
MatriW P ater
Fnalysis Batch: 35x095

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Fnyalte	Spike Fdded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1 Limits	RTD	Limit
Gasoline	1.00	1.02		mg/L		102	79 - 120	2	10
Surrogate	%Recovery	LCSD	Qualifier	Limits					
4-Bromofluorobenzene (Surr)	102			50 - 150					

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: AP NTH-GW- Aorthwest - Volatile Tetroleum Troducts)GC4)Continued4

Lab Sample ID: MB 580-35x5x2/3
MatriW P ater
Fnalysis Batch: 35x5x2

Client Sample ID: Method Blank
Trep Nype: Notal/AF

Fnalyste	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	FnalysteUbd	Dil zac
Gasoline	ND		0.25	0.10	mg/L			06/18/21 03:29	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	93		50 - 150					06/18/21 03:29	1

Lab Sample ID: LCS 580-35x5x2/%
MatriW P ater
Fnalysis Batch: 35x5x2

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF

Fnalyste	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
Gasoline	1.00	0.968		mg/L		97	79 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	100		50 - 150				

Lab Sample ID: LCSD 580-35x5x2/5
MatriW P ater
Fnalysis Batch: 35x5x2

Client Sample ID: Lab Control Sample Dup
Trep Nype: Notal/AF

Fnalyste	Spike Fdded	LCSD Result	LCSD Quali(ier)	f nit	D	Rec	Rec1 Limits	RTD	Limit
Gasoline	1.00	0.992		mg/L		99	79 - 120	2	10
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits						
4-Bromofluorobenzene (Surr)	100		50 - 150						

Method: AP NTH-DW- Aorthwest - Semi-Volatile Tetroleum Troducts)GC4

Lab Sample ID: MB 580-358596/9-F
MatriW P ater
Fnalysis Batch: 35853%

Client Sample ID: Method Blank
Trep Nype: Notal/AF
Trep Batch: 358596

Fnalyste	MB Result	MB Quali(ier)	RL	MDL	f nit	D	Tprepared	FnalysteUbd	Dil zac
#2 Diesel (C10-C24)	ND		0.11	0.065	mg/L		06/07/21 14:58	06/07/21 18:03	1
Motor Oil (>C24-C36)	ND		0.35	0.096	mg/L		06/07/21 14:58	06/07/21 18:03	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	79		50 - 150				06/07/21 14:58	06/07/21 18:03	1

Lab Sample ID: LCS 580-358596/2-F
MatriW P ater
Fnalysis Batch: 35853%

Client Sample ID: Lab Control Sample
Trep Nype: Notal/AF
Trep Batch: 358596

Fnalyste	Spike Fdded	LCS Result	LCS Quali(ier)	f nit	D	Rec	Rec1 Limits
#2 Diesel (C10-C24)	2.00	1.88		mg/L		94	50 - 120
Motor Oil (>C24-C36)	2.00	2.00		mg/L		100	64 - 120

Eurofins FGS, Seattle

QC Sample Results

Client: Geosyntec Consultants, Inc.
 Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Method: AP NTH-DW- Aorthwest - Semi-Volatile Tetroleum Troducts)GC4)Continued4

Lab Sample ID: LCS 580-358596/2-F
 MatriW P ater
 Fnalysis Batch: 35853%

Client Sample ID: Lab Control Sample
 Trep Nype: Notal/AF
 Trep Batch: 358596

Surrogate	LCS		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	92		50 - 150

Lab Sample ID: LCSD 580-358596/3-F
 MatriW P ater
 Fnalysis Batch: 35853%

Client Sample ID: Lab Control Sample Dup
 Trep Nype: Notal/AF
 Trep Batch: 358596

F nalyte	Spike F dded	LCSD Result	LCSD Quali(ier	f nit	D	. Rec	. Rec1		RTD	
							Limits	RTD	Limit	
#2 Diesel (C10-C24)	2.00	1.88		mg/L		94	50 - 120	0	26	
Motor Oil (>C24-C36)	2.00	2.03		mg/L		102	64 - 120	2	24	

Surrogate	LCSD		Limits
	%Recovery	Qualifier	
<i>o</i> -Terphenyl	92		50 - 150

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- 2
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Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 040152-RB-WG 258

Lab Sample ID: Mk0-20dM x-2

Date CollecteT: 04y01y52 0/ :M5

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DiIFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANt	Lab
Total/NA	Analysis	8260D		1	358885	06/10/21 23:07	T1W	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E		1	358799	06/10/21 15:52	W1T	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359008	06/11/21 17:49	W1T	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	358550	06/09/21 06:15	JSM	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 15:07	T1W	FGS SEA

Client Sample ID: 040152-RB-WG 2/ 8

Lab Sample ID: Mk0-20dM x-5

Date CollecteT: 04y01y52 20:10

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DiIFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANt	Lab
Total/NA	Analysis	8260D		1	358885	06/10/21 23:32	T1W	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E		1	358799	06/10/21 16:15	W1T	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359008	06/11/21 18:11	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	3	359632	06/18/21 15:10	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	358550	06/09/21 06:40	JSM	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 15:28	T1W	FGS SEA

Client Sample ID: 040152-RB-8 S0d

Lab Sample ID: Mk0-20dM x-d

Date CollecteT: 04y01y52 22:0d

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DiIFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANt	Lab
Total/NA	Analysis	8260D		1	358885	06/10/21 23:57	T1W	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E		1	358799	06/10/21 16:38	W1T	FGS SEA
Total/NA	Prep	3510C			358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359008	06/11/21 18:34	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358672	06/09/21 09:02	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	3	359632	06/18/21 15:32	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359592	06/18/21 12:27	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 15:48	T1W	FGS SEA

Eurofins FGS, Seattle

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 040152-RB-WG 1UD

Lab Sample ID: Mx0-20dM x-1

Date CollecteT: 04y01y52 25:50

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		20	358885	06/11/21 00:22	T1W	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 16:20	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E	DL	50	359635	06/18/21 15:03	ADB	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 17:57	TL1	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	10	359632	06/18/21 17:07	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359592	06/18/21 12:51	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 16:08	T1W	FGS SEA

Client Sample ID: 040152-RB-WG 1UD-D6 u

Lab Sample ID: Mx0-20dM x-M

Date CollecteT: 04y01y52 25:50

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		20	358885	06/11/21 00:47	T1W	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 16:44	W1T	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E	DL	50	359635	06/18/21 15:27	ADB	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 18:20	TL1	FGS SEA
Total/NA	Prep	3510C	DL		358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM	DL	10	359632	06/18/21 17:29	E1L	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359592	06/18/21 13:16	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 16:28	T1W	FGS SEA

Client Sample ID: 040152-RB-8 S05

Lab Sample ID: Mx0-20dM x-4

Date CollecteT: 04y01y52 2d:MD

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		1	359179	06/14/21 21:03	CJ	FGS SEA
Total/NA	Analysis	8260D	RA	1	359251	06/15/21 13:52	RJF	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 17:07	W1T	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 18:43	TL1	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359015	06/12/21 01:51	JBT	FGS SEA

Eurofins FGS, Seattle

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Client Sample ID: 040152-RB-8 S05

Lab Sample ID: Mk0-20dM x-4

Date CollecteT: 04y01y52 2d:M0

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 17:08	T1W	FGS SEA

Client Sample ID: 040152-RB-8 S02

Lab Sample ID: Mk0-20dM x-U

Date CollecteT: 04y01y52 21:dM

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		1	358759	06/10/21 06:11	RJF	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E		1	359080	06/12/21 17:31	W1T	FGS SEA
Total/NA	Prep	3510C			358945	06/11/21 08:45	N1B	FGS SEA
Total/NA	Analysis	8270E SIM		1	359077	06/12/21 19:05	TL1	FGS SEA
Total/NA	Analysis	NWTPH-Gx		1	359015	06/12/21 02:16	JBT	FGS SEA
Total/NA	Prep	3510C			358516	06/07/21 14:58	N1B	FGS SEA
Total/NA	Analysis	NWTPH-Dx		1	359114	06/13/21 17:28	T1W	FGS SEA

Client Sample ID: Brip s lank

Lab Sample ID: Mk0-20dM x-x

Date CollecteT: 04y01y52 00:02

9 atriv: Gater

Date WeceiPeT: 04y01y52 2Md0

urep BApe	s atch BApe	s atch 9 ethoT	WFn	DilFtion 7actor	s atch RFmber	urepareT or z nalA3eT	z nalANT	Lab
Total/NA	Analysis	8260D		1	358759	06/10/21 06:35	RJF	FGS SEA

LaboratorA WeferenceN

FGS SEA = Eurofins FGS, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Laboratory: Eurofins FGS, Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Washington	State	C788	07-13-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8270E SIM	3510C	Water	Bis(2-ethylhexyl) phthalate

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Lilyblad Site Remediation

Job ID: 580-103598-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-103598-1	060421-NT-RW12G	Water	06/04/21 09:52	06/04/21 15:30	
580-103598-2	060421-NT-RW19G	Water	06/04/21 10:40	06/04/21 15:30	
580-103598-3	060421-NT-GS03	Water	06/04/21 11:03	06/04/21 15:30	
580-103598-4	060421-NT-RW47D	Water	06/04/21 12:20	06/04/21 15:30	
580-103598-5	060421-NT-RW47D-DUP	Water	06/04/21 12:20	06/04/21 15:30	
580-103598-6	060421-NT-GS02	Water	06/04/21 13:50	06/04/21 15:30	
580-103598-7	060421-NT-GS01	Water	06/04/21 14:35	06/04/21 15:30	
580-103598-8	Trip Blank	Water	06/04/21 00:01	06/04/21 15:30	

Chain of Custody Record



Client Information Client Contact: <u>Luke Smith</u> Company: <u>Geosyntec Consultants</u> Address: <u>520 Pike Street # 2600</u> City: <u>Seattle</u> State, Zip: <u>WA, 98101</u> Phone: <u>(206) 490-1450</u> Email: <u>luke.smith@geosyntec.com</u> Project Name: <u>Lilyblad</u> Site: <u>Lilyblad Tacoma</u>		Sampler: <u>Mate Tandecki</u> Lab PM: <u>Sheri Cruz</u> Phone: _____ E-Mail: _____ Carrier Tracking No(s): _____ State of Origin: _____ COC No: _____ Page: <u>Page 1 of 1</u> Job #: <u>103598</u>	
Due Date Requested: _____ TAT Requested (days): <u>Standard</u> Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No PO #: <u>100025933</u> Purchase Order not required WO #: _____ Project #: <u>PNR0697</u> SSOHW: _____		Analysis Requested VOCs by 8260D VOCs by 8270F TPH by NMTPH-GX TPH by NMTPH-IX Total Number of Containers: _____	
Sample Identification Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, O=soil, A=air) Preservation Code (A=Ascorbic Acid, B=Boil, C=Cool, D=Dry, E=EDTA, F=Freeze, G=Grab, H=Ice, I=Ice, J=DI Water, K=EDTA, L=EDA, M=Hexane, N=None, O=AsNaO2, P=Na2O4S, Q=Na2SO3, R=Na2SO3, S=H2SO4, T=TSP Dodecahydrate, U=Acetone, V=ph 4-5, W=ph 4-5, Z=other (specify))		Special Instructions/Note: Therm. ID: <u>A1 Cor: 5.7 ° Inc: 5.9 °</u> Cooler Desc: <u>LG Blue</u> FedEx: Packing: <u>Box</u> UPS: Cust. Seal: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Blue Ice: <u>Wet, Dry, None</u> Lab Cour: Other: <u>Clubs</u> Therm. ID: <u>PR-8 Cor: 26.4 ° Inc: 20.9 °</u> Cooler Desc: <u>LG Blue</u> FedEx: Packing: <u>Box</u> UPS: Cust. Seal: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Blue Ice: <u>Wet, Dry, None</u> Lab Cour: Other: _____ d if san	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)		580-103598 Chain of Custody 	
Relinquished by: <u>Mate Tandecki</u> Date/Time: <u>06/04/21 1530</u> Company: <u>Geosyntec</u>		Relinquished by: _____ Date/Time: _____ Company: _____	
Relinquished by: _____ Date/Time: _____ Company: _____		Relinquished by: _____ Date/Time: _____ Company: _____	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.: _____	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 580-103598-1

Login Number: 103598

List Source: Eurofins FGS, Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
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	Received same day of collection; chilling process has begun.
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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



APPENDIX F

Focused Feasibility Study Remedial Alternative Cost Estimates



Remedial Alternatives Cost Estimate Summary
 Site Remedy Review - Focused Feasibility Study
 Former Lilyblad Cleanup Site
 Tacoma, Washington

Alt No.	Name	Timeframe Estimate Summary	Capital Costs	O&M Costs	Total	Range (-30%/+50%)
Source Remediation Alternatives						
1	DPE with Transition to MNA and ICs	5 years DPE 15 years MNA Total - 20 years	\$760,000	\$2,460,000	\$3,220,000	\$2,250,000 - \$4,830,000
2	MNA/NSZD with ICs	30 years	\$80,000	\$2,080,000	\$2,160,000	\$1,510,000 - \$3,240,000
		85 years	\$80,000	\$3,660,000	\$3,740,000	\$2,610,000 - \$5,610,000
3	Bio-Sparging with NSZD/MNA and ICs and with options for items below	8 years Bio-Sparge 10 years MNA Total - 18 years	\$940,000	\$2,580,000	\$3,520,000	\$2,460,000 - \$5,280,000
		20 years Bio-Sparge 10 years MNA Total - 30 years	\$940,000	\$4,310,000	\$5,250,000	\$3,670,000 - \$7,880,000
a	<i>Concurrent SVE</i>	9 years Bio-Sparge/SVE 10 years MNA Total - 19 years	\$1,260,000	\$3,310,000	\$4,570,000	\$3,190,000 - \$6,860,000
b	<i>Concurrent Groundwater Extraction</i>	6 years Bio-Sparge 10 years MNA Total - 16 years	\$2,020,000	\$2,500,000	\$4,520,000	\$3,160,000 - \$6,780,000
c	<i>Followed by ISCO/Aerobic Biodegradation</i>	8 years Bio-Sparge 3 years ISCO/Bio 3 years MNA Total - 14 years	\$1,130,000	\$3,630,000	\$4,760,000	\$3,330,000 - \$7,140,000
d	<i>Expanded Bio-Sparge Operation</i>	8 years Bio-Sparge 10 years MNA Total - 18 years	\$1,260,000	\$2,570,000	\$3,830,000	\$2,680,000 - \$5,750,000
4	Excavation with MNA and ICs	2 years Excavation 4 years MNA Total - 6 years	\$11,950,000	\$260,000	\$12,210,000	\$8,540,000 - \$18,320,000
Containment Alternatives						
5	Groundwater Containment via Extraction & Treatment with ICs	30 years	\$550,000	\$5,400,000	\$5,950,000	\$4,160,000 - \$8,930,000
6	Bio-Sparging Treatment Zone at Downgradient Site Boundary with ICs	30 years	\$850,000	\$4,920,000	\$5,770,000	\$4,030,000 - \$8,660,000

Notes:

- Costs are estimated using 2020 dollars.
- All costs are -30%/+50%. Costs do not include decommissioning of existing infrastructure as these would be universal costs for all alternatives.
- ICs - Institutional Controls
- DPE - Dual Phase Extraction
- SVE - Soil Vapor Extraction
- ISCO - In Situ Chemical Oxidation
- MNA - Monitored Natural Attenuation
- O&M - Operation and Maintenance

COST ESTIMATE
ALTERNATIVE 1 - DPE WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis					
Groundwater Monitoring Basis					
Number of Existing Monitoring Wells				35	
Years of Semi-Annual GW Monitoring				5	
Years of Annual MNA GW Monitoring				15	
Average Number of GW Samples: Semi-Annual Monitoring Event (Years 1-5)				25	
Number of GW Samples: Annual MNA Monitoring Event (Years 6-10)				20	
Number of GW Samples: Annual MNA Monitoring Event (Years 11-20)				10	
DPE Basis					
Years of System Operation				5	
Number of DPE Wells Currently Within Extent of COC Plume				42	
New Conveyance Piping Length - Above & Below Ground (ft)				1,350	
Length of Trenching Estimated (ft)				410	
Costs					
	Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS					
DPE System Upgrades					
	Welding Work	event	\$1,500	1	\$ 1,500
	Stator Rebuild Kit	ls	\$600	1	\$ 600
	New Piping	ft	\$75	1,350	\$ 105,000
	Trenching	ft	\$300	410	\$ 125,000
	Trenching Permit	ls	\$2,000	1	\$ 2,000
	Well Replacement	ea	\$6,700	28	\$ 190,000
	Well Permits	well	\$220	28	\$ 6,500
	TDS Treatment	ea	\$25,000	1	\$ 25,000
	Transmitter Replacement	ls	\$800	1	\$ 800
	Recovery Well Head Reconstruction	well	\$400	42	\$ 17,000
	Well Seal Replacement	ls	\$30	42	\$ 1,500
	Stinger Replacement	ft	\$6	510	\$ 3,500
	Miscellaneous Field Supplies	day	\$200	25	\$ 5,000
	Site Visit Costs (Truck Rental, Per diem)	day	\$200	25	\$ 5,000
	Replacement Liquid Phase GAC Vessel	ls	\$5,000	1	\$ 5,000
	Vessel Shipping, Delivery and Installation	ls	\$950	1	\$ 1,000
	Carbon Media Replacement	lb	\$3.50	500	\$ 1,800
	Carbon Changeout	event	\$2,000	1	\$ 2,000
	IWW Permit Update	ls	\$10,000	1	\$ 10,000
	IDW Management & Disposal	ls	\$25,000	1	\$ 25,000
	System Startup and Testing	ls	\$25,000	1	\$ 25,000
	Construction Documentation & Report	ls	\$10,000	1	\$ 10,000
	2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$530,000	\$ 21,500
	CQA & Project Mgmt	% cost	25%	\$570,000	\$ 145,000
	System Upgrades Subtotal				\$ 735,000
Institutional Controls					
	Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$ 15,000
	Site Management Plan (SMP)	ls	\$5,000	1	\$ 5,000
	Project Management	% costs	15%	\$20,000	\$ 3,000
	Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL					\$ 760,000

COST ESTIMATE
ALTERNATIVE 1 - DPE WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

OPERATIONS, MAINTENANCE, & MONITORING (OMM)					
DPE Operations and Maintenance					
Onsite Labor	month	\$4,000	60	\$	240,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	240	\$	50,000
Replacement Bag Filters	month	\$50	120	\$	6,000
Miscellaneous Field Supplies	month	\$500	60	\$	30,000
Carbon Media Replacement	lb	\$3.50	2500	\$	8,800
Carbon Changeouts	event	\$2,000	5	\$	10,000
Vapor Sampling	event	\$500	10	\$	5,000
IWW Extracted Water Sampling	event	\$1,000	10	\$	10,000
IWW Permit Fee	annual	\$700	5	\$	4,000
IWW Permit Compliance Labor	annual	\$1,500	5	\$	8,000
IWW Monthly and Semi-Annual Reporting	annual	\$12,500	5	\$	65,000
PSCAA Permit	annual	\$700	5	\$	4,000
IDW Management & Disposal	annual	\$2,000	5	\$	10,000
Electrical Costs	annual	\$44,000	5	\$	220,000
Well Cleaning/Redevelopment	Per well	\$1,500	42	\$	65,000
Equipment Repair/Replacement	Every 5 years	\$20,000	1	\$	20,000
Data Management and Reporting	quarter	\$2,500	20	\$	50,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$405,000	\$	16,500
Project Management	% cost	15%	\$ 810,000	\$	125,000
DPE Operations and Maintenance Subtotal				\$	950,000
Remedy Groundwater Sampling (Years 1 - 5)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	25	\$	400
Groundwater Sampling - Collection	well	\$95	25	\$	2,500
Groundwater Analytical	well	\$700	25	\$	18,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Inquiries - Additional Analysis	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$30,000	\$	1,500
Project Management & Access Coordination	% cost	20%	\$ 50,000	\$	10,000
<i>Costs Per Sampling Event Subtotal</i>				\$	<i>60,000</i>
Semi-Annual Sampling (Years 1 - 5) Subtotal	event	\$ 55,000	10	\$	550,000

COST ESTIMATE
ALTERNATIVE 1 - DPE WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

MNA Groundwater Sampling (Years 6 - 10)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	20	\$	300
Groundwater Sampling - Collection	well	\$95	20	\$	2,000
MNA Groundwater Analytical	well	\$700	20	\$	14,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$25,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$ 45,000	\$	9,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 55,000
MNA Sampling (Years 6 - 10) Subtotal					\$ 275,000
MNA Groundwater Sampling (Years 11 - 20)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	600
Groundwater Sampling - DTW	well	\$15	10	\$	200
Groundwater Sampling - Collection	well	\$95	10	\$	1,000
MNA Groundwater Analytical	well	\$700	10	\$	7,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	300
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$30,000	\$	1,500
Project Management & Access Coordination	% cost	20%	\$ 35,000	\$	7,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 45,000
MNA Sampling (Years 11 - 20) Subtotal					\$ 450,000
Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	4	\$	200,000
Project Management	% cost	15%	\$ 200,000	\$	30,000
Remedy Evaluation Reports Subtotal					\$ 230,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$	2,460,000
TOTAL COSTS				\$	3,220,000
TOTAL COSTS (-30%)				\$	2,250,000
TOTAL COSTS (+50%)				\$	4,830,000

COST ESTIMATE
ALTERNATIVE 1 - DPE WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

Costs assume no new monitoring wells will be installed.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface

COC - Contaminants of Concern

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

IWW - Industrial Wastewater

lb - Pound(s)

GAC - Granulated Active Carbon

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

VOCs - Volatile Organic Compounds

**COST ESTIMATE
ALTERNATIVE 2 - NSZD/MNA WITH ICs
Lilyblad Cleanup Site, Tacoma, Washington**

Design/Cost Basis				
Groundwater Monitoring Basis				
Number of Existing Monitoring Wells				35
Years of Annual MNA/NSZD Monitoring				30
Number of Existing In-Situ Microcosms				8
Number of Quinquennial (every 5 years) CO ₂ Flux Monitoring Events				6
Number of Wells Sampled (Years 1 - 10)				25
Number of Wells Sampled (Years 11 - 20)				15
Number of Wells Sampled (Years 21 - 30)				10
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan				
Revised CAP Preparation	ls	\$30,000	1	\$ 30,000
Public Comment Review/Response	ls	\$15,000	1	\$ 15,000
Project Management	% cost	15%	\$45,000	\$ 7,000
Revised Corrective Action Plan Subtotal				\$ 55,000
MNA Evaluation/Analysis	ls	\$100,000	0	\$ -
Institutional Controls				
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$ 15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$ 5,000
Project Management	% cost	15%	\$20,000	\$ 3,000
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 80,000
OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
MNA/NSZD Groundwater Sampling (Years 1 - 10)				
Groundwater Sampling - Mobilization	day	\$365	3	\$ 1,500
Groundwater Sampling - DTW	well	\$15	25	\$ 375
Groundwater Sampling - Collection	well	\$95	25	\$ 2,500
MNA/NSZD Groundwater Analytical	well	\$800	25	\$ 20,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$ 600
Data Processing/Data Validation	event	\$3,500	1	\$ 3,500
Database Management	event	\$2,000	1	\$ 2,000
Data Evaluation	event	\$4,000	1	\$ 4,000
IDW Management & Disposal	event	\$3,000	1	\$ 3,000
Miscellaneous Field Supplies	event	\$200	1	\$ 200
Well Maintenance	event	\$2,500	1	\$ 2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$ 10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$50,000	\$ 2,000
Project Management & Access Coordination	% cost	20%	\$50,175	\$ 10,500
<i>Costs Per Sampling Event Subtotal</i>				<i>\$ 65,000</i>
MNA Sampling (Years 1 - 10) Subtotal	event	\$ 65,000	10	\$ 650,000

COST ESTIMATE
ALTERNATIVE 2 - NSZD/MNA WITH ICs
Lilyblad Cleanup Site, Tacoma, Washington

MNA/NSZD Groundwater Sampling (Years 11 - 20)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	700
Groundwater Sampling - DTW	well	\$15	15	\$	200
Groundwater Sampling - Collection	well	\$95	15	\$	1,500
MNA/NSZD Groundwater Analytical	well	\$700	15	\$	10,500
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	non-labor cost	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$ 38,500	\$	8,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 50,000
MNA Sampling (Years 11 - 20) Subtotal					\$ 500,000
MNA/NSZD Groundwater Sampling (Years 21 - 30)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	800
Groundwater Sampling - DTW	well	\$15	10	\$	200
Groundwater Sampling - Collection	well	\$95	10	\$	1,000
MNA/NSZD Groundwater Analytical	well	\$800	10	\$	8,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	non-labor cost	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$ 35,600	\$	7,500
<i>Costs Per Sampling Event Subtotal</i>					\$ 45,000
MNA Sampling (Years 21 - 30) Subtotal					\$ 450,000
Quinquennial (every 5 years) CO₂ Flux Monitoring Events					
Onsite Labor	event	\$1,000	1	\$	1,000
Site Visit Costs (Truck Rental, Per Diem)	event	\$200	2	\$	400
CO ₂ Flux Monitoring	sample	\$1,600	8	\$	13,000
Results Evaluation	event	\$5,000	1	\$	5,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$15,000	\$	1,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 22,000
CO₂ Sampling (Years 1 - 30) Subtotal					\$ 135,000

**COST ESTIMATE
ALTERNATIVE 2 - NSZD/MNA WITH ICs
Lilyblad Cleanup Site, Tacoma, Washington**

Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	6	\$	300,000
Project Management	% cost	15%	\$300,000	\$	45,000
Remedy Evaluation Reports Subtotal				\$	345,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$	2,080,000
TOTAL COSTS				\$	2,160,000
TOTAL COSTS (-30%)				\$	1,510,000
TOTAL COSTS (+50%)				\$	3,240,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.
 Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.
 Costs assume no new monitoring wells or in-situ microcosms will be installed.
 System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

- bgs - Below ground surface
- DTW - Depth to Water
- CAP - Corrective Action Plan
- COC - Contaminants of Concern
- CO₂ - carbon dioxide
- CQA - Construction Quality Assurance
- ft - Feet
- gpm - Gallons per Minute
- GW - Groundwater
- IDW - Investigation Derived Waste
- IWW - Industrial Wastewater
- lb - Pound(s)
- GAC - Granulated Active Carbon
- ls - Lump Sum
- SF - Square Feet
- SMP - Site Management Plan
- VOCs - Volatile Organic Compounds

COST ESTIMATE
ALTERNATIVE 2 (EXPANDED)- NSZD/MNA WITH ICs
Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis					
Groundwater Monitoring Basis					
Number of Existing Monitoring Wells					35
Years of Annual MNA/NSZD Monitoring					85
Number of Existing In-Situ Microcosms					8
Number of Quinquennial (every 5 years) CO ₂ Flux Monitoring Events					6
Number of Wells Sampled (Years 1 - 10)					25
Number of Wells Sampled (Years 11 - 20)					15
Number of Wells Sampled (Years 21 - 85)					10
Costs					
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)	
CAPITAL COSTS					
Revised Corrective Action Plan					
Revised CAP Preparation	ls	\$30,000	1	\$	30,000
Public Comment Review/Response	ls	\$15,000	1	\$	15,000
Project Management	% cost	15%	\$45,000	\$	7,000
Revised Corrective Action Plan Subtotal				\$	55,000
MNA Evaluation/Analysis	ls	\$100,000	0	\$	-
Institutional Controls					
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$	15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$	5,000
Project Management	% cost	15%	\$20,000	\$	3,000
Institutional Controls Subtotal				\$	23,000
CAPITAL COSTS TOTAL				\$	80,000
OPERATIONS, MAINTENANCE, & MONITORING (OMM)					
MNA/NSZD Groundwater Sampling (Years 1 - 10)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	25	\$	375
Groundwater Sampling - Collection	well	\$95	25	\$	2,500
MNA/NSZD Groundwater Analytical	well	\$800	25	\$	20,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$50,000	\$	2,000
Project Management & Access Coordination	% cost	20%	\$50,175	\$	10,500
<i>Costs Per Sampling Event Subtotal</i>				<i>\$</i>	<i>65,000</i>
MNA Sampling (Years 1 - 10) Subtotal	event	\$ 65,000	10	\$	650,000

COST ESTIMATE
ALTERNATIVE 2 (EXPANDED)- NSZD/MNA WITH ICs
Lilyblad Cleanup Site, Tacoma, Washington

MNA/NSZD Groundwater Sampling (Years 11 - 20)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	700
Groundwater Sampling - DTW	well	\$15	15	\$	200
Groundwater Sampling - Collection	well	\$95	15	\$	1,500
MNA/NSZD Groundwater Analytical	well	\$700	15	\$	10,500
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	non-labor cost	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$ 38,500	\$	8,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 50,000
MNA Sampling (Years 11 - 20) Subtotal	event	\$ 50,000	10	\$	500,000
MNA/NSZD Groundwater Sampling (Years 21 - 85)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	800
Groundwater Sampling - DTW	well	\$15	10	\$	200
Groundwater Sampling - Collection	well	\$95	10	\$	1,000
MNA/NSZD Groundwater Analytical	well	\$800	10	\$	8,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	non-labor cost	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$ 35,600	\$	7,500
<i>Costs Per Sampling Event Subtotal</i>					\$ 45,000
MNA Sampling (Years 21 - 85) Subtotal	event	\$ 45,000	21	\$	945,000
Quinquennial (every 5 years) CO₂ Flux Monitoring Events					
Onsite Labor	event	\$1,000	1	\$	1,000
Site Visit Costs (Truck Rental, Per Diem)	event	\$200	2	\$	400
CO ₂ Flux Monitoring	sample	\$1,600	8	\$	13,000
Results Evaluation	event	\$5,000	16	\$	80,000
2021 Non-Labor Inflation Adjustment	non-labor cost	4%	\$15,000	\$	1,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 97,000
CO₂ Sampling (Years 1 - 30) Subtotal	event	\$ 97,000	6	\$	585,000

**COST ESTIMATE
ALTERNATIVE 2 (EXPANDED)- NSZD/MNA WITH ICs
Lilyblad Cleanup Site, Tacoma, Washington**

Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	17	\$	850,000
Project Management	% cost	15%	\$850,000	\$	127,500
Remedy Evaluation Reports Subtotal				\$	978,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$	3,660,000
TOTAL COSTS				\$	3,740,000
TOTAL COSTS (-30%)				\$	2,610,000
TOTAL COSTS (+50%)				\$	5,610,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

Costs assume no new monitoring wells or in-situ microcosms will be installed.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below ground surface

DTW - Depth to Water

CAP - Corrective Action Plan

COC - Contaminants of Concern

CO₂ - carbon dioxide

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

IWW - Industrial Wastewater

lb - Pound(s)

GAC - Granulated Active Carbon

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

VOCs - Volatile Organic Compounds

COST ESTIMATE
ALTERNATIVE 3 - BIOSPARGING WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis				
Monitoring Basis				
Number of Existing GW Monitoring Wells				35
Number of Proposed Vapor Probes				5
Years of Semi-Annual Vapor & GW Monitoring				8
Years of Annual MNA GW Monitoring				10
Average Number of GW Samples: Semi-Annual Monitoring Event (Years 1-8)				25
Average Number of Vapor Samples: Semi-Annual Monitoring Event (Years 1-8)				2
Number of GW Samples: Annual MNA Monitoring Event (Years 9-10)				20
Number of GW Samples: Annual MNA Monitoring Event (Years 11-18)				10
Biosparge Basis				
Number of Existing DPE Wells Planned for Reuse as Bio-Sparging Wells and within COC plume				37
Vapor Monitoring Probes (New)				5
Estimated Radius of Influence (ft)				12
New Biosparge Wells to be Installed				18
Assumed Years of System Operation				8
New Conveyance Piping Length - Above & Below Ground (ft)				1000
Length of Trenching Estimated (ft)				500
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan				
Revised CAP Preparation	ls	\$30,000	1	\$ 30,000
Public Comment Review/Response	ls	\$15,000	1	\$ 15,000
Detailed Design	ls	\$20,000	1	\$ 20,000
Project Management	% cost	15%	\$65,000	\$ 9,800
Revised Corrective Action Plan Subtotal				\$ 75,000
Bio-Sparge System Pilot Study				
Pilot Test	ls	\$65,000	\$0	\$ -
Project Management	% cost	15%	\$0	\$ -
Bio-Sparge System Pilot Study Subtotal				\$ -

COST ESTIMATE
ALTERNATIVE 3 - BIOSPARGING WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Bio-Sparge System Construction				
Building Permit	ls	\$2,000	1	\$ 2,000
Clear Sediment from Existing Lines	ls	\$58,500	1	\$ 60,000
Well Permits	well	\$220	42	\$ 10,000
New Biosparge Well Installation	well	\$6,700	18	\$ 125,000
Well Replaced (67% of existing wells)	well	\$6,700	24	\$ 165,000
Well Head Reconstruction (80% of wells)	well	\$400	30	\$ 12,000
Vapor Probe Installation	probe	\$1,500	5	\$ 8,000
New Piping for Biosparge Wells	ft	\$75	750	\$ 60,000
Trenching Associated with Piping Installation	ft	\$300	250	\$ 75,000
Compressor Skid and well packers	each	\$41,167	1	\$ 45,000
Miscellaneous Field Supplies	day	\$1,000	25	\$ 25,000
IDW Management & Disposal	ls	\$25,000	1	\$ 25,000
System Startup and Testing	ls	\$20,000	1	\$ 20,000
Construction Documentation & Report	ls	\$15,000	1	\$ 15,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$635,000	\$ 25,500
CQA & Project Mgmt	% cost	25%	\$650,000	\$ 165,000
Bio-Sparge System Construction Subtotal				\$ 840,000
Institutional Controls				
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$ 15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$ 5,000
Project Management	% cost	15%	\$20,000	\$ 3,000
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 940,000
OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
Biosparging Operations and Maintenance				
Onsite Labor	month	\$1,200	96	\$ 120,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	192	\$ 40,000
Semi-Annual Vapor Screening/Monitoring	event	\$1,000	16	\$ 16,000
Vapor Probe Sampling	event	\$500	32	\$ 16,000
Miscellaneous Field Supplies/Repairs	month	\$500	96	\$ 50,000
Electrical Costs	month	\$3,000	96	\$ 290,000
Data Management and Reporting	quarter	\$2,500	32	\$ 80,000
Well Cleaning/Redevelopment	Per well	\$1,500	55	\$ 85,000
Equipment Repair/Replacement	Every 5 years	\$20,000	1	\$ 20,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$540,000	\$ 22,000
Project Management	% cost	15%	\$615,000	\$ 95,000
Biosparging Operations and Maintenance Subtotal				\$ 835,000

COST ESTIMATE
ALTERNATIVE 3 - BIOSPARGING WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Remedy Groundwater Sampling (Per Event)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	25	\$	400
Groundwater Sampling - Collection	well	\$95	25	\$	2,500
Groundwater Analytical	well	\$700	25	\$	18,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	3,000
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$45,000	\$	2,000
Project Management & Access Coordination	% cost	20%	\$50,000	\$	10,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 65,000
Semi-Annual Sampling (Years 1 - 8) Subtotal	event	\$ 65,000	16	\$	1,040,000
MNA Groundwater Sampling (Years 9 - 10)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	20	\$	300
Groundwater Sampling - Collection	well	\$95	20	\$	2,000
MNA Groundwater Analytical	well	\$700	20	\$	14,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$25,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$45,000	\$	9,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 55,000
MNA Sampling (Years 9 - 10) Subtotal	event	\$ 55,000	2	\$	110,000

COST ESTIMATE
ALTERNATIVE 3 - BIOSPARGING WITH TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

MNA Groundwater Sampling (Years 11 - 18)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	800
Groundwater Sampling - DTW	well	\$15	10	\$	200
Groundwater Sampling - Collection	well	\$95	10	\$	1,000
MNA Groundwater Analytical	well	\$800	10	\$	8,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$40,000	\$	8,000
<i>Costs Per Sampling Event Subtotal</i>				\$	<i>45,000</i>
MNA Sampling (Years 11 - 18) Subtotal	event	\$ 45,000	8	\$	360,000
Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	4	\$	200,000
Project Management	% cost	15%	\$200,000	\$	30,000
Remedy Evaluation Reports Subtotal				\$	230,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$	2,580,000
TOTAL COSTS				\$	3,520,000
TOTAL COSTS (-30%)				\$	2,460,000
TOTAL COSTS (+50%)				\$	5,280,000

Notes / Assumptions:

- Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.
- Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.
- Costs assume no new monitoring wells will be installed.
- System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

- bgs - Below Ground Surface
- COC - Contaminants of Concern
- CQA - Construction Quality Assurance
- ft - Feet
- gpm - Gallons per Minute
- GW - Groundwater
- IDW - Investigation Derived Waste
- IWW - Industrial Wastewater
- lb - Pound(s)
- GAC - Granulated Active Carbon
- ls - Lump Sum
- SF - Square Feet
- SMP - Site Management Plan
- VOCs - Volatile Organic Compounds

ALTERNATIVE 3 (EXTENDED) - BIOSPARGING WITH TRANSITION TO MNA AND ICs

Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis				
Monitoring Basis				
Number of Existing GW Monitoring Wells				35
Number of Proposed Vapor Probes				5
Years of Semi-Annual Vapor & GW Monitoring (during operation)				10
Years of Annual Vapor & GW Monitoring (during operation)				10
Years of Annual MNA GW Monitoring (following operation)				10
Average Number of GW Samples: Semi-Annual and Annual Monitoring Event (Years 1-20)				25
Average Number of Vapor Samples: Semi-Annual and Annual Monitoring Event (Years 1-20)				2
Number of GW Samples: Annual MNA Monitoring Event (Years 21-22)				20
Number of GW Samples: Annual MNA Monitoring Event (Years 23-30)				10
Biosparge Basis				
Number of Existing DPE Wells Planned for Reuse as Bio-Sparging Wells and within COC plume				37
Vapor Monitoring Probes (New)				5
Estimated Radius of Influence (ft)				12
New Biosparge Wells to be Installed				18
Assumed Years of System Operation				20
New Conveyance Piping Length - Above & Below Ground (ft)				1000
Length of Trenching Estimated (ft)				500
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan				
Revised CAP Preparation	ls	\$30,000	1	\$ 30,000
Public Comment Review/Response	ls	\$15,000	1	\$ 15,000
Detailed Design	ls	\$20,000	1	\$ 20,000
Project Management	% cost	15%	\$65,000	\$ 9,800
Revised Corrective Action Plan Subtotal				\$ 75,000
Bio-Sparge System Pilot Study				
Pilot Test	ls	\$65,000	\$0	\$-
Project Management	% cost	15%	\$0	\$-
Bio-Sparge System Pilot Study Subtotal				\$-
Bio-Sparge System Construction				
Building Permit	ls	\$2,000	1	\$ 2,000
Clear Sediment from Existing Lines	ls	\$58,500	1	\$ 60,000
Well Permits	well	\$220	42	\$ 10,000
New Biosparge Well Installation	well	\$6,700	18	\$ 125,000
Well Replaced (67% of existing wells)	well	\$6,700	24	\$ 165,000
Well Head Reconstruction (80% of wells)	well	\$400	30	\$ 12,000
Vapor Probe Installation	probe	\$1,500	5	\$ 8,000
New Piping for Biosparge Wells	ft	\$75	750	\$ 60,000
Trenching Associated with Piping Installation	ft	\$300	250	\$ 75,000
Compressor Skid and well packers	each	\$41,167	1	\$ 45,000
Miscellaneous Field Supplies	day	\$1,000	25	\$ 25,000
IDW Management & Disposal	ls	\$25,000	1	\$ 25,000
System Startup and Testing	ls	\$20,000	1	\$ 20,000
Construction Documentation & Report	ls	\$15,000	1	\$ 15,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$ 632,000	\$ 25,500
CQA & Project Mgmt	% cost	25%	\$ 650,000	\$ 165,000
Bio-Sparge System Construction Subtotal				\$ 840,000

ALTERNATIVE 3 (EXTENDED) - BIOSPARGING WITH TRANSITION TO MNA AND ICs

Lilyblad Cleanup Site, Tacoma, Washington

Institutional Controls				
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$ 15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$ 5,000
Project Management	% cost	15%	\$20,000	\$ 3,000
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL			\$940,000	
OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
Biosparging Operations and Maintenance				
Onsite Labor	month	\$1,200	240	\$ 290,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	480	\$ 100,000
Semi-Annual Vapor Screening/Monitoring	event	\$1,000	40	\$ 40,000
Vapor Probe Sampling	event	\$500	32	\$ 16,000
Miscellaneous Field Supplies/Repairs	month	\$300	240	\$ 75,000
Electrical Costs	month	\$3,000	240	\$ 720,000
Data Management and Reporting	semi-annually	\$2,500	40	\$ 100,000
Well Cleaning/Redevelopment	Per well	\$1,500	55	\$ 85,000
Equipment Repair/Replacement	Every 5 years	\$20,000	1	\$ 20,000
2021 Non-Labor Inflation Adjustment	non-labor co:	4%	\$1,040,000	\$ 42,000
Project Management	% cost	15%	\$1,345,000	\$ 205,000
Biosparging Operations and Maintenance Subtotal				\$ 1,695,000
Remedy Groundwater Sampling (Per Event)				
Groundwater Sampling - Mobilization	day	\$365	3	\$ 1,500
Groundwater Sampling - DTW	well	\$15	25	\$ 400
Groundwater Sampling - Collection	well	\$95	25	\$ 2,500
Groundwater Analytical	well	\$700	25	\$ 18,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$ 600
Data Processing/Data Validation	event	\$3,500	1	\$ 3,500
Database Management	event	\$2,000	1	\$ 2,000
Data Evaluation	event	\$4,000	1	\$ 4,000
IDW Management & Disposal	event	\$3,000	1	\$ 3,000
Miscellaneous Field Supplies	event	\$200	1	\$ 200
Well Maintenance	event	\$2,500	1	\$ 3,000
GW Monitoring Summary Reports	event	\$7,000	1	\$ 7,000
2021 Non-Labor Inflation Adjustment	non-labor co:	4%	\$45,000	\$ 2,000
Project Management & Access Coordination	% cost	20%	\$50,000	\$ 10,000
<i>Costs Per Sampling Event Subtotal</i>				<i>\$ 60,000</i>
Semi-Annual Sampling (Years 1 - 10) Subtotal	event	\$ 60,000	20	\$ 1,200,000
<i>Costs Per Sampling Event Subtotal</i>				<i>\$ 60,000</i>
Annual Sampling (Years 11 - 20) Subtotal	event	\$ 60,000	10	\$ 600,000
MNA Groundwater Sampling (Years 21 - 22)				
Groundwater Sampling - Mobilization	day	\$365	3	\$ 1,500
Groundwater Sampling - DTW	well	\$15	20	\$ 300
Groundwater Sampling - Collection	well	\$95	20	\$ 2,000
MNA Groundwater Analytical	well	\$700	20	\$ 14,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$ 600
Data Processing/Data Validation	event	\$3,500	1	\$ 3,500

ALTERNATIVE 3 (EXTENDED) - BIOSPARGING WITH TRANSITION TO MNA AND ICs

Lilyblad Cleanup Site, Tacoma, Washington

Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	non-labor co:	4%	\$25,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$45,000	\$	9,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 55,000
MNA Sampling (Years 21 - 22) Subtotal	event	\$55,000	2	\$	110,000
MNA Groundwater Sampling (Years 23 - 30)					
Groundwater Sampling - Mobilization	day	\$365	1	\$	400
Groundwater Sampling - DTW	well	\$15	10	\$	200
Groundwater Sampling - Collection	well	\$95	10	\$	1,000
MNA Groundwater Analytical	well	\$800	10	\$	8,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	1	\$	200
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	non-labor co:	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$35,000	\$	7,000
<i>Costs Per Sampling Event Subtotal</i>					\$ 45,000
MNA Sampling (Years 23 - 30) Subtotal	event	\$45,000	8	\$	\$360,000
Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	6	\$	300,000
Project Management	% cost	15%	\$300,000	\$	45,000
Remedy Evaluation Reports Subtotal				\$	345,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL					\$ 4,310,000
TOTAL COSTS					\$ 5,250,000
TOTAL COSTS (-30%)					\$ 3,670,000
TOTAL COSTS (+50%)					\$ 7,880,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

Costs assume no new monitoring wells will be installed.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface

COC - Contaminants of Concern

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

COST ESTIMATE
ALTERNATIVE 3a - BIOSPARGING WITH CONCURRENT SVE
AND TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis				
Monitoring Basis				
Groundwater and Soil Vapor Probes (See Alternative 3)				--
Number of Proposed Sub-Slab Vapor Probes				5
Years of Semi-Annual Groundwater and Sub-Slab Vapor Monitoring				9
Years of Annual MNA GW Monitoring (Same as Alternative 3)				10
Number of GW Samples: Annual MNA Monitoring Event (Years 10-11)				20
Number of GW Samples: Annual MNA Monitoring Event (Years 12-19)				10
Biosparge Basis (See Alternative 3)				
Assumed Years of System Operation				9
SVE Basis				
Number of Existing DPE Wells Planned for Reuse as SVE Wells				9
New SVE Wells to be Installed				10
Radius of Influence (ft)				20
New Conveyance Piping Length - Above & Below Ground (ft)				600
Length of Trenching Estimated (ft)				400
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan (See Alternative 3)				
Revised Corrective Action Plan Subtotal				\$ 75,000
Biosparging System Pilot & Construction (See Alternative 3)				
Bio-Sparge System Pilot Study Subtotal				\$ -
Bio-Sparge System Construction Subtotal				\$ 840,000
SVE System Construction				
SVE Well Installation	well	\$6,700	10	\$ 70,000
Well Permits	well	\$220	10	\$ 3,000
New Piping for SVE wells	ft	\$75	600	\$ 45,000
Trenching Associated with Piping Installation	ft	\$300	400	\$ 120,000
Sub-Slab Vapor Probe Installation	each	\$500	5	\$ 3,000
IDW Management & Disposal	ls	\$10,000	1	\$ 10,000
Miscellaneous Field Supplies	week	\$500	1	\$ 500
Construction Documentation & Report	ls	\$15,000	1	\$ 15,000
2021 Non-Labor Inflation Adjustment	% non-labor co:	4%	\$255,000	\$ 10,500
CQA & Project Mgmt	% cost	25%	\$ 270,000	\$ 70,000
SVE System Construction Subtotal				\$ 350,000
Institutional Controls (See Alternative 3)				
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 1,290,000

COST ESTIMATE
ALTERNATIVE 3a - BIOSPARGING WITH CONCURRENT SVE
AND TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
Biosparging Operations and Maintenance (See Alternative 3)				
<i>Average Costs Per Year Subtotal</i>				\$ 104,400
Biosparging Operations and Maintenance Subtotal	year	\$ 104,400	9	\$ 940,000
SVE Operations and Maintenance				
Onsite Labor	month	\$1,000	108	\$ 110,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	108	\$ 22,000
PSCAA Permit	annual	\$700	9	\$ 7,000
Carbon Media Replacement	lb	\$3.5	1000	\$ 3,500
Carbon Changeout	event	\$3,000	1	\$ 3,000
Parts: Valves, Gauges, Casings	month	\$250	108	\$ 30,000
IDW Management & Disposal	year	\$1,000	9	\$ 9,000
Electrical Costs	month	\$2,000	108	\$ 220,000
Semi-Annual Vapor Screening/Monitoring	event	\$250	18	\$ 5,000
Vapor Sampling	event	\$500	18	\$ 9,000
2021 Non-Labor Inflation Adjustment	% non-labor co:	4%	\$300,000	\$ 12,000
Project Management	% cost	15%	\$ 420,000	\$ 65,000
SVE Operations and Maintenance Subtotal				\$ 500,000
Remedy Groundwater Sampling (See Alternative 3)				
<i>Costs Per Sampling Event Subtotal</i>				\$ 65,000
Semi-Annual Sampling (Years 1 - 9) Subtotal	event	\$ 65,000	18	\$ 1,170,000
MNA Groundwater Sampling (See Alternative 3)				
<i>Costs Per Sampling Event (Years 10-11) Subtotal</i>				\$ 55,000
MNA Sampling (Years 10-11) Subtotal	event	\$ 55,000	2	\$ 110,000
<i>Costs Per Sampling Event (Year 12 - 19) Subtotal</i>				\$ 45,000
MNA Sampling (Years 12 - 19) Subtotal	event	\$ 45,000	8	\$ 360,000
Remedy Evaluation Reports (See Alternative 3)				
Remedy Evaluation Reports Subtotal				\$ 225,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$ 3,310,000
TOTAL COSTS				\$ 4,600,000
TOTAL COSTS (-30%)				\$ 3,220,000
TOTAL COSTS (+50%)				\$ 6,900,000

COST ESTIMATE
ALTERNATIVE 3a - BIOSPARGING WITH CONCURRENT SVE
AND TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

Costs assume no new monitoring wells will be installed.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface

COC - Contaminants of Concern

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

IWW - Industrial Wastewater

lb - Pound(s)

GAC - Granulated Active Carbon

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

VOCs - Volatile Organic Compounds

COST ESTIMATE
ALTERNATIVE 3b - BIOSPARGING WITH CONCURRENT GROUNDWATER EXTRACTION
AND TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis				
Monitoring Basis				
Groundwater and Soil Vapor Probes (See Alternative 3)				--
Years of Semi-Annual Vapor & GW Monitoring				6
Years of Annual MNA GW Monitoring (Same as Alternative 3)				10
Number of GW Samples: Annual MNA Monitoring Event (Years 7-10)				20
Number of GW Samples: Annual MNA Monitoring Event (Years 11-16)				10
Biosparge Basis (See Alternative 3)				
Assumed Years of System Operation				6
Groundwater Extraction				
Pumping Rate from Single Well (gpm)				0.5
Estimated Radius of Influence (ft)				40
Numer of Extraction Wells (Re-purposed DPE Wells)				10
Estimated Total Flow (gpm)				5
Assumed Years of System Operation				6
New Pneumatic Conveyance Piping Length (ft)				3,200
Length of Trenching Estimated (ft)				1,100
New Water Conveyance Piping Length - Above & Below Ground (ft)				500
Percent of Operation Time Assumed During Bio-Sparge				100%
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan (See Alternative 3)				
Revised Corrective Action Plan Subtotal				\$ 75,000
Bio-sparging System Pilot & Construction (See Alternative 3)				
Bio-Sparge System Pilot Study Subtotal				\$ -
Bio-Sparge System Construction Subtotal				\$ 840,000
Extraction System Design & Pump Test				
Detailed Design	ls	\$20,000	1	\$ 20,000
Extraction Pump Test	ls	\$15,000	1	\$ 15,000
Project Management	% cost	15%	\$35,000	\$ 5,500
Extraction System Design & Pump Test Subtotal				\$ 45,000

COST ESTIMATE
ALTERNATIVE 3b - BIOSPARGING WITH CONCURRENT GROUNDWATER EXTRACTION
AND TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Groundwater Extraction System Construction				
<i>Well Installation and Connection to System</i>				
Well Permits	well	\$220	10	\$ 2,500
Well Installation & Development	well	\$6,700	10	\$ 67,000
Piping Installation (pneumatic line)	ft	\$100	3,700	\$ 370,000
Trenching (pneumatic line)	ft	\$200	1,100	\$ 220,000
Compressor for Pumps	ls	\$10,000	1	\$ 10,000
New Pneumatic Pumps	well	\$5,000	10	\$ 50,000
New Pressure Transducers	well	\$1,000	10	\$ 10,000
<i>Groundwater Extraction System Upgrades</i>				
Welding Work	event	\$1,500	1	\$ 1,500
Stator Rebuild Kit	ls	\$600	1	\$ 600
Replacement Liquid Phase GAC Vessel	ls	\$5,000	1	\$ 5,000
Vessel Shipping, Delivery and Installation	ls	\$950	1	\$ 950
Transmitter Replacement	ls	\$800	1	\$ 800
Recovery Well Head Reconstruction	well	\$300	10	\$ 3,000
IDW Management & Disposal	ls	\$15,000	1	\$ 15,000
Miscellaneous Field Supplies	per week	\$2,000	3	\$ 6,000
System Startup and Testing	ls	\$15,000	1	\$ 15,000
Construction Documentation & Report	ls	\$15,000	1	\$ 15,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$765,000	\$ 31,000
CQA & Project Management	% cost	25%	\$795,000	\$ 200,000
Extraction System Design & Pump Test Subtotal				\$ 1,030,000
Institutional Controls (See Alternative 3)				
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 2,020,000
OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
Biosparging Operations and Maintenance (See Alternative 3)				
Biosparging Operations and Maintenance Subtotal	years	\$ 104,375	6	\$ 626,250
GW Extraction Operations and Maintenance				
Geosyntec Onsite Labor	month	\$2,000	72	\$ 145,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	144	\$ 29,000
Miscellaneous Field Supplies	month	\$250	72	\$ 18,000
Bag Filter Replacements	month	\$50	72	\$ 4,000
Electrical Costs	annual	\$6,000	6	\$ 40,000
IWW Extracted Water Sampling	event	\$1,000	12	\$ 12,000
IWW Permit Fee	annual	\$700	6	\$ 4,500
IWW Permit Compliance Labor	annual	\$1,500	6	\$ 9,000
IWW Monthly and Semi-Annual Reporting	annual	\$12,500	6	\$ 75,000
Virgin Coconut Activated Carbon Media	lb	\$3.5	3,000	\$ 10,500
Carbon Changeout	event	\$2,000	6	\$ 12,000
Quarterly Water Analytical - VOCs	sample	\$70	24	\$ 2,000
Data Processing/Data Validation	event	\$750	24	\$ 18,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$180,000	\$ 7,500
Project Management	% cost	15%	\$380,000	\$ 60,000
GW Extraction Operations and Maintenance Subtotal				\$ 450,000

COST ESTIMATE
ALTERNATIVE 3b - BIOSPARGING WITH CONCURRENT GROUNDWATER EXTRACTION
AND TRANSITION TO MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Remedy Groundwater Sampling			
<i>Costs Per Sampling Event Subtotal (See Alternative 3)</i>			\$ 65,000
Semi-Annual Sampling (Years 1 - 6) Subtotal	event	\$ 65,000	12 \$ 780,000
MNA Groundwater Sampling (See Alternative 3)			
<i>Costs Per Sampling Event (Years 7 - 8) Subtotal</i>			\$ 55,000
MNA Sampling (Years 7 - 8) Subtotal	event	\$ 55,000	2 \$ 110,000
<i>Costs Per Sampling Event (Years 9 - 16) Subtotal</i>			\$ 45,000
MNA Sampling (Years 9 - 16) Subtotal	event	\$ 45,000	8 \$ 360,000
Remedy Evaluation Reports (See Alternative 3)			
Remedy Evaluation Reports Subtotal (Reduced to 3 reports)			\$ 170,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL			\$ 2,500,000
TOTAL COSTS			\$ 4,520,000
TOTAL COSTS (-30%)			\$ 3,160,000
TOTAL COSTS (+50%)			\$ 6,780,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.
 Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.
 System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

- bgs - Below Ground Surface
- COC - Contaminants of Concern
- CQA - Construction Quality Assurance
- ft - Feet
- gpm - Gallons per Minute
- GW - Groundwater
- IDW - Investigation Derived Waste
- IWW - Industrial Wastewater
- lb - Pound(s)
- GAC - Granulated Active Carbon
- ls - Lump Sum
- SF - Square Feet
- SMP - Site Management Plan
- VOCs - Volatile Organic Compounds

COST ESTIMATE
ALTERNATIVE 3c - BIOSPARGING WITH TRANSITION TO ISCO/AEROBIC
BIODEGRADATION FOLLOWED BY MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Ddsign/Cost Basis					
Groundwatdr Monitoring Basis					
Groundwater and Soil Vapor Probes (See Alternative 3)				--	
Years of Semi-Annual Bio-Sparge GW Monitoring				8	
Years of Quartdrly ISCO GW Monitoring				1	
Years of Semi-Annual ISCO GW Monitoring				2	
Years of Annual MNA Monitoring				3	
Number of GW Samples: Semi-Annual Bio-Sparge GW Monitoring (Years 1-8)				25	
Number of GW Samples: Quarterly ISCO Monitoring dvdnt (Year 9)				15	
Number of GW Samples: Semi-Annual ISCO Monitoring event (Years 10-11)				15	
Number of GW Samples: MNA Monitoring event (Years 12-14)				10	
Biosparge Basis (See Alternative 3)					
Assumed Years of System Operation				8	
ISCO/Aerobic Biodegradation Injection Design Basis					
Approximate On-Site Area with COC CUL exceedances Currently (SF)				87,000	
Assumed extent of COC CUL exceedance Aftdr Biosparging (percent)				20%	
Assumed Area of COC CUL exceedance After Biosparging (SF)				17,400	
Injection Depth Interval (ft)				9	
Effective Porosity				20%	
Target Pore Water Volume in Formation (Gallons)				234,290	
Total ISCO/Adrobic Biodegradation Injection Locations				35	
Estimated Injection ROI (ft)				7.5	
Area Within Injection ROI (SF)				6,185	
ISCO Solution to be Injected per Injection Location per event (Gallons)				250	
Aerobic Biodegradation Solution to be Injected per Injection Location per event (Gallons)				1,250	
Total Solution Volume per Injection event (Gallons)				52,500	
Number of Injection events				3	
Estimated Pore Volume Rdplacement Over Total Injection events (Gallons)				157,500	
Percent of Pore Volume Replacement Over Total Injection events				67%	
Duration of each ISCO-Bio Injection event (days)				15	
Costs					
	Itdm	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS					
Rdvisdd Corrdctivd Action Plan (Sdd Altdrnativd 3)					
	Revised Corrective Action Plan Subtotal				\$ 75,000
Biosparging System Pilot & Construction (See Alternative 3)					
	Bio-Sparge System Pilot Study Subtotal				\$ -
	Bio-Sparge System Construction Subtotal				\$ 840,000
ISCO/Aerobic Biodegradation Treatability & Pilot Tests					
	Detailed Design	ls	\$25,000	1	\$ 25,000
	Bench-Scale Treatability Study	study	\$22,000	1	\$ 22,000
	Pilot Study Injections	event	\$47,000	1	\$ 47,000
	Pilot Study Analytical	event	\$8,544	4	\$ 34,200
	Pilot Study Report	ls	\$15,000	1	\$ 15,000
	2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$105,000	\$ 4,500
	CQA & Project Mgmt	% cost	25%	\$145,000	\$ 40,000
	ISCO/Aerobic Biodegradation Treatability & Pilot Tests Subtotal				\$ 190,000

COST ESTIMATE
ALTERNATIVE 3c - BIOSPARGING WITH TRANSITION TO ISCO/AEROBIC
BIODEGRADATION FOLLOWED BY MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

Institutional Controls (See Alternative 3)					
Institutional Controls Subtotal				\$	23,000
CAPITAL COSTS TOTAL				\$	1,130,000
OPERATIONS, MAINTENANCE, & MONITORING (OMM)					
Biosparging Operations and Maintenance (See Alternative 3)					
Biosparging Operations and Maintenance Subtotal				\$	835,000
Bio-Sparge Groundwater Sampling (Per Event)					
Semi-Annual Bio-Sparge (Years 1 - 8; See Alternative 3)		event		16	\$ 1,040,000
ISCO/Aerobic Biodegradation Injection Costs (per event)					
Direct Push Rig Mob/Demob to Site	event	\$14,400	1	\$	14,400
Direct Push Rig + Crew	day	\$6,900	15	\$	105,000
Borehole Abandonment	ft	\$2	435.5	\$	1,000
DOE/NOI Start Cards	ls	\$95	35	\$	3,500
Tank, Hoses, Etc	event	\$5,000	1	\$	5,000
UIC Registration	event	\$1,000	1	\$	1,000
Miscellaneous Field Supplies	event	\$1,000	1	\$	1,000
IDW Management & Disposal	event	\$5,000	1	\$	5,000
Water Meter Rental	event	\$1,800	1	\$	2,000
ISCO Injection	location	\$2,800	35	\$	100,000
Bio Injections	location	\$400	35	\$	14,000
Injection Completion Report	ls	\$15,000	1	\$	15,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$255,000	\$	10,500
CQA & Project Mgmt	% cost	25%	\$270,000	\$	70,000
<i>Costs Per Injection Event Subtotal</i>					\$ 350,000
ISCO Injection Costs Subtotal		event	\$350,000	3	\$ 1,050,000
ISCO/Aerobic Biodegradation Groundwater Sampling (Per Event)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	730
Groundwater Sampling - DTW	well	\$15	15	\$	230
Groundwater Sampling - Collection	well	\$95	15	\$	1,400
Groundwater Analytical	well	\$700	15	\$	11,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$1,000	1	\$	1,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$30,000	\$	1,500
Project Management & Access Coordination	% cost	20%	\$40,000	\$	8,000
<i>Costs Per ISCO-Bio Sampling Event Subtotal</i>					\$ 50,000
Quarterly ISCO Sampling (Year 9) Subtotal		event	\$ 50,000	4	\$ 200,000
Semi-Annual ISCO Sampling (Years 10 - 11) Subtotal		event	\$ 50,000	4	\$ 200,000

COST ESTIMATE
ALTERNATIVE 3c - BIOSPARGING WITH TRANSITION TO ISCO/AEROBIC
BIODEGRADATION FOLLOWED BY MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

MNA Groundwater Sampling (Years 12 - 14)				
<i>Costs Per Sampling Event Subtotal (See Alternative 3)</i>				\$ 45,000
MNA Sampling (Years 12-14) Subtotal	event	\$ 45,000	3	\$ 135,000
Remedy Evaluation Reports (See Alternative 3)				
Remedy Evaluation Reports Subtotal (3 reports)				\$ 170,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$ 3,630,000
TOTAL COSTS				\$ 4,760,000
TOTAL COSTS (-30%)				\$ 3,330,000
TOTAL COSTS (+50%)				\$ 7,140,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.
 Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.
 Costs assume no new monitoring wells will be installed.
 System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

- bgs - Below Ground Surface
- COC - Contaminants of Concern
- CQA - Construction Quality Assurance
- ft - Feet
- gpm - Gallons per Minute
- GW - Groundwater
- IDW - Investigation Derived Waste
- IWW - Industrial Wastewater
- lb - Pound(s)
- GAC - Granulated Active Carbon
- ls - Lump Sum
- SF - Square Feet
- SMP - Site Management Plan
- VOCs - Volatile Organic Compounds

**COST ESTIMATE
ALTERNATIVE 3d - EXPANDED BIOSPARGING
FOLLOWED BY MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington**

Design/Cost Basis				
Monitoring Basis				
Groundwater and Soil Vapor Probes (See Alternative 3)				--
Number of additional Sub-Slab Vapor Probes				5
Years of Semi-Annual Groundwater and Sub-Slab Vapor Monitoring				8
Years of Annual MNA GW Monitoring (Same as Alternative 3)				10
Number of GW Samples: Annual MNA Monitoring Event (Years 10-11)				20
Number of GW Samples: Annual MNA Monitoring Event (Years 12-19)				10
Biosparge Basis (See Alternative 3)				
Assumed Years of System Operation				8
Extend Biosparge Throughout Entire Site				
Number of Existing Biosparge Wells Planned for Use				50
Number of New Biosparge Wells Planned for Use				25
Assumed additional Years of Biosparge Operation				0
Visits per month				1
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan (See Alternative 3)				
Revised Corrective Action Plan Subtotal				\$ 75,000
Biosparging System Pilot & Construction (See Alternative 3)				
Bio-Sparge System Pilot Study Subtotal				\$ -
Bio-Sparge System Construction Subtotal				\$ 840,000
Extended Biosparge Construction				
New blower and manifold for expanded number of wells	ls	\$15,000	1	\$ 15,000
Clear Sediment from Existing Lines	ls	\$26,500	1	\$ 26,500
New Well Permits	well	\$220	7	\$ 1,540
New Biosparge Well Installation	well	\$6,700	7	\$ 46,900
Well Replaced (67% of existing wells)	well	\$6,700	9	\$ 58,067
New Piping for Biosparge Wells	ft	\$75	250	\$ 18,750
Trenching Associated with Piping Installation	ft	\$300	250	\$ 75,000
Sub-Slab Vapor Probe Installation	probe	\$1,500	5	\$ 7,500
IDW Management & Disposal	ls	\$10,000	1	\$ 10,000
Miscellaneous Field Supplies	week	\$500	2	\$ 1,000
Construction Documentation & Report	ls	\$15,000	1	\$ 15,000
2021 Non-Labor Inflation Adjustment	% non-labor co:	4%	\$ 15,000	\$ 1,000
Project Management	% cost	15%	\$ 275,257	\$ 41,500
Extended Biosparge Construction Subtotal				\$ 318,000
Institutional Controls (See Alternative 3)				
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 1,260,000

COST ESTIMATE
ALTERNATIVE 3d - EXPANDED BIOSPARGING
FOLLOWED BY MNA AND ICs
Lilyblad Cleanup Site, Tacoma, Washington

OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
Biosparging Operations and Maintenance (See Alternative 3)				
<i>Average Costs Per Year Subtotal</i>				\$ 104,400
Biosparging Operations and Maintenance Subtotal	year	\$ 104,400	8	\$ 835,000
Extended Biosparge Operations and Maintenance				
Onsite Labor	month	\$600	0	\$ -
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	0	\$ -
Semi-Annual Vapor Screening/Monitoring	event	\$1,000	0	\$ -
Miscellaneous Field Supplies/Repairs	month	\$250	0	\$ -
Electrical Costs	month	\$1,500	0	\$ -
Data Management and Reporting	quarterly	\$1,500	0	\$ -
2021 Non-Labor Inflation Adjustment	% non-labor co:	4%	\$0	\$ -
Project Management	% cost	15%	\$0	\$ -
Extended Biosparge Operations and Maintenance Subtotal				\$ -
Remedy Groundwater Sampling (See Alternative 3)				
<i>Costs Per Sampling Event Subtotal</i>				\$ 65,000
Semi-Annual Sampling (Years 1 - 10) Subtotal	event	\$ 65,000	16	\$ 1,040,000
MNA Groundwater Sampling (See Alternative 3)				
<i>Costs Per Sampling Event (Years 10-11) Subtotal</i>				\$ 55,000
MNA Sampling (Years 10-11) Subtotal	event	\$ 55,000	2	\$ 110,000
<i>Costs Per Sampling Event (Year 12 - 19) Subtotal</i>				\$ 45,000
MNA Sampling (Years 12 - 19) Subtotal	event	\$ 45,000	8	\$ 360,000
Remedy Evaluation Reports (See Alternative 3)				
Remedy Evaluation Reports Subtotal				\$ 225,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$ 2,570,000
TOTAL COSTS				\$ 3,830,000
TOTAL COSTS (-30%)				\$ 2,680,000
TOTAL COSTS (+50%)				\$ 5,750,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

Costs assume no new monitoring wells will be installed.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface

COC - Contaminants of Concern

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

lb - Pound(s)

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

**COST ESTIMATE
ALTERNATIVE 4 - EXCAVATION
Lilyblad Cleanup Site, Tacoma, Washington**

Design/Cost Basis				
Infrastructure Assumptions				
C&D Disposal Volume (CY)				1,850.0
Paved Area (SF)				50,000
Concrete to Recycle (CY)				370
Building Size (SF)				15,000
Excavation Assumptions				
Soil Density (Tons per Cubic Yard)				1.4
Property Area (SF)				87,000
Horizontal Extent of Contamination (SF)				83,200
Average Vertical Extent of Contamination (ft)				12
Excavated Soil Quantity (cubic yards [cy])				34,000
Excavated Soil Weight (tons)				48,000
Percent of Soil as Clean Overburden (%)				0
Estimated Duration (Days)				200
Excavation Confirmation Soil Samples				50
Groundwater Monitoring Basis				
Number of Remaining Monitoring Wells				20
Years of Semi-Annual Excavation Monitoring				2
Number of GW Samples: Excavation Monitoring Event (Years 1-2)				15
Years of Annual MNA Monitoring				4
Number of GW Samples: MNA Monitoring Event (Years 3-6)				15
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan				
Revised CAP Preparation	ls	\$30,000	1	\$ 30,000
Public Comment Review/Response	ls	\$15,000	1	\$ 15,000
Detailed Design	ls	\$100,000	1	\$ 100,000
Project Management	% cost	15%	\$45,000	\$ 7,000
Revised Corrective Action Plan Subtotal				\$ 155,000
Pre-Excavation - Preparation & Infrastructure Removal				
Utility Locating	ls	\$2,500	1	\$ 2,500
Permitting	ls	\$10,000	1	\$ 10,000
Building Demolition	SF	\$8	15000	\$ 120,000
C&D Disposal	CY	\$28	1850	\$ 55,000
Tank Cleaning and Removal	each	\$8,500	57	\$ 485,000
Paving Demolition	SF	\$3	50000	\$ 150,000
Concrete Recycling	ton	\$15	370	\$ 6,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$830,000	\$ 33,500
CQA and Project Management	% cost	25%	\$830,000	\$ 210,000
Pre-Excavation Costs Subtotal				\$ 1,080,000

COST ESTIMATE
ALTERNATIVE 4 - EXCAVATION
Lilyblad Cleanup Site, Tacoma, Washington

Excavation Costs				
<i>Excavation Services</i>				
Excavator Mob/Demob	ls	\$8,000	1	\$ 8,000
Capping of Site Utilities at Property Boundary	ls	\$15,000	1	\$ 15,000
Dewatering System Installation	ls	\$50,000	1	\$ 50,000
Treatment System Modifications	ls	\$50,000	1	\$ 50,000
Dewatering Disposal Costs	gal	\$0.10	2300000	\$ 230,000
Soil Excavation	CY	\$10	34000	\$ 340,000
Soil Transport & Disposal (Subtitle D)	ton	\$80	48000	\$ 3,840,000
Licensed Well Driller Oversight	day	\$1,000	25	\$ 25,000
Excavation Confirmation Samples	ea	\$200	50	\$ 10,000
Importation, Placement, and Compaction of Backfill	ton	\$70	48000	\$ 3,360,000
Site Fencing and Security	week	\$500	29	\$ 15,000
Lodging and Meals for Contractors	person-day	\$210	800	\$ 168,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$8,120,000	\$ 325,000
CQA and Project Management	% cost	25%	\$8,120,000	\$ 2,030,000
<i>Excavation Groundwater Monitoring</i>				
Groundwater Sampling - Mobilization	day	\$365	12	\$ 4,500
Groundwater Sampling - DTW	well	\$15	60	\$ 1,000
Groundwater Sampling - Collection	well	\$95	60	\$ 6,000
Groundwater Analytical	well	\$410	60	\$ 25,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	36	\$ 7,500
Data Processing/Data Validation	event	\$3,500	4	\$ 14,000
Database Management	event	\$2,000	4	\$ 8,000
Data Evaluation	event	\$4,000	4	\$ 16,000
IDW Management & Disposal	event	\$3,000	4	\$ 12,000
Miscellaneous Field Supplies	event	\$200	4	\$ 1,000
Well Maintenance	event	\$2,500	4	\$ 10,000
GW Monitoring Summary Reports	event	\$7,500	4	\$ 30,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$60,000	\$ 2,500
Project Management & Access Coordination	% cost	20%	\$135,000	\$ 27,000
<i>Remedy Reporting</i>				
Excavation Completion Report	lump sum	\$50,000	1	\$ 50,000
Project Management	% cost	15%	\$50,000	\$ 7,500
Excavation Costs Subtotal				\$ 10,690,000
<i>Institutional Controls</i>				
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$ 15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$ 5,000
Project Management	% cost	15%	\$20,000	\$ 3,000
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 11,950,000

COST ESTIMATE
ALTERNATIVE 4 - EXCAVATION
Lilyblad Cleanup Site, Tacoma, Washington

OPERATIONS, MAINTENANCE, & MONITORING (OMM)				
MNA Groundwater Sampling (Years 3 - 6)				
Groundwater Sampling - Mobilization	day	\$365	2	\$ 730
Groundwater Sampling - DTW	well	\$15	15	\$ 225
Groundwater Sampling - Collection	well	\$95	15	\$ 1,500
MNA Groundwater Analytical	well	\$700	15	\$ 11,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$ 400
Data Processing/Data Validation	event	\$3,500	1	\$ 3,500
Database Management	event	\$2,000	1	\$ 2,000
Data Evaluation	event	\$4,000	1	\$ 4,000
IDW Management & Disposal	event	\$3,000	1	\$ 3,000
Miscellaneous Field Supplies	event	\$200	1	\$ 200
Well Maintenance	event	\$2,500	1	\$ 2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$ 10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$20,000	\$ 1,000
Project Management & Access Coordination	% cost	20%	\$40,000	\$ 8,000
<i>Costs Per Sampling Event Subtotal</i>				\$ 49,000
MNA Sampling (Years 3 - 6) Subtotal	event	\$ 49,000	4	\$ 196,000
Remedy Evaluation Reports				
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	1	\$ 50,000
Project Management	% cost	15%	\$50,000	\$ 7,500
Remedy Evaluation Reports Subtotal				\$ 60,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$ 260,000
TOTAL COSTS				\$ 12,210,000
TOTAL COSTS (-30%)				\$ 8,540,000
TOTAL COSTS (+50%)				\$ 18,320,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface

COC - Contaminants of Concern

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

IWW - Industrial Wastewater

lb - Pound(s)

GAC - Granulated Active Carbon

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

VOCs - Volatile Organic Compounds

COST ESTIMATE
ALTERNATIVE 5 - GROUNDWATER EXTRACTION AND CONTAINMENT
Lilyblad Cleanup Site, Tacoma, Washington

Design/Cost Basis			
Groundwater Extraction			
Area of the COC Plume Targeted by Groundwater Extraction (SF)			30,159
Transmissivity (SF/Day)			60
Pumping Rate from Single Well (gpm)			0.5
Estimated Radius of Influence (ft)			40
Number of New Extraction Wells			6
Estimated Avg Total Flow (gpm)			3
Years of Operation			30
New Conveyance Piping Length - Above & Below Ground (ft)			300
Length of Trenching Estimated (ft)			300
Groundwater Monitoring Basis			
Number of Existing Monitoring Wells			35
Years of Semi-Annual Depth to Water Level Monitoring			30
Years of Annual GW Monitoring/Sampling			30
Number of Wells Sampled (Years 1 - 10)			25
Number of Wells Sampled (Years 11 - 20)			20
Number of Wells Sampled (Years 21 - 30)			15
Costs			
Item	Unit	2020 Unit Cost	Unit Qty Total Cost (Rounded)
CAPITAL COSTS			
Revised Corrective Action Plan			
Revised CAP Preparation	ls	\$30,000	1 \$ 30,000
Public Comment Review/Response	ls	\$15,000	1 \$ 15,000
Project Management	% cost	15%	\$45,000 \$ 7,000
Revised Corrective Action Plan Subtotal			\$ 52,000
Extraction System Design & Pump Test			
Detailed Design	ls	\$20,000	1 \$ 20,000
Extraction Pump Test	ls	\$15,000	1 \$ 15,000
Project Management	% cost	15%	\$35,000 \$ 5,500
Extraction System Design & Pump Test Subtotal			\$ 41,000

COST ESTIMATE
ALTERNATIVE 5 - GROUNDWATER EXTRACTION AND CONTAINMENT
Lilyblad Cleanup Site, Tacoma, Washington

Groundwater Extraction System Construction					
<i>Well Installation and Connection to System</i>					
Well Permits	well	\$220	6	\$	1,500
Well Installation & Development	well	\$6,700	6	\$	45,000
Piping Installation (Extraction and Pneumatic Line)	ft	\$150	600	\$	90,000
Trenching (Pneumatic Line)	ft	\$300	300	\$	90,000
Compressor for Pumps	ls	\$10,000	1	\$	10,000
New Pneumatic Pumps	well	\$5,000	6	\$	30,000
Pressure Transducers	well	\$1,000	6	\$	6,000
<i>Groundwater Extraction System Upgrades</i>					
Welding Work	event	\$1,500	1	\$	1,500
Stator Rebuild Kit	ls	\$600	1	\$	600
Replacement Liquid Phase GAC Vessel	ls	\$5,000	1	\$	5,000
Vessel Shipping, Delivery and Installation	ls	\$950	1	\$	950
Transmitter Replacement	ls	\$800	1	\$	800
Recovery Well Head Reconstruction	well	\$300	6	\$	2,000
IDW Management & Disposal	ls	\$7,500	1	\$	7,500
Miscellaneous Field Supplies	week	\$2,000	3	\$	6,000
System Startup and Testing	ls	\$15,000	1	\$	15,000
Construction Documentation & Report	ls	\$15,000	1	\$	15,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$300,000	\$	12,000
CQA & Project Mgmt	% cost	25%	\$330,000	\$	85,000
Groundwater Extraction System Construction Subtotal				\$	425,000
Institutional Controls					
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$	15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$	5,000
Project Management	% costs	15%	\$20,000	\$	3,000
Institutional Controls Subtotal				\$	23,000
CAPITAL COSTS TOTAL				\$	550,000
OPERATIONS, MAINTENANCE, & MONITORING (OMM)					
GW Extraction Operations and Maintenance					
Geosyntec Onsite Labor	month	\$3,000	360	\$	1,080,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	1080	\$	220,000
Miscellaneous Field Supplies	month	\$250	360	\$	90,000
Bag Filter Replacements	month	\$50	360	\$	18,000
Electrical Costs	annual	\$6,000	30	\$	180,000
IWW Extracted Water Sampling	event	\$1,000	60	\$	60,000
IWW Permit Fee	annual	\$700	30	\$	21,000
IWW Permit Compliance Labor	annual	\$1,500	30	\$	45,000
IWW Monthly and Semi-Annual Reporting	annual	\$12,500	30	\$	375,000
Virgin Coconut Activated Carbon Media	lb	\$4	15,000	\$	52,500
Carbon Changeout	event	\$2,000	30	\$	60,000
Quarterly Water Analytical - VOCs	sample	\$70	120	\$	8,500
Data Processing/Data Validation	event	\$750	120	\$	90,000
Equipment Repair/Replacement	annual	\$25,000	30	\$	750,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$910,000	\$	36,500
Project Management	% cost	15%	\$3,050,000	\$	460,000
GW Extraction Operations and Maintenance Subtotal				\$	3,550,000

COST ESTIMATE
ALTERNATIVE 5 - GROUNDWATER EXTRACTION AND CONTAINMENT
Lilyblad Cleanup Site, Tacoma, Washington

Remedy Groundwater Sampling (Years 1-10)					
Groundwater Sampling - Mobilization	day	\$365	4	\$	1,500
Groundwater Sampling - DTW	well	\$15	50	\$	750
Groundwater Sampling - Collection	well	\$95	25	\$	2,500
Groundwater Analytical	well	\$400	25	\$	10,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	4	\$	800
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$30,000	\$	1,500
Project Management & Access Coordination	% cost	20%	\$45,000	\$	9,000
<i>Costs Per Sampling Year Subtotal</i>					\$ 55,000
Annual Sampling (Years 1 - 10) Subtotal	annual	\$ 55,000	10	\$	550,000
Remedy Groundwater Sampling (Years 11-20)					
Groundwater Sampling - Mobilization	day	\$365	4	\$	1,500
Groundwater Sampling - DTW	well	\$15	40	\$	600
Groundwater Sampling - Collection	well	\$95	20	\$	2,000
Groundwater Analytical	well	\$400	20	\$	8,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	4	\$	800
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$20,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$40,000	\$	8,000
<i>Costs Per Sampling Year Subtotal</i>					\$ 50,000
Annual Sampling (Years 11 - 20) Subtotal	annual	\$ 50,000	10	\$	500,000

COST ESTIMATE
ALTERNATIVE 5 - GROUNDWATER EXTRACTION AND CONTAINMENT
Lilyblad Cleanup Site, Tacoma, Washington

Remedy Groundwater Sampling (Years 21-30)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	30	\$	450
Groundwater Sampling - Collection	well	\$95	15	\$	1,500
Groundwater Analytical	well	\$400	15	\$	6,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$25,000	\$	1,000
Project Management & Access Coordination	% cost	20%	\$40,000	\$	8,000
<i>Costs Per Sampling Year Subtotal</i>					\$ 45,000
Annual Sampling (Years 21 - 30) Subtotal	annual	\$ 45,000	10	\$	450,000
Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	6	\$	300,000
Project Management	% cost	15%	\$300,000	\$	45,000
Remedy Evaluation Reports Subtotal				\$	345,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$	5,400,000
TOTAL COSTS				\$	5,950,000
TOTAL COSTS (-30%)				\$	4,160,000
TOTAL COSTS (+50%)				\$	8,930,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface
COC - Contaminants of Concern
CQA - Construction Quality Assurance
ft - Feet
gpm - Gallons per Minute
GW - Groundwater
IDW - Investigation Derived Waste
IWW - Industrial Wastewater
lb - Pound(s)
GAC - Granulated Active Carbon
ls - Lump Sum
SF - Square Feet
SMP - Site Management Plan
VOCs - Volatile Organic Compounds

**COST ESTIMATE
ALTERNATIVE 6 - BIOSPARGING AT SITE BOUNDARY
Lilyblad Cleanup Site, Tacoma, Washington**

Design/Cost Basis				
Boundary Biosparge Basis				
Length of Site Downgradient Site Boundary (ft)				300
Number of Bio-Sparge Wells to Be Installed				34
Number of Bio-Sparge Rows				2
Estimated Radius of Influence (ft)				12
Groundwater Flow Velocity (ft/month)				0.75 to 1.5
Estimated Residence Time within Bio-Sparge Zone (months)				10 to 24
New Conveyance Piping Length - Above & Below Ground (ft)				420
Length of Trenching Estimated (ft)				420
Years of System Operation				30
Groundwater Monitoring Basis				
Number of Existing Monitoring Wells				35
Years of Semi-Annual GW Monitoring				30
Average Number of GW Samples: Semi-Annual Monitoring (Years 1 - 10)				17
Number of Wells Sampled Annually (Years 11 - 20)				20
Number of Wells Sampled Annually (Years 21 - 30)				15
Costs				
Item	Unit	2020 Unit Cost	Unit Qty	Total Cost (Rounded)
CAPITAL COSTS				
Revised Corrective Action Plan				
Revised CAP Preparation	ls	\$30,000	1	\$ 30,000
Public Comment Review/Response	ls	\$15,000	1	\$ 15,000
Detailed Design	ls	\$20,000	1	\$ 20,000
Project Management	% cost	15%	\$65,000	\$ 10,000
Revised Corrective Action Plan Subtotal				\$ 75,000
Bio-Sparge System Pilot Study				
Pilot Test	ls	\$65,000	0	\$ -
Project Management	% cost	15%	\$0	\$ -
Bio-Sparge System Pilot Study Subtotal				\$ -
Boundary Biosparge System Upgrades				
Building Permit	ls	\$2,000	1	\$ 2,000
Well Permits	well	\$220	34	\$ 8,000
New Biosparge Well Installation	well	\$6,700	34	\$ 230,000
New Piping for Air Sparge Wells	ft	\$150	420	\$ 65,000
Trenching	ft	\$300	420	\$ 130,000
Compressor Skid	each	\$75,000	1	\$ 75,000
Miscellaneous Field Supplies	day	\$200	25	\$ 5,000
IDW Management & Disposal	ls	\$25,000	1	\$ 25,000
System Startup and Testing	ls	\$20,000	1	\$ 20,000
Construction Documentation & Report	ls	\$15,000	1	\$ 15,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$575,000	\$ 23,000
CQA and Project Management	% cost	25%	\$575,000	\$ 145,000
System Upgrades Subtotal				\$ 745,000
Institutional Controls				
Land Use Covenant Preparation & Negotiations	ls	\$15,000	1	\$ 15,000
Site Management Plan (SMP)	ls	\$5,000	1	\$ 5,000
Project Management	% costs	15%	\$20,000	\$ 3,000
Institutional Controls Subtotal				\$ 23,000
CAPITAL COSTS TOTAL				\$ 850,000

**COST ESTIMATE
ALTERNATIVE 6 - BIOSPARGING AT SITE BOUNDARY
Lilyblad Cleanup Site, Tacoma, Washington**

OPERATIONS, MAINTENANCE, & MONITORING (OMM)					
Biosparging Operations and Maintenance					
Onsite Labor	month	\$1,200	360	\$	432,000
Site Visit Costs (Truck Rental, Per Diem)	visit	\$200	720	\$	145,000
Miscellaneous Field Supplies	month	\$500	360	\$	180,000
Electrical Costs	month	\$3,000	360	\$	1,080,000
Data Management and Reporting	quarterly	\$2,500	120	\$	300,000
Well Cleaning/Redevelopment	Per well	\$1,500	34	\$	55,000
Equipment Repair/Replacement	Every 5 Years	\$20,000	6	\$	120,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$1,740,000	\$	70,000
Project Management	% cost	15%	\$2,320,000	\$	350,000
Biosparging Operations and Maintenance Subtotal				\$	2,740,000
Remedy Groundwater Sampling (Years 1 - 10)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	17	\$	300
Groundwater Sampling - Collection	well	\$95	17	\$	2,000
Groundwater Analytical	well	\$400	17	\$	7,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$35,000	\$	1,400
Project Management & Access Coordination	% cost	20%	\$40,000	\$	8,000
<i>Costs Per Sampling Event Subtotal</i>				<i>\$</i>	<i>46,000</i>
Semi-Annual Sampling (Years 1 - 10) Subtotal	event	\$ 46,000	20	\$	920,000
Remedy Groundwater Sampling (Years 11 - 20)					
Groundwater Sampling - Mobilization	day	\$365	3	\$	1,500
Groundwater Sampling - DTW	well	\$15	20	\$	300
Groundwater Sampling - Collection	well	\$95	20	\$	2,000
Groundwater Analytical	well	\$400	20	\$	8,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	3	\$	600
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$30,000	\$	1,500
Project Management & Access Coordination	% cost	20%	\$40,000	\$	8,000
<i>Costs Per Sampling Event Subtotal</i>				<i>\$</i>	<i>48,000</i>
Annual Sampling (Years 11 - 20) Subtotal	event	\$ 48,000	10	\$	480,000

**COST ESTIMATE
ALTERNATIVE 6 - BIOSPARING AT SITE BOUNDARY
Lilyblad Cleanup Site, Tacoma, Washington**

Remedy Groundwater Sampling (Years 21 - 30)					
Groundwater Sampling - Mobilization	day	\$365	2	\$	730
Groundwater Sampling - DTW	well	\$15	15	\$	225
Groundwater Sampling - Collection	well	\$95	15	\$	1,500
Groundwater Analytical	well	\$400	15	\$	6,000
Site Visit Costs (Truck Rental, Per diem)	day	\$200	2	\$	400
Data Processing/Data Validation	event	\$3,500	1	\$	3,500
Database Management	event	\$2,000	1	\$	2,000
Data Evaluation	event	\$4,000	1	\$	4,000
IDW Management & Disposal	event	\$3,000	1	\$	3,000
Miscellaneous Field Supplies	event	\$200	1	\$	200
Well Maintenance	event	\$2,500	1	\$	2,500
GW Monitoring Summary Reports	event	\$10,000	1	\$	10,000
2021 Non-Labor Inflation Adjustment	% non-labor cost	4%	\$30,000	\$	1,500
Project Management & Access Coordination	% cost	20%	\$35,000	\$	7,000
<i>Costs Per Sampling Event Subtotal</i>				\$	<i>43,000</i>
Annual Sampling (Years 21 - 30) Subtotal	event	\$ 43,000	10	\$	430,000
Remedy Evaluation Reports					
Remedy Evaluation Reports (Every 5 years)	report	\$50,000	6	\$	300,000
Project Management	% cost	15%	\$300,000	\$	45,000
Remedy Evaluation Reports Subtotal				\$	345,000
OPERATIONS, MAINTENANCE, & MONITORING COSTS TOTAL				\$	4,920,000
TOTAL COSTS				\$	5,770,000
TOTAL COSTS (-30%)				\$	4,030,000
TOTAL COSTS (+50%)				\$	8,660,000

Notes / Assumptions:

Costs are estimated using 2021 dollars. Estimates do not include any potential commodity fluctuations.

Cost estimates were based on Geosyntec's experience at similar sites, as well as subcontractor and vendor quotes.

Costs assume no new monitoring wells will be installed.

System demolition and well decommissioning costs are not included as these costs are likely similar for all remedial alternatives.

bgs - Below Ground Surface

COC - Contaminants of Concern

CQA - Construction Quality Assurance

ft - Feet

gpm - Gallons per Minute

GW - Groundwater

IDW - Investigation Derived Waste

IWW - Industrial Wastewater

lb - Pound(s)

GAC - Granulated Active Carbon

ls - Lump Sum

SF - Square Feet

SMP - Site Management Plan

VOCs - Volatile Organic Compounds