

BGES, INC.

ENVIRONMENTAL CONSULTANTS

10560 OLD SEWARD HIGHWAY
ANCHORAGE, ALASKA

ADEC FILE NUMBER 2100.26.463

GROUNDWATER MONITORING REPORT (OCTOBER 2019)

DECEMBER 2019

Submitted to: Frank Martin
BM Old Seward LLC
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Submitted by: BGES, INC.

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ACRONYMS

AAC	-	Alaska Administrative Code
ADEC	-	Alaska Department of Environmental Conservation
AK	-	Alaska Method
bg	-	Below Grade
BGES	-	Braunstein Geological and Environmental Services
C	-	Celsius
CSM	-	Conceptual Site Model
DRO	-	Diesel Range Organics
EPA	-	Environmental Protection Agency
ESA	-	Environmental Site Assessment
GRO	-	Gasoline Range Organics
IDW	-	Investigation-Derived Waste
LOQ	-	Limit of Quantitation
mL/min	-	Milliliters per Minute
QC	-	Quality Control
QEP	-	Qualified Environmental Professional
PAHs	-	Polynuclear Aromatic Hydrocarbons
PCE	-	Tetrachloroethylene
RPD	-	Relative Percent Difference
RRO	-	Residual Range Organics
SGS	-	SGS North America, Inc.
TCE	-	Trichloroethylene
µg/L	-	Micrograms per Liter
UST	-	Underground Storage Tank
VOCs	-	Volatile Organic Compounds

1.0 INTRODUCTION

BGES, Inc. (BGES) was retained by Frank Martin of BM Old Seward LLC. to conduct seasonal groundwater monitoring activities for the former Parker Drilling Company property located at 10560 Old Seward Highway in Anchorage, Alaska (Figure 1); hereafter referred to as the subject property. The groundwater monitoring activities described below were performed as requested by the Alaska Department of Environmental Conservation (ADEC). Field activities were accomplished in October of 2019 at the subject property. All groundwater monitoring activities were performed in accordance with BGES' Work Plan *Addendum Number 2 for Additional Site Characterization and Remediation Activities* (published on June 20, 2016). Robert Weimer, ADEC Project Manager, provided approval of BGES' Work Plan Addendum on June 23, 2016 via email. In a letter dated June 11, 2019, Robert Weimer requested additional groundwater monitoring in October or early November of 2019 to assess seasonal groundwater contamination concentration fluctuations and to establish trends, if any. The contaminants of concern for the subject property include volatile organic compounds (VOCs).

2.0 SITE BACKGROUND

The subject property is a Contaminated Site with a status of "Active" as listed in the ADEC Contaminated Sites Database (File Number 2100.26.463 and Hazard Identification Number 23848). The subject property has historically been used as an oil-field services yard and is currently occupied by a school bus storage yard and maintenance shop for Reliant Transportation.

In 1989, six underground storage tanks (USTs), associated piping, and contaminated soil were removed at three locations on the subject property. Soil samples collected from the excavation sidewalls met ADEC cleanup levels and a "No Further Action" letter was issued by the ADEC in December of 1989.

In April of 2008, a Phase II Environmental Site Assessment (ESA), conducted by BGES, discovered stained soils with diesel range organics (DRO) and tetrachloroethylene (PCE) concentrations exceeding ADEC cleanup criteria at a depth of 15 feet below grade (bg) at the former UST location.

In addition, stained areas of surface soils associated with the buses parked at the subject property were discovered at five locations on the western portion of the property. Four of the five stained areas were excavated in August of 2008, and 19.8 cubic yards of contaminated soil were removed and thermally treated offsite. However, Stained Soil Area SS4 could not be located at that time because of an apparent addition of 3 to 4 inches of fill material placed over the area.

In June of 2016, additional site characterization and remediation activities were conducted by BGES to determine the extent of the soil and groundwater contamination, if any, associated with the former used oil tank located on the subject property. One soil boring, which was completed as a groundwater monitoring well, was advanced within the approximate location of the former excavation of the former used oil tank on the subject property. The reported concentrations of one or more of the following parameters, trichloroethene (TCE), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, and naphthalene, in several of the soil samples collected from Soil Boring SB7 exceeded the applicable ADEC cleanup criteria from depths between 19 and 31 feet bg. These soil samples also exhibited concentrations of GRO, DRO, residual range organics (RRO), PCE and numerous other VOCs, and several PAH parameters that were below the applicable ADEC cleanup criteria.

Soils in the vicinity of the former Stained Soil Area SS4 were removed from the ground on October 10, 2016 and transported offsite for thermal treatment and disposal on February 1, 2017. Confirmation soil samples collected from the excavation exhibited concentrations of DRO, RRO, and numerous PAHs that were below the applicable ADEC cleanup criteria.

Soil Boring SB7 was completed as Monitoring Well BGESMW1. The groundwater sample collected from this well, exhibited concentrations of GRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, isopropylbenzene, n-propylbenzene, sec-butylbenzene, PCE, TCE, and total xylenes below applicable ADEC cleanup criteria.

Correspondence from the ADEC Project Manager, Robert Weimer, dated June 12, 2017, indicated that further characterization and remediation activities associated with the Surface Stained Soil Area SS4 were not anticipated to be required. As mentioned above, this letter also indicated that seasonal groundwater monitoring on a quarterly basis would be required. It is important to note that via a phone conversation with Mr. Weimer on June 16, 2017, Mr. Weimer agreed that the water sample collected on August 17, 2016 would count as one of the quarterly sampling events if we collected a groundwater sample during June of 2017 and the results were submitted to the ADEC before early August of 2017.

The third quarterly groundwater monitoring activities were conducted in November of 2017. The groundwater sample collected from Monitoring Well BGESMW1 exhibited concentrations of chloroform and trichloroethylene exceeding the applicable ADEC cleanup criteria. Additionally, tetrachloroethylene (PCE) was detected at concentrations below the applicable ADEC cleanup criteria.

The fourth quarterly groundwater monitoring activities conducted in March of 2018 detected PCE and TCE

in Water Sample BGESMW1-0322 at concentrations of 7.03 micrograms per liter ($\mu\text{g/L}$) and 2.30 $\mu\text{g/L}$. Both of these concentrations were below their applicable ADEC cleanup criteria of 41 $\mu\text{g/L}$ and 2.8 $\mu\text{g/L}$, respectively.

The groundwater monitoring activities conducted in October of 2019 are discussed below.

3.0 FIELD ACTIVITIES

Field work for these Groundwater Monitoring Activities was performed by Qualified Environmental Professionals (QEPs) as defined by the ADEC. The onsite activities were performed on October 29, 2019. The following paragraphs discuss the results of the field activities.

3.1 Collection of Groundwater Samples

The groundwater samples were collected from the wells using low-flow sampling methodology. Prior to collection of the groundwater samples, the depths to water (from the top of casing) and the total depths of the wells were measured with an electronic water-level meter; which was decontaminated prior to each use by washing it in an Alconox® (laboratory-grade detergent) solution, followed by a potable water rinse. Using these measurements, as well as the diameter of the well casings, the volume of water in each well was calculated. During purging, groundwater quality parameters for pH, conductivity, oxidation reduction potential, and temperature were measured utilizing a YSI Professional Plus water quality meter and a flow-through cell. These measurements were recorded on groundwater monitoring logs included in Appendix A and the measurements are summarized in Table 1.

After approximately three well volumes were purged from each well, the water quality parameters stabilized and groundwater samples were collected utilizing a submersible, positive-displacement bladder pump. Prior to collecting the samples, the flow-through cell was removed from the sample collection train in accordance with ADEC Field Sampling Guidance. The bladder pump intake was set approximately 6 inches below the top of the water column in the monitoring well. The pumping rate during the purging and sampling activities were approximately 200 milliliters per minute (mL/min). Groundwater was pumped directly into the laboratory-supplied sample jars, and the containers for volatile analyses were filled first. Care was taken during the sampling process to ensure that none of the preservative was spilled from the containers, and to minimize the potential that headspace was created within the vials destined for volatile analyses.

A groundwater sample was collected from Monitoring Well BGESMW1 (Sample OSH-1-1029). As a

quality control measure, a duplicate groundwater sample was collected from BGESMW1, and was identified as Sample OSH-2-1029. This duplicate sample was submitted “blindly” to the laboratory for analysis. The samples were labeled, stored, and transported in a chilled cooler, and delivered under chain of custody protocol to SGS for analysis. Analytical results for the groundwater samples are presented in Table 2 and are discussed in Section 4.0 below. Copies of the field notes and the water monitoring log are included in Appendix A.

3.2 Investigation-Derived Waste

Investigation-derived waste (IDW), including purge and decontamination water generated during the sampling event, was containerized in a 5-gallon bucket. The bucket was clearly labeled with contact information and a description of the contents, potentially contaminated water, and is temporarily being stored on site pending disposal. The bucket of IDW was placed on the north side of the second building from the northeast corner of the subject property (Figure 2). Additionally, purge water from the March 2018, June 2017, and November 2017 sampling events are also onsite totaling four, 5-gallon buckets.

4.0 EVALUATION OF LABORATORY DATA

Laboratory analyses of the water samples collected during this sampling event were performed by SGS, an ADEC-approved laboratory. Analytical results are presented in Table 2; and a copy of the laboratory data package is provided in Appendix B.

Groundwater cleanup criteria are obtained from ADEC 18 AAC 75.345, Table C (October 27, 2018). The water samples were submitted to SGS and were analyzed for VOCs by Environmental Protection Agency (EPA) Method 8260. As a quality control procedure, a trip blank sample for water always accompanied the field samples scheduled for volatile analyses from sample collection until submission to the laboratory. The Trip Blank sample was analyzed for VOCs by the same methods described above, to determine if cross-contamination of the samples had occurred.

The water samples collected from the subject property were numbered, for example, OSH-1-1029, where the prefix “OSH-1” indicates the monitoring well location from which the water sample was collected, and, “-1029” indicates the month and the day the sample was collected.

Groundwater Sample OSH-1 exhibited a concentration of PCE at 4.27 micrograms per liter ($\mu\text{g/L}$), which is well below the 41 $\mu\text{g/L}$ ADEC cleanup criterion. Groundwater Sample OSH-1 exhibited a concentration of TCE at 1.69 $\mu\text{g/L}$, which is below the 2.8 $\mu\text{g/L}$ ADEC cleanup criterion. Groundwater Sample OSH-1

also exhibited concentrations of chloromethane at 2.14 µg/L, which is well below the 190 µg/L ADEC cleanup criterion, and chloroform at 1.36 µg/L, which is below the 2.2 µg/L ADEC cleanup criterion.

Groundwater Sample OSH-2, duplicate of OSH-1, exhibited concentrations of PCE at 4.69 µg/L, TCE at 1.87 µg/L, and chloroform at 1.44 µg/L; which are all below the applicable ADEC cleanup criteria.

The laboratory's limit of quantitation (LOQ) for 1,2,3-trichloropropane exceeded the ADEC cleanup criterion for both samples on this work order. No other analytes exceeded the cleanup criteria in the groundwater samples. Analytical results for groundwater samples are listed in Table 2; a copy of the laboratory data package is included in Appendix B; and the monitoring well location is shown on Figure 2.

5.0 LABORATORY DATA QUALITY REVIEW

SGS provided sample analyses for this sampling event. SGS is approved by the ADEC to conduct the specified analyses. The samples were hand-delivered to SGS by BGES personnel under chain of custody protocol. A laboratory data quality checklist for this sampling event is included in Appendix C. The following is a discussion of our evaluation of sample conditions and laboratory procedures during the October 2019 sampling event.

Laboratory Work Order Number 1196487

The sample cooler arrived at the laboratory with a measured temperature blank of 9.6 degrees Celsius, which exceeds the prescribed optimal temperature range of 0 to 6 degrees Celsius. However, because the laboratory's acceptance criteria allows for the temperature blank to exceed the optimal temperature range if the samples have been chilled and submitted within 8 hours of the time of their collection (the samples were submitted within 30 minutes of collection), there is a reduced potential for significant contaminant concentration loss within the samples because of natural attenuation. For this reason, it is our opinion that this quality control (QC) failure does not affect the acceptability of the data for their intended use. The samples contained the proper preservatives for the requested analyses and no unusual sample conditions were noted by the laboratory. A trip blank sample accompanied the samples through the entirety of the sampling process and delivery to the laboratory. A case narrative was included with the laboratory data. No Quality Control (QC) failures were identified in the case narrative.

The LOQs for 1,2,3-trichloropropane exceeded the ADEC cleanup criterion for both samples on this work order and have been italicized in Table 2 to indicate this occurrence. As such, it cannot be determined if the actual concentrations of 1,2,3-trichloropropane within these samples exceed the ADEC cleanup

criterion. However, because 1,2,3-trichloropropane is not a contaminant of concern for this site, it is our opinion that this elevated LOQ does not affect the interpretation of the data for their intended use. All other LOQs were below the ADEC cleanup criteria.

Sample OSH-2 is a duplicate of OSH-1 and was collected to evaluate field sampling precision. The relative percent difference (RPD) between the reported concentrations of PCE was 9 percent, the RPD between the reported concentrations of TCE was 10 percent, and the RPD between the reported concentrations of chloroform was 6 percent. These RPDs are within the acceptable limit of 30 percent, indicating good field sampling precision with respect to these analytes. The RPDs between the reported concentrations of the remaining analytes could not be calculated because those analytes were not detected in one or both of these samples.

6.0 CONCEPTUAL SITE MODEL

A human health conceptual site model (CSM) was developed for this site and was presented in the “Site Characterization and Remediation Report” (dated February 2017). It is our opinion that the CSM is still valid for this site, and as such has not been modified based on the results of this sampling event.

7.0 CONCLUSIONS AND RECOMMENDATIONS

As described above, groundwater samples were collected from Monitoring Well BGESMW1 in October of 2019. These activities were performed to assess the seasonal contamination fluctuations and trends in groundwater at the subject property.

Groundwater Sample OSH-1 exhibited a concentration of PCE at 4.27 µg/L, which is below the 41 µg/L ADEC cleanup criterion. Groundwater Sample OSH-1 exhibited a concentration of TCE at 1.69 µg/L, which is below the 2.8 µg/L ADEC cleanup criterion. Groundwater Sample OSH-1 also exhibited concentrations of chloromethane at 2.14 µg/L, which is well below the 190 µg/L ADEC cleanup criterion, and chloroform at 1.36 µg/L, which is below the 2.2 µg/L ADEC cleanup criterion.

Groundwater Sample OSH-2, duplicate of OSH-1, exhibited concentrations of PCE at 4.69 µg/L, TCE at 1.87 µg/L, and chloroform at 1.44 µg/L; which are all below the applicable ADEC cleanup criteria.

Table 3 provides historical groundwater sampling data. A review of the results included in Table 3 indicates a declining trend in all analyte concentrations since the November of 2017 sampling event, except for chloromethane which was non-detectable during the 2017 sampling event and exhibited a concentration

of 2.14 µg/L (well below the ADEC cleanup criterion of 190 µg/L) during the current sampling effort. Based on these declining trends in groundwater contaminant concentrations, and the fact that no analytes exceeded the ADEC cleanup criteria during the last two sampling events (including the current sampling event), we are recommending that the ADEC consider a status of “Cleanup Complete” for the subject property. We recommend that a copy of this report be provided to the ADEC for review and approval of the recommendation for a change in site status. We also recommend disposing the purge water from this and previous sampling events currently being stored on-site via processing by a licensed and appropriate waste disposal firm, after permission to do so has been obtained by the ADEC.

8.0 EXCLUSIONS AND CONSIDERATIONS

This report presents facts, observations, and inferences based on conditions observed during the period of our project activities, and only those conditions that were evaluated as part of our scope of work. Our conclusions are based solely on our observations made and work conducted, and only apply to the immediate vicinities of the locations where samples were collected. In addition, changes to site conditions may have occurred since the completion of our project activities. These changes may be from the actions of man or nature. Changes in regulations may also impact the interpretation of site conditions. BGES will not disclose our findings to any parties other than our client as listed above, except as directed by our client, or as required by law.

The field work for this project and was performed by Chris Pepe, Environmental Scientist I of BGES and a Qualified Environmental Professional (QEP) as defined by the ADEC. The report was also prepared by Chris Pepe. Mr. Pepe has conducted groundwater sampling at numerous sites in southcentral Alaska. This report was reviewed by Robert N. Braunstein, C.P.G. and Principal Geologist of BGES. Mr. Braunstein has more than 35 years of professional geological and environmental consulting experience, and has conducted and managed thousands of environmental projects involving site characterization and groundwater monitoring efforts throughout Alaska and the lower 48 states.

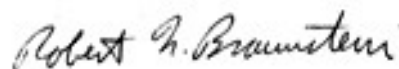
Sincerely,
BGES, INC.

Prepared by:



Chris Pepe
 Environmental Scientist

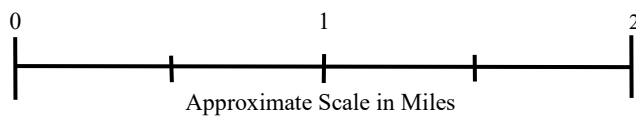
Reviewed by:



Robert N. Braunstein, C.P.G.; P.G.
 Principal Geologist



Source: USGS Map, Anchorage (A-8) NW, Alaska 1979, Revised 1994.



10560 Old Seward Highway
Anchorage, Alaska
Property Vicinity Map

BGES, INC.

December 2019

Figure 1

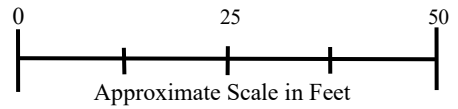


OSH-1-1029 & OSH-1029 (Duplicate of OSH-1-1029) *


Tetrachloroethene (PCE) = 4.69 µg/L
 Trichloroethene (TCE) = 1.87 µg/L
 Chloroform = 1.36 µg/L
 Chloromethane = 2.14 µg/L



Source: Google Earth Pro ©



Legend

 = Monitoring Well BGESMW1 (concentrations are below the ADEC cleanup criteria)

 = Investigation Derived Waste (IDW)

ADEC = Alaska Department of Environmental Conservation

*Greatest concentration for each analyte from the sample/duplicate pair is presented.

10560 Old Seward Highway
 Anchorage, Alaska
**Groundwater Sample Results Map
 (October 2019)**



December 2019

Figure 2

TABLE 1
10560 OLD SEWARD HIGHWAY
ANCHORAGE, ALASKA
MONITORING WELL SAMPLING DATA (OCTOBER 2019)

BGES, INC.

Well Number	BGESMW1
Date Sampled	10/29/19
Date of Depth and Elevation Measurement	10/29/19
Time of Depth to Water Measurement	10:25
Time Sample Collected	11:55
Top of Casing Elevation (feet)	-
Depth to Water (feet below top of casing)	22.83
Water Elevation (feet)	-
Total Depth of Well (feet below top of casing)	29.21
Well Casing Diameter (Inches)	2
Standing Water Well Volume (gallons)	1.04
Purge Volume-Actual (gallons)	3.2
Depth of Bladder Intake (feet below top of casing)	23.50
Temperature (degrees Celsius)	10.2/9.2/8.9/8.9
pH (standard units)	5.60/5.97/6.05/6.05
Conductivity (microsiemens per centimeter)	0.3/0.3/0.7/0.9
Oxidation Reduction Potential (millivolts)	175.4/170.5/171.1/172.0
Notes:	
10/29/2019 Purge rate was ~ 200 milliliters/minute	
10/29/2019 Sample rate was ~ 200 milliliters/minute	
Sampler: C. Pepe	
Field parameters were measured with a YSI Pro Plus water quality meter and flow-through cell.	
Weather conditions on October 29, 2019 were cloudy and windy with an ambient temperature of approximately 48 degrees Fahrenheit.	
Duplicate OSH-2-1029 collected at 12:00	

TABLE 2
10560 OLD SEWARD HIGHWAY
ANCHORAGE, ALASKA
GROUNDWATER ANALYTICAL RESULTS (OCTOBER 2019)

Sample No.	Parameter	Results (µg/L)	LOQ (µg/L)	ADEC Cleanup Criteria (µg/L) ¹	Analytical Method	
OSH-1-1029 (Monitoring Well = BGESMW1)	Benzene	ND	0.400	4.6	SW8260C	
	Chloroform	1.36	1.00	2.2	SW8260C	
	Chloromethane	2.14	1.00	190	SW8260C	
	Ethylbenzene	ND	1.000	15	SW8260C	
	Tetrachloroethene (PCE)	4.27	1.00	41	SW8260C	
	Toluene	ND	1.00	1,100	SW8260C	
	Trichloroethene (TCE)	1.69	1.00	2.8	SW8260C	
	Total Xylenes	ND	3.00	190	SW8260C	
	<i>1,2,3-Trichloropropane</i>	<i>ND</i>	<i>1.00</i>	0.0075	SW8260C	
	All Other VOCs	ND	varies	varies	SW8260C	
OSH-2-1029 Duplicate of OSH-1-1029	Benzene	ND	0.400	4.6	SW8260C	
	Chloroform	1.44	1.00	2.2	SW8260C	
	Chloromethane	ND	1.00	190	SW8260C	
	Ethylbenzene	ND	1.000	15	SW8260C	
	RPD = 9 %	Tetrachloroethene (PCE)	4.69	1.00	41	SW8260C
	Toluene	ND	1.00	1,100	SW8260C	
	RPD = 10 %	Trichloroethene (TCE)	1.87	1.00	2.8	SW8260C
	Total Xylenes	ND	3.00	190	SW8260C	
	<i>1,2,3-Trichloropropane</i>	<i>ND</i>	<i>1.00</i>	0.0075	SW8260C	
	All Other VOCs	ND	varies	varies	SW8260C	

¹ Groundwater cleanup criteria are obtained from ADEC 18 AAC 75.341, Table C (October 27, 2018).
AAC = Alaska Administrative Code; ADEC = Alaska Department of Environmental Conservation;
µg/L = micrograms per liter; RPD = relative percent difference;
VOC = volatile organic compound; LOQ = limit of quantitation; ND = not detectable
Italics = The LOQ exceeds the applicable ADEC cleanup criterion.

TABLE 3
10560 OLD SEWARD HIGHWAY
ANCHORAGE, ALASKA
HISTORICAL GROUNDWATER ANALYTICAL RESULTS

BGES, INC.

Analyte	Well Number BGESMW1					ADEC Cleanup Criteria ¹
	Date Sampled					
	8/17/2016	6/21/2017	11/6/2017	3/22/2018	10/29/2019	
	Units = µg/L					
Diesel Range Organics	ND	NA	NA	NA	NA	1,500
Gasoline Range Organics	796	118	ND	ND	NA	2,200
Residual Range Organics	ND	NA	NA	NA	NA	1,100
Benzene	ND	ND	ND	ND	ND	4.6
Toluene	ND	ND	ND	ND	ND	1,100
Ethylbenzene	2.05	ND	ND	ND	ND	15
Total Xylenes	4.41	ND	ND	ND	ND	190
1,2,4-trimethylbenzene	7.82	ND	ND	ND	ND	15
1,3,5-trimethylbenzene	8.05	ND	ND	ND	ND	120
Chloroform	ND	1.15	2.62	ND	1.44	2.2
Isopropylbenzene	1.55	ND	ND	ND	ND	450
n-propylbenzene	5.22	ND	ND	ND	ND	660
sec-butylbenzene	2.08	ND	ND	ND	ND	2,000
Tetrachloroethene (PCE)	2.34	1.57	16.2	7.03	4.69	41
Trichloroethene (TCE)	1.30	ND	4.47	2.3	1.87	2.8
Chloromethane	ND	ND	ND	ND	2.14	190.0

Notes:
¹ = Groundwater cleanup criteria based on 18 AAC 75.345, Table C (October 27, 2018).
The concentrations presented in the table reflect the greatest concentration reported for each analyte for each sample/duplicate pair.
ADEC = Alaska Department of Environmental Conservation; NA = not analyzed; ND = non-detectable; µg/L = micrograms per liter;

BOLD = The result exceeds the applicable ADEC cleanup criterion.

APPENDIX A
SAMPLING LOG AND FIELD NOTES



BGES, INC. *BGESMW1*
ENVIRONMENTAL CONSULTANTS

Well Number: *MWT*

Weather Conditions *49°F cloudy windy*

Date of Sampling Event: *10-29-19*

Time of Depth to Water Measurement: *10:25*

Date of Depth to Water Measurement: *10-29-19*

Total Depth of Well (feet below TOC): *29.21*

Depth to Water (feet below TOC): *22.83*

Water Column (feet): *6.38*

Type of Sampling Equipment:
MPSO controller
VSI Pro
1.75" bladder pump

Volume of well (gals) *1.04*

=0.1632 X Water Column (For 2-inch well)
=0.6528 X Water Column (For 4-inch well)
=1.4688 X Water Column (For 6-inch well)

Time Purging Began: *10:35*

Time of Sampling: *11:55*

Volume purged *3.2*

PURGE A MINIMUM OF THREE WELL VOLUMES

Temperature (°C) *10.2*
Conductivity *10.3*
pH *5.60*
ORP *175.4*
Volume Purged *1.2 gal*
Depth To Water *22.93*
Time of Measurement *10:38*

Temperature (°C) _____
Conductivity _____
pH _____
ORP _____
Volume Purged _____
Depth To Water _____
Time of Measurement _____

Depth of Bladder intake:
23.5

Temperature (°C) *9.2*
Conductivity *0.3*
pH *5.97*
ORP *170.5*
Volume Purged *1.80 gal*
Depth To Water *22.85*
Time of Measurement *11:05*

Temperature (°C) _____
Conductivity _____
pH _____
ORP _____
Volume Purged _____
Depth To Water _____
Time of Measurement _____

Purge Rate:
200ml

Temperature (°C) *8.9*
Conductivity *0.7*
pH *6.05*
ORP *171.1*
Volume Purged *1.5*
Depth To Water *22.85*
Time of Measurement *11:25*

Temperature (°C) _____
Conductivity _____
pH _____
ORP _____
Volume Purged _____
Depth To Water _____
Time of Measurement _____

Sample Rate:
200ml

Sample ID:
OSH-1-1029 @ 11:55
and dup OSH-2-1029 @ 12:00

Temperature (°C) *8.9*
Conductivity *0.9*
pH *6.05*
ORP *172.0*
Volume Purged *3.0*
Depth To Water *22.85*
Time of Measurement *11:50*

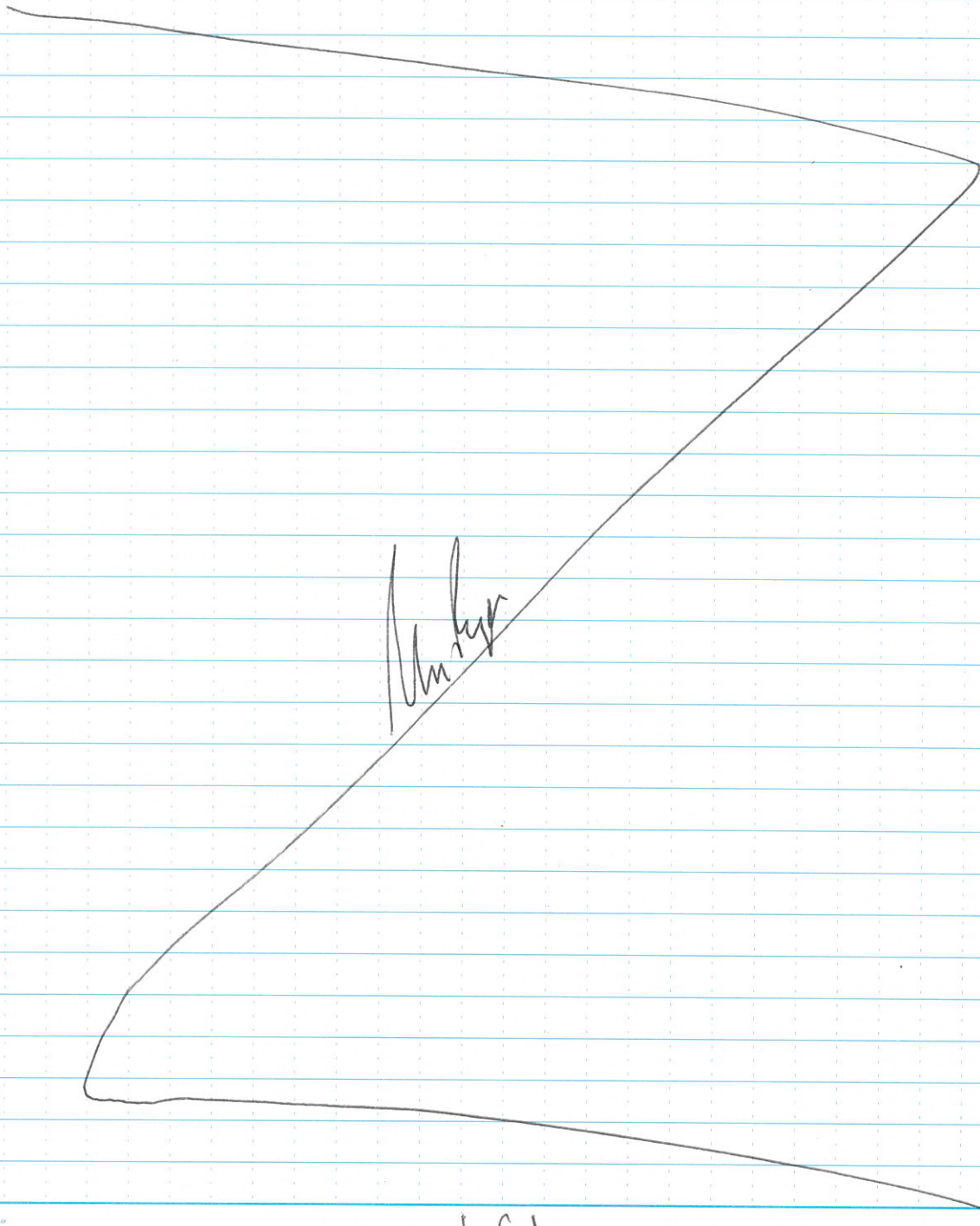
Temperature (°C) _____
Conductivity _____
pH _____
ORP _____
Volume Purged _____
Depth To Water _____
Time of Measurement _____

Additional Notes:

10:15 Chris w/ BGES on site, opened well and collected groundwater measurements

MW#	Depth to Water	Total Depth of well	Time
#BGESW1	22.83	29.21	10:25

12:10 Left purge water in a labeled 5-gallon bucket behind garage, w/ 3 other 5-gallon buckets from previous sampling events BGES offsite.



[Handwritten signature]

APPENDIX B
LABORATORY ANALYTICAL DATA

Laboratory Report of Analysis

To: BGES Inc.
1042 E. 6th Ave.,
Anchorage, AK 99501
(907)644-2900

Report Number: **1196487**

Client Project: **Old Seward Highway**

Dear Jayne Martin,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jillian at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.


SGS North America, Inc.
Environmental Services - Alaska Division
Project Manager

Jillian Janssen

2019.11.05

11:02:04 -09'00'

Jillian Janssen
Project Manager
Jillian.Janssen@sgs.com

Date

Case Narrative

SGS Client: **BGES Inc.**
SGS Project: **1196487**
Project Name/Site: **Old Seward Highway**
Project Contact: **Jayne Martin**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
OSH-1-1029	1196487001	10/29/2019	10/29/2019	Water (Surface, Eff., Ground)
OSH-2-1029	1196487002	10/29/2019	10/29/2019	Water (Surface, Eff., Ground)
Trip Blank	1196487003	10/29/2019	10/29/2019	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
SW8260C	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **OSH-1-1029**

Lab Sample ID: 1196487001

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Chloroform	1.36	ug/L
Chloromethane	2.14	ug/L
Tetrachloroethene	4.27	ug/L
Trichloroethene	1.69	ug/L

Client Sample ID: **OSH-2-1029**

Lab Sample ID: 1196487002

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Chloroform	1.44	ug/L
Tetrachloroethene	4.69	ug/L
Trichloroethene	1.87	ug/L

Print Date: 11/05/2019 8:45:56AM



Results of OSH-1-1029

Client Sample ID: OSH-1-1029
Client Project ID: Old Seward Highway
Lab Sample ID: 1196487001
Lab Project ID: 1196487

Collection Date: 10/29/19 11:55
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of OSH-1-1029

Client Sample ID: OSH-1-1029
Client Project ID: Old Seward Highway
Lab Sample ID: 1196487001
Lab Project ID: 1196487

Collection Date: 10/29/19 11:55
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical parameters like Chloroform, Benzene, and Toluene with their respective results and limits.

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Results of OSH-1-1029

Client Sample ID: **OSH-1-1029**
Client Project ID: **Old Seward Highway**
Lab Sample ID: 1196487001
Lab Project ID: 1196487

Collection Date: 10/29/19 11:55
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19629
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 11/04/19 00:56
Container ID: 1196487001-A

Prep Batch: VXX35190
Prep Method: SW5030B
Prep Date/Time: 11/03/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/05/2019 8:45:57AM



Results of OSH-2-1029

Client Sample ID: OSH-2-1029
Client Project ID: Old Seward Highway
Lab Sample ID: 1196487002
Lab Project ID: 1196487

Collection Date: 10/29/19 12:00
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

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Results of OSH-2-1029

Client Sample ID: **OSH-2-1029**
 Client Project ID: **Old Seward Highway**
 Lab Sample ID: 1196487002
 Lab Project ID: 1196487

Collection Date: 10/29/19 12:00
 Received Date: 10/29/19 12:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	1.44	1.00	0.310	ug/L	1		11/04/19 01:12
Chloromethane	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		11/04/19 01:12
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		11/04/19 01:12
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Freon-113	10.0 U	10.0	3.10	ug/L	1		11/04/19 01:12
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		11/04/19 01:12
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		11/04/19 01:12
Naphthalene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
o-Xylene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		11/04/19 01:12
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Styrene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Tetrachloroethene	4.69	1.00	0.310	ug/L	1		11/04/19 01:12
Toluene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Trichloroethene	1.87	1.00	0.310	ug/L	1		11/04/19 01:12
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		11/04/19 01:12
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		11/04/19 01:12
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		11/04/19 01:12
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		11/04/19 01:12
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		11/04/19 01:12
4-Bromofluorobenzene (surr)	108	85-114		%	1		11/04/19 01:12
Toluene-d8 (surr)	102	89-112		%	1		11/04/19 01:12

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Results of OSH-2-1029

Client Sample ID: **OSH-2-1029**
Client Project ID: **Old Seward Highway**
Lab Sample ID: 1196487002
Lab Project ID: 1196487

Collection Date: 10/29/19 12:00
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19629
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 11/04/19 01:12
Container ID: 1196487002-A

Prep Batch: VXX35190
Prep Method: SW5030B
Prep Date/Time: 11/03/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/05/2019 8:45:57AM



Results of Trip Blank

Client Sample ID: Trip Blank
Client Project ID: Old Seward Highway
Lab Sample ID: 1196487003
Lab Project ID: 1196487

Collection Date: 10/29/19 11:55
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Print Date: 11/05/2019 8:45:57AM



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **Old Seward Highway**
 Lab Sample ID: 1196487003
 Lab Project ID: 1196487

Collection Date: 10/29/19 11:55
 Received Date: 10/29/19 12:15
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Chloromethane	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
cis-1,3-Dichloropropene	0.500 U	0.500	0.150	ug/L	1		11/03/19 23:25
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		11/03/19 23:25
Dibromomethane	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Dichlorodifluoromethane	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Ethylbenzene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Freon-113	10.0 U	10.0	3.10	ug/L	1		11/03/19 23:25
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Isopropylbenzene (Cumene)	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		11/03/19 23:25
Methyl-t-butyl ether	10.0 U	10.0	3.10	ug/L	1		11/03/19 23:25
Naphthalene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
n-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
n-Propylbenzene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
o-Xylene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
P & M -Xylene	2.00 U	2.00	0.620	ug/L	1		11/03/19 23:25
sec-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Styrene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
tert-Butylbenzene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Toluene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
trans-1,3-Dichloropropene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Trichlorofluoromethane	1.00 U	1.00	0.310	ug/L	1		11/03/19 23:25
Vinyl acetate	10.0 U	10.0	3.10	ug/L	1		11/03/19 23:25
Vinyl chloride	0.150 U	0.150	0.0500	ug/L	1		11/03/19 23:25
Xylenes (total)	3.00 U	3.00	1.00	ug/L	1		11/03/19 23:25
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		11/03/19 23:25
4-Bromofluorobenzene (surr)	110	85-114		%	1		11/03/19 23:25
Toluene-d8 (surr)	102	89-112		%	1		11/03/19 23:25

Print Date: 11/05/2019 8:45:57AM

Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **Old Seward Highway**
Lab Sample ID: 1196487003
Lab Project ID: 1196487

Collection Date: 10/29/19 11:55
Received Date: 10/29/19 12:15
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS19629
Analytical Method: SW8260C
Analyst: NRB
Analytical Date/Time: 11/03/19 23:25
Container ID: 1196487003-A

Prep Batch: VXX35190
Prep Method: SW5030B
Prep Date/Time: 11/03/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/05/2019 8:45:57AM



Method Blank

Blank ID: MB for HBN 1801858 [VXX/35190]

Blank Lab ID: 1541993

QC for Samples:

1196487001, 1196487002, 1196487003

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Print Date: 11/05/2019 8:45:58AM



Method Blank

Blank ID: MB for HBN 1801858 [VXX/35190]

Blank Lab ID: 1541993

QC for Samples:

1196487001, 1196487002, 1196487003

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	107	85-114		%
Toluene-d8 (surr)	101	89-112		%

Print Date: 11/05/2019 8:45:58AM



Method Blank

Blank ID: MB for HBN 1801858 [VXX/35190]
Blank Lab ID: 1541993

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1196487001, 1196487002, 1196487003

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
------------------	----------------	---------------	-----------	--------------

Batch Information

Analytical Batch: VMS19629
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 11/3/2019 9:29:00PM

Prep Batch: VXX35190
Prep Method: SW5030B
Prep Date/Time: 11/3/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/05/2019 8:45:58AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196487 [VXX35190]
 Blank Spike Lab ID: 1541994
 Date Analyzed: 11/03/2019 21:45

Spike Duplicate ID: LCSD for HBN 1196487 [VXX35190]
 Spike Duplicate Lab ID: 1541995
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196487001, 1196487002, 1196487003

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	31.3	104	30	31.3	104	(78-124)	0.17	(< 20)
1,1,1-Trichloroethane	30	30.3	101	30	29.6	99	(74-131)	2.20	(< 20)
1,1,2,2-Tetrachloroethane	30	33.9	113	30	33.7	112	(71-121)	0.43	(< 20)
1,1,2-Trichloroethane	30	33.0	110	30	33.2	111	(80-119)	0.67	(< 20)
1,1-Dichloroethane	30	31.1	104	30	30.5	102	(77-125)	1.80	(< 20)
1,1-Dichloroethene	30	28.0	93	30	27.6	92	(71-131)	1.40	(< 20)
1,1-Dichloropropene	30	31.7	106	30	30.8	103	(79-125)	2.90	(< 20)
1,2,3-Trichlorobenzene	30	31.0	103	30	34.5	115	(69-129)	10.80	(< 20)
1,2,3-Trichloropropane	30	32.4	108	30	32.3	108	(73-122)	0.23	(< 20)
1,2,4-Trichlorobenzene	30	30.9	103	30	32.7	109	(69-130)	5.50	(< 20)
1,2,4-Trimethylbenzene	30	32.4	108	30	31.7	106	(79-124)	2.20	(< 20)
1,2-Dibromo-3-chloropropane	30	35.8	119	30	37.1	124	(62-128)	3.60	(< 20)
1,2-Dibromoethane	30	29.3	98	30	29.7	99	(77-121)	1.40	(< 20)
1,2-Dichlorobenzene	30	31.3	104	30	31.0	103	(80-119)	0.68	(< 20)
1,2-Dichloroethane	30	31.5	105	30	31.2	104	(73-128)	1.20	(< 20)
1,2-Dichloropropane	30	31.3	104	30	30.5	102	(78-122)	2.50	(< 20)
1,3,5-Trimethylbenzene	30	32.0	107	30	31.6	105	(75-124)	1.20	(< 20)
1,3-Dichlorobenzene	30	32.1	107	30	31.6	105	(80-119)	1.50	(< 20)
1,3-Dichloropropane	30	34.6	115	30	34.2	114	(80-119)	1.10	(< 20)
1,4-Dichlorobenzene	30	32.0	107	30	31.6	105	(79-118)	1.00	(< 20)
2,2-Dichloropropane	30	30.8	103	30	30.2	101	(60-139)	2.00	(< 20)
2-Butanone (MEK)	90	100	112	90	107	119	(56-143)	6.20	(< 20)
2-Chlorotoluene	30	33.2	111	30	32.1	107	(79-122)	3.40	(< 20)
2-Hexanone	90	107	119	90	112	125	(57-139)	5.00	(< 20)
4-Chlorotoluene	30	33.2	111	30	32.6	109	(78-122)	1.70	(< 20)
4-Isopropyltoluene	30	31.7	106	30	31.2	104	(77-127)	1.50	(< 20)
4-Methyl-2-pentanone (MIBK)	90	87.2	97	90	90.6	101	(67-130)	3.90	(< 20)
Benzene	30	29.9	100	30	29.3	98	(79-120)	1.70	(< 20)
Bromobenzene	30	30.6	102	30	30.3	101	(80-120)	1.10	(< 20)
Bromochloromethane	30	25.5	85	30	25.4	85	(78-123)	0.72	(< 20)
Bromodichloromethane	30	32.4	108	30	31.9	106	(79-125)	1.80	(< 20)
Bromoform	30	33.1	110	30	33.7	112	(66-130)	2.00	(< 20)
Bromomethane	30	25.9	87	30	27.7	93	(53-141)	6.70	(< 20)
Carbon disulfide	45	47.5	105	45	46.9	104	(64-133)	1.30	(< 20)

Print Date: 11/05/2019 8:46:00AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196487 [VXX35190]
 Blank Spike Lab ID: 1541994
 Date Analyzed: 11/03/2019 21:45

Spike Duplicate ID: LCSD for HBN 1196487 [VXX35190]
 Spike Duplicate Lab ID: 1541995
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196487001, 1196487002, 1196487003

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	31.2	104	30	30.5	102	(72-136)	2.50	(< 20)
Chlorobenzene	30	27.6	92	30	27.4	91	(82-118)	0.65	(< 20)
Chloroethane	30	31.2	104	30	35.9	120	(60-138)	13.90	(< 20)
Chloroform	30	30.9	103	30	30.3	101	(79-124)	1.90	(< 20)
Chloromethane	30	29.6	99	30	29.0	97	(50-139)	2.00	(< 20)
cis-1,2-Dichloroethene	30	27.8	93	30	27.4	91	(78-123)	1.40	(< 20)
cis-1,3-Dichloropropene	30	31.4	105	30	30.8	103	(75-124)	1.90	(< 20)
Dibromochloromethane	30	31.0	103	30	30.9	103	(74-126)	0.08	(< 20)
Dibromomethane	30	29.8	99	30	29.7	99	(79-123)	0.19	(< 20)
Dichlorodifluoromethane	30	24.5	82	30	23.8	79	(32-152)	2.80	(< 20)
Ethylbenzene	30	29.8	99	30	29.8	99	(79-121)	0.01	(< 20)
Freon-113	45	44.1	98	45	43.7	97	(70-136)	0.77	(< 20)
Hexachlorobutadiene	30	31.8	106	30	32.4	108	(66-134)	1.70	(< 20)
Isopropylbenzene (Cumene)	30	31.5	105	30	30.9	103	(72-131)	2.10	(< 20)
Methylene chloride	30	28.9	96	30	28.9	96	(74-124)	0.24	(< 20)
Methyl-t-butyl ether	45	47.1	105	45	47.7	106	(71-124)	1.40	(< 20)
Naphthalene	30	28.9	96	30	31.7	106	(61-128)	9.30	(< 20)
n-Butylbenzene	30	33.5	112	30	32.7	109	(75-128)	2.50	(< 20)
n-Propylbenzene	30	33.6	112	30	32.9	110	(76-126)	2.10	(< 20)
o-Xylene	30	29.9	100	30	29.4	98	(78-122)	1.60	(< 20)
P & M -Xylene	60	59.6	99	60	59.2	99	(80-121)	0.71	(< 20)
sec-Butylbenzene	30	32.0	107	30	31.3	104	(77-126)	2.10	(< 20)
Styrene	30	31.1	104	30	30.8	103	(78-123)	0.92	(< 20)
tert-Butylbenzene	30	30.9	103	30	30.7	102	(78-124)	0.65	(< 20)
Tetrachloroethene	30	29.2	97	30	28.5	95	(74-129)	2.20	(< 20)
Toluene	30	29.7	99	30	28.8	96	(80-121)	3.00	(< 20)
trans-1,2-Dichloroethene	30	27.9	93	30	27.4	91	(75-124)	1.90	(< 20)
trans-1,3-Dichloropropene	30	35.2	117	30	35.2	117	(73-127)	0.21	(< 20)
Trichloroethene	30	28.3	94	30	27.5	92	(79-123)	2.80	(< 20)
Trichlorofluoromethane	30	31.1	104	30	32.3	108	(65-141)	3.70	(< 20)
Vinyl acetate	30	32.9	110	30	33.0	110	(54-146)	0.38	(< 20)
Vinyl chloride	30	30.8	103	30	29.4	98	(58-137)	4.50	(< 20)
Xylenes (total)	90	89.6	100	90	88.6	99	(79-121)	1.00	(< 20)

Print Date: 11/05/2019 8:46:00AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1196487 [VXX35190]
 Blank Spike Lab ID: 1541994
 Date Analyzed: 11/03/2019 21:45

Spike Duplicate ID: LCSD for HBN 1196487 [VXX35190]
 Spike Duplicate Lab ID: 1541995
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1196487001, 1196487002, 1196487003

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	105	105	30	105	105	(81-118)	0.41	
4-Bromofluorobenzene (surr)	30	104	104	30	103	103	(85-114)	1.50	
Toluene-d8 (surr)	30	99.7	100	30	100	100	(89-112)	0.25	

Batch Information

Analytical Batch: **VMS19629**
 Analytical Method: **SW8260C**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX35190**
 Prep Method: **SW5030B**
 Prep Date/Time: **11/03/2019 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/05/2019 8:46:00AM



CH

1196487



Profile: 334626 JKJ

Locations Nationwide
 Alaska Maryland
 New Jersey New York
 North Carolina Indiana
 West Virginia Kentucky
www.us.sgs.com

Instructions: Sections 1 - 5 must be filled out.
 Omissions may delay the onset of analysis.

Page 1 of 1

CLIENT: **BGES**

CONTACT: **Jayne Martin** PHONE NO: **907-644-2900**

PROJECT NAME: **Old Seward Highway** PROJECT/PWSID/PERMIT#: **—**

REPORTS TO: **Jayne Martin** E-MAIL: **Jayne@BGESINC.com**

INVOICE TO: **Jayne Martin** QUOTE #: **OPEN** P.O. #:

#	CONTAINER	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative										REMARKS/ LOC ID		
			HCL												
		VOCs 82608													
①	AC	W	X												
②	AC	W	X												
③	AC	W	X												

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE
	OSH-1-1029	10-29-19	11:55	W
	OSH-2-1029	10-29-19	12:00	W
	Trip Blank			W

Relinquished By: (1) *[Signature]* Date: **10-29-19** Time: **12:10** Received By: *[Signature]*

Relinquished By: (2) _____ Date: _____ Time: _____ Received By: _____

Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____

Relinquished By: (4) *[Signature]* Date: **10/29/19** Time: **12:15** Received For Laboratory By: *[Signature]*

Section 4 DOD Project? Yes No Data Deliverable Requirements: **Level II DATA Package**

Cooler ID: _____

Requested Turnaround Time and/or Special Instructions: **Standard Turnaround Time**

Temp Blank °C: **3.6 - DSG** Chain of Custody Seal: (Circle) **INTACT** **BROKEN** **ABSENT**

(See attached Sample Receipt Form) (See attached Sample Receipt Form)



e-Sample Receipt Form

SGS Workorder #:

1196487



1 1 9 6 4 8 7

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
Yes **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	No	Cooler ID: 1 @ 9.6 °C Therm. ID: D59
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	Yes	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A ***Exemption permitted for metals (e.g,200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1196487001-A	HCL to pH < 2	OK			
1196487001-B	HCL to pH < 2	OK			
1196487001-C	HCL to pH < 2	OK			
1196487002-A	HCL to pH < 2	OK			
1196487002-B	HCL to pH < 2	OK			
1196487002-C	HCL to pH < 2	OK			
1196487003-A	HCL to pH < 2	OK			
1196487003-B	HCL to pH < 2	OK			
1196487003-C	HCL to pH < 2	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

APPENDIX C
LABORATORY DATA REVIEW CHECKLIST

Laboratory Data Review Checklist

Completed By:

Chris Pepe

Title:

Environmental Scientist

Date:

11/25/2019

Consultant Firm:

BGES, Inc

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

ADEC File Number:

2100.26.463

Hazard Identification Number:

23848

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

Note: Any N/A or No box checked must have an explanation in the comments box.

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes No N/A Comments:

b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes No N/A Comments:

Samples were not transferred to another laboratory

2. Chain of Custody (CoC)

a. CoC information completed, signed, and dated (including released/received by)?

Yes No N/A Comments:

b. Correct analyses requested?

Yes No N/A Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes No N/A Comments:

The sample cooler arrived at the laboratory with a measured temperature blank of 9.6 degrees Celsius, which exceeds the prescribed optimal temperature range of 0 to 6 degrees Celsius. However, because the laboratory’s acceptance criteria allows for the temperature blank to exceed the optimal temperature range if the samples have been chilled and submitted within 8 hours of the time of their collection (the samples were submitted within 30 minutes of collection), there is a reduced potential for significant contaminant concentration loss within the samples because of natural attenuation. For this reason, it is our opinion that this quality control (QC) failure does not affect the acceptability of the data for their intended use.

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No N/A Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No N/A Comments:

No unusual sample conditions were documented.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

No discrepancies noted

e. Data quality or usability affected?

Comments:

See 3a. above

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

Yes No N/A Comments:

A case narrative was included with the laboratory data. No Quality Control (QC) failures were identified in the case narrative.

c. Were all corrective actions documented?

Yes No N/A Comments:

A case narrative was included with the laboratory data. No Quality Control (QC) failures were identified in the case narrative.

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

d. What is the effect on data quality/usability according to the case narrative?

Comments:

No Quality Control (QC) failures were identified in the case narrative.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No N/A Comments:

b. All applicable holding times met?

Yes No N/A Comments:

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

No soil samples were part of the scope of work for this project.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

Yes No N/A Comments:

The LOQs for 1,2,3-trichloropropane exceeded the ADEC cleanup criterion for both samples on this work order and have been italicized in Table 2 to reflect this occurrence. As such, it cannot be determined if the actual concentrations of 1,2,3-trichloropropane within these samples exceed the ADEC cleanup criterion. However, because 1,2,3-trichloropropane is not a contaminant of concern for this site, it is our opinion that this elevated LOQ does not affect the interpretation of the data for their intended use. All other LOQs were below the ADEC cleanup criteria.

e. Data quality or usability affected?

See 5d. above

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes No N/A Comments:

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

Method blank results did not exceed LOQs

v. Data quality or usability affected?

Comments:

Method blank results did not exceed LOQs

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No N/A Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

The samples on this work order were not analyzed for metals or inorganics.

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Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from LCS/LCSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

All RPD within laboratory limits

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

All RPDs within laboratory limits

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

All RPDs within laboratory limits

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

All RPDs within laboratory limits

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Note: Leave blank if not required for project

i. Organics – One MS/MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

The laboratory stated that the LCS/LCSD pair in this data report meets the required demonstration of precision.

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

ii. Metals/Inorganics – one MS and one MSD reported per matrix, analysis and 20 samples?

Yes No N/A Comments:

The samples on this work order were not analyzed for metals or inorganics.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No N/A Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

All RPDs within the LCS/LCSD are with laboratory limits

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No N/A Comments:

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No N/A Comments:

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes No N/A Comments:

All surrogate recoveries within laboratory's limits

iv. Data quality or usability affected?

Comments:

N/A

e. Trip Blanks

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No N/A Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No N/A Comments:

iii. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

N/A

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

v. Data quality or usability affected?

Comments:

No data QC issues regarding the trip blank were observed

f. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No N/A Comments:

ii. Submitted blind to lab?

Yes No N/A Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

Sample OSH-2 is a duplicate of OSH-1 and was collected to evaluate field sampling precision. The relative percent difference (RPD) between the reported concentrations of PCE was 9 percent, the RPD between the reported concentrations of TCE was 10 percent, and the RPD between the reported concentrations of chloroform was 6 percent. These RPDs are within the acceptable limit of 30 percent, indicating good field sampling precision with respect to these analytes. The RPDs between the reported concentrations of the remaining analytes could not be calculated because those analytes were not detected in one or both of these samples.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See 6.f.iii. above

1196487

Laboratory Report Date:

11-5-2019

CS Site Name:

Parker Drilling Company

g. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below)?

Yes No N/A Comments:

Decontamination and equipment blanks were not part of the approved scope of work for this project.

i. All results less than LOQ and project specified objectives?

Yes No N/A Comments:

See 6.g. above

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

See 6.g. above

iii. Data quality or usability affected?

Comments:

See 6.g. above

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No N/A Comments:

No other data flags in data package