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15 March 2017

Andrew Smith, P.E., LHG
UST/Technical Services Unit Supervisor
Ecology's Toxics Cleanup Program
Southwest Regional Office
Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Subject: Third Annual Compliance Groundwater Monitoring Report
Agreed Order No. DE 97TCS121
Frederickson Industrial Park Site, Pierce County, WA
Geosyntec Project: GR4631F

Dear Mr. Smith:

This letter has been prepared by Geosyntec Consultants on behalf of Olin Corporation and Mallinckrodt US, Holdings LLC (the Companies) to present the results from compliance monitoring completed in 2016 at the Frederickson Industrial Park Site (Site) in Pierce County, Washington (Figure 1). This compliance monitoring is being performed in accordance with the Washington Department of Ecology's (Ecology's) Agreed Order (AO) No. DE 9514 (Order).

Background

The Site encompasses 527 acres of land south of 176th Street East and east of Canyon Road East in the Fredrickson area of Pierce County, Washington. The Site is situated approximately 10 miles south of Tacoma and 8 miles southwest of Puyallup, and is located in unincorporated County area surrounded by a mixture of industrial, residential and commercial properties. Boeing is the current owner of the Frederickson Industrial Center; Olin and Mallinckrodt are the successors of former owners of the Site.

In 1997, the Companies entered into AO No. DE 97TC-S121 requiring the Companies to undertake the following remedial actions at the Site:

- devise and implement a permanent solution regarding the impact of carbon tetrachloride (CTC) in affected domestic drinking water wells; and

- design and implement a Remedial Investigation/Feasibility Study (RI/FS).

The RI/FS Report [Geosyntec, 2012][1] was submitted to Ecology by the Companies on 28 March 2012 and recommended monitored natural attenuation (MNA) to address CTC in groundwater.

The Cleanup Action Plan (CAP), which was approved by Ecology after a public comment period, was based upon Ecology's approval of MNA as the groundwater remedy. A Compliance Monitoring Work Plan (CMWP) was provided as part of the CAP, and outlines the requirements for MNA compliance monitoring. The compliance monitoring network encompasses eleven monitoring wells at the Site (listed in Table 1) and includes hydrogeologic monitoring and groundwater sampling for CTC analysis. As described in the CMWP, compliance monitoring for the Site consists of performance monitoring to track MNA, followed by confirmational monitoring to confirm compliance with applicable cleanup standards. The May 2016 sampling event is the third year of the CMWP required performance monitoring. As outlined in the CMWP, monitoring during the third year was reduced from two monitoring events to a single annual event.

In addition, as approved by Ecology, a sampling comparison evaluation of approved low-flow sampling and passive diffusion bag sampling was conducted during the 2016 monitoring event.

Performance Groundwater Monitoring Results

Hydrogeologic Monitoring

Water level data collected during the 2016 groundwater monitoring event are presented in Table 1. Water level contours for Aquifer A are shown in Figure 2 for the 2016 monitoring event. The groundwater gradient in Aquifer A is to the north-northwest towards Clover Creek, which is consistent with past monitoring events. An upward vertical hydraulic gradient near Clover Creek was observed at the P2 intermediate and shallow monitoring wells located just south of Clover Creek.

Groundwater elevation data collected semi-annually during 2014-2015 confirmed that water level changes conform to expectations with higher groundwater elevations at the end of the wet season (Spring) and lower groundwater elevations in the dry season (Fall). The groundwater elevation

[1] Geosyntec, 2012. Remedial Investigation/Feasibility Study (RI/FS) Report, Frederickson Industrial Park, Frederickson, Washington. March 2012.

data collected during the 2016 groundwater monitoring event are consistent with the observations seen during previous monitoring events conducted during wet season conditions.

Field Parameters

Field Parameters (Table 2) for the 2016 monitoring event are consistent with past monitoring events, and indicate stable hydrogeochemical conditions. The turbidity results for MW-4 remain elevated, but all other parameters stabilized within required limits. Elevated turbidity values have been observed previously on several monitoring wells without apparent influence on CTC results.

Carbon Tetrachloride

Eleven monitoring wells were sampled by low flow methods during the May 2016 monitoring event, with samples analyzed for CTC by ALS laboratory. Figure 3 presents the well locations and the May 2016 CTC results; the updated May 2016 CTC contour, corresponding to the CTC cleanup level of 0.63 µg/L, is provided based on the Aquifer A well concentrations. The CTC data are summarized in Table 3, and the analytical reports are provided in Attachment A. Concentration trends for CTC are plotted for the monitoring wells in Figures 4a-4c. Five compliance monitoring events have now been completed. As demonstrated in Table 4 and Figures 4a-4c, CTC concentrations in Aquifer A continue to decline.

Consistent with previous monitoring results, monitoring wells BMW-18, HLA-1, and 11-CL continue to have the highest CTC concentrations ranging between 2.9 µg/L and 3.7 µg/L (Figure 4a). The intermediate concentration wells (e.g., 11-BL, MW-1, and MW-13) remain in the range between 0.5 µg/L and 1.5 µg/L (Figure 4b). The peripheral monitoring wells, MW-4 on the east, MW-7 and P-2I/P-2S on the north, and BMW-3 on the south, ranged from below detection limits of 0.096 µg/L to 0.51 µg/L (Figure 4c). During the reporting period, six wells had concentrations below the CTC cleanup level of 0.63 µg/L. As noted above, the trends plotted in Figures 4a-4c illustrate a continuing decline in CTC concentrations.

Following the procedures outlined in the CMWP, and as defined in WAC 173-340-720 (9)(e)(iv), the upper one-sided 95% confidence limits (i.e., 95% UCL) on the true mean CTC groundwater concentrations for monitoring wells BMW-3, MW-7, P2-S, and P2-I (Table 4) were calculated and determined to be below the Model Toxics Control Act (MTCA) regulatory limit of 0.63 µg/L. Thus, in accordance with Section 3.1 of the CWMP, **the Companies request the removal of BMW-3, MW-7, P2-S, and P2-I from the performance monitoring well network.**

Overall, the May 2016 monitoring event results are among the lowest concentrations measured for each of the monitoring wells. Fluctuations between sampling events are expected given the low

CTC concentrations being analyzed and the seasonal variability of groundwater recharge and discharge. The primary observation is a continued decrease in CTC groundwater concentrations.

Passive Sampling Results

The Companies proposed a plan to implement a sampling comparison of low flow sampling techniques and passive diffusion bags (PDBs) for the monitoring event in May 2016. Ecology approved the proposal. The Companies proceeded with the implementation of the sampling comparison by deploying PDBs in six monitoring wells listed in Table 5. BMW-18 was originally selected as one of the wells to be included in the sampling comparison but was replaced with monitoring well 11-CL. The reason for the change is that BMW-18 has a dedicated pump installed that would require removal and replacement as part of the PDB sampling process, potentially complicating the direct comparison between the low flow sampling data and the PDB data. Monitoring well 11-CL, which does not have a dedicated pump installed, was selected as a suitable replacement for BMW-18 given the historical CTC concentrations and trends are similar for both monitoring wells.

Four of the six monitoring wells had CTC results above the method reporting limit (0.5 µg/l). These four PDB results were either identical to low flow sampling results or slightly higher. The relative percent difference (RPD) ranged from 0% to 16% for samples with CTC concentrations above the reporting limit, which is well within an acceptable range. The second side-by-side sampling event will occur during the 2017 monitoring event.

2017 Monitoring Schedule

The monitoring schedule for 2017 will continue to be on an annual basis, in accordance with Section 2.1 of the CMWP. This annual monitoring event will occur in the spring (2nd quarter), to coincide with higher groundwater elevations. The second sampling comparison monitoring event will occur during the 2017 monitoring event. If the request to remove the specified monitoring wells from the Performance Monitoring program in this annual report is approved, then the sampling comparison evaluation conducted in 2017 will include monitoring wells 11-CL, HLA-1, MW-1, and MW-13, which represents more than 50% of the remaining monitoring network. A recommendation regarding the sampling method will be provided to Ecology based on the results from the two sampling comparison evaluation events (2016 & 2017).

Conclusions and Recommendations

The third year of MNA compliance monitoring confirmed that CTC concentrations continue to decline and contraction of the area of CTC-impacted groundwater continues to occur. Consistent

with these observations, and in accordance with the CMWP and as defined in WAC 173-340-720 (9)(e)(iv), **the Companies recommend that Ecology approve the removal of BMW-3, MW-7, P2-S, and P2-I from the Performance Monitoring portion of the Compliance Monitoring program.**

Please contact Julie Irwin (423-336-4084) if you have questions regarding the information presented herein.

Sincerely,

James J. Deitsch, PhD., P.E.
Principal

David L. Parkinson, PhD., P.G.
Senior Scientist

Cc: Julie Irwin, Olin Corporation
James Cashwell, Olin Corporation
Karen Burke, Mallinckrodt
Jim Bet, The Boeing Company
Anne Smith, Tacoma Water

Attachments:
Tables
Figures
Attachment A: Analytical Laboratory Report

GR4631F

Tables

Table 1.
Compliance Monitoring Groundwater Sampling Event Water Level Data
Brazier Site, Frederickson, Washington

Well	Ground Elevation (ft MSL)	Top of Casing Elevation (MSL)	Top of Screen (MSL)	Bottom of Screen (MSL)	Aquifer	Sample Date	Depth to Water (ft)	Water Level (MSL)
11-BL	395.5	396.08	331.5	321.5	Lower - Aquifer A	05/24/16	34.68	361.40
11-CL	403.69	404.55	329.7	319.7	Lower - Aquifer A	05/24/16	39.29	365.26
BMW-18	409.74	412.09	375.7	345.7	Upper - Aquifer A	05/23/16	35.75	376.34
BMW-3	414.74	416.76	381.7	351.7	Upper - Aquifer A	05/23/16	36.31	380.45
HLA-1	403.86	405.81	320.9	310.9	Lower - Aquifer A	05/24/16	40.61	365.20
MW-7	350.7	350.12	310.2	300.2	Upper - Aquifer A	05/23/16	26.21	323.91
MW-1	413.27	415.79	324.8	314.8	Lower - Aquifer A	05/23/16	35.81	379.98
MW-4	465.5	467.72	317.9	307.9	Aquifer A	05/24/16	112.81	354.91
P2-I	340.65	343.23	270.7	265.7	Lower - Aquifer A	05/23/16	13.39	329.84
P2-S	340.55	343.6	320.6	310.6	Upper - Aquifer A	05/23/16	15.31	328.29
MW-13	394.5	394.1	284.5	274.5	Aquifer A	05/24/16	51.32	342.78

Table 2.
Compliance Monitoring Groundwater Sampling Event Field Parameter Data
Brazier Site, Frederickson, Washington

Well	Date	Time	pH	Field SC (µS/cm)	Temperature (°C)	Turbidity (NTUs)	Field ORP (mV)	D.O. (mg/L)
11-BL	05/24/16	9:07	6.76	210	12.07	3	-45.1	1.50
11-CL	05/24/16	9:50	7.06	187	13.16	27	-57.3	1.14
BMW-18	05/23/16	11:37	6.91	170	14.09	1	-14.4	0.96
BMW-3	05/23/16	8:12	6.39	119	13.61	1	84.1	1.49
HLA-1	05/24/16	10:49	7.09	188	13.15	5	-85.7	0.97
MW-7	05/23/16	13:58	6.56	194	10.93	7	38.1	1.08
MW-1	05/23/16	9:17	6.78	197	13.44	38	53.1	1.37
MW-4	05/24/16	8:21	6.76	214	11.11	>1000	-43.8	1.32
P2-I	05/23/16	13:14	6.55	175	11.53	6	-37.1	0.86
P2-S	05/23/16	12:34	6.62	223	11.08	3	27.8	1.06
MW-13	05/24/16	11:49	6.83	167	13.03	619	-90.4	1.06

Footnotes:

SC = Specific conductivity
D.O. = Dissolved oxygen
NTUs = Nephelometric Turbidity Units
ORP = Oxidation reduction potential

Table 3.
Carbon Tetrachloride Results
Brazier Site, Frederickson, Washington

Well	Sample Type	Sample Date	Result (µg/L)	Lab MRL	Lab MDL	Qualifiers	Depth to Water (ft)	Water Level (MSL)
11-BL		05/24/16	0.50	0.5	0.096		34.68	361.40
11-CL		05/24/16	**2.9**	0.5	0.096		39.29	365.26
	PDB	05/24/16	**3.4**	0.5	0.096			
BMW-18		05/23/16	**3.7**	0.5	0.096		35.75	376.34
	Duplicate	05/23/16	**3.6**	0.5	0.096			
BMW-3		05/23/16	0.27	0.5	0.096	J	36.31	380.45
HLA-1		05/24/16	**3.6**	0.5	0.096		40.61	365.20
	PDB	05/24/16	**3.7**	0.5	0.096			
MW-1		05/23/16	**1.5**	0.5	0.096		35.81	379.98
	PDB	05/23/16	**1.7**	0.5	0.096			
MW-4		05/24/16	0.51	0.5	0.096		112.81	354.91
MW-7		05/23/16	<0.096	0.5	0.096		26.21	323.91
P2-I		05/23/16	<0.096	0.5	0.096		13.39	329.84
	PDB	05/23/16	0.39	0.5	0.096	J		
P2-S		05/23/16	0.28	0.5	0.096	J	15.31	328.29
	PDB	05/23/14	<0.096	0.5	0.096			
MW-13		05/24/16	**1.3**	0.5	0.096		51.32	342.78
	PDB	05/24/16	**1.3**	0.5	0.096			

Notes:

BOLD = CTC value above groundwater cleanup level of 0.63 µg/L

µg/L = micrograms per liter; equivalent to parts per billion

MRL = Method Reporting Limit

MDL = Method Detection Limit

Laboratory Qualifier:

J = Carbon Tetrachloride detected between the MDL and method reporting limit (MRL: 0.5 µg/L). The reported value is estimated.

Table 4.
2014-2016 Carbon Tetrachloride Groundwater Compliance Monitoring Data
Brazier Site, Frederickson, Washington

Wells	11-BL	11-CL	HLA-1	BMW-3	BMW-18	MW1	MW4	MW7	P2S	P2I	MW-13
May-14	**0.97**	**5.4**	**5.0**	*0.28*	**5.5**	**1.8**	**0.82**	**2.3**	**0.76**	**0.72**	**2.3**
Oct-14	**0.95**	**4.4**	**4.6**	*0.39*	**4.8**	**1.4**	**0.66**	ND	ND	ND	**1.9**
Mar-15	**0.64**	**4.3**	**4.4**	*0.19*	**4.2**	**1.5**	0.62	*0.22*	*0.29*	ND	**1.9**
Oct-15	**0.72**	**3.8**	**3.9**	0.51	**3.8**	**1.2**	0.53	*0.24*	*0.45*	ND	**1.7**
May-16	0.50	**2.9**	**3.6**	*0.27*	**3.7**	**1.5**	0.51	ND	*0.28*	ND	**1.3**
95% UCL*	**0.95***	**4.4***	**4.6***	0.51**	**4.8***	**1.5***	**0.66***	*0.24***	*0.45***	*0.39***	**1.9***

Notes:
*95% Upper Confidence Limit on true mean, using Ecology's Statistical Guidance for sample sets less than 20 (Example #15, page 97-98)
https://fortress.wa.gov/ecy/publications/documents/9254.pdf

WAC 173-340-720 (9)(e)(iv) **If more than fifty percent of the measurements are below the practical quantitation limit, the largest value in the data set shall be used in place of an upper confidence limit on the true mean groundwater calculation.

1.5	Bold values are above the CTC cleanup level of 0.63 µg/L
0.5	Estimated Value (i.e., concentration greater than method detection limit but less than method reporting limit)
ND	Non-Detected (Method Detection = 0.096)

Table 5.
Carbon Tetrachloride Results for both low flow sampling and PDB
Brazier Site, Frederickson, Washington

Well	Sample Date	PDB Result (µg/L)	Low Flow Result (µg/L)	Lab MRL	Lab MDL	Qualifiers	Depth to Water (ft)	Water Level (MSL)	RPD (%)
11-CL	05/24/16	**3.4**	**2.9**	0.5	0.096		39.29	365.26	15.9
HLA-1	05/24/16	**3.7**	**3.6**	0.5	0.096		40.61	365.20	2.7
MW-1	05/23/16	**1.7**	**1.5**	0.5	0.096		35.81	379.98	12.5
P2-I	05/23/16	0.39	<0.096	0.5	0.096	J	13.39	329.84	
P2-S	05/23/16	<0.096	0.28	0.5	0.096	J	15.31	328.29	
MW-13	05/24/16	**1.3**	**1.3**	0.5	0.096		51.32	342.78	0.0

Notes:

BOLD = CTC value above groundwater cleanup level of 0.63 µg/L

µg/L = micrograms per liter; equivalent to parts per billion

MRL = Method Reporting Limit

MDL = Method Detection Limit

ND(XX)= Not Detected(Detection Limit)

Laboratory Qualifier:

J = Carbon Tetrachloride detected between the MDL and method reporting limit (MRL: 0.5 µg/L). The reported value is estimated.

Figures

Property Location

Frederickson Industrial Park
Frederickson, WA

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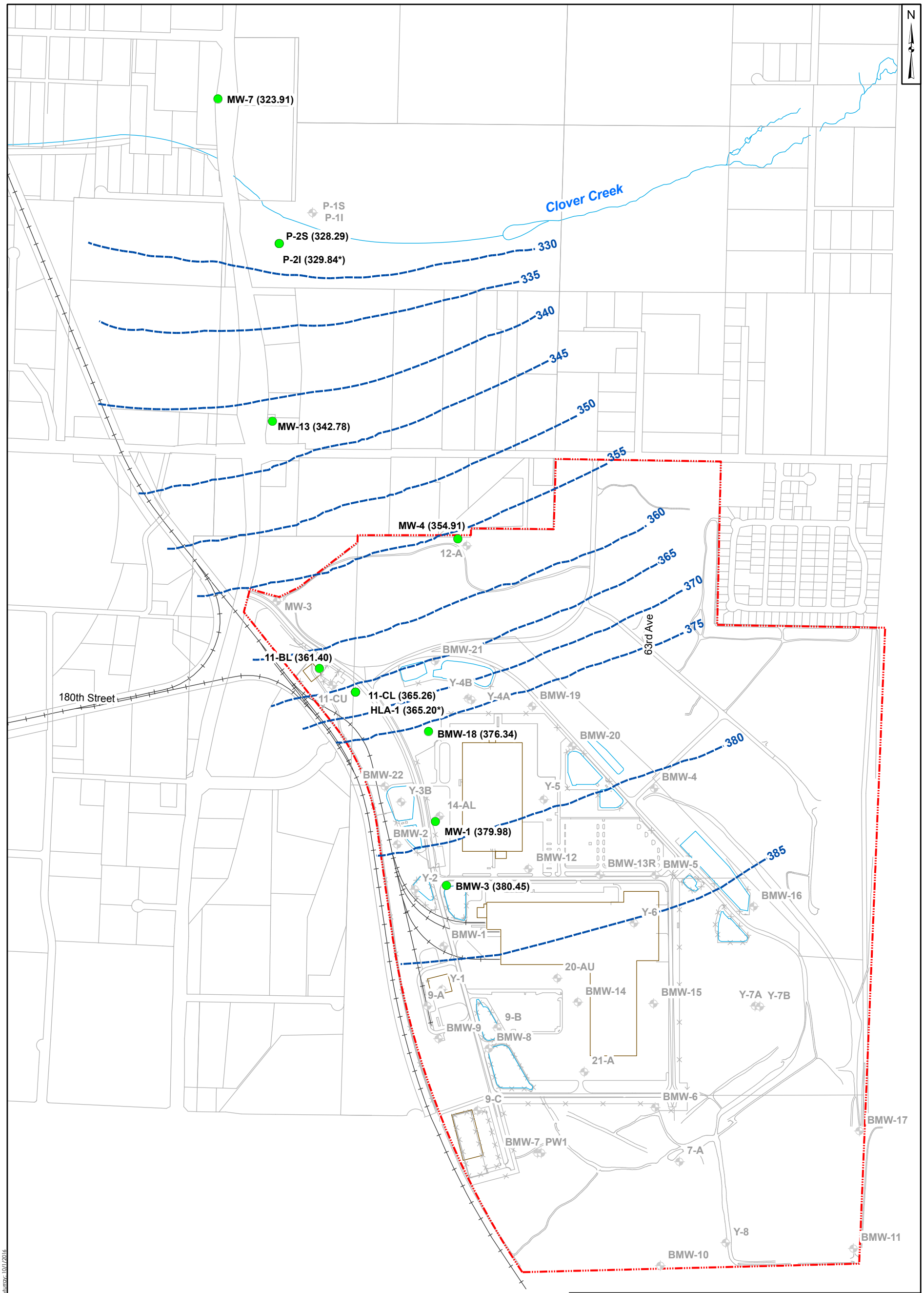
Figure 1

N:\Frederickson\GIS\Figure 1-1 Property Location.mxd; RMurray; 10/19/2016



750 375 0 750 Feet

Note:

* - Not used in water level contouring; well is screened in lower level of Aquifer A compared to wells used to develop contours.

Legend

- May 2016 Water Level Contours (ft masl)
- Aquifer A Compliance Monitoring Network Well (May 2016 Water Level (ft masl))
- Monitoring Wells
- Property Boundary

Aquifer A Groundwater Levels
May 2016

Frederickson Industrial Park
Frederickson, WA

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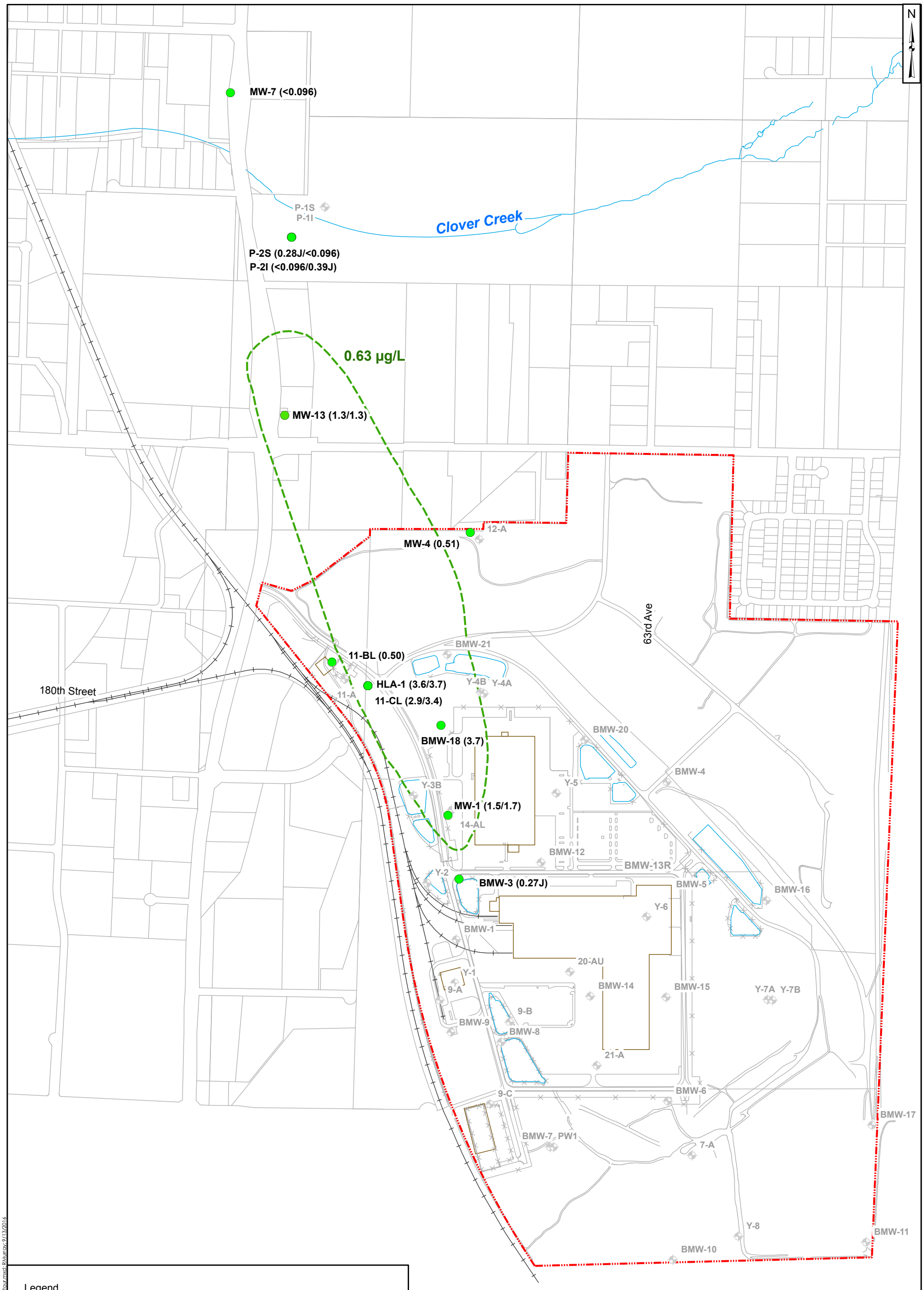
Figure 2

N:\Frederickson\GIS\2016_May\mxd\Figure_02_Qlin_GW_Elev_May2016.mxd; RMurray; 10/1/2016



Legend

- Aquifer A Monitoring Well (CTC Concentration (µg/L))
- Monitoring Wells
- CTC Contour for May 2016 data set
- Property Boundary

Notes:

1. (0.17 J) The results were above the Method Detection Limit (MDL), but below the Method Reporting Limit (MRL) and thus the values are estimated (i.e., J - flagged).
2. (1.5/1.7) Results from the May 2016 sampling event are displayed at each sampling location in parentheses. For locations with sampling by both low-flow and passive techniques both results are displayed. Low-flow results are shown on the left, and passive diffusion bag (PDB) results are shown on the right.

750 375 0 750 Feet

Aquifer A Carbon Tetrachloride Groundwater Results May 2016

Frederickson Industrial Park
Frederickson, WA

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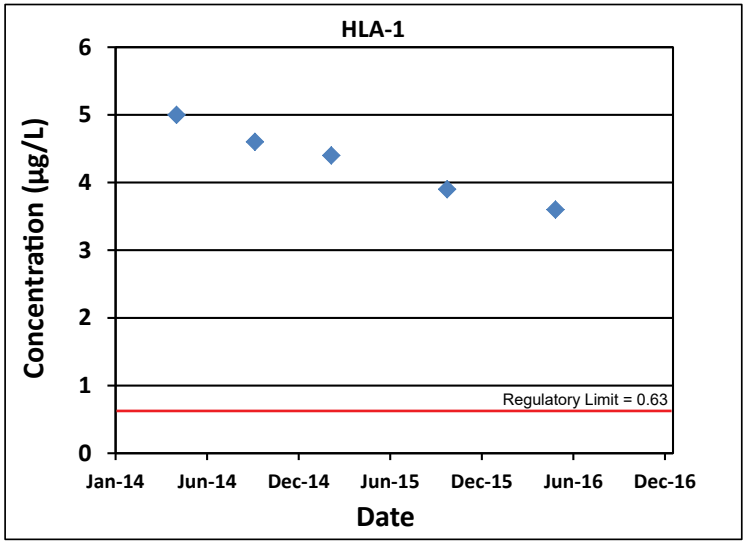
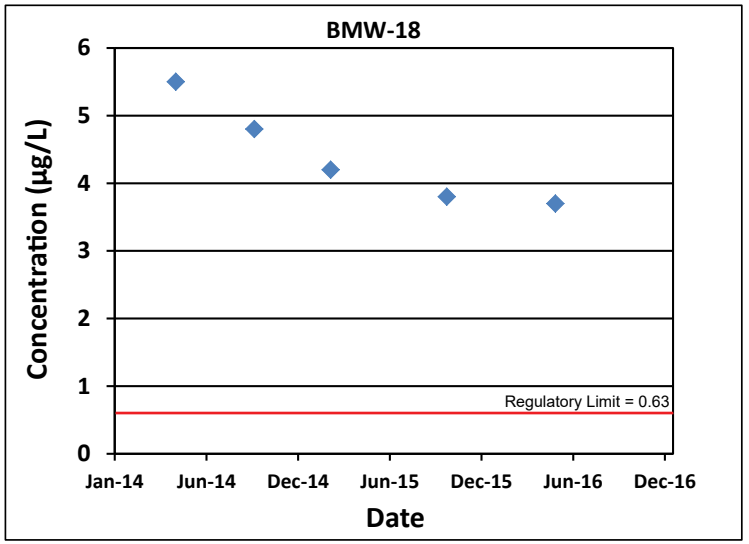
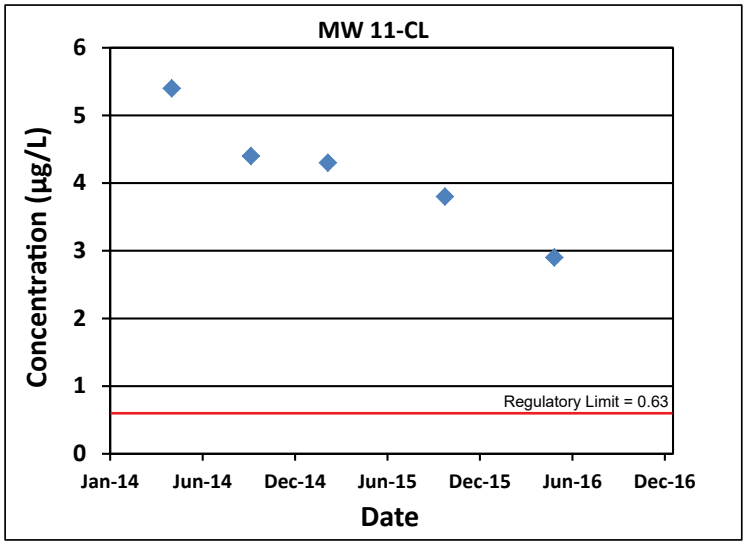
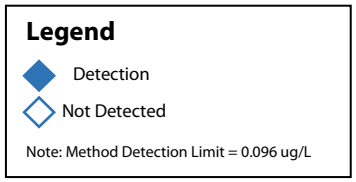
Figure 3

N:\Frederickson\GIS\2016_Mxd\Figure_03_Olin_CTC_Conc_May2016_NewContour.mxd RMurray 9/13/2016









Carbon Tetrachloride
Groundwater Monitoring Well Data
Frederickson Industrial Park, Frederickson, WA

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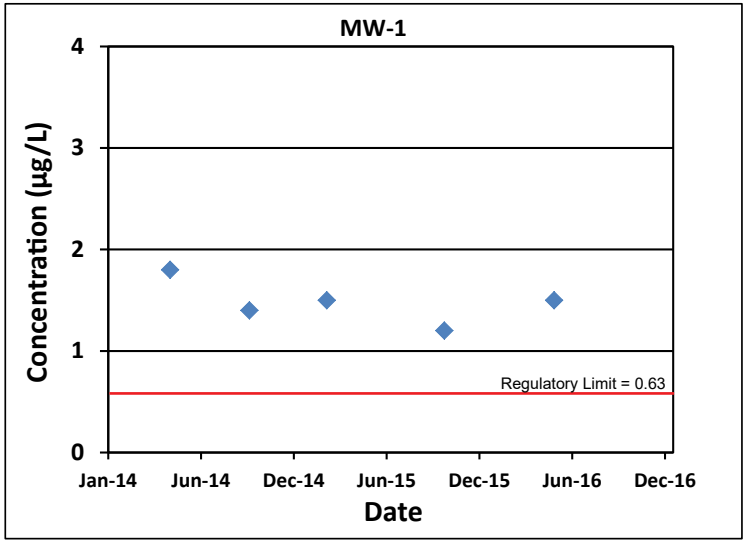
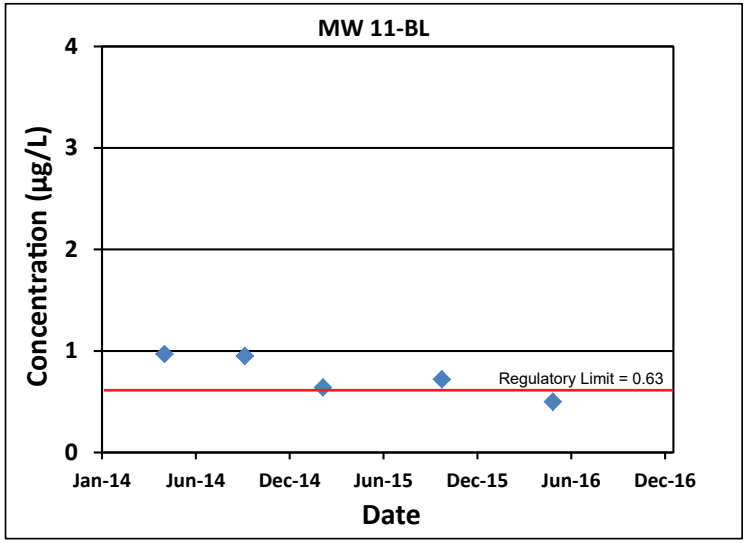
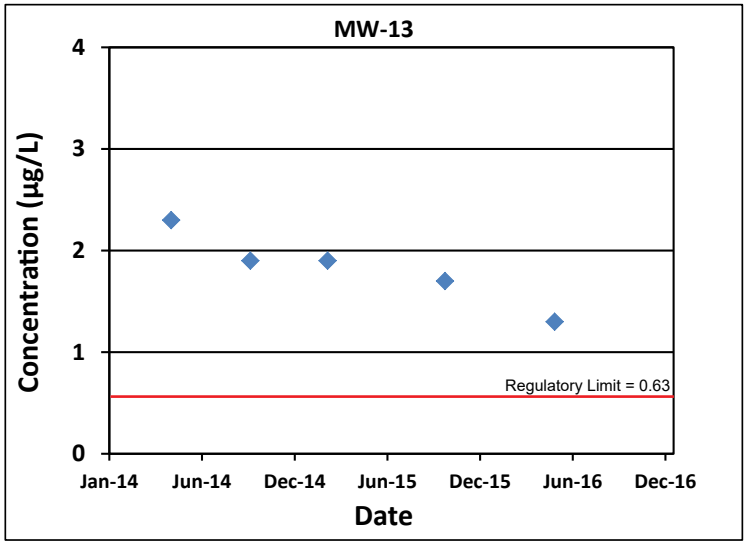
Figure **4a**







Legend

Detection

Not Detected

Note: Method Detection Limit = 0.096 ug/L

Carbon Tetrachloride
Groundwater Monitoring Well Data
Frederickson Industrial Park, Frederickson, WA

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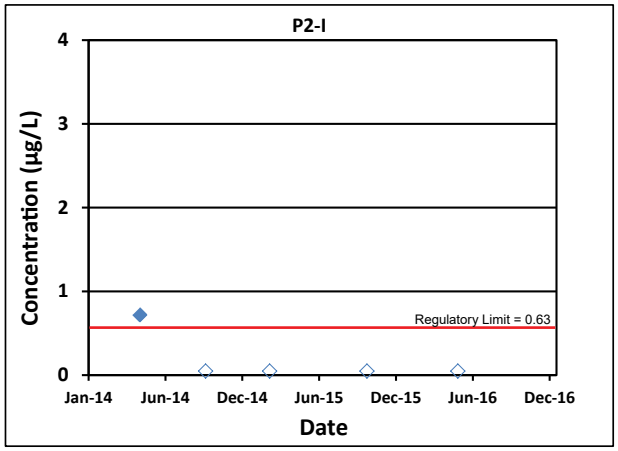
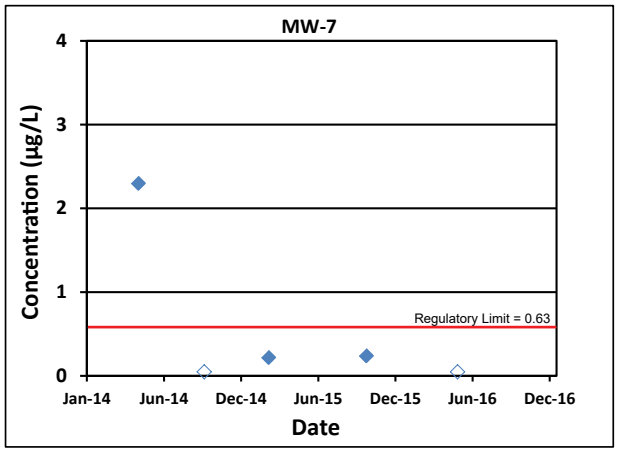
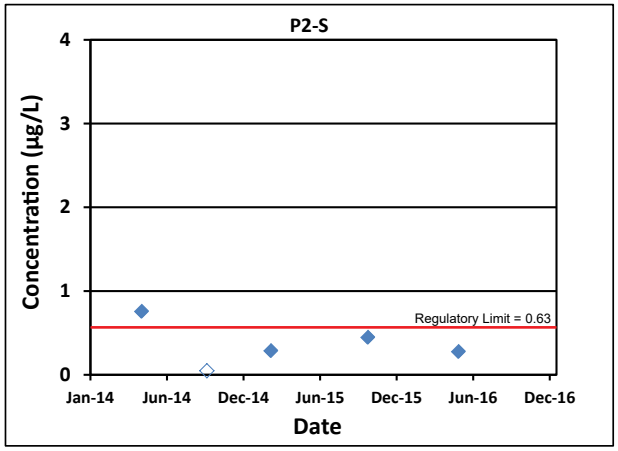
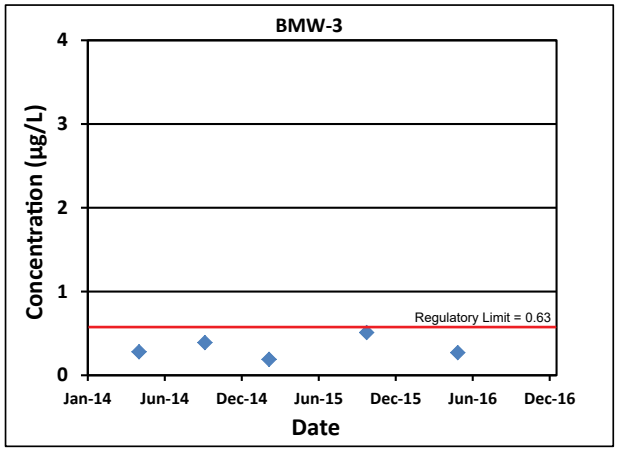
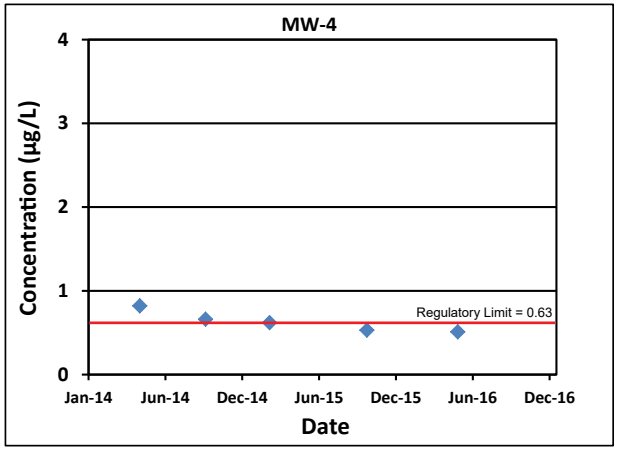
Figure **4b**











Legend

- Detection
- Not Detected

Note: Method Detection Limit = 0.096 ug/L

Carbon Tetrachloride
Groundwater Monitoring Well Data
Frederickson Industrial Park, Frederickson, WA

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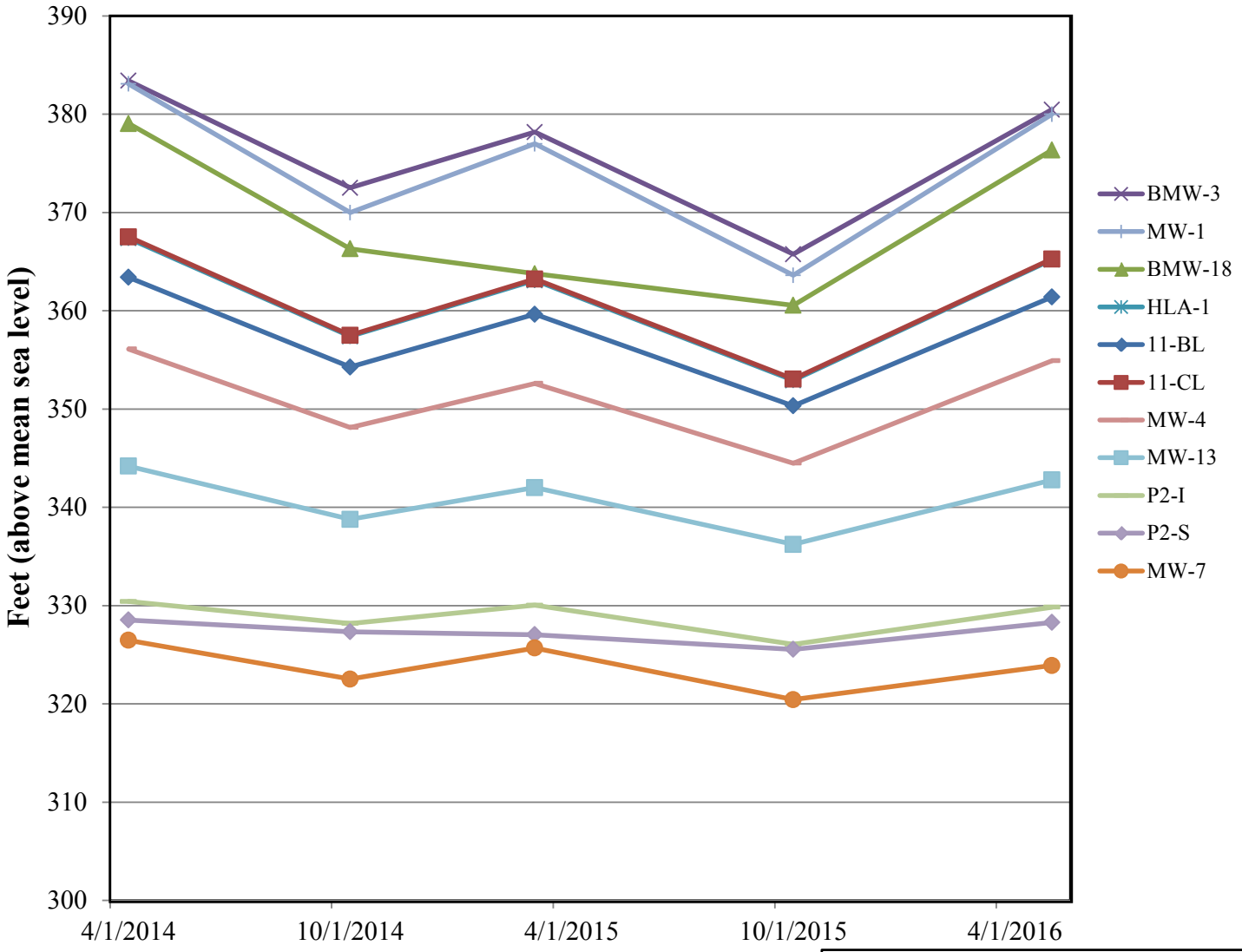
Figure **4c**



Groundwater Monitoring Well Elevation Data

Frederickson Industrial Park, Frederickson, WA

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Figure **5**

Attachment A

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

June 15, 2016

Analytical Report for Service Request No: K1605578

Dave Parkinson
GeoSyntec Consultants
520 Pike Street, Suite #1375
Seattle, WA 98101

RE: Frederickson Industrial Park

Dear Dave,

Enclosed are the results of the sample(s) submitted to our laboratory May 25, 2016
For your reference, these analyses have been assigned our service request number **K1605578.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Senior Project
Manager

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Table of Contents

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	GeoSyntec Consultants	**Service Request No.:**	K1605578
Project:	Frederickson Industrial Park	**Date Received:**	05/25/16
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier III deliverables including summary forms for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty-one water samples were received for analysis at ALS Environmental on 05/25/16. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Volatile Organic Compounds by EPA Method 8260

No anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
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K1605578

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 160523-LB2

CLIENT Geosyntec Consultants

SITE Olin - Fredrickson
18001 Canyon Rd East
Frederickson, WA

LAB ALS | DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA ☐ RWQCB REGION _____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

Invoice & Report to: Geosyntec Consultants Attn: David Parkinson

	SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	CONDUCT ANALYSIS TO DETECT: VOC's (8260)	(CTC) Carbon Tetrachloride	(RDX)	(TNT)	Perchlorate	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
1	GW-052316-MW-1	5/23/16	0918	W	3	VOA			X							
5	GW-052316-MW-1-PDB	↓	0840	W	3				X							
6	GW-052416-MW-4	5/24/16	0822	W	3				X							
7	GW-052316-MW-7	5/23/16	1359	W	3				X							
8	GW-052416-MW-13	5/24/16	1150	W	3				X							
9	GW-052416-MW-13-PDB		1125	W	3				X							
10	GW-052416-11-B2		0908	W	3				X							
	GW-052416-11-C2		0951	W	3				X							
	GW-052416-11-C2-PDB	↓	0930	W	3				X							
	GW-052316-BMW3	5/23/16	0813	W	3	↓			X							

RESULTS NEEDED NO LATER THAN Standard TAT

SAMPLING COMPLETED	DATE 5/24/16	TIME 1330	SAMPLING PERFORMED BY LEE BURES		
RELEASED BY	DATE 5/24/16	TIME 1600	RECEIVED BY SHIPPED VIA FEDEX	DATE	TIME 9:-
RELEASED BY	DATE	TIME	RECEIVED BY Dwight ALS	DATE 5/25/16	TIME 9:40
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
SHIPPED VIA	DATE SENT	TIME SENT	COOLER #		

K1605578

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 160523-LB2

CLIENT: Geosyntec Consultants

SITE: Olin - Fredrickson
18001 Canyon Rd East
Fredrickson, WA

LAB: ALS DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA ☐ LIA ☐ OTHER ☐ RWQCB REGION _____

SPECIAL INSTRUCTIONS

Invoice & Report to: Geosyntec Consultants Attn: David Parkinson

	SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	VOC's (8260)	(CTC) Carbon Tetrachloride	(RDX)	(TNT)	Perchlorate				ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
1	GW-052316-BMW-18	5/23/16	1138	W	3	VOA			X										
2	GW-052416-HLA-1	5/24/16	1050	W	9				X							MS/MSD			
3	GW-052416-HLA-1-PDB	↓	1006	W	3				X										
4	GW-052316-P-21	5/23/16	1315	W	3				X										
5	GW-052316-P-21-PDB		1255	W	3				X										
6	GW-052316-P-25		1235	W	3				X										
7	GW-052316-P-25-PDB		1205	W	3				X										
8	GW-052316-DUP	↓	—	W	3				X										
9	GW-052416-PDB-BLANK	5/24/16	1205	W	3				X										
10	GW-052416-FB	↓	1330	W	3	↓			X										

RESULTS NEEDED NO LATER THAN: Standard TAT

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY
	5/24/16	1330	LEE BURES

		DATE	TIME			DATE	TIME
RELEASED BY		5/24/16	1600	RECEIVED BY	SHIPPED VIA FEDEX		
RELEASED BY				RECEIVED BY	ALS	525-16	940
RELEASED BY				RECEIVED BY			

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

K1605578

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 160523-LB2

CLIENT: Geosyntec Consultants

SITE: Olin - Fredrickson
18001 Canyon Rd East
Frederickson, WA

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

LAB: ALS DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND
☐ EPA ☐ RWQCB REGION _____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

Invoice & Report to: Geosyntec Consultants Attn: David Parkinson

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		VOC's (8260)	(CTC) Carbon Tetrachloride	(RDX)	(TNT)	Perchlorate				ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
21 GW-052316-TB	5/23/16	0800	W	2	VOA		X										

SAMPLING COMPLETED: DATE 5/24/16 TIME 1330
SAMPLING PERFORMED BY: LEE BORES

RESULTS NEEDED NO LATER THAN: Standard TAT

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
	5/24/16	1600	SHIPPED VIA FEDEX		
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
			Bullyat ALS	5-25-16	940
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

PC Greg

Cooler Receipt and Preservation Form

Client Blaine Tech Srv Service Request *K16* 05578

Received: 5-25-16 Opened: 5-25-16 By: DW Unloaded: 5-25-16 By: DW

1. Samples were received via? *Mail* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
4.0	3.9	6.5	6.4	-0.1	306		6447-9274 2376	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* BOXES
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: GeoSyntec Consultants **Service Request:** K1605578
Project: Frederickson Industrial Park

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
GW-052316-MW-1	K1605578-001	05/23/2016	05/25/2016
GW-052316-MW-1-PDB	K1605578-002	05/23/2016	05/25/2016
GW-052416-MW-4	K1605578-003	05/24/2016	05/25/2016
GW-052316-MW-7	K1605578-004	05/23/2016	05/25/2016
GW-052416-MW-13	K1605578-005	05/24/2016	05/25/2016
GW-052416-MW-13-PDB	K1605578-006	05/24/2016	05/25/2016
GW-052416-11-BL	K1605578-007	05/24/2016	05/25/2016
GW-052416-11-CL	K1605578-008	05/24/2016	05/25/2016
GW-052416-11-CL-PDB	K1605578-009	05/24/2016	05/25/2016
GW-052316-BMW-3	K1605578-010	05/23/2016	05/25/2016
GW-052316-BMW-18	K1605578-011	05/23/2016	05/25/2016
GW-052416-HLA-1	K1605578-012	05/24/2016	05/25/2016
GW-052416-HLA-1-PDB	K1605578-013	05/24/2016	05/25/2016
GW-052316-P-2I	K1605578-014	05/23/2016	05/25/2016
GW-052316-P-2I-PDB	K1605578-015	05/23/2016	05/25/2016
GW-052316-P-2S	K1605578-016	05/23/2016	05/25/2016
GW-052316-P-2S-PDB	K1605578-017	05/23/2016	05/25/2016
GW-052316-DUP	K1605578-018	05/23/2016	05/25/2016
GW-052416-PDB-BLANK	K1605578-019	05/24/2016	05/25/2016
GW-052416-EB	K1605578-020	05/24/2016	05/25/2016
GW-052316-TB	K1605578-021	05/23/2016	05/25/2016
GW-052416-HLA-1MS	KWG1604308-1	05/24/2016	05/25/2016
GW-052416-HLA-1DMS	KWG1604308-2	05/24/2016	05/25/2016

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-MW-1	**Units:**	ug/L
Lab Code:	K1605578-001	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**1.5**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/31/16	Acceptable
Toluene-d8	104	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-MW-1-PDB	**Units:**	ug/L
Lab Code:	K1605578-002	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**1.7**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	100	73-122	05/31/16	Acceptable
Toluene-d8	105	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	89	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-MW-4	**Units:**	ug/L
Lab Code:	K1605578-003	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**0.51**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/31/16	Acceptable
Toluene-d8	104	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-MW-7	**Units:**	ug/L
Lab Code:	K1605578-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	86	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-MW-13	**Units:**	ug/L
Lab Code:	K1605578-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**1.3**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	104	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-MW-13-PDB	**Units:**	ug/L
Lab Code:	K1605578-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**1.3**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	88	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-11-BL	**Units:**	ug/L
Lab Code:	K1605578-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**0.50**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-11-CL	**Units:**	ug/L
Lab Code:	K1605578-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**2.9**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	05/31/16	Acceptable
Toluene-d8	105	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-11-CL-PDB	**Units:**	ug/L
Lab Code:	K1605578-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**3.4**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-BMW-3	**Units:**	ug/L
Lab Code:	K1605578-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**0.27**	J	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-BMW-18	**Units:**	ug/L
Lab Code:	K1605578-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**3.7**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	05/31/16	Acceptable
Toluene-d8	104	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-HLA-1	**Units:**	ug/L
Lab Code:	K1605578-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**3.6**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-HLA-1-PDB	**Units:**	ug/L
Lab Code:	K1605578-013	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**3.7**		0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	98	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	87	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-P-2I	**Units:**	ug/L
Lab Code:	K1605578-014	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	105	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	86	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-P-2I-PDB	**Units:**	ug/L
Lab Code:	K1605578-015	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**0.39**	J	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	104	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	86	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-P-2S	**Units:**	ug/L
Lab Code:	K1605578-016	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**0.28**	J	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	88	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-P-2S-PDB	**Units:**	ug/L
Lab Code:	K1605578-017	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	06/01/16	06/01/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	06/01/16	Acceptable
Toluene-d8	103	65-144	06/01/16	Acceptable
4-Bromofluorobenzene	86	68-117	06/01/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-DUP	**Units:**	ug/L
Lab Code:	K1605578-018	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	**3.6**		0.50	0.096	1	06/01/16	06/01/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	06/01/16	Acceptable
Toluene-d8	104	65-144	06/01/16	Acceptable
4-Bromofluorobenzene	87	68-117	06/01/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-PDB-BLANK	**Units:**	ug/L
Lab Code:	K1605578-019	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	06/01/16	06/01/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	96	73-122	06/01/16	Acceptable
Toluene-d8	104	65-144	06/01/16	Acceptable
4-Bromofluorobenzene	88	68-117	06/01/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/24/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052416-EB	**Units:**	ug/L
Lab Code:	K1605578-020	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	06/02/16	06/02/16	KWG1604395	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	06/02/16	Acceptable
Toluene-d8	105	65-144	06/02/16	Acceptable
4-Bromofluorobenzene	87	68-117	06/02/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	05/23/2016
Sample Matrix:	Water	**Date Received:**	05/25/2016

Volatile Organic Compounds

Sample Name:	GW-052316-TB	**Units:**	ug/L
Lab Code:	K1605578-021	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	88	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1604308-4	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	05/31/16	05/31/16	KWG1604308	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	99	73-122	05/31/16	Acceptable
Toluene-d8	103	65-144	05/31/16	Acceptable
4-Bromofluorobenzene	89	68-117	05/31/16	Acceptable

Comments:

Analytical Results

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Volatile Organic Compounds

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1604395-3	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Carbon Tetrachloride	ND	U	0.50	0.096	1	06/02/16	06/02/16	KWG1604395	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	97	73-122	06/02/16	Acceptable
Toluene-d8	103	65-144	06/02/16	Acceptable
4-Bromofluorobenzene	86	68-117	06/02/16	Acceptable

Comments:

Client: GeoSyntec Consultants **Service Request:** K1605578
Project: Frederickson Industrial Park
Sample Matrix: Water

Surrogate Recovery Summary
Volatile Organic Compounds

Extraction Method: EPA 5030B **Units:** Percent
Analysis Method: 8260C **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
GW-052316-MW-1	K1605578-001	99	104	87
GW-052316-MW-1-PDB	K1605578-002	100	105	89
GW-052416-MW-4	K1605578-003	98	104	87
GW-052316-MW-7	K1605578-004	98	103	86
GW-052416-MW-13	K1605578-005	97	104	87
GW-052416-MW-13-PDB	K1605578-006	97	103	88
GW-052416-11-BL	K1605578-007	97	103	87
GW-052416-11-CL	K1605578-008	96	105	87
GW-052416-11-CL-PDB	K1605578-009	98	103	87
GW-052316-BMW-3	K1605578-010	96	103	87
GW-052316-BMW-18	K1605578-011	96	104	87
GW-052416-HLA-1	K1605578-012	97	103	87
GW-052416-HLA-1-PDB	K1605578-013	98	103	87
GW-052316-P-2I	K1605578-014	97	105	86
GW-052316-P-2I-PDB	K1605578-015	97	104	86
GW-052316-P-2S	K1605578-016	96	103	88
GW-052316-P-2S-PDB	K1605578-017	97	103	86
GW-052316-DUP	K1605578-018	97	104	87
GW-052416-PDB-BLANK	K1605578-019	96	104	88
GW-052416-EB	K1605578-020	99	105	87
GW-052316-TB	K1605578-021	97	103	88
Method Blank	KWG1604308-4	99	103	89
Method Blank	KWG1604395-3	97	103	86
GW-052416-HLA-1MS	KWG1604308-1	103	107	98
GW-052416-HLA-1DMS	KWG1604308-2	106	108	98
Lab Control Sample	KWG1604308-3	104	109	98
Lab Control Sample	KWG1604395-1	102	110	98
Duplicate Lab Control Sample	KWG1604395-2	103	108	99

Surrogate Recovery Control Limits (%)

Sur1	=	Dibromofluoromethane	73-122
Sur2	=	Toluene-d8	65-144
Sur3	=	4-Bromofluorobenzene	68-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Date Analyzed: 05/31/2016
Time Analyzed: 15:15

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\053116\0531F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1604309-2
Analysis Lot: KWG1604309

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	514,488	5.54	197,956	9.02	186,920	11.44
	Upper Limit ==>	1,028,976	5.71	395,912	9.19	373,840	11.61
	Lower Limit ==>	257,244	5.37	98,978	8.85	93,460	11.27
	ICAL Result ==>	674,911	5.55	264,357	9.02	240,805	11.43
Associated Analyses							
Lab Control Sample	KWG1604308-3	534,120	5.54	205,012	9.02	188,566	11.44
GW-052416-HLA-1MS	KWG1604308-1	543,434	5.55	208,648	9.02	190,246	11.44
GW-052416-HLA-1DMS	KWG1604308-2	541,247	5.55	208,795	9.02	196,154	11.45
Method Blank	KWG1604308-4	494,112	5.55	192,487	9.02	170,344	11.45
GW-052316-TB	K1605578-021	496,351	5.55	189,029	9.02	164,057	11.45
GW-052416-HLA-1	K1605578-012	494,395	5.55	190,948	9.02	166,017	11.45
GW-052316-MW-1	K1605578-001	496,243	5.55	191,883	9.02	170,055	11.45
GW-052316-MW-1-PDB	K1605578-002	490,123	5.55	189,832	9.02	166,203	11.45
GW-052416-MW-4	K1605578-003	486,601	5.55	190,513	9.02	167,026	11.45
GW-052316-MW-7	K1605578-004	455,358	5.55	176,210	9.02	154,115	11.45
GW-052416-MW-13	K1605578-005	486,689	5.55	189,808	9.02	165,005	11.45
GW-052416-11-BL	K1605578-007	489,964	5.55	187,949	9.02	162,954	11.45
GW-052416-MW-13-PDB	K1605578-006	476,738	5.55	184,950	9.02	160,448	11.45
GW-052416-11-CL	K1605578-008	482,498	5.55	187,879	9.02	163,759	11.45
GW-052416-11-CL-PDB	K1605578-009	471,495	5.55	184,030	9.02	159,827	11.45
GW-052316-BMW-3	K1605578-010	484,538	5.55	188,444	9.02	163,693	11.45
GW-052316-BMW-18	K1605578-011	477,441	5.55	186,379	9.02	164,291	11.45
GW-052416-HLA-1-PDB	K1605578-013	476,003	5.55	183,789	9.02	161,812	11.45
GW-052316-P-2I	K1605578-014	470,457	5.55	184,966	9.02	159,327	11.45
GW-052316-P-2I-PDB	K1605578-015	469,225	5.55	183,707	9.02	159,973	11.45
GW-052316-P-2S	K1605578-016	471,983	5.55	182,617	9.02	160,215	11.45
GW-052316-P-2S-PDB	K1605578-017	476,716	5.55	185,856	9.02	162,223	11.45
GW-052316-DUP	K1605578-018	460,894	5.55	179,722	9.02	159,389	11.45
GW-052416-PDB-BLANK	K1605578-019	467,293	5.55	183,560	9.02	160,954	11.45

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Date Analyzed: 06/02/2016
Time Analyzed: 14:49

Internal Standard Area and RT Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\060216\0602F003.D
Instrument ID: GC-MS 18
Analysis Method: 8260C

Lab Code: KWG1604394-2
Analysis Lot: KWG1604394

		Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	519,307	5.55	202,317	9.02	189,988	11.44
	Upper Limit ==>	1,038,614	5.72	404,634	9.19	379,976	11.61
	Lower Limit ==>	259,654	5.38	101,159	8.85	94,994	11.27
	ICAL Result ==>	674,911	5.55	264,357	9.02	240,805	11.43
Associated Analyses							
Lab Control Sample	KWG1604395-1	527,031	5.55	204,252	9.02	192,541	11.44
Duplicate Lab Control Sample	KWG1604395-2	535,124	5.55	207,418	9.02	194,891	11.45
Method Blank	KWG1604395-3	491,438	5.55	191,131	9.02	167,232	11.45
GW-052416-EB	K1605578-020	471,786	5.55	186,038	9.02	160,535	11.45

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	05/31/2016
Sample Matrix:	Water	**Date Analyzed:**	05/31/2016

Matrix Spike/Duplicate Matrix Spike Summary
Volatile Organic Compounds

Sample Name:	GW-052416-HLA-1	**Units:**	ug/L
Lab Code:	K1605578-012	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1604308

		GW-052416-HLA-1MS KWG1604308-1 Matrix Spike			GW-052416-HLA-1DMS KWG1604308-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Carbon Tetrachloride	3.6	13.7	10.0	101	13.2	10.0	97	53-161	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	05/31/2016
Sample Matrix:	Water	**Date Analyzed:**	05/31/2016

Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1604308

	Lab Control Sample KWG1604308-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Carbon Tetrachloride	9.15	10.0	92	55-140

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	06/02/2016
Sample Matrix:	Water	**Date Analyzed:**	06/02/2016

Lab Control Spike/Duplicate Lab Control Spike Summary
Volatile Organic Compounds

Extraction Method:	EPA 5030B	**Units:**	ug/L
Analysis Method:	8260C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1604395

	Lab Control Sample KWG1604395-1 Lab Control Spike			Duplicate Lab Control Sample KWG1604395-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Carbon Tetrachloride	8.20	10.0	82	7.85	10.0	79	55-140	4	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	05/31/2016
Sample Matrix:	Water	**Date Analyzed:**	05/31/2016
		Time Analyzed:	17:35

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1604308-4	**File ID:**	J:\MS18\DATA\053116\0531F009.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1604308

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1604308-3	J:\MS18\DATA\053116\0531F004.D	05/31/16	15:46
GW-052416-HLA-1MS	KWG1604308-1	J:\MS18\DATA\053116\0531F005.D	05/31/16	16:10
GW-052416-HLA-1DMS	KWG1604308-2	J:\MS18\DATA\053116\0531F006.D	05/31/16	16:31
GW-052316-TB	K1605578-021	J:\MS18\DATA\053116\0531F010.D	05/31/16	17:57
GW-052416-HLA-1	K1605578-012	J:\MS18\DATA\053116\0531F011.D	05/31/16	18:19
GW-052316-MW-1	K1605578-001	J:\MS18\DATA\053116\0531F012.D	05/31/16	18:40
GW-052316-MW-1-PDB	K1605578-002	J:\MS18\DATA\053116\0531F013.D	05/31/16	19:02
GW-052416-MW-4	K1605578-003	J:\MS18\DATA\053116\0531F014.D	05/31/16	19:23
GW-052316-MW-7	K1605578-004	J:\MS18\DATA\053116\0531F015.D	05/31/16	19:45
GW-052416-MW-13	K1605578-005	J:\MS18\DATA\053116\0531F016.D	05/31/16	20:06
GW-052416-11-BL	K1605578-007	J:\MS18\DATA\053116\0531F017.D	05/31/16	20:28
GW-052416-MW-13-PDB	K1605578-006	J:\MS18\DATA\053116\0531F018.D	05/31/16	20:49
GW-052416-11-CL	K1605578-008	J:\MS18\DATA\053116\0531F019.D	05/31/16	21:11
GW-052416-11-CL-PDB	K1605578-009	J:\MS18\DATA\053116\0531F020.D	05/31/16	21:32
GW-052316-BMW-3	K1605578-010	J:\MS18\DATA\053116\0531F021.D	05/31/16	21:54
GW-052316-BMW-18	K1605578-011	J:\MS18\DATA\053116\0531F022.D	05/31/16	22:15
GW-052416-HLA-1-PDB	K1605578-013	J:\MS18\DATA\053116\0531F023.D	05/31/16	22:37
GW-052316-P-2I	K1605578-014	J:\MS18\DATA\053116\0531F024.D	05/31/16	22:58
GW-052316-P-2I-PDB	K1605578-015	J:\MS18\DATA\053116\0531F025.D	05/31/16	23:20
GW-052316-P-2S	K1605578-016	J:\MS18\DATA\053116\0531F026.D	05/31/16	23:41
GW-052316-P-2S-PDB	K1605578-017	J:\MS18\DATA\053116\0531F027.D	06/01/16	00:03
GW-052316-DUP	K1605578-018	J:\MS18\DATA\053116\0531F028.D	06/01/16	00:24
GW-052416-PDB-BLANK	K1605578-019	J:\MS18\DATA\053116\0531F029.D	06/01/16	00:46

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	06/02/2016
Sample Matrix:	Water	**Date Analyzed:**	06/02/2016
		Time Analyzed:	16:41

Method Blank Summary
Volatile Organic Compounds

Sample Name:	Method Blank	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1604395-3	**File ID:**	J:\MS18\DATA\060216\0602F008.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1604395

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1604395-1	J:\MS18\DATA\060216\0602F004.D	06/02/16	15:15
Duplicate Lab Control Sample	KWG1604395-2	J:\MS18\DATA\060216\0602F005.D	06/02/16	15:37
GW-052416-EB	K1605578-020	J:\MS18\DATA\060216\0602F014.D	06/02/16	18:50

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	05/31/2016
Sample Matrix:	Water	**Date Analyzed:**	05/31/2016
		Time Analyzed:	15:46

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1604308-3	**File ID:**	J:\MS18\DATA\053116\0531F004.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1604308

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
GW-052416-HLA-1MS	KWG1604308-1	J:\MS18\DATA\053116\0531F005.D	05/31/16	16:10
GW-052416-HLA-1DMS	KWG1604308-2	J:\MS18\DATA\053116\0531F006.D	05/31/16	16:31
Method Blank	KWG1604308-4	J:\MS18\DATA\053116\0531F009.D	05/31/16	17:35
GW-052316-TB	K1605578-021	J:\MS18\DATA\053116\0531F010.D	05/31/16	17:57
GW-052416-HLA-1	K1605578-012	J:\MS18\DATA\053116\0531F011.D	05/31/16	18:19
GW-052316-MW-1	K1605578-001	J:\MS18\DATA\053116\0531F012.D	05/31/16	18:40
GW-052316-MW-1-PDB	K1605578-002	J:\MS18\DATA\053116\0531F013.D	05/31/16	19:02
GW-052416-MW-4	K1605578-003	J:\MS18\DATA\053116\0531F014.D	05/31/16	19:23
GW-052316-MW-7	K1605578-004	J:\MS18\DATA\053116\0531F015.D	05/31/16	19:45
GW-052416-MW-13	K1605578-005	J:\MS18\DATA\053116\0531F016.D	05/31/16	20:06
GW-052416-11-BL	K1605578-007	J:\MS18\DATA\053116\0531F017.D	05/31/16	20:28
GW-052416-MW-13-PDB	K1605578-006	J:\MS18\DATA\053116\0531F018.D	05/31/16	20:49
GW-052416-11-CL	K1605578-008	J:\MS18\DATA\053116\0531F019.D	05/31/16	21:11
GW-052416-11-CL-PDB	K1605578-009	J:\MS18\DATA\053116\0531F020.D	05/31/16	21:32
GW-052316-BMW-3	K1605578-010	J:\MS18\DATA\053116\0531F021.D	05/31/16	21:54
GW-052316-BMW-18	K1605578-011	J:\MS18\DATA\053116\0531F022.D	05/31/16	22:15
GW-052416-HLA-1-PDB	K1605578-013	J:\MS18\DATA\053116\0531F023.D	05/31/16	22:37
GW-052316-P-2I	K1605578-014	J:\MS18\DATA\053116\0531F024.D	05/31/16	22:58
GW-052316-P-2I-PDB	K1605578-015	J:\MS18\DATA\053116\0531F025.D	05/31/16	23:20
GW-052316-P-2S	K1605578-016	J:\MS18\DATA\053116\0531F026.D	05/31/16	23:41
GW-052316-P-2S-PDB	K1605578-017	J:\MS18\DATA\053116\0531F027.D	06/01/16	00:03
GW-052316-DUP	K1605578-018	J:\MS18\DATA\053116\0531F028.D	06/01/16	00:24
GW-052416-PDB-BLANK	K1605578-019	J:\MS18\DATA\053116\0531F029.D	06/01/16	00:46

QA/QC Report

Client:	GeoSyntec Consultants	**Service Request:**	K1605578
Project:	Frederickson Industrial Park	**Date Extracted:**	06/02/2016
Sample Matrix:	Water	**Date Analyzed:**	06/02/2016
		Time Analyzed:	15:15

Lab Control Sample Summary
Volatile Organic Compounds

Sample Name:	Lab Control Sample	**Instrument ID:**	GC-MS 18
Lab Code:	KWG1604395-1	**File ID:**	J:\MS18\DATA\060216\0602F004.D
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C	**Extraction Lot:**	KWG1604395

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1604395-3	J:\MS18\DATA\060216\0602F008.D	06/02/16	16:41
GW-052416-EB	K1605578-020	J:\MS18\DATA\060216\0602F014.D	06/02/16	18:50

QA/QC Results

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Date Analyzed: 05/31/2016
Time Analyzed: 14:49

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\053116\0531F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1604309

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	16.5	7419	PASS
75	95	30	60	45.4	20405	PASS
95	95	100	100	100.0	44978	PASS
96	95	5	9	7.3	3277	PASS
173	174	0	2	0.5	184	PASS
174	95	50	120	81.3	36573	PASS
175	174	5	9	7.7	2805	PASS
176	174	95	101	98.2	35898	PASS
177	176	5	9	6.5	2334	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1604309-2	J:\MS18\DATA\053116\0531F003.D	05/31/2016	15:15	
Lab Control Sample	KWG1604308-3	J:\MS18\DATA\053116\0531F004.D	05/31/2016	15:46	
GW-052416-HLA-1MS	KWG1604308-1	J:\MS18\DATA\053116\0531F005.D	05/31/2016	16:10	
GW-052416-HLA-1DMS	KWG1604308-2	J:\MS18\DATA\053116\0531F006.D	05/31/2016	16:31	
Method Blank	KWG1604308-4	J:\MS18\DATA\053116\0531F009.D	05/31/2016	17:35	
GW-052316-TB	K1605578-021	J:\MS18\DATA\053116\0531F010.D	05/31/2016	17:57	
GW-052416-HLA-1	K1605578-012	J:\MS18\DATA\053116\0531F011.D	05/31/2016	18:19	
GW-052316-MW-1	K1605578-001	J:\MS18\DATA\053116\0531F012.D	05/31/2016	18:40	
GW-052316-MW-1-PDB	K1605578-002	J:\MS18\DATA\053116\0531F013.D	05/31/2016	19:02	
GW-052416-MW-4	K1605578-003	J:\MS18\DATA\053116\0531F014.D	05/31/2016	19:23	
GW-052316-MW-7	K1605578-004	J:\MS18\DATA\053116\0531F015.D	05/31/2016	19:45	
GW-052416-MW-13	K1605578-005	J:\MS18\DATA\053116\0531F016.D	05/31/2016	20:06	
GW-052416-11-BL	K1605578-007	J:\MS18\DATA\053116\0531F017.D	05/31/2016	20:28	
GW-052416-MW-13-PDB	K1605578-006	J:\MS18\DATA\053116\0531F018.D	05/31/2016	20:49	
GW-052416-11-CL	K1605578-008	J:\MS18\DATA\053116\0531F019.D	05/31/2016	21:11	
GW-052416-11-CL-PDB	K1605578-009	J:\MS18\DATA\053116\0531F020.D	05/31/2016	21:32	
GW-052316-BMW-3	K1605578-010	J:\MS18\DATA\053116\0531F021.D	05/31/2016	21:54	
GW-052316-BMW-18	K1605578-011	J:\MS18\DATA\053116\0531F022.D	05/31/2016	22:15	
GW-052416-HLA-1-PDB	K1605578-013	J:\MS18\DATA\053116\0531F023.D	05/31/2016	22:37	
GW-052316-P-2I	K1605578-014	J:\MS18\DATA\053116\0531F024.D	05/31/2016	22:58	
GW-052316-P-2I-PDB	K1605578-015	J:\MS18\DATA\053116\0531F025.D	05/31/2016	23:20	
GW-052316-P-2S	K1605578-016	J:\MS18\DATA\053116\0531F026.D	05/31/2016	23:41	
GW-052316-P-2S-PDB	K1605578-017	J:\MS18\DATA\053116\0531F027.D	06/01/2016	00:03	
GW-052316-DUP	K1605578-018	J:\MS18\DATA\053116\0531F028.D	06/01/2016	00:24	
GW-052416-PDB-BLANK	K1605578-019	J:\MS18\DATA\053116\0531F029.D	06/01/2016	00:46	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Date Analyzed: 06/02/2016
Time Analyzed: 14:24

Tune Summary
Volatile Organic Compounds

File ID: J:\MS18\DATA\060216\0602F002.D
Instrument ID: GC-MS 18
Column:

Analysis Method: 8260C
Analysis Lot: KWG1604394

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
50	95	15	40	17.1	8151	PASS
75	95	30	60	45.3	21546	PASS
95	95	100	100	100.0	47610	PASS
96	95	5	9	7.5	3571	PASS
173	174	0	2	0.4	133	PASS
174	95	50	120	77.8	37064	PASS
175	174	5	9	6.8	2523	PASS
176	174	95	101	95.5	35402	PASS
177	176	5	9	7.1	2517	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1604394-2	J:\MS18\DATA\060216\0602F003.D	06/02/2016	14:49	
Lab Control Sample	KWG1604395-1	J:\MS18\DATA\060216\0602F004.D	06/02/2016	15:15	
Duplicate Lab Control Sample	KWG1604395-2	J:\MS18\DATA\060216\0602F005.D	06/02/2016	15:37	
Method Blank	KWG1604395-3	J:\MS18\DATA\060216\0602F008.D	06/02/2016	16:41	
GW-052416-EB	K1605578-020	J:\MS18\DATA\060216\0602F014.D	06/02/2016	18:50	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: GeoSyntec Consultants **Service Request:** K1605578
Project: Frederickson Industrial Park **Calibration Date:** 04/13/2016

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL14682 **Column:** MS
Instrument ID: GC-MS 18

Level ID	File ID	Level ID	File ID
A	J:\MS18\DATA\041316\0413F012.D	G	J:\MS18\DATA\041316\0413F018.D
B	J:\MS18\DATA\041316\0413F013.D	H	J:\MS18\DATA\041316\0413F019.D
C	J:\MS18\DATA\041316\0413F014.D	I	J:\MS18\DATA\041316\0413F020.D
D	J:\MS18\DATA\041316\0413F015.D	J	J:\MS18\DATA\041316\0413F021.D
E	J:\MS18\DATA\041316\0413F016.D	K	J:\MS18\DATA\041316\0413F022.D
F	J:\MS18\DATA\041316\0413F017.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Carbon Tetrachloride				B	0.20	0.222	C	0.50	0.190	D	1.0	0.202	E	2.0	0.189
	F	5.0	0.224	G	10	0.231	H	20	0.254	I	40	0.279	J	60	0.268
	K	80	0.287												
Dibromofluoromethane										D	4.0	0.174	E	6.0	0.188
	F	8.0	0.185	G	10	0.196	H	12	0.206	I	14	0.209	J	16	0.210
	K	20	0.216												
Toluene-d8										D	4.0	0.833	E	6.0	0.903
	F	8.0	0.851	G	10	0.872	H	12	0.927	I	14	0.918	J	16	0.929
	K	20	0.929												
4-Bromofluorobenzene										D	4.0	0.792	E	6.0	0.876
	F	8.0	0.838	G	10	0.870	H	12	0.891	I	14	0.892	J	16	0.894
	K	20	0.908												

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GeoSyntec Consultants **Service Request:** K1605578
Project: Frederickson Industrial Park **Calibration Date:** 04/13/2016

Initial Calibration Summary
Volatile Organic Compounds

Calibration ID: CAL14682 **Column:** MS
Instrument ID: GC-MS 18

		Calibration Evaluation					RRF Evaluation		
Analyte Name	**Compound Type**	**Fit Type**	**Eval.**	**Eval. Result**	**Q**	**Control Criteria**	**Average RRF**	**Q**	**Minimum RRF**
Carbon Tetrachloride	MS	Quadratic(0,0)	COD	0.999		≥ 0.990	0.235		0.100
Dibromofluoromethane	SURR	AverageRF	% RSD	7.4		≤ 20	0.198		0.01
Toluene-d8	SURR	AverageRF	% RSD	4.3		≤ 20	0.895		0.01
4-Bromofluorobenzene	SURR	AverageRF	% RSD	4.4		≤ 20	0.870		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Calibration Date: 04/13/2016
Date Analyzed: 04/13/2016

Second Source Calibration Verification
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration ID: CAL14682
Units: PPB

File ID: J:\MS18\DATA\041316\0413F025.D
J:\MS18\DATA\041316\0413F027.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Carbon Tetrachloride	10	9.1	0.235	0.229	NA	-9	± 30 %	Quadratic(0,0)

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Date Analyzed: 05/31/2016

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 04/13/2016
Calibration ID: CAL14682
Analysis Lot: KWG1604309
Units: PPB

File ID: J:\MS18\DATA\053116\0531F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Carbon Tetrachloride	10	9.6	0.100	0.235	0.241	NA	-4	± 20	Quadratic(0,0)
Dibromofluoromethane	10	11	0.01	0.198	0.210	6	NA	± 20	AverageRF
Toluene-d8	10	11	0.01	0.895	1.00	12	NA	± 20	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.870	0.881	1	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park

Service Request: K1605578
Date Analyzed: 06/02/2016

Continuing Calibration Verification Summary
Volatile Organic Compounds

Calibration Type: Internal Standard
Analysis Method: 8260C

Calibration Date: 04/13/2016
Calibration ID: CAL14682
Analysis Lot: KWG1604394
Units: PPB

File ID: J:\MS18\DATA\060216\0602F003.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Carbon Tetrachloride	10	8.4	0.100	0.235	0.210	NA	-16	± 20	Quadratic(0,0)
Dibromofluoromethane	10	10	0.01	0.198	0.207	4	NA	± 20	AverageRF
Toluene-d8	10	11	0.01	0.895	1.00	12	NA	± 20	AverageRF
4-Bromofluorobenzene	10	10	0.01	0.870	0.879	1	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: GeoSyntec Consultants **Service Request:** K1605578
Project: Frederickson Industrial Park

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C **Analysis Lot:** KWG1604309
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0531F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1604309-1	5/31/2016	14:49		5/31/2016	15:05
0531F003.D	Continuing Calibration Verification	KWG1604309-2	5/31/2016	15:15		5/31/2016	15:31
0531F004.D	Lab Control Sample	KWG1604308-3	5/31/2016	15:46		5/31/2016	16:02
0531F005.D	GW-052416-HLA-1MS	KWG1604308-1	5/31/2016	16:10		5/31/2016	16:26
0531F006.D	GW-052416-HLA-1DMS	KWG1604308-2	5/31/2016	16:31		5/31/2016	16:47
0531F009.D	Method Blank	KWG1604308-4	5/31/2016	17:35		5/31/2016	17:51
0531F010.D	GW-052316-TB	K1605578-021	5/31/2016	17:57		5/31/2016	18:13
0531F011.D	GW-052416-HLA-1	K1605578-012	5/31/2016	18:19		5/31/2016	18:35
0531F012.D	GW-052316-MW-1	K1605578-001	5/31/2016	18:40		5/31/2016	18:56
0531F013.D	GW-052316-MW-1-PDB	K1605578-002	5/31/2016	19:02		5/31/2016	19:18
0531F014.D	GW-052416-MW-4	K1605578-003	5/31/2016	19:23		5/31/2016	19:39
0531F015.D	GW-052316-MW-7	K1605578-004	5/31/2016	19:45		5/31/2016	20:01
0531F016.D	GW-052416-MW-13	K1605578-005	5/31/2016	20:06		5/31/2016	20:22
0531F017.D	GW-052416-11-BL	K1605578-007	5/31/2016	20:28		5/31/2016	20:44
0531F018.D	GW-052416-MW-13-PDB	K1605578-006	5/31/2016	20:49		5/31/2016	21:05
0531F019.D	GW-052416-11-CL	K1605578-008	5/31/2016	21:11		5/31/2016	21:27
0531F020.D	GW-052416-11-CL-PDB	K1605578-009	5/31/2016	21:32		5/31/2016	21:48
0531F021.D	GW-052316-BMW-3	K1605578-010	5/31/2016	21:54		5/31/2016	22:10
0531F022.D	GW-052316-BMW-18	K1605578-011	5/31/2016	22:15		5/31/2016	22:31
0531F023.D	GW-052416-HLA-1-PDB	K1605578-013	5/31/2016	22:37		5/31/2016	22:53
0531F024.D	GW-052316-P-2I	K1605578-014	5/31/2016	22:58		5/31/2016	23:14
0531F025.D	GW-052316-P-2I-PDB	K1605578-015	5/31/2016	23:20		5/31/2016	23:36
0531F026.D	GW-052316-P-2S	K1605578-016	5/31/2016	23:41		5/31/2016	23:57
0531F027.D	GW-052316-P-2S-PDB	K1605578-017	6/1/2016	00:03		6/1/2016	00:19
0531F028.D	GW-052316-DUP	K1605578-018	6/1/2016	00:24		6/1/2016	00:40
0531F029.D	GW-052416-PDB-BLANK	K1605578-019	6/1/2016	00:46		6/1/2016	01:02

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Client: GeoSyntec Consultants **Service Request:** K1605578
Project: Frederickson Industrial Park

Analysis Run Log
Volatile Organic Compounds

Analysis Method: 8260C **Analysis Lot:** KWG1604394
Instrument ID: GC-MS 18

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0602F002.D	GC/MS Tuning - Bromofluorobenzene	KWG1604394-1	6/2/2016	14:24		6/2/2016	14:40
0602F003.D	Continuing Calibration Verification	KWG1604394-2	6/2/2016	14:49		6/2/2016	15:05
0602F004.D	Lab Control Sample	KWG1604395-1	6/2/2016	15:15		6/2/2016	15:31
0602F005.D	Duplicate Lab Control Sample	KWG1604395-2	6/2/2016	15:37		6/2/2016	15:53
0602F008.D	Method Blank	KWG1604395-3	6/2/2016	16:41		6/2/2016	16:57
0602F009.D	ZZZZZZ	ZZZZZZ	6/2/2016	17:03		6/2/2016	17:19
0602F010.D	ZZZZZZ	ZZZZZZ	6/2/2016	17:24		6/2/2016	17:40
0602F011.D	ZZZZZZ	ZZZZZZ	6/2/2016	17:46		6/2/2016	18:02
0602F012.D	ZZZZZZ	ZZZZZZ	6/2/2016	18:07		6/2/2016	18:23
0602F014.D	GW-052416-EB	K1605578-020	6/2/2016	18:50		6/2/2016	19:06
0602F015.D	ZZZZZZ	ZZZZZZ	6/2/2016	19:12		6/2/2016	19:28
0602F016.D	ZZZZZZ	ZZZZZZ	6/2/2016	19:33		6/2/2016	19:49
0602F017.D	ZZZZZZ	ZZZZZZ	6/2/2016	19:55		6/2/2016	20:11
0602F018.D	ZZZZZZ	ZZZZZZ	6/2/2016	20:16		6/2/2016	20:32
0602F019.D	ZZZZZZ	ZZZZZZ	6/2/2016	20:38		6/2/2016	20:54
0602F020.D	ZZZZZZ	ZZZZZZ	6/2/2016	20:59		6/2/2016	21:15
0602F021.D	ZZZZZZ	ZZZZZZ	6/2/2016	21:21		6/2/2016	21:37
0602F022.D	ZZZZZZ	ZZZZZZ	6/2/2016	21:42		6/2/2016	21:58
0602F023.D	ZZZZZZ	ZZZZZZ	6/2/2016	22:04		6/2/2016	22:20
0602F024.D	ZZZZZZ	ZZZZZZ	6/2/2016	22:25		6/2/2016	22:41
0602F025.D	ZZZZZZ	ZZZZZZ	6/2/2016	22:47		6/2/2016	23:03
0602F026.D	ZZZZZZ	ZZZZZZ	6/2/2016	23:08		6/2/2016	23:24
0602F028.D	ZZZZZZ	ZZZZZZ	6/2/2016	23:51		6/3/2016	00:07
0602F029.D	ZZZZZZ	ZZZZZZ	6/3/2016	00:13		6/3/2016	00:29
0602F030.D	ZZZZZZ	ZZZZZZ	6/3/2016	00:34		6/3/2016	00:50

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park
Sample Matrix: Water

Service Request: K1605578
Date Extracted: 05/31/2016

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1604308
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
GW-052316-MW-1	K1605578-001	05/23/16	05/25/16	10ml	10ml	NA	
GW-052316-MW-1-PDB	K1605578-002	05/23/16	05/25/16	10ml	10ml	NA	
GW-052416-MW-4	K1605578-003	05/24/16	05/25/16	10ml	10ml	NA	
GW-052316-MW-7	K1605578-004	05/23/16	05/25/16	10ml	10ml	NA	
GW-052416-MW-13	K1605578-005	05/24/16	05/25/16	10ml	10ml	NA	
GW-052416-MW-13-PDB	K1605578-006	05/24/16	05/25/16	10ml	10ml	NA	
GW-052416-11-BL	K1605578-007	05/24/16	05/25/16	10ml	10ml	NA	
GW-052416-11-CL	K1605578-008	05/24/16	05/25/16	10ml	10ml	NA	
GW-052416-11-CL-PDB	K1605578-009	05/24/16	05/25/16	10ml	10ml	NA	
GW-052316-BMW-3	K1605578-010	05/23/16	05/25/16	10ml	10ml	NA	
GW-052316-BMW-18	K1605578-011	05/23/16	05/25/16	10ml	10ml	NA	
GW-052416-HLA-1	K1605578-012	05/24/16	05/25/16	10ml	10ml	NA	
GW-052416-HLA-1-PDB	K1605578-013	05/24/16	05/25/16	10ml	10ml	NA	
GW-052316-P-2I	K1605578-014	05/23/16	05/25/16	10ml	10ml	NA	
GW-052316-P-2I-PDB	K1605578-015	05/23/16	05/25/16	10ml	10ml	NA	
GW-052316-P-2S	K1605578-016	05/23/16	05/25/16	10ml	10ml	NA	
GW-052316-P-2S-PDB	K1605578-017	05/23/16	05/25/16	10ml	10ml	NA	
GW-052316-DUP	K1605578-018	05/23/16	05/25/16	10ml	10ml	NA	
GW-052416-PDB-BLANK	K1605578-019	05/24/16	05/25/16	10ml	10ml	NA	
GW-052316-TB	K1605578-021	05/23/16	05/25/16	10ml	10ml	NA	
Method Blank	KWG1604308-4	NA	NA	10ml	10ml	NA	
GW-052416-HLA-1MS	KWG1604308-1	05/24/16	05/25/16	10ml	10ml	NA	
GW-052416-HLA-1DMS	KWG1604308-2	05/24/16	05/25/16	10ml	10ml	NA	
Lab Control Sample	KWG1604308-3	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: GeoSyntec Consultants
Project: Frederickson Industrial Park
Sample Matrix: Water

Service Request: K1605578
Date Extracted: 06/02/2016

Extraction Prep Log
Volatile Organic Compounds

Extraction Method: EPA 5030B
Analysis Method: 8260C

Extraction Lot: KWG1604395
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
GW-052416-EB	K1605578-020	05/24/16	05/25/16	10ml	10ml	NA	
Method Blank	KWG1604395-3	NA	NA	10ml	10ml	NA	
Lab Control Sample	KWG1604395-1	NA	NA	10ml	10ml	NA	
Duplicate Lab Control Sample	KWG1604395-2	NA	NA	10ml	10ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis