First Quarter 2016
Remedial Systems Operations and Maintenance (O&M) Report

TOC Holdings Co. Facility No. 01-176
24205, 24225, 24309 56th Avenue West
Mountlake Terrace, WA

Prepared for:
TOC Holdings Co.
2737 W. Commodore Way
Seattle, WA 98199

May 6, 2016

Prepared by:

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24205, 24225, 24309 56th Avenue West
Mountlake Terrace, WA

Washington State Department of Ecology
Agreed Order No. DE 8661

HydroCon Project No: 01-176

Prepared by:

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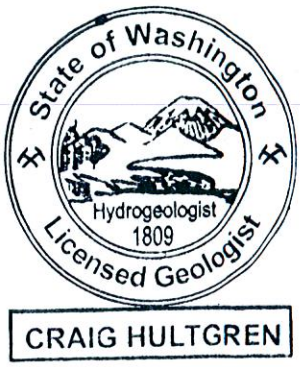

May 6, 2016

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1 INTRODUCTION

This report was prepared by HydroCon Environmental, LLC (HydroCon) on behalf of TOC Holdings Co. (TOC) to document the First Quarter 2016 (Q1 2016) remedial systems operation and maintenance (O&M) activities. Field activities associated with interim remedial actions were conducted from January through March 2016 at Facility No. 01-176 located in Mountlake Terrace, Snohomish County, Washington (Figure 1).

1.1 SCOPE OF WORK

Ongoing interim remedial actions are conducted under Agreed Order (AO) No. DE 8661, between TOC and the Washington State Department of Ecology[1] entered in October 2011 for TOC's Facility No. 01-176. The O&M scope of work is defined in the *Interim Remedial Action Work Plan*[2] (IRAWP). Per the requirements of the IRAWP, the O&M scope of work includes monthly maintenance and quarterly monitoring events.

As described in the IRAWP, the TOC Facility No. 01-176 is termed the "Interim Remedial Project Area" (IRPA) and consists of the following four properties located in Mountlake Terrace, Washington (Figure 2):

- TOC Property: 24205 56th Avenue West
- TOC/Farmasonis Property: 24225 56th Avenue West
- Drake Property: 24309 56th Avenue West
- Portions of the 56th Avenue West Right-of-Way (ROW): adjacent to the TOC, TOC/Farmasonis and Drake properties

O&M activities are conducted to monitor the performance of three multi-phase extraction (MPE) remediation systems currently operating at the IRPA. The MPE remediation systems were installed to remediate petroleum hydrocarbon-contaminated groundwater, soil vapor, and free product. Unit 1 is located on the TOC Property; Units 2 and 3 are located on the TOC/Farmasonis Property. Unit 1 is associated with the operation of remediation wells installed on the TOC Property; Units 2 and 3 are associated with the operation of wells installed on the TOC/Farmasonis and Drake Properties, respectively.

Details on remediation well identification and locations are provided in the description of remedial systems in Appendix A.

[1] *Washington State Department of Ecology (Ecology). 2011. Agreed Order No. DE 8661, TOC Facility No. 01-176. October 28.*

[2] *SoundEarth Strategies, Inc. (SES) 2011. Interim Remedial Action Work Plan. TOC Holdings Co. Facility No. 01-176; 24205 56th Avenue West, Mountlake Terrace, WA, Prepared for TOC Holdings Co. July 28.*

1.2 SUMMARY OF Q1 2016 O&M ACTIVITIES

This report includes a description of permit compliance and remedial system performance and optimization efforts. A summary of the remedial system performance and maintenance activities performed from January through March 2016 is provided below.

- O&M consisted of routine, scheduled maintenance activities (as described in the O&M Manual) plus SVE system optimization for all three units.
- A combined total of 28.6 pounds of vapor-phase hydrocarbons were removed during this reporting period. A cumulative total of approximately 4,612.5 pounds have been removed since startup in October 2012.
- A combined total volume of 268,086 gallons of groundwater were extracted, treated and discharged during this period. The total volume of water processed since systems were started is approximately 4,088,763 gallons.
- Light, nonaqueous-phase liquids (LNAPL) were not observed or recovered from the three MPE systems during this quarter. Also, the oil/water separator (OWS) for each system was inspected, and no LNAPL was visible.

System optimization activities during this reporting period focused on evaluating the mass recovery performance of individual remediation wells connected to each of the three systems. These activities are described in more detail in the following section.

2 REMEDIAL SYSTEMS MODIFICATIONS

The top 6 inches of granular activated carbon (GAC) in the first GAC unit in series (GAC-1) for Unit 3 was replaced on January 29 based on an observed pressure drop and limited flow. After observing the pressure drop, the Unit 3 system was shut down temporarily to inspect the carbon vessels. A crust was observed on the first carbon vessel in the series. The crust was removed and drummed onsite and replaced with fresh carbon. The system was restarted and operated normally until a higher than normal pressure drop was noted in the post-oil water separator (OWS) bag filter in Unit 3 during the February 23 monitoring event. The bag filter was replaced on February 23. After GAC and bag filter replacement, the Unit 3 system operated trouble free for the remainder of the reporting period.

During the February 24 inspection of Unit 1, it was determined that nearly all of the SVE lines had been plugged by condensate collecting in each below grade elbow located underneath the manifold. This was confirmed by the absence of vacuum at each well connected to the SVE system. HydroCon personnel removed the accumulated condensate using suction from a vacuum truck that was onsite for the enhanced fluid recovery (EFR) events. After the condensate was removed, the measured vacuum levels at the well heads roughly matched the vacuums measured at the SVE manifold indicating that air flow and vacuum had been restored to all of the Unit 1 vents.

After normal air flow had been restored to the Unit 1 SVE system, HydroCon balanced the air flow for all vents in Unit 1 by using a hot-wire anemometer. HydroCon also made the following adjustments to the Units 2 and 3 SVE systems to optimize and balance air flow from wells that appear to be still providing some remedial benefit, while closing off other nonproductive wells, as summarized in the table below. This was determined for each vent by measuring total organic vapors with a photoionization detector (PID), velocity by hot wire anemometer, and carbon dioxide and oxygen concentrations using real-time detectors.

Summary of SVE System Adjustments for Units 2 and 3

Unit 2 wells	**MW93**	**MW31**	**MW94**	**MW92**	**MW57**	**MW41**			
	Closed	Closed	Open	Open	Throttled >50%	Closed			
Velocity			Balanced to between 150 and 200 feet per minute (fpm)						
Unit 3 wells	**MW101**	**MW99**	**MW70**	**MW97**	**MW98**	**MW84**	**MW69**	**MW95**	**MW96**
	Closed	Closed	Closed	Open	Open	Closed	Open	Open	Closed
Velocity				Between 150-200 fpm			Between 150- 200 fpm		

Other than the system maintenance and modifications listed above, all three remedial systems operated trouble free and within normal operating parameters for the reporting period.

3 SYSTEM PERFORMANCE

The data from the most recent annual groundwater sampling event (conducted in February 2016) has not yet been published; however, preliminary data showed that one or more of the following contaminants: benzene, toluene, ethylbenzene, and total xylenes (BTEX), gasoline-range petroleum hydrocarbon (GRPH) and diesel-range petroleum hydrocarbon (DRPH) concentrations in groundwater remain above the Model Toxics Control Act (MTCA) Method A cleanup levels in at least five groundwater monitoring wells located in the IRPA. These wells are:

- Wells MW25, MW28, and MW29 located on the TOC Property;
- Well MW48**,** at the southwest boundary of the TOC Farmasonis and Drake Properties, and
- Well MW69, located on the Drake Property.

3.1 TOC PROPERTY (UNIT 1)

The following is a summary of the First Quarter 2016 system performance for the TOC Property:

- The MPE system operational time for this reporting period was approximately 83 percent. The cumulative operational time over the lifetime of this facility is 73 percent (Table 1-1). System down time is attributed to a planned system shutdown to accommodate annual groundwater monitoring, plus an unplanned system shut down to remove condensate from the SVE lines.
- The vapor-phase hydrocarbon mass removal associated with the soil vapor extraction (SVE) system was approximately 7.6 pounds, and aqueous-phase hydrocarbon removal associated with the GAC treatment process was approximately 0.02 pounds for this reporting period. The cumulative vapor- and aqueous-phase hydrocarbons removed to date are approximately 3,320 and 16.2 pounds, respectively (Tables 1-1, 1-2 and 1-3).
- The volume of groundwater extracted during this reporting period was 129,508 gallons. The cumulative volume of groundwater extracted over the lifetime of this facility is 995,913 gallons (Tables 1-1 and 1-3). The average daily groundwater recovery volume during this reporting period was 1,423 gallons. The cumulative average daily groundwater recovery over the lifetime of this facility is 757.3 gallons (Tables 1-1 and 1-3).
- No LNAPL was recovered from the OWS. Also, the OWS was inspected, and no LNAPL or sheen was visible on the liquid contents.
- The vapor-phase mass removal rate ranged from 0.07 to 0.64 pounds per day during this reporting period (Table 1-2). These amounts are substantially less when compared to the third and fourth quarters of 2015 coinciding with an overall increase in Site-wide groundwater elevations.
- Air flow through the catalytic oxidizer (CATOX) from the SVE blower was bypassed in February 2015 because permit conditions for bypass were achieved. According to the PSCAA NOC permit for each unit (1, 2, and 3), the CATOX may be removed or bypassed

and directly vented to the atmosphere if benzene and GRPH concentrations in the untreated air remain below 0.5 and 50 parts per million by volume (ppmv), respectively, for a period of 3 consecutive months (refer to Appendix B2 for other permit conditions).

The concentrations of GRPH exiting the stack during this quarter ranged in concentration from less than 10 to 11 milligrams per cubic meter [mg/m^3] which is equivalent to a range of less than 3.3 to 3.7 ppmv using the estimated molecular weight of 72.5 as representative of the composite molecular weight of gasoline[3]. The conversion to ppmv from mg/m^3 assumes a temperature of 25°C and standard pressure (1 atmosphere) (Table 1-4). The maximum measured value of 11 mg/m^3 (3.7 ppmv) for GRPH did not exceed the uncontrolled PSCAA permit threshold of 50 ppmv.

- The concentrations of benzene exiting the stack during this quarter were below the laboratory's lower reporting limit of 0.1 mg/m3, which is equivalent to 0.03 ppmv at 25°C and standard pressure. Laboratory analytical reports are provided in Appendix C.
- In the previous quarter, there was an exceedance of the PSCAA permit threshold[4] for GRPH. HydroCon contacted the PSCAA about this exceedance[5] to determine what corrective action would be acceptable to the PSCAA. The PSCAA indicated that the following monitoring protocol would be acceptable over the short-term[6]:
  - Increase monitoring frequency to weekly for a month for Unit 1.
  - Develop a correlation between real-time PID measurements and laboratory results based on weekly monitoring to include a grab vapor sample split in two for: 1) real time total organic vapor measurement using a photoionization detector (PID); and, 2) laboratory analysis.
  - After the initial month, continue monitoring weekly using the PID to confirm that GRPH vapor concentrations remain below the NOC threshold of 50 ppmv.
  - Continue to collect monthly vapor samples for laboratory analysis.

  HydroCon conducted four real-time air monitoring events for the Unit 1 vapor effluent (January 29, February 3, March 9, and March 16) in addition to the routinely scheduled monthly air sampling events (January 20, February 23, and March 21) to observe any correlation between concentrations of GRPH in air samples and real-time total organic vapor measurements with the PID. Real time measurements were not taken on January 20.

[3] *Fremont Analytical. 2015. Personal Communication. Response to email inquiry from Mr. Mark Selman. September 23.*

[4] *HydroCon. 2016. Fourth Quarter 2015 Remedial Systems Operations and Maintenance (O&M) Report. Prepared for TOC Holdings Co. 2737 W. Commodore Way, Seattle, WA 98199. February 17.*

[5] *Personal Communication. 2016a. Telephone voice message from Mr. Mark Selman representing HydroCon to Mr. Brian Renninger, Engineer with the PSCAA on January 13 and return call from Mr. MengChiu Lim representing PSCAA on January 14.*

[6] *Personal Communication. 2016b. Email confirmation from Mr. MengChiu Lim, Engineer II, representing PSCAA to Mr. Mark Selman representing HydroCon on January 20, 2016; 2:31p MST.*

The results of the real-time PID measurements and corresponding laboratory result (if analyzed) for the Unit 1 vapor discharges during this reporting period are summarized in the following table.

Results of Real-Time PID Measurements and Corresponding Laboratory Analysis Unit 1 Vapor Effluent

Sample Date	PID Measurement (ppm – Total Organic Vapors)	Corresponding Laboratory Result for GRPH in Air (ppm)
January 20	No measurement	<3.3
January 29	3.1	6.74
February 3	0.4	< 3.3
February 23	1.5	11
March 9	0.3	No sample
March 16	0.3	No sample
March 21	1.0	<3.3

The results revealed that the real-time PID measurements appear to underestimate the actual GRPH concentration in the air samples. Nevertheless, the real-time measurements will continue to be useful to evaluate when air concentrations are approaching the PSCAA threshold of 50 ppmv (148.2 mg/m^3). HydroCon will continue to monitor the vapor effluent concentrations with the PID for Unit 1 during occasional weekly and all monthly O&M sampling events to monitor for increases in the vapor concentrations that could potentially trigger an exceedance of the PSCAA permit threshold. If such an increase is observed, HydroCon will modify the operation of the system to prevent any permit exceedances.

- System operations are summarized in Tables 1-1 through 1-5. There were no exceedances of permit conditions during this reporting period.
- In the previous quarter (fourth quarter 2015), there was an exceedance of the State Waste Discharge (SWD) permit condition for Monitoring Point 001 for Outfall 001 for the chemicals: Tetrakis(hydroxymethyl)phosphonium sulfate (Tolcide®), and Etidronic acid [Phosphonic acid, P, P'-(1-hydroxyethylidene) bis-] (phosphonate) (see Appendix B1). The events surrounding this incident and a preventative maintenance plan were communicated to Ecology (HydroCon 2016). Preventative maintenance was implemented during this reporting period. There were no exceedances of the permit conditions related to these chemicals during this reporting period.

3.2 TOC/FARMASONIS PROPERTY (UNIT 2)

The following is a summary of the First Quarter 2016 system performance for the TOC/Farmasonis Property:

- The MPE system operational time for this reporting period was approximately 83 percent (Table 2-1). The cumulative operational time over the lifetime of this facility is 81 percent. System down time is attributed to a planned system shutdown in February to accommodate annual groundwater monitoring.
- The vapor-phase hydrocarbon mass removal associated with the SVE system was approximately 15.7 pounds, and aqueous-phase hydrocarbon removal associated with the GAC treatment process was 0.029 pounds for this reporting period. The cumulative vapor- and aqueous-phase hydrocarbons removed to date are approximately 1,049.0 pounds and 0.87 pounds, respectively (Tables 2-1, 2-2, and 2-3).
- The volume of groundwater extracted during this reporting period was approximately 69,853 gallons. The cumulative volume of groundwater extracted over the lifetime of this facility is 1,077,083 gallons (Tables 2-1 and 2-3). The average daily groundwater recovery volume during this reporting period was 767.6 gallons. The cumulative average daily groundwater recovery volume over the lifetime of this facility is 821.5 gallons (Tables 2-1 and 2-3).
- No LNAPL was recovered from the OWS. Also, the OWS was inspected, and no LNAPL or sheen was visible on the liquid contents.
- The vapor-phase mass removal rate ranged from 0.07 to 0.41 pounds per day during this reporting period (Table 2-2).
- Air flow through the CATOX from the SVE blower was bypassed in September 2014 because permit conditions for bypass had been achieved. Effluent concentrations of benzene exiting the stack during this quarter were below the laboratory's lower reporting limit of 0.1 mg/m^3 (Table 2-4). Effluent concentrations of GRPH, ethylbenzene, and total xylenes exiting the stack were above laboratory detection limits in late December 2015 and early January 2016, but below their respective PSCAA permit limits during this reporting period. Laboratory analytical reports are provided in Appendix C.
- All system operations were in compliance with the SWD and PSCAA permit limits (Tables 2-3, 2-4, and 2-5).

3.3 DRAKE PROPERTY (UNIT 3)

The following is a summary of the First Quarter 2016 system performance for the Drake Property:

- The MPE system operational time for this reporting period was approximately 76 percent. The cumulative operational time over the lifetime of this facility is 81 percent (Table 3-1). System down time is attributed to a planned system shutdown to accommodate annual groundwater monitoring.
- The vapor-phase hydrocarbon mass removal associated with the SVE system was approximately 5.3 pounds, and aqueous-phase hydrocarbon removal associated with the GAC treatment process was 0.03 pounds for this reporting period. The cumulative vapor- and aqueous-phase hydrocarbons removed to date are approximately 243.7 and 2.16 pounds, respectively (Tables 3-1, 3-2 and 3-3).

- The volume of groundwater extracted during this reporting period was approximately 68,725 gallons. The cumulative volume of groundwater extracted over the lifetime of this facility is 2,015,767 gallons (Tables 3-1 and 3-3). The average daily groundwater recovery volume for this reporting period was 755 gallons. The cumulative average daily groundwater recovery volume over the lifetime of this facility is 1,577 gallons (Tables 3-1 and 3-3).
- No LNAPL was recovered from the OWS. Also, the OWS was inspected, and no LNAPL or sheen was visible on the liquid contents.
- The average vapor-phase mass removal rate was 0.08 pounds per day during this reporting period (Table 3-2).
- Air flow through the CATOX from the SVE blower was bypassed in September 2014 because permit conditions for bypass had been achieved. Effluent concentrations of benzene and GRPH exiting the stack during this quarter were below the laboratory's lower reporting limits of 0.1 and 10 mg/m^3, respectively (Table 3-4). Laboratory analytical reports are provided in Appendix C.
- All system operations were in compliance with the SWD and PSCAA permit limits (Tables 3-3, 3-4, and 3-5).

4 SYSTEM OPTIMIZATION & FUTURE RECOMMENDATIONS

The following is a summary of the First Quarter 2016 system optimization and future recommendations for operation of the MPE systems.

The MPE systems will continue to operate until the terms and conditions of the AO have been satisfied in accordance with Section IX (Satisfaction of Order), or until the work to be performed has been amended in accordance with Section VIII.L (Amendment of Order). Specifically, "the provisions of the [Agreed] Order shall be deemed satisfied upon TOC's receipt of written notification from Ecology that TOC has completed the remedial activity required by the [Agreed] Order, as amended by any modifications, and that TOC has complied with all other provisions of the [Agreed] Order."

Operational activities during this quarter continued to focus on dewatering the formation to optimize the physical recovery of dissolved- and vapor-phase hydrocarbons, and to provide a continual supply of atmospheric oxygen via SVE to sustain aerobic bioremediation of the residual hydrocarbons.

4.1 OPTIMIZATION COMPLETED

As recommended in the Second Quarter 2015 Remedial Systems O&M Report[7], HydroCon began assessing the vapor-phase mass removal performance of individual remediation wells. These evaluations involved measuring air velocity and VOC, lower explosive limit (LEL), oxygen, and carbon dioxide concentrations using real-time monitoring instruments. Baseline air velocities, LEL, VOC, oxygen, and carbon dioxide conditions for each well connected to Units 1, 2, and 3 were measured and recorded during the Third and Fourth Quarters 2015 and First Quarter 2016 O&M visits. The systems were adjusted accordingly during this reporting period based on the measurements from the previous three quarters. The adjustments made are described in Section 2. HydroCon will continue to evaluate the vapor- and aqueous-phase mass removal performance for individual wells that are still operating for each system during the Second Quarter 2016.

HydroCon performed Enhanced Fluid Recovery (EFR) on February 24 for wells MW69, MW48 and MW90[8]. The purpose of the EFR was to recover any residual contaminants from the filter pack and surrounding formation materials that might be the cause of artificially high contaminant concentrations, thus falsely over estimating the actual contaminant levels at these locations. To conduct the EFR, a stinger tube was dropped into each well to the depth of the well screen, the well casing sealed, and vacuum applied to the stinger tube to rapidly remove groundwater and soil gas. Preliminary results revealed a substantial reduction in dissolved GRPH concentration in well MW48 following EFR. Data will be published in a future EFR technical memorandum.

[7] *HydroCon. 2015b. Second Quarter 2015 Remedial Systems O&M Report; TOC Holdings Co. Facility No. 01-176. October 7.*

[8] *HydroCon. 2015c. Work Plan for Minor Modifications to Agreed Order DE 8661; TOC Facility No. 01-176, addressed to Ms. Sunny Becker Washington State Department of Ecology; Northwest Regional Office; Toxics Cleanup Program. September 29.*

4.2. OPTIMIZATION PLANNED

Data generated by the remedial well evaluations and EFR events will be used to downgrade or eliminate the continued operation of specific remediation wells if it is confirmed that they are no longer providing a discernable remedial benefit. The data will be critically reviewed to determine the operating configuration for each system (i.e., unit) that will produce the optimum mass recovery rates and thus achieve the remedial objectives as quickly as possible. If these optimization efforts do not provide adequate and timely results, other remedial approaches and technologies to complement and/or replace existing technology will be evaluated.

5 LIMITATIONS

This document entitled, *First Quarter 2016 Remedial Systems Operations & Maintenance Report,* was prepared by HydroCon Environmental, LLC exclusively for and on behalf of TOC Holdings Co. Material contained in this document reflects HydroCon's best judgments regarding the information available at the time of preparation and in accordance with industry-standard practices. Reliance on this document by a third party is the responsibility of the third party; therefore, HydroCon provides no warranty or guarantee related the unauthorized third party use of the information and findings presented herein. Finally, HydroCon accepts no responsibility for damages, if any, claimed by a third party as a result of the unauthorized use of this document.

FIGURES

0 200 400

SCALE IN FEET
1" = 400'

SOURCE: STANTEC, JBR - 2014

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W E
S

HydroCon
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE 1
SITE LOCATION MAP

TOC HOLDINGS CO, FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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0 100 200

SCALE IN FEET
1" = 100'

SOURCE: STANTEC, JBR - 2014

N
W E
S

Hydro Con
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE 2
SITE MAP

TOC HOLDINGS CO, FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

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TABLES

Table 1-1
Summary of System Performance
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

Reporting Period		Days In Reporting Period	Days In Operation	System Run Time (%)	Volume of Treated Groundwater Discharged (gallons)	Average Daily Groundwater Recovery Rate (gallons per day)	GRPH Aqueous-Phase Removal (lb)	GRPH Vapor-Phase Removal (lb)
Start Date	End Date							
10/02/12	12/05/12	64	29.6	46%	34,569	540.1	3.67	1,353.0
12/05/12	03/04/13	89	35.6	40%	7,655.9	86.0	0.938	50.6
03/04/13	06/05/13	93	29.1	31%	4,915.8	52.9	0.604	7.2
06/05/13	09/04/13	91	69.0	76%	83,540.3	918.0	3.580	265.4
09/04/13	12/03/13	90	90.0	100%	75,825.2	842.5	1.226	1,061.1
12/03/13	01/31/14	59	26.1	44%	1,166.2	19.8	0.033	158.9
01/31/14	03/19/14	47	29.4	63%	29,991.7	638.1	0.872	35.1
03/19/14	06/16/14	89	69.7	78%	101,082.0	1,135.8	3.328	5.4
06/16/14	09/18/14	94	86.6	92%	101,780.0	1,082.8	1.097	51.2
09/18/14	12/09/14	82	68.7	84%	53,355.0	650.7	0.022	132.0
12/09/14	03/11/15	92	62.0	67%	103,289.0	1,122.7	0.470	4.2
03/11/15	06/08/15	89	77.7	87%	133,855.0	1,504.0	0.072	4.9
06/08/15	09/21/15	105	93.9	89%	98,522.4	938.3	0.041	48.5
09/21/15	12/21/15	91	76.3	84%	36,857.8	405.0	0.019	134.7
12/21/15	03/21/16	91	75.7	83%	129,508.3	1,423.2	0.219	7.6
Cumulative Total or Lifetime Average		**1,266**	**919**	**73%**	**995,913.2**	**757.3**	**16.19**	**3,319.8**

NOTES:

= data for current reporting period

% = percent
GRPH = gasoline-range petroleum hydrocarbons
lb = pounds
SVE = soil vapor extraction

Table 1-2
Vapor Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
10/02/12	5.0	0.2	70	146.8	330	380	1,600	21.12	0.000
10/10/12	70.2	2.9	69	149.2	330	419	2,600	45.24	132.3
10/17/12	237.7	9.9	69	149.2	330	410	3,400	63.04	572.3
10/24/12	406.9	17.0	68	144.4	330	385	2,400	54.11	953.8
11/07/12	638.2	26.6	73	140.7	330	384	1,700	37.16	1311.9
12/05/12	714.2	29.8	67	148.0	330	344	150	12.98	1353.0
01/08/13	1,482.9	61.8	65	153.8	330	342	35	1.49	1400.8
01/17/13	1,533.7	63.9	76	153.0	330	350	--		
02/05/13	1,537.6	64.1	64	148.6	330	342	53	0.96	1403.0
03/04/13	1,569.4	65.4	27	173.0	330	342	<10	0.46	1403.6
04/03/13	1,587.2	66.1	60	157.4	330	342	14	0.25	1403.8
05/08/13	1,595.4	66.5	17	175.2	330	341	22	0.43	1403.9
06/05/13	2,267.7	94.5	36	166.0	330	340	<10	0.25	1410.8
07/02/13	2,789.8	116.2	39	168.0	330	340	26	0.43	1420.1
08/06/13	3,227.4	134.5	47	162.1	330	341	31	0.65	1432.0
08/09/13	3,302.8	137.6	64	157.1	330	345	--		
09/04/13	3,924.4	163.5	66	152.0	330	351	580	8.41	1676.2
10/07/13	4,715.2	196.5	66	153.1	330	356	710	13.71	2128.1
10/14/13	4,888.3	203.7	72	155.4	330	354	--		
10/15/13	4,913.7	204.7	70	154.7	330	355	--		
10/16/13	4,936.9	205.7	66	154.4	330	364	--		
11/06/13	5,434.8	226.5	45	173.7	330	349	240	8.74	2390.2
11/07/13	5,460.5	227.5	45	168.1	330	346	--		
12/03/13	6,084.2	253.5	74	158.2	330	355	740	12.83	2737.3
01/13/14	6,710.4	279.6	0	0.0	--	--	--		
01/31/14	6,711.6	279.7	47	174.0	330	342	37	6.08	2896.2
02/06/14	6,854.2	285.6	47	173.4	330	343	--		
02/07/14	6,877.1	286.5	47	174.9	330	342	110	2.02	2910.1
03/19/14	7,416.7	309.0	48	174.0	330	340	<10	0.94	2931.2
04/18/14	7,919.8	330.0	48	173.1	330	340	<10	0.08	2932.9
05/19/14	8,420.1	350.8	47	172.8	330	345	<10	0.08	2934.5
06/16/14	9,088.9	378.7	50	172.2	330	345	<10	0.08	2936.7
07/09/14	9,571.0	398.8	50	169.8	330	344	<10	0.08	2938.2
08/12/14	10,287.5	428.6	49	167.4	330	339	19	0.18	2943.6
09/18/14	11,168.4	465.4	48	170.1	330	341	140	1.21	2987.9
10/22/14	11,881.3	495.1	48	166.5	330	342	220	2.72	3068.8
11/17/14	12,301.8	512.6	52	175.0	330	341	63	2.17	3106.9
12/09/14	12,817.3	534.1	52	171.5	330	340	15	0.61	3119.9
01/13/15	13,215.2	550.6	54	174.6	330	340	<10	0.16	3122.5

Table 1-2
Vapor Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
02/18/15	13,815.2	575.6	57	40.7	CATOX OFF		<10	0.05	3123.7
03/11/15	14,305.9	596.1	59	50.9	CATOX OFF		<10	0.02	3124.1
04/22/15	15,074.4	628.1	67	165.6	CATOX OFF		<10	0.05	3125.7
05/19/15	15,691.6	653.8	60	163.4	CATOX OFF		<10	0.07	3127.6
06/08/15	16,171.3	673.8	60	163.7	CATOX OFF		<10	0.07	3129.0
07/28/15	17,221.9	717.6	60	163.5	CATOX OFF		14	0.14	3135.2
08/20/15	17,775.8	740.7	58	164.7	CATOX OFF		43	0.42	3144.9
09/21/15	18,425.5	767.7	60	164.8	CATOX OFF		120	1.21	3177.5
10/28/15	19147.1	797.8	60	165.9	CATOX OFF		190	2.30	3246.8
11/23/15	19762.9	823.5	65	168.9	CATOX OFF		81	2.04	3299.1
12/21/15	20257.1	844.0	65	160.1	CATOX OFF		<10	0.64	3312.2
01/20/16	20978.4	874.1	79	164.8	CATOX OFF		<10	0.07	3314.4
02/23/16	21434.2	893.1	70	164.0	CATOX OFF		11	0.12	3316.7
03/21/16	22073.5	919.7	61	164.2	CATOX OFF		<10	0.12	3319.8
PSCAA NOC- 10384 Conditions				**max. 350**	**min. 240**	**max. 620**			

NOTES:

[1]Air flow rates calculated using an averaging flow sensor (Dwyer Model DS). Air flow rates between 2/7/14 and 12/09/14 calculated from data. Air flow rates from 1/12/15 forward calculated from averaging flow sensor.

[2]Influent vapor samples collected from SVE sample port prior to air treatment.

[3]Daily mass removal rate (lb/day) = average concentration (mg/m^3) x average flow rate (scfm) x conversion (8.99x10-5 lb-m^3-min/mg-ft^3-day).

[4]Cumulative mass of benzene removed (lb) = daily removal rate (lb/day) x time in operation (days) + previous cumulative total (lb).

-- = not analyzed, measured, or calculated
GRPH = gasoline-range petroleum hydrocarbons
iow = inches of water
lb = pounds
lb/day = pounds per day
mg/m^3 = milligrams per cubic meter
NOC - Notice of Construction
PSCAA = Puget Sound Clean Air Agency
scfm = standard cubic feet per minute
SVE = soil vapor extraction

HydroCon

Table 1-3
Liquid Stream - System Performance Monitoring Data
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
10/02/12	636	0	0		--	--
10/10/12	5,761	5,125	641	18,000	0.770	0.77
10/17/12	14,898	9,137	1,305	--		
10/24/12	21,888	6,990	999	--		
11/07/12	31,362	9,473	677	6,100	*2.574*	*3.34*
12/05/12	35,205	3,843	137	14,000	0.322	3.67
01/08/13	38,077	2,872	84	19,000	0.395	4.06
01/17/13	40,712	2,636	293			
02/05/13	41,363	651	34	8,200	0.373	4.43
03/04/13	42,861	1,497	55	19,000	*0.170*	*4.60*
04/03/13	44,190	1,329	44	11,000	*0.166*	*4.77*
05/08/13	46,980	2,790	80	20,000	*0.361*	*5.13*
06/05/13	47,777	797	28	3,200	*0.077*	*5.21*
07/02/13	63,870	16,093	596	17,000	*1.356*	*6.57*
08/06/13	89,988	26,118	746	<100	*1.858*	*8.42*
08/09/13	95,563	5,575	1,858	--	--	
09/04/13	131,317	35,754	1,375	2,400	0.4	8.79
10/07/13	174,445	43,128	1,307	1,100	0.6	9.42
10/14/13	184,152	9,707	1,387	--	--	
10/15/13	184,982	831	831	--	--	
10/16/13	185,955	973	973	--	--	
11/06/13	187,065	1,110	53	3,800	0.3	9.68
11/07/13	188,072	1,007	1,007	--	--	
12/03/13	207,142	19,070	733	240	0.34	10.01
01/13/14	208,154	1,012	25	--	--	
01/31/14	208,308	155	9	6,600	0.03	10.05
02/06/14	214,154	5,846	974	--	--	
02/07/14	214,841	686	686	760	0.20	10.25
03/19/14	238,300	23,460	586	6,100	0.67	10.92
04/18/14	273,331	35,031	1,168	4,300	1.52	12.44
05/19/14	303,504	30,173	973	2,700	0.88	13.32
06/16/14	339,382	35,878	1,281	3,500	0.93	14.25
07/09/14	367,276	27,894	1,213	2,500	0.70	14.94
08/12/14	399,903	32,627	960	180	0.36	15.31
09/18/14	441,162	41,259	1,115	<100	0.03	*15.34*
10/22/14	464,280	23,118	680	<100	*0.010*	*15.35*
11/17/14	478,016	13,736	528	<100	*0.006*	*15.36*
12/09/14	494,517	16,501	750	<100	*0.007*	*15.37*
01/13/15	516,310	21,793	623	1,500	*0.141*	*15.51*
02/18/15	559,454	43,144	1,198	150	*0.297*	*15.80*
03/11/15	597,806	38,352	1,826	<100	*0.032*	*15.84*
04/23/15	658,574	60,768	1,413	<100	*0.025*	*15.86*
05/19/15	702,217	43,643	1,679	<100	*0.018*	*15.88*
06/08/15	731,661	29,444	1,472	180	*0.028*	*15.91*
07/28/15	786,086	54,425	1,089	<100	*0.023*	*15.93*
08/20/15	805,176	19,090	830	<100	*0.008*	*15.94*
09/21/15	830,183	25,007	781	<100	*0.010*	*15.95*
10/28/15	847,836	17,652	477	<100	*0.007*	*15.96*
11/23/15	857,202	9,366	360	<100	*0.004*	*15.96*
12/21/15	867,041	9,839	351	130	*0.007*	*15.97*
01/20/16	895,118	28,077	936	250	*0.045*	*16.01*
02/23/16	927,146	32,028	942	300	*0.073*	*16.09*
03/21/16	996,550	69,404	2,571	<100	*0.101*	*16.19*
State Waste Discharge Permit ST0007384 Limits			**7,000**			

NOTES:
Sample Analysis conducted by Friedman & Bruya, Inc.
[1]Influent samples collected prior to treatment with liquid-phase granular activated carbon.
[2] Mass removal weight (lb) = gallons recovered x concentration (µg/L)
x conversion factor (8.344E-9 lb-L/µg-gallon).
[3]Nondetectable influent concentrations assumed to be 50% of the laboratory's lower reporting limit.
[4]Cumulative mass (lb) = mass removal between sampling visits (lb) + previous cumulative total (lb).
Totalizer data not recorded on 8/20/15; value is estimated based on average daily flow

DEFINITIONS:
-- = not analyzed, measured, or calculated
< = not detected at the concentration indicated
µg/L = micrograms per liter
GRPH = gasoline-range petroleum hydrocarbons
lb = pound

Table 1-4
Vapor Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 1VINF)					Effluent Vapor Samples[2] (Sample ID: 1VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	GRPH DRE[3]
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	%
10/2/2012	1,600	2	10	5.5	26	<10	<0.1	<0.1	<0.1	<0.3	99.7
10/10/2012	2,600	2.3	13	8.7	37	<10	<0.1	0.2	<0.1	<0.3	99.8
10/17/2012	3,400	3	9.4	11	42	<10	<0.1	<0.1	<0.1	<0.3	99.9
10/24/2012	2,400	1.5	7	9.4	39	<10	<0.1	<0.1	<0.1	<0.3	99.8
11/7/2012	1,700	<0.5	7	7.3	37	<10	<0.1	<0.1	<0.1	<0.3	99.7
12/5/2012	150	<0.1	0.23	<0.1	3.5	<10	<0.1	<0.1	<0.1	<0.3	96.7
1/8/2013	35	<0.1	0.19	0.18	0.86	<10	<0.1	0.16	<0.1	<0.3	85.7
2/5/2013	53	<0.1	0.3	0.13	0.78	<10	<0.1	<0.1	<0.1	<0.3	90.6
3/4/2013	<10	<0.1	0.1	0.1	0.69	<10	<0.1	<0.1	<0.1	<0.3	-
4/3/2013	14	<0.1	0.18	0.14	0.9	<10	<0.1	<0.1	<0.1	<0.3	64.3
5/8/2013	22	<0.1	0.23	<0.1	0.35	<10	<0.1	<0.1	<0.1	<0.3	77.3
6/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/2/2013	26	<0.1	0.24	<0.1	0.48	<10	<0.1	<0.1	<0.1	<0.3	80.8
8/6/2013	31	<0.1	0.21	0.14	0.79	<10	<0.1	<0.1	<0.1	<0.3	83.9
9/4/2013	580	<0.1	5	<0.1	22	<10	<0.1	<0.1	<0.1	<0.3	99.1
10/7/2013	710	<0.1	5.7	<0.1	22	<10	<0.1	<0.1	<0.1	<0.3	99.3
11/6/2013	240	<0.1	1.6	<0.1	6.4	<10	<0.1	<0.1	<0.1	<0.3	97.9
12/3/2013	740	<0.1	6.3	<0.1	19	<10	<0.1	<0.1	<0.1	<0.3	99.3
1/31/2014	37	<0.1	0.4	<0.1	0.75	<10	<0.1	<0.1	<0.1	<0.3	86.5
2/7/2014	110	<0.1	0.77	<0.1	2.2	<10	<0.1	<0.1	<0.1	<0.3	95.5
3/19/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
4/18/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
6/16/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/9/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
8/11/2014	19	<0.1	0.12	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	73.7
9/17/2014	140	<0.1	0.23	0.54	1.6	<10	<0.1	<0.1	<0.1	<0.3	96.4
10/22/2014	220	<0.1	3	<0.1	3.3	<10	<0.1	<0.1	<0.1	<0.3	97.7
11/18/2014	63	<0.1	0.57	<0.1	0.72	<10	<0.1	<0.1	<0.1	<0.3	92.1
12/9/2014	15	<0.1	0.29	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	66.7
1/13/2015	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
2/18/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
3/11/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
4/23/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-

Table 1-4
Vapor Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 1VINF)					Effluent Vapor Samples[2] (Sample ID: 1VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	GRPH DRE[3]
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	%
6/8/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
7/28/2015	CATOX OFF - SAMPLED AT STACK					14	<0.1	<0.1	<0.1	<0.3	-
8/20/2015	CATOX OFF - SAMPLED AT STACK					43	<0.1	0.42	0.13	0.34	-
9/21/2015	CATOX OFF - SAMPLED AT STACK					120	<0.1	1.1	0.36	1	-
10/28/2015	CATOX OFF - SAMPLED AT STACK					190	<0.1	1.4	0.68	1.4	-
11/23/2015	CATOX OFF - SAMPLED AT STACK					81	<0.1	<0.1	0.21	0.93	-
12/21/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
1/20/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
1/29/2016	CATOX OFF - SAMPLED AT STACK					20	<0.1	0.16	<0.1	0.77	-
2/3/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	
2/23/2016	CATOX OFF - SAMPLED AT STACK					11	<0.1	<0.1	<0.1	<0.3	-
3/21/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	-
PSCAA NOC-10384 Restrictions and Conditions						max 148.2[3]	1.6[4]	NS	NS	NS	95%[3][5]

Notes:

Red denotes concentration exceeds PSCAA Conditions

Samples analyzed by Fremont Analytical of Seattle, Washington.

[1] Influent vapor samples collected from SVE port on the pressure side of the blower

[2] Effluent vapor samples collected from the sample port on the effluent stack

[3] DRE shall be at least 95% unless the effluent GRPH concentration does not exceed 50 ppmv (or 148.2 mg/m ^{3} at standard temperature and pressure assuming an average molecular weight for GRPH of 72.5)

[4] The PSCAA NOC threshold concentration for uncontrolled benzene emission is 0.5 ppmv, which is equivalent to 1.6 mg/m ^{3} at standard temperature and pressure see below for conversion formula

[5] DRE is calculated by [GRPH inf-GRPH eff]/[GRPH inf] x 100. For results below detection limit, 50% of the value of the detection limit is used in the calculation.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

mg/m^3 = milligrams per cubic meter

CATOX - catalytic oxidizer

DRE = destruction removal efficiency

GRPH = gasoline-range petroleum hydrocarbons

NOC = Notice of Construction

NWTPH = Northwest Total Petroleum Hydrocarbon

ppmv = parts per million by volume

PSCAA = Puget Sound Clean Air Agency

SVE = soil vapor extraction

Formula to convert concentration in mg/m^3 to ppmv =

(24.45 x mg/m^3)/gram molecular weight of substance

where mg/m^3 = concentration of substance in milligrams per cubic meter

formula assumes standard temperature and pressure.

Source: ACGIH. 2015. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs).

Table 1-5
Liquid Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 1WINF)					Groundwater Midstream Sample[2] (Sample ID: 1GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 1WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Total BTEX	Lead	pH
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pH
10/10/2012	18,000	25	370	280	4,500	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.59
11/7/2012	6,100	8.4	99	24	1,200	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.61
12/5/2012	14,000	12	250	200	2,700	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	19.4	7.19
1/8/2013	19,000	60	400	520	3,600	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.71
2/5/2013	8,200	11	83	61	1,200	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.86
3/4/2013	19,000	20	200	460	3,900	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.88
4/3/2013	11,000	27	83	<40	2,500	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.68
5/8/2013	20,000	11	450	<10	3,400	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.06
6/5/2013	3,200	4	35	<1	350	<100	<1	<1	<1	<3	<100	<1	<1	<1	3.1	<6	3.33	6.8
7/2/2013	17,000	9.9	290	190	3,200	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.74
8/6/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.89
9/4/2013	2,400	1.1	18	<1	230	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.41
10/7/2013	1,100	1.1	12	<1	86	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.89
11/6/2013	3,800	27	150	26	810	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.94
12/3/2013	240	<1	3.7	<1	19	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	7.05	6.98
1/31/2014	6,600	19	370	<1	1,000	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	-
2/7/2014	760	1	6.6	<1	54	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.71
3/19/2014	6,100	2.9	160	<1	1,100	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	8.49
4/18/2014	4,300	<1	100	<1	650	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.65
5/19/2014	2,700	2.5	62	<1	310	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.9
6/16/2014	3,500	2	86	<1	520	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.04	6.59
7/9/2014	2,500	1.7	358	<1	350	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.2
8/12/2014	180	<1	1.5	<1	15	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.29
9/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25
10/22/2014	<100	<1	1.4	<1	4	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.19
11/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.56
12/9/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	13.3	7.29
1/13/2015	1,500	<1	35	<1	270	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.37
2/18/2015	150	<1	3.3	<1	25	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25
3/11/2015	<100	<1	<1	<1	8.5	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.15
4/23/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25
5/19/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.38

Table 1-5
Liquid Stream Analytical Results
Unit 1 - TOC Property
TOC Holdings Co. Facility No. 01-176
24205 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 1WINF)					Groundwater Midstream Sample[2] (Sample ID: 1GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 1WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
6/8/2015	180	<1	2.8	<1	28	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	5.64	6.5
7/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	6.3
8/20/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	6.5
9/21/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		6.7
10/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	4.99	6.8
11/23/2015	<100	<1	<1	1.1	<3						<100	<1	<1	<1	<3	<6		7.0 [4]
12/21/2015	130	<1	5.7	1.8	25	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
1/20/2016	250	<1	3.7	<1	39						<100	<1	<1	<1	<3	<6		7.0
2/23/2016	300	<1	2.8	2	48						<100	<1	<1	<1	<3	<6		7.0
3/21/2016	<100	<1	<1	1.1	4.2						<100	<1	<1	<1	<3	<6	3.04	7.0
WA Discharge Permit ST0007384 Effluent Limits											1,000	5	NS	NS	NS	100	1,090	6 to 10

Notes:

Red denotes measurement falls outside of the range stipulated in the discharge permit.

Samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington.

[1]Three GAC vessels are operated in series mode. 1WINF sample is collected prior to first GAC vessel in series

[2] 1GAC1 sample is collected downstream of GAC-1 and upstream of the GAC-2 vessels in series

[3] Effluent sample collected downstream of third GAC vessel in series, which represents the quality of water discharged to the POTW

[4] pH measured on December 3, 2015

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GAC = granular activated carbon

NS = no standard

NWTPH = Northwest Total Petroleum Hydrocarbon

POTW = publicly-owned treatment works

Table 2-1
Summary of System Performance
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Reporting Period			Days In Reporting Period	Days In Operation	System Run Time (%)	Volume of Treated Groundwater Discharged (gallons)	Average Daily Groundwater Recovery Rate (gallons per day)	GRPH Aqueous-Phase Removal (lb)	GRPH Vapor-Phase Removal (lb)
Start Date	End Date								
10/03/12	12/05/12		63	51.7	82%	12,461	197.8	0.01	671.8
12/05/12	03/04/13		89	52.5	59%	5,900	66.3	0.002	12.8
03/04/13	06/05/13		93	67.1	72%	106,670	1,147	0.356	7.4
06/05/13	09/04/13		91	82.2	90%	123,303	1,355	0.157	9.3
09/04/13	12/03/13		90	89.9	100%	89,204	991.2	0.037	163.5
12/03/13	01/13/14		41	41.1	100%	29,087	709	0.012	73.0
01/13/14	03/18/14		64	41.8	65%	29,578	462.2	0.012	49.7
03/18/14	06/16/14		90	85.4	95%	167,292	1,858.8	0.070	9.7
06/16/14	09/18/14		94	90.7	97%	120,848	1,285.6	0.050	6.2
09/18/14	12/09/14		82	53.9	66%	19,301	235.4	0.008	3.3
12/09/14	03/11/15	[1]	92	43.8	48%	39,860	433.3	0.017	7.1
03/11/15	06/08/15	[1]	89	81.1	91%	160,177	1,799.7	0.067	2.4
06/08/15	09/21/15		105	93.9	89%	84,900	808.6	0.035	6.8
09/21/15	12/21/15		91	71.7	79%	18,651	205.0	0.008	10.3
12/21/15	03/21/16		91	75.8	83%	69,853	767.6	0.029	15.7
Cumulative Total or Lifetime Average			**1,265**	**1,023**	**81%**	**1,077,083**	**821.5**	**0.87**	**1,049.0**

NOTES:

= data for current reporting period

[1] An air sample was not collected during the March 11, 2015 site visit because the blower was not operational. Removal is estimated based on extrapolation to April vapor sample

% = percent
GRPH = gasoline-range petroleum hydrocarbons
lb = pounds
SVE = soil vapor extraction

Table 2-2
Vapor Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent/Effluent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
10/03/12	15.6	0.7	68	149.1	330	350	340	4.56	0.000
10/10/12	73.7	3.1	86	134.1	330	363	1,300	18.71	57.5
10/17/12	242.0	10.1	76	135.8	330	376	1,300	23.66	223.4
10/24/12	410.7	17.1	72	137.2	330	355	1,100	21.47	374.3
10/25/12	434.7	18.1	73	139.2	330	354	--	--	--
11/06/12	722.8	30.1	74	137.8	330	358	--	--	
11/07/12	748.2	31.2	74	138.6	330	352	660	15.00	585.3
12/05/12	1,257.4	52.4	74	124.3	330	338	15	4.08	671.8
12/06/12	1,266.4	52.8	75	135.6	--	--	--	--	
01/08/13	1,989.7	82.9	27	164.7	330	344	15	0.29	680.7
01/09/13	2,012.1	83.8	32	163.5	330	336	--	--	--
01/17/13	2,037.9	84.9	27	166.5	331	336	--	--	--
02/05/13	2,490.2	103.8	33	159.5	330	335	<10	0.18	684.5
02/06/13	2,514.5	104.8	38	157.5	330	335	--	--	--
03/04/13	2,517.2	104.9	31	162.9	330	335	<10	0.11	684.6
03/12/13	2,705.4	112.7	32	161.7	330	335	--	--	--
04/03/13	3,230.7	134.6	33	166.8	330	335	<10	0.11	687.9
05/08/13	3,454.7	143.9	33	164.5	330	338	<10	0.11	688.9
06/05/13	4,127.1	172.0	36	158.9	330	335	<10	0.11	692.0
06/19/13	4,438.7	184.9	34	166.7	330	335	--	--	--
07/02/13	4,746.1	197.8	32	164.2	330	335	<10	0.11	694.8
08/06/13	5,403.6	225.2	10	175.5	330	335	<10	0.11	697.9
08/09/13	5,475.4	228.1	20	168.6	330	335	--	--	--
09/04/13	6,098.7	254.1	20	170.1	330	335	<10	0.12	701.3
10/07/13	6,890.0	287.1	34	163.9	330	336	41	0.65	722.9
10/14/13	7,062.9	294.3	35	165.2	330	336	--	--	--
10/15/13	7,088.0	295.3	74	146.5	330	342	--	--	--
10/16/13	7,111.3	296.3	67	147.6	330	340	--	--	--
11/06/13	7,610.8	317.1	73	150.7	330	338	140	2.27	791.0
11/07/13	7,635.3	318.1	65	148.2	330	338	--	--	--
12/03/13	8,257.0	344.0	65	154.2	330	337	130	2.74	864.8
12/04/13	8,287.9	345.3	66	154.2	330	337	--	--	--
01/13/14	9,242.4	385.1	71	147.8	330	336	66	1.78	937.8
01/23/14	9,485.7	395.2	69	--	--	--	--	--	--
01/31/14	9,675.8	403.2	68	147.3	330	335	--	--	--
02/07/14	9,694.4	403.9	74	144.7	330	335	82	1.51	966.3
03/18/14	10,246.4	--	74	--	330	334	26	0.87	987.5
04/17/14	10,859.0	452.5	68	146.6	330	336	<10	0.23	993.2
05/20/14	11,645.2	485.2	72	146.9	330	338	<10	0.07	995.4

Table 2-2
Vapor Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent/Effluent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
06/16/14	12,296.4	512.4	62	152.4	330	338	<10	0.07	997.2
07/10/14	12,799.7	533.3	62	150.2	330	338	<10	0.07	998.6
08/12/14	13,588.2	566.2	61	149.4	330	338	<10	0.07	1000.9
09/18/14	14,474.1	603.1	48	158.3	CATOX OFF		<10	0.07	1003.4
10/22/14	14,721.8	613.4	45	72.7	CATOX OFF		<10	0.05	1004.0
11/17/14	15,242.7	635.1	47	166.6	CATOX OFF		<10	0.05	1005.1
12/09/14	15,767.5	657.0	49	156.5	CATOX OFF		<10	0.07	1006.7
01/13/15	16,495.6	687.3	56	156.0	CATOX OFF		<10	0.07	1008.8
02/18/15	16,818.0	700.8	--	--	BLOWER DOWN		--	--	--
03/11/15	16,818.0	700.8	--	--			--	--	--
04/22/15	17,642.7	735.1	59	149.5	CATOX OFF		<10	0.10	1013.8
05/19/15	18,284.4	761.9	57	159.5	CATOX OFF		<10	0.03	1014.7
06/08/15	18,764.9	781.9	65	158.8	CATOX OFF		<10	0.07	1016.1
07/28/15	19,814.3	825.6	50	163.9	CATOX OFF		<10	0.07	1019.3
08/20/15	20,367.2	848.6	54	161.1	CATOX OFF		<10	0.07	1021.0
09/21/15	21,018.3	875.8	56	162.4	CATOX OFF		<10	0.07	1022.9
10/28/15	21,756.8	906.5	53	162.4	CATOX OFF		<10	0.07	1025.2
11/23/15	22,374.4	932.3	55	160.7	CATOX OFF		<10	0.07	1027.1
12/21/15	22,738.4	947.4	51	160.1	CATOX OFF		52	0.41	1033.3
01/20/16	23,458.8	977.5	53	161.1	CATOX OFF		<10	0.41	1045.6
02/23/16	23,915.0	996.5	50	162.4	CATOX OFF		<10	0.07	1047.0
03/21/16	24,557.2	1023.2	45	158.8	CATOX OFF		<10	0.07	1049.0
PSCAA NOC- 10384 Conditions				**max. 350**	**min. 240**	**max. 620**			

NOTES:

[1]Air flow rates calculated using an averaging flow sensor (Dwyer Model DS). Air flow rates between 2/7/14 and 12/09/14 calculated from data. Air flow rates from 1/12/15 forward calculated from averaging flow sensor.

[2]Were termed "influent" vapor samples and were collected from SVE sample port prior to air treatment while CATOX was still operating prior to September 2014. Were termed "effluent" samples after CATOX was shut down starting in September 2014

[3]Daily mass removal rate (lb/day) = average concentration (mg/m^3) x average flow rate (scfm) x conversion (8.99x10-5 lb-m^3-min/mg-ft^3-day).

[4]Cumulative mass removed (lb) = daily removal rate (lb/day) x time in operation (days) + previous cumulative total (lb).

-- = not analyzed, measured, or calculated
GRPH = gasoline-range petroleum hydrocarbons
iow = inches of water
lb = pounds
lb/day = pounds per day
mg/m^3 = milligrams per cubic meter
NOC - Notice of Construction
PSCAA = Puget Sound Clean Air Agency
scfm = standard cubic feet per minute
SVE = soil vapor extraction

HydroCon

Table 2-3
Liquid Stream - System Performance Monitoring Data
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
10/03/12	397.8	0	0	--	--	--
10/10/12	562.6	165	24	<100	0.000	0.000
10/17/12	5,392.6	4,830	690	--	--	--
10/24/12	8,170.9	2,778	397	--	--	--
10/25/12	8,580.4	410	410	--	--	--
11/06/12	10,624.2	2,044	170	--	--	--
11/07/12	10,630.5	6	6	<100	0.004	0.004
12/05/12	12,858.4	2,228	80	<100	0.001	0.005
12/06/12	14,221.5	1,363	1,363	--	--	--
01/08/13	18,643.2	4,422	134	<100	0.002	0.008
01/09/13	18,651.6	8	8	--	--	--
01/17/13	18,753.9	102	13	--	--	--
02/05/13	18,753.9	0	0	<100	0.000	0.008
03/12/13	18,758.0	4	0	--	--	--
03/13/13	18,758.0	0	0	1,100	0.000	0.008
04/03/13	24,667.4	5,909	281	740	0.045	0.053
05/08/13	90,733.6	66,066	1,888	<100	0.218	0.27
06/05/13	125,427.8	34,694	1,239	590	0.093	0.36
06/19/13	131,990.5	6,563	469	--	--	--
07/02/13	172,454.5	40,464	3,113	<100	0.126	0.49
08/06/13	223,496.3	51,042	1,458	<100	0.021	0.51
08/09/13	226,651.9	3,156	1,052	--	--	
09/04/13	248,730.9	22,079	849	<100	0.011	0.52
10/07/13	269,136.3	20,405	618	<100	0.009	0.53
10/14/13	273,636.3	4,500	643	--	--	--
10/15/13	275,837.1	2,201	2,201	--	--	--
10/16/13	277,480.5	1,643	1,643	--	--	--
11/06/13	308,993.4	31,513	1,501	<100	0.017	0.55
11/07/13	310,249.2	1,256	1,256	--	--	--
12/03/13	337,935.2	27,686	1,065	<100	0.012	0.56
12/04/13	339,243.0	1,308	1,308	--	--	--
01/13/14	367,022.0	27,779	694	<100	0.012	0.57
01/31/14	376,637.4	9,615	534	--	--	--
02/07/14	376,875.7	238	34	<100	0.004	0.57
03/18/14	396,600.0	19,724	506	<100	0.008	0.58
04/17/14	424,646.0	28,046	935	<100	0.012	0.59
05/20/14	497,115.0	72,469	2,196	<100	0.030	0.62
06/16/14	563,892.0	66,777	2,473	<100	0.028	0.65
07/09/14	603,616.0	39,724	1,727	<100	0.017	0.67
08/12/14	652,922.0	49,306	1,450	<100	0.021	0.69
09/17/14	684,740.0	31,818	884	<100	0.013	0.70
10/22/14	687,370.0	2,630	75	<100	0.001	0.70
11/17/14	695,157.0	7,787	300	<100	0.003	0.71
12/09/14	704,041.0	8,884	404	<100	0.004	0.71
01/13/15	725,601.0	21,560	616	<100	0.009	0.72
02/18/15	736,017.0	10,416	289	<100	0.004	0.72
03/11/15	743,901.0	7,884	375	<100	0.003	0.73
04/23/15	816,311.0	72,410	1,684	<100	0.030	0.76
05/19/15	867,016.0	50,705	1,950	<100	0.021	0.78
06/08/15	904,078.0	37,062	1,853	<100	0.015	0.79
07/28/15	958,806.5	54,729	1,095	<100	0.023	0.82
08/20/15	975,527.1	16,721	727	<100	0.007	0.82
09/21/15	988,977.5	13,450	420	<100	0.006	0.83
10/28/15	998,059.9	9,082	245	<100	0.004	0.83
11/23/15	1,004,157.7	6,098	235	<100	0.003	0.84
12/21/15	1,007,628.0	3,470	124	<100	0.001	0.84
01/20/16	1,022,611.4	14,983	499	<100	0.006	0.84
02/23/16	1,039,777.1	17,166	505	<100	0.007	0.85
03/21/16	1,077,480.5	37,703	1,396	<100	0.016	0.87
State Waste Discharge Permit ST0007384 Limits			**7,000**			

NOTES:
Sample Analysis conducted by Friedman & Bruya, Inc.

[1]Influent samples collected prior to treatment with liquid-phase granular activated carbon.
[2] Mass removal weight (lb) = gallons recovered x concentration (µg/L)
x conversion factor (8.344E-9 lb-L/µg-gallon).
[3]Nondetectable influent concentrations assumed to be 50% of the laboratory's lower reporting limit.
[4]Cumulative mass (lb) = mass removal between sampling visits (lb) + previous cumulative total (lb).

DEFINITIONS:
-- = not analyzed, measured, or calculated
< = not detected at the concentration indicated
µg/L = micrograms per liter
GRPH = gasoline-range petroleum hydrocarbons
lb = pound

Table 2-4
Vapor Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 2VINF)					Effluent Vapor Samples[2] (Sample ID: 2VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	GRPH DRE[3]
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	%
10/3/2012	340	0.44	1.6	0.96	1.7	<10	<0.1	0.17	<0.1	<0.3	98.5
10/10/2012	1,300	0.77	<0.5	4	9.6	<10	<0.1	0.21	<0.1	<0.3	99.6
10/17/2012	1,300	0.55	<0.5	3.7	7.9	<10	<0.1	<0.1	<0.1	<0.3	99.6
10/24/2012	1,100	0.5	3.1	<0.1	11	<10	<0.1	<0.1	<0.1	<0.3	99.5
11/7/2012	660	<0.1	2.7	<0.1	7.1	<10	<0.1	<0.1	<0.1	<0.3	99.2
12/5/2012	15	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	66.7
1/8/2013	15	<0.1	<0.1	<0.1	<0.3	<10	<0.1	0.1	<0.1	<0.3	66.7
2/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
3/4/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
4/3/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
5/8/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
6/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
7/2/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
8/6/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
9/4/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
10/7/2013	41	<0.1	0.19	<0.1	-	<10	<0.1	<0.1	<0.1	<0.3	87.8
11/6/2013	140	<0.1	0.52	<0.1	1.4	<10	<0.1	<0.1	<0.1	<0.3	96.4
12/3/2013	130	<0.1	0.44	0.73	1.3	<10	<0.1	<0.1	<0.1	<0.3	96.2
1/13/2014	66	<0.1	0.31	0.38	0.51	<10	<0.1	<0.1	<0.1	<0.3	92.4
2/7/2014	82	<0.1	<0.1	0.73	0.65	<10	<0.1	<0.1	<0.1	<0.3	93.9
3/18/2014	26	<0.1	<0.1	0.2	<0.3	<10	<0.1	<0.1	0.2	<0.3	80.8
4/17/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
5/20/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
6/16/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
7/9/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
8/11/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	--
9/17/2014	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
10/22/2014	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
11/18/2014	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
12/9/2014	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
1/13/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
2/18/2015	BLOWER DOWN - NO SAMPLE					-	-	-	-	-	--
3/11/2015						-	-	-	-	-	--
4/23/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
5/19/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--

Table 2-4
Vapor Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 2VINF)					Effluent Vapor Samples[2] (Sample ID: 2VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range mg/m3	Benzene mg/m3	Toluene mg/m3	Ethylbenzene mg/m3	Xylene Total mg/m3	Gasoline Range mg/m3	Benzene mg/m3	Toluene mg/m3	Ethylbenzene mg/m3	Xylene Total mg/m3	GRPH DRE[3] %
6/8/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
7/28/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
8/20/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
9/21/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
10/28/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
11/23/2015	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
12/21/2015	CATOX OFF - SAMPLED AT STACK					52	<0.1	<0.1	0.45	0.48	--
1/20/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
2/23/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
3/21/2016	CATOX OFF - SAMPLED AT STACK					<10	<0.1	<0.1	<0.1	<0.3	--
PSCAA NOC-10384 Restrictions and Conditions						max 148.2[3]	1.6[4]	NS	NS	NS	95%[3][5]

Notes:

Red denotes concentration exceeds PSCAA Conditions

Samples analyzed by Fremont Analytical of Seattle, Washington.

[1] Influent vapor samples collected from SVE port on the pressure side of the blower

[2] Effluent vapor samples collected from the sample port on the effluent stack

[3] DRE shall be at least 95% unless the effluent GRPH concentration does not exceed 50 ppmv (or 148.2 mg/m ^{3} at standard temperature and pressure assuming an average molecular weight for GRPH of 72.5)

[4] The PSCAA NOC threshold concentration for uncontrolled benzene emission is 0.5 ppmv, which is equivalent to 1.6 mg/m ^{3} at standard temperature and pressure see below for conversion formula

[5] DRE is calculated by [GRPH inf-GRPH eff]/[GRPH inf] x 100. For results below detection limit, 50% of the value of the detection limit is used in the calculation.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

mg/m^3 = milligrams per cubic meter

CATOX - catalytic oxidizer

DRE = destruction removal efficiency

GRPH = gasoline-range petroleum hydrocarbons

NOC = Notice of Construction

NWTPH = Northwest Total Petroleum Hydrocarbon

ppmv = parts per million by volume

PSCAA = Puget Sound Clean Air Agency

SVE = soil vapor extraction

Formula to convert concentration in mg/m ^{3} to ppmv =

(24.45 x mg/m^3)/gram molecular weight of substance

where mg/m^3 = concentration of substance in milligrams per cubic meter

formula assumes standard temperature and pressure.

Source: ACGIH. 2015. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs).

Table 2-5
Liquid Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 2WINF)					Groundwater Midstream Sample[2] (Sample ID: 2GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 2WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
10/10/2012	<100	<1	<1	<1	3.1	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.59
11/7/2012	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.71
12/5/2012	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	76.5	8.05
1/8/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.29
2/5/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.31
3/13/2013	1,100	2.9	<1	<1	27	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	7.59
4/3/2013	740	<1	<1	<1	7.9	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.08
5/8/2013	<100	<1	<1	<1	5.1	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.51
6/5/2013	590	2	1.8	14	120	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	4.51	6.68
7/2/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.97
8/6/2013	<100	<1	<1	<1	5.2	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.1
9/4/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.96
10/7/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.17
11/6/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.92
12/3/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.59	7.04
1/13/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.13
2/7/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.45
3/18/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.86
4/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.87
5/20/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.18
6/16/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	6.91
7/9/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.82
8/12/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.12
9/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.04
10/22/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	5.92
11/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.83
12/9/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	7.29
1/13/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.45
2/18/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.07
3/11/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.26
4/23/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.97
5/19/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.25

Table 2-5
Liquid Stream Analytical Results
Unit 2 - TOC Farmasonis Property
TOC Holdings Co. Facility No. 01-176
24225 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 2WINF)					Groundwater Midstream Sample[2] (Sample ID: 2GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 2WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
6/8/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	7
7/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	6.5
8/20/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	7.0
9/21/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	7.0
10/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
11/23/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6		7.0[4]
12/21/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
1/20/2016	<100	<1	<1	<1	<3						<100	<1	<1	<1	<3	<6		7.0
2/23/2016	<100	<1	<1	<1	<3						<100	<1	<1	<1	<3	<6		7.0
3/21/2016	<100	<1	<1	<1	<3						<100	<1	<1	<1	<3	<6	<1	7.0
WA Discharge Permit ST0007384 Effluent Limits											1,000	5	NS	NS	NS	100	1,090	6 to 10

Notes:

Red denotes measurement falls outside of the range stipulated in the discharge permit.

Samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington.

[1] Three GAC vessels are operated in series mode. 2WINF sample is collected prior to first GAC vessel in series

[2] 2GAC1 sample is collected downstream of GAC-1 and upstream of the GAC-2 vessels in series

[3] Effluent sample collected downstream of third GAC vessel in series, which represents the quality of water discharged to the POTW

[4] pH was measured on December 3, 2015 at 7.0

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GAC = granular activated carbon

NS = no standard

NWTPH = Northwest Total Petroleum Hydrocarbon

POTW = publicly-owned treatment works

Table 3-1
Summary of System Performance
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Reporting Period			Days In Reporting Period	Days In Operation	System Run Time (%)	Volume of Treated Groundwater Discharged (gallons)	Average Daily Groundwater Recovery Rate (gallons per day)	GRPH Aqueous-Phase Removal (lb)	GRPH Vapor-Phase Removal (lb)
Start Date	End Date								
10/02/12	12/05/12		64	58.6	92%	69,982	1,093	0.03	60.8
12/05/12	03/04/13		89	73.3	82%	30,269	340	0.14	40.0
03/04/13	06/05/13		93	39.6	43%	74,016	796	0.49	4.1
06/05/13	09/04/13		91	58.1	64%	68,179	749	0.73	7.0
09/04/13	12/03/13		90	75.8	84%	211,043	2,345	0.09	9.4
12/03/13	01/13/14		41	41.0	100%	40,410	986	0.02	5.2
01/13/14	03/18/14		64	58.0	91%	132,724	2,074	0.06	68.3
03/18/14	06/16/14		90	71.3	79%	206,572	2,295	0.09	6.7
06/16/14	09/18/14		94	85.2	91%	225,458	2,398	0.11	7.0
09/18/14	12/09/14		82	70.8	86%	203,925	2,487	0.09	5.9
12/09/14	03/11/15		92	70.6	77%	266,301	2,895	0.11	5.7
03/11/15	06/08/15		89	79.5	89%	221,773	2,492	0.09	5.7
06/08/15	09/21/15		105	93.9	89%	143,422	1,366	0.07	6.9
09/21/15	12/21/15		91	78.5	86%	52,970	582	0.02	5.9
12/21/15	03/21/16		91	68.8	76%	68,725	755	0.03	5.3
Cumulative Total or Lifetime Average			**1,266**	**1,023**	**81%**	**2,015,767**	**1,577**	**2.16**	**243.7**

NOTES:

= data for current reporting period

% = percent
GRPH = gasoline-range petroleum hydrocarbons
lb = pounds
SVE = soil vapor extraction

Table 3-2
Vapor Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
10/03/12	11.2	0.5	70	143.8	330	340	13	0.17	0.000
10/10/12	75.7	3.2	73	140.4	330	338	12	0.24	0.75
10/17/12	243.7	10.2	74	141.7	330	337	<10	0.14	1.7
10/24/12	411.9	17.2	74	139.9	330	338	<10	0.09	2.4
11/07/12	750.3	31.3	76	139.1	330	338	<10	0.10	3.7
12/05/12	1,417.6	59.1	76	141.9	330	340	160	2.05	60.8
01/08/13	2,231.8	93.0	83	137.3	330	337	<10	1.07	97.0
02/05/13	2,731.0	113.8	70	144.2	330	337	<10	0.09	99.0
03/04/13	3,177.5	132.4	71	144.6	330	338	<10	0.10	100.8
04/03/13	3,894.4	162.3	64	152.4	330	338	<10	0.10	103.8
05/15/13	4,059.7	169.2	27	173.5	330	301	<10	0.11	104.5
06/05/13	4,126.8	172.0	27	172.9	330	338	<10	0.12	104.8
07/02/13	4,400.3	183.3	17	171.7	330	338	<10	0.12	106.2
08/06/13	5,055.3	210.6	10	182.6	330	338	<10	0.12	109.4
09/04/13	5,520.0	230.0	13	181.6	330	338	<10	0.12	111.8
10/07/13	6,311.3	263.0	13	183.7	330	337	<10	0.12	115.9
11/06/13	7,031.9	293.0	18	185.6	330	338	<10	0.12	119.6
12/03/13	7,339.5	305.8	20	186.4	330	338	<10	0.13	121.2
01/13/14	8,323.6	346.8	24	186.6	330	337	<10	0.13	126.4
02/07/14	8,796.0	366.5	20	188.9	330	340	98	1.70	159.8
03/18/14	9,715.1	404.8	24	187	330	338	<10	0.91	194.7
04/18/14	10,370.2	432.1	27	183.5	330	340	<10	0.12	197.7
05/19/14	10,942.5	455.9	22	184.9	330	342	<10	0.08	199.7
06/16/14	11,425.1	476.0	26	181.8	330	342	<10	0.08	201.4
07/09/14	11,846.3	493.6	24	182.7	330	341	<10	0.08	202.8
08/13/14	12,607.6	525.3	26	181.7	330	337	<10	0.08	205.4
09/18/14	13,470.3	561.3	17	185.0	CATOX OFF		<10	0.08	208.4
10/22/14	14,047.2	585.3	18	185.2	CATOX OFF		<10	0.08	210.4
11/17/14	14,646.6	610.3	19	189.1	CATOX OFF		<10	0.08	212.5
12/09/14	15,168.6	632.0	19	185.6	CATOX OFF		<10	0.08	214.3
01/12/15	15,889.0	662.0	8	197.3	CATOX OFF		<10	0.09	216.9
02/18/15	16,369.4	682.1	64	160.8	CATOX OFF		<10	0.08	218.5
03/11/15	16,862.8	702.6	70	157.8	CATOX OFF		<10	0.07	220.0
04/22/15	17,667.5	736.1	67	160.9	CATOX OFF		<10	0.07	222.4

Table 3-2
Vapor Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

Date	Run Time		SVE Parameters		Catalytic Oxidizer		GRPH Removal		
	SVE Hours	Total Time in Operation	SVE-Prefilter Vacuum	Air Flow Rate[1]	Catalyst Entrance Temp.	Catalyst Exit Temp.	Influent Concentration[2]	Daily Mass Removal Rate[3]	Cumulative Mass Recovered[4]
	(hours)	(days)	(iow)	(scfm)	(°C)	(°C)	(mg/m^3)	(lb/day)	(lb)
05/19/15	18,290.8	762.1	61	160.1	CATOX OFF		<10	0.07	224.2
06/08/15	18,770.7	782.1	60	159.2	CATOX OFF		<10	0.07	225.7
07/28/15	19,821.2	825.9	52	164.2	CATOX OFF		<10	0.07	228.9
08/20/15	20,372.9	848.9	58	161.3	CATOX OFF		<10	0.07	230.5
09/21/15	21,024.8	876.0	56	164.7	CATOX OFF		<10	0.07	232.5
10/28/15	21,750.6	906.3	57	165.0	CATOX OFF		<10	0.07	234.8
11/23/15	22,368.4	932.0	56	167.9	CATOX OFF		<10	0.07	236.7
12/21/15	22,909.9	954.6	58	170.3	CATOX OFF		<10	0.08	238.4
01/20/16	23,630.2	984.6	63	166.2	CATOX OFF		<10	0.08	240.7
02/23/16	24,090.1	1003.8	49	176.6	CATOX OFF		<10	0.08	242.2
03/21/16	24,561.2	1023.4	56	171.5	CATOX OFF		<10	0.08	243.7
PSCAA NOC- 10384 Conditions				**max. 350**	**min. 240**	**max. 620**			

NOTES:

[1]Air flow rates calculated using an averaging flow sensor (Dwyer Model DS). Air flow rates between 2/7/14 and 12/09/14 calculated from data. Air flow rates from 1/12/15 forward calculated from averaging flow sensor.

[2]Influent vapor samples collected from SVE sample port prior to air treatment.

[3]Daily mass removal rate (lb/day) = average concentration (mg/m^3) x average flow rate (scfm) x conversion (8.99x10-5 lb-m^3-min/mg-ft^3-day).

[4]Cumulative mass removed (lb) = daily removal rate (lb/day) x time in operation (days) + previous cumulative total (lb).

-- = not analyzed, measured, or calculated
GRPH = gasoline-range petroleum hydrocarbons
iow = inches of water
lb = pounds
lb/day = pounds per day
mg/m^3 = milligrams per cubic meter
NOC - Notice of Construction
PSCAA = Puget Sound Clean Air Agency
scfm = standard cubic feet per minute
SVE = soil vapor extraction

HydroCon

Table 3-3
Liquid Stream - System Performance Monitoring Data
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Extracted Groundwater			Hydrocarbon Recovery - Aqueous-Phase		
				GRPH Recovery - Aqueous-Phase		
Date	Discharge Flow Totalizer (gallons)	Treated Between Visits (gallons)	Average Daily Flow Rate Between Visits (gallons per day)	Influent GRPH Concentration[1] (µg/L)	GRPH Removed[2][3] (lb)	Cumulative GRPH Removed[3][4] (lb)
10/02/12	1,178.0	0	0	--	--	--
10/10/12	5,075.9	3,898	487	<100	0.001	0.001
11/07/12	38,565.1	2,266	2,266	<100	0.014	0.014
12/05/12	71,160.2	32,595	1,164	<100	0.014	0.028
01/08/13	71,627.1	467	14	<100	0.000	0.028
02/06/13	84,429.4	12,802	441	160	0.011	0.039
03/04/13	101,429.0	17,000	654	1,700	0.132	0.171
04/03/13	119,013.8	17,585	586	<100	0.128	0.299
05/08/13	157,058.4	38,045	1,087	1,500	0.246	0.55
06/05/13	175,444.9	18,387	657	<100	0.119	0.66
07/02/13	175,445.7	1	0	--	--	--
08/06/13	181,799.7	6,354	182	2,500	0.068	0.73
09/04/13	243,623.6	61,824	2,132	<100	0.658	1.39
10/07/13	333,942.9	90,319	2,737	<100	0.038	1.43
11/06/13	420,282.1	62,248	2,829	<100	0.036	1.46
12/03/13	454,666.4	31,301	1,204	<100	0.014	1.48
01/13/14	495,076.1	36,896	922	<100	0.017	1.49
02/07/14	523,790.1	17,262	2,466	<100	0.012	1.51
03/18/14	627,800.0	104,010	2,667	<100	0.043	1.55
04/18/14	722,961.0	95,161	3,070	<100	0.040	1.59
05/19/14	791,030.0	68,069	2,196	<100	0.028	1.62
06/16/14	834,372.0	43,342	1,548	<100	0.018	1.64
07/10/14	887,218.0	52,846	2,202	130	0.040	1.68
08/13/14	964,443.0	77,225	2,271	<100	0.032	1.71
09/18/14	1,059,830.0	95,387	2,650	<100	0.040	1.75
10/22/14	1,142,560.0	82,730	2,433	<100	0.035	1.78
11/17/14	1,205,945.0	63,385	2,438	<100	0.026	1.81
12/09/14	1,263,755.0	57,810	2,628	<100	0.024	1.83
01/13/15	1,351,575.0	87,820	2,509	<100	0.037	1.87
02/18/15	1,463,712.0	112,137	3,115	<100	0.047	1.92
03/11/15	1,530,056.0	66,344	3,159	<100	0.028	1.94
04/23/15	1,631,881.0	101,825	2,368	<100	0.042	1.99
05/19/15	1,705,576.0	73,695	2,834	<100	0.031	2.02
06/08/15	1,751,829.0	46,253	2,313	<100	0.019	2.04
07/28/15	1,819,655.2	67,826	1,357	100	0.042	2.08
08/20/15	1,852,901.2	33,246	1,445	<100	0.014	2.09
09/21/15	1,895,250.5	42,349	1,323	<100	0.018	2.11
10/28/15	1,921,791.9	26,541	717	<100	0.011	2.12
11/23/15	1,944,832.0	23,040	886	<100	0.010	2.13
12/21/15	1,948,220.2	3,388	121	130	0.003	2.13
01/20/16	1,962,753.7	14,534	484	<100	0.006	2.14
02/23/16	1,981,693.5	18,940	557	<100	0.008	2.15
03/21/16	2,016,944.9	35,251	1,306	<100	0.015	2.16
State Waste Discharge Permit ST0007384 Limits			**7,000**			

NOTES:

Sample Analysis conducted by Friedman & Bruya, Inc.

[1] Influent samples collected prior to treatment with liquid-phase granular activated carbon.

[2] Mass removal weight (lb) = gallons recovered x concentration (µg/L) x conversion factor (8.344E-9 lb-L/µg-gallon).

[3] Nondetectable influent concentrations assumed to be 50% of the laboratory's lower reporting limit.

[4] Cumulative mass (lb) = mass removal between sampling visits (lb) + previous cumulative total (lb).

DEFINITIONS:

-- = not analyzed, measured, or calculated

< = not detected at the concentration indicated

µg/L = micrograms per liter

GRPH = gasoline-range petroleum hydrocarbons

lb = pound

Table 3-4
Vapor Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 3VINF)					Effluent Vapor Samples[2] (Sample ID: 3VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	GRPH DRE[3]
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	%
10/2/2012	13	<0.1	0.13	0.12	0.35	<10	<0.1	<0.1	<0.1	<0.3	61.5
10/10/2012	12	<0.1	0.1	<0.1	<0.3	<10	<0.1	0.18	<0.1	<0.3	58.3
10/17/2012	<10	<0.1	0.17	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
10/24/2012	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
11/7/2012	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
12/5/2012	160	<0.1	<0.1	1.5	0.99	<10	<0.1	<0.1	<0.1	<0.3	**96.9**
1/8/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	0.12	<0.1	<0.3	-
2/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
3/4/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
4/3/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
5/15/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
6/5/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/2/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
8/6/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
9/4/2013	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
10/7/2013	<10	<0.1	0.19	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
11/6/2013	<10	<0.1	0.52	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
12/3/2013	<10	<0.1	0.44	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
1/13/2014	<10	<0.1	0.31	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
2/7/2014	98	<0.1	<0.1	0.34	0.65	<10	<0.1	<0.1	<0.1	<0.3	94.9
3/18/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	0.2	<0.3	-
4/18/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
6/16/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
7/9/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
8/11/2014	<10	<0.1	<0.1	<0.1	<0.3	<10	<0.1	<0.1	<0.1	<0.3	-
9/17/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
10/22/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
11/18/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
12/9/2014	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
1/13/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
2/18/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
3/11/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
4/23/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
5/19/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-

Table 3-4
Vapor Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Influent Vapor Samples[1] (Sample ID: 3VINF)					Effluent Vapor Samples[2] (Sample ID: 3VEFF)					
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	GRPH DRE[3]
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	%
6/8/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
7/28/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
8/20/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
9/21/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
10/28/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
11/23/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
12/21/2015	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
1/20/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
2/23/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
3/21/2016	-	-	-	-	-	<10	<0.1	<0.1	<0.1	<0.3	-
PSCAA NOC-10384 Restrictions and Conditions						max 148.2[3]	1.6[4]	NS	NS	NS	95%[3][5]

Notes:

Red denotes concentration exceeds PSCAA Conditions

Samples analyzed by Fremont Analytical of Seattle, Washington.

[1] Influent vapor samples collected from SVE port on the pressure side of the blower

[2] Effluent vapor samples collected from the sample port on the effluent stack

[3] DRE shall be at least 95% unless the effluent GRPH concentration does not exceed 50 ppmv (or 148.2 mg/m ^{3} at standard temperature and pressure assuming an average molecular weight for GRPH of 72.5)

[4] The PSCAA NOC threshold concentration for uncontrolled benzene emission is 0.5 ppmv, which is equivalent to 1.6 mg/m ^{3} at standard temperature and pressure see below for conversion formula

[5] DRE is calculated by [GRPH inf-GRPH eff]/[GRPH inf] x 100. For results below detection limit, 50% of the value of the detection limit is used in the calculation.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

mg/m^3 = milligrams per cubic meter

CATOX - catalytic oxidizer

DRE = destruction removal efficiency

GRPH = gasoline-range petroleum hydrocarbons

NOC = Notice of Construction

NWTPH = Northwest Total Petroleum Hydrocarbon

ppmv = parts per million by volume

PSCAA = Puget Sound Clean Air Agency

SVE = soil vapor extraction

Formula to convert concentration in mg/m ^{3} to ppmv =

(24.45 x mg/m^3)/gram molecular weight of substance

where mg/m^3 = concentration of substance in milligrams per cubic meter

formula assumes standard temperature and pressure.

Source: ACGIH. 2015. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs).

Table 3-5
Liquid Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 3WINF)					Groundwater Midstream Sample[2] (Sample ID: 3GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 3WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Gasoline Range	Benzene	Toluene	Ethylbenzene	Xylene Total	Total BTEX	Lead	pH
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	pH
10/10/2012	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.87
11/7/2012	<100	1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.83
12/5/2012	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	4.1	7.84
1/8/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.06
2/5/2013	160	<1	<1	1.8	5.8	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.02
3/4/2013	1,700	2.9	1.4	24	160	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	7.64
4/3/2013	<100	<1	<1	<1	3.7	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.89
5/8/2013	1,500	<1	<1	16	120	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.41
6/5/2013	<100	2	1.8	<1	4	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	2.99	7.05
7/2/2013	-	-	-	-	-	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	6.35
8/6/2013	2,500	1	2.3	40	260	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	8.07
9/4/2013	<100	<1	<1	<1	3.6	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.03
10/7/2013	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.09
11/6/2013	<100	<1	<1	<1	5.7	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.94
12/3/2013	<100	<1	<1	<1	5.7	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.9	7.35
1/13/2014	<100	<1	<1	<1	<3	<100	<3	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	-
2/7/2014	<100	<1	<1	<1	3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.36
3/18/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	8.38
4/18/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.4
5/19/2014	<100	<1	<1	<1	5.6	<100	<1	<1	<1	-	<100	<1	<1	<1	<3	<6	-	7.25
6/16/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.05	5.94
7/9/2014	130	<1	<1	<1	3.8	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.67
8/13/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.59
9/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.1
10/22/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	5.97
11/17/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.66
12/9/2014	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	1.09	6.89
1/13/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.25
2/18/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.46
3/11/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.36
4/23/2015	<100	<1	<1	<1	4.3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	6.8
5/19/2015	<100	<1	<1	<1	4.5	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	-	7.19

Table 3-5
Liquid Stream Analytical Results
Unit 3 - Drake Property
TOC Holdings Co. Facility No. 01-176
24309 56th Avenue West
Mountlake Terrace, WA

	Groundwater Influent Sample[1] (Sample ID: 3WINF)					Groundwater Midstream Sample[2] (Sample ID: 3GAC1)					Groundwater Effluent to POTW Discharge Sample[3] (Sample ID: 3WEFF)							
	NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B				NWTPH-Gx	SW8021B					EPA 200.8	Field
Sample Date	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Gasoline Range µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylene Total µg/L	Total BTEX µg/L	Lead µg/L	pH pH
6/8/2015	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<100	<1	<1	<1	<3	<6	<1	7
7/28/2015	100	<1	<1	<1	5	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	6.7
8/20/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	6.9
9/21/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	-	-	7.0
10/28/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
11/23/2015	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	-	7.1[4]
12/21/2015	130	<1	<1	<1	5.7	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
1/20/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
2/23/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
3/21/2016	<100	<1	<1	<1	<3	-	-	-	-	-	<100	<1	<1	<1	<3	<6	<1	7.0
WA Discharge Permit ST0007384 Effluent Limits											1,000	5	NS	NS	NS	100	1,090	6 to 10

Notes:

Red denotes measurement falls outside of the range stipulated in the discharge permit.

Samples analyzed by Friedman & Bruya, Inc., of Seattle, Washington.

[1]Three GAC vessels are operated in series mode. 3WINF sample is collected prior to first GAC vessel in series

[2] 3GAC1 sample is collected downstream of GAC-1 and upstream of the GAC-2 vessels in series

[3] Effluent sample collected downstream of third GAC vessel in series, which represents the quality of water discharged to the POTW

[4] pH was measured on December 3, 2015.

- = not measured; not analyzed; or not applicable

< = not detected at a concentration exceeding the laboratory MRL shown

µg/L = micrograms per liter

EPA = U.S. Environmental Protection Agency

GAC = granular activated carbon

NS = no standard

NWTPH = Northwest Total Petroleum Hydrocarbon

POTW = publicly-owned treatment works

APPENDIX A

Remedial Systems Descriptions

APPENDIX A –REMEDIAL SYSTEMS DESCRIPTIONS

The following sections provide remedial systems background, and configurations, respectively.

A.1 BACKGROUND

TOC (formerly Time Oil Co.) operated a retail gasoline station on the TOC Property between 1968 and 1990. One 8,000-gallon and two 6,000-gallon underground storage tanks were removed from the TOC Property in 1991. The TOC Property is currently vacant. In 1996, a dual-phase extraction (DPE) remediation system was installed at the TOC Property to remediate Shallow Zone groundwater impacted by petroleum hydrocarbons and remove LNAPL. The DPE system operated from February 1997 to June 2005 and was later removed following confirmation that the system effectively remediated Shallow Zone groundwater. In 2006, groundwater monitoring results confirmed gasoline-related contamination extending directly downgradient of the TOC Property to the south and west.[8]

Between 1992 and 2013, site investigations were conducted to determine the extent of petroleum contamination which led to the installation of 107 monitoring and remediation wells on the TOC Site and three adjacent properties (a portion of the 242nd Street Southwest ROW and the downgradient Herman and Shin/Choi properties). Six wells have been decommissioned. Two additional wells were installed on the Herman property in July 2015. Currently, there are 103 active monitoring and/or remediation wells installed in three groundwater zones (defined as Shallow, Intermediate and Deep) on the TOC Site and three adjacent properties. Of the 103 active monitoring and remediation wells, 20 are installed in the Shallow Zone, 62 are installed in the Intermediate Zone, 6 are in the Deep Zone, and 15 have well screens intersecting multiple groundwater zones (either shallow-intermediate or intermediate-deep). The three groundwater zones are further discussed in SES 2013 and Stantec 2015a.

In accordance with the AO, SES initiated a remedial investigation (RI) at the TOC Site and determined that remediation by the former DPE system in the Shallow Zone on that property had been effective. The DPE system was removed and three MPE systems were installed in the Intermediate Zone between November 2011 and August 2012. The three MPE systems (Units 1, 2 and 3) began operating in October 2012. MPE is an in situ remedial technology that simultaneously extracts multiple fluid phases from remediation wells. The phases include soil vapor, dissolved (i.e., groundwater), and LNAPL or free product.

A.2 SYSTEM CONFIGURATIONS

Each MPE system is housed in a self-contained, aboveground equipment enclosure surrounded by chain link fence with locked gate. The MPE system for the TOC Property (Unit 1) is located on the TOC Property. The MPE systems for the TOC/Farmasonis Property (Unit

[8] *SES 2013. Draft Remedial Investigation Report, TOC Holdings Co. No. 01-176, 24205 56th Avenue West, Mountlake Terrace, Washington 98043. November 27.*

2) and Drake Property (Unit 3) are co-located within a single fenced enclosure on the TOC/Farmasonis Property. The three MPE systems are basically identical, with the exception of their orientation, mirror-image layouts, and the number of remediation wells serving each MPE system. A total of 22 remediation wells serve the three MPE systems: eight wells on the TOC Property, six wells on the TOC/Farmasonis Property, and eight wells on the Drake Property (Figure A-1).

Wells MW15 (installed on the TOC Property) and MW84 (installed on the Drake Property) were initially connected to Units 1 and 3 as remediation wells, but currently serve only as monitoring wells. The pump in MW15 was removed by Stantec on December 16, 2014 due to the consistent presence of biological buildup in the well. The pump in MW84 was removed by SES on September 17, 2013. Documentation of the purpose for removing the pump from MW84 is not available in the historical files.

The table below identifies the currently active remediation wells connected to each system and their locations.

Wells Serving MPE Remediation Systems

System Name	System Location	Remediation Well ID		Well Location
Unit 1	**TOC Property**	• MW11 • MW18 • MW24 • MW27	• MW29 • MW32 • MW90 • MW91	**TOC Property**
Unit 2	**TOC/Farmasonis Property**	• MW31 • MW41 • MW57	• MW92 • MW93 • MW94	**TOC/Farmasonis Property**
Unit 3	**TOC Farmasonis Property**	• MW69 • MW70 • MW95 • MW96	• MW97 • MW98 • MW99 • MW101	**Drake Property**

The individual MPE equipment enclosures were custom fabricated in accordance with the Washington State Department of Labor and Industry requirements for factory-assembled structures. Each of the remediation wells is equipped with a down-well pneumatic pump to extract petroleum- impacted groundwater (dissolved-phase petroleum hydrocarbons) and recoverable LNAPL. In addition, each MPE system is equipped with a SVE blower. The SVE blowers are intended to extract soil vapors (vapor-phase petroleum hydrocarbons) from the remediation wells and surrounding soil. Buried piping is utilized to convey recovered fluids (groundwater and LNAPL) and vapor from the remediation wells to the MPE system enclosures for treatment. The piping and instrumentation diagram presented on Figure A-2 illustrates the typical process flow and major mechanical equipment associated with each MPE system.

Extracted groundwater is conveyed to each MPE system for phase separation, treatment, and permitted discharge to the sanitary sewer in accordance with Ecology State Waste Discharge Permit No. ST0007384. The extracted groundwater is processed through an OWS, which is designed to process up to 10 gallons per minute (gpm). The effluent from the OWS is pumped through three 55-gallon granular activated carbon (GAC) canisters to remove dissolved phase volatile organic compounds (VOCs) prior to being discharged to the sanitary sewer. When present, LNAPL recovered with the OWS is temporarily stored in a 55-gallon product drum prior to disposal or recycling at an offsite facility.

The SVE blowers create the vacuum necessary to extract soil vapors from the remediation wells. The extracted soil vapors are processed through an air/water separator (AWS) and previously through a CATOX. The AWS removes particulate and liquids from the air stream to prevent damage to the SVE blower and ancillary equipment. Previously, the vapors were thermally treated by the CATOX prior to being discharged to the atmosphere, in accordance with the Puget Sound Clean Air Agency (PSCCA) Notice of Construction (NOC) No. 10384.

Legend

- Site Boundary
- Historic Pump Islands (Removed)
- Parcels
- Remediation System Piping
- Compound Fence
- Historic Excavation
- Historic UST Location
- System Compound
- Abandoned Well
- Deep Well
- Intermediate Well
- Shallow Well
- Mix Zone Well
- Stormwater Infiltration Pit

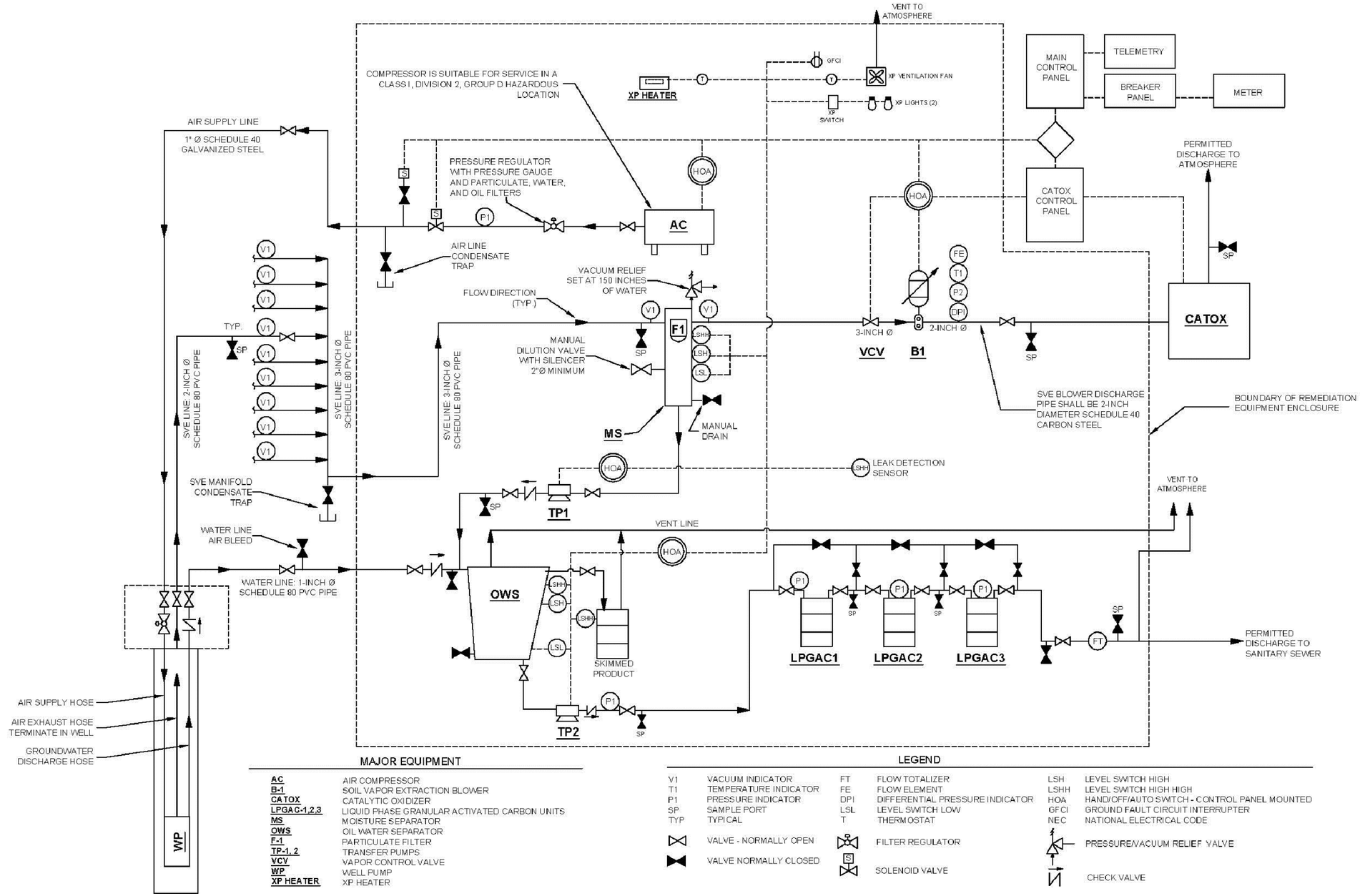
TOC Holdings Co. Facility 01-176
24205 56th Avenue West
Mountlake Terrace, Washington

FIGURE A-1: LOCATIONS OF WELLS AND REMEDIATION SYSTEMS

Stantec

DRAWN BY	D.H.
DATE DRAWN	12/1/2015
SCALE	1 in = 50 ft
PROJECT	203700102

Path: X:\WA\Clients\Time_Oil\TOC-MountlakeTerrace_BA1402800\MXDs\WorkingMXDs\Figure3_SiteMap With Well Locations(11x17).mxd



MAJOR EQUIPMENT

AC	AIR COMPRESSOR
B-1	SOIL VAPOR EXTRACTION BLOWER
CATOX	CATALYTIC OXIDIZER
LPGAC-1,2,3	LIQUID PHASE GRANULAR ACTIVATED CARBON UNITS
MS	MOISTURE SEPARATOR
OWS	OIL WATER SEPARATOR
F-1	PARTICULATE FILTER
TP-1, 2	TRANSFER PUMPS
VCV	VAPOR CONTROL VALVE
WP	WELL PUMP
XP HEATER	XP HEATER

LEGEND

V1	VACUUM INDICATOR	FT	FLOW TOTALIZER	LSH	LEVEL SWITCH HIGH
T1	TEMPERATURE INDICATOR	FE	FLOW ELEMENT	LSHH	LEVEL SWITCH HIGH HIGH
P1	PRESSURE INDICATOR	DPI	DIFFERENTIAL PRESSURE INDICATOR	HOA	HAND/OFF/AUTO SWITCH - CONTROL PANEL MOUNTED
SP	SAMPLE PORT	LSL	LEVEL SWITCH LOW	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
TYP	TYPICAL	T	THERMOSTAT	NEC	NATIONAL ELECTRICAL CODE

VALVE - NORMALLY OPEN
VALVE NORMALLY CLOSED
FILTER REGULATOR
SOLENOID VALVE
PRESSURE/VACUUM RELIEF VALVE
CHECK VALVE

SOURCE:
SOUND EARTH STRATEGIES, 2013

NOT TO SCALE

Hydro Con
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE A-2
PIPING AND INSTRUMENTATION DIAGRAM

TOC HOLDINGS CO. FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

APPENDIX B

TOC Facility No. 01-176 Permits

APPENDIX B – TOC FACILITY NO. 01-176 PERMITS

State, regional, and local permit requirements apply to the interim remedial action. Pursuant to the Revised Code of Washington 70.105D.090(1), TOC's interim remedial actions under the AO are exempt from the procedural requirements of any laws requiring or authorizing local government permits or approvals; however, TOC must comply with the substantive requirements of such permits or approvals.

Local requirements for clearing, grading, and erosion control activities were addressed through review under the State Environmental Policy Act (SEPA), which included a public comment period through September 26, 2011. State and regional permit requirements beyond the jurisdiction of the AO are discussed below in Sections B.1 (State Waste Discharge Permit), B.2 [Puget Sound Clean Air Agency (PSCAA) Order of Approval), and B.3 (Special Use Permit [SUP]).

B.1 STATE WASTE DISCHARGE PERMIT

State Waste Discharge Permit ST0007384 (SWD Permit) authorizes and regulates operation of and discharges from the three MPE systems on the TOC Site, effective July 2, 2012 through June 19, 2017.

Ecology's Water Quality Program administers the wastewater discharge permit, wastewater compliance sampling, record-keeping, and submittal schedule. Discharge Monitoring Reports (DMRs) are submitted to Ecology monthly. The DMR is a summary report which presents the monitoring data obtained during the monthly reporting period. A summary of the maximum daily effluent limits established by the permit are summarized below:

- The maximum daily volumes of water to be discharged to Monitoring Points 001 and 002 shall be 7,000 and 14,000 gallons per day (gallons/day), respectively.
- pH shall be between 6 and 10 standard units.
- Benzene concentrations shall not exceed 5 micrograms per liter (µg/L).
- Benzene, toluene, ethylbenzene and total xylene (BTEX) cumulative concentration shall not exceed 100 µg/L.
- Total petroleum hydrocarbons, gasoline range (GRPH) shall not exceed 1,000 µg/L.
- Total lead shall not exceed 1,090 µg/L.

The SWD Permit identifies two monitoring points (001 and 002) where compliance with the maximum daily effluent limits must be attained: the discharge from Unit 1 is monitored at monitoring point 001; the combined discharge from Units 2 and 3 is monitored at point 002. Treated groundwater from both monitoring points discharges to the City of Edmonds, Washington Wastewater Treatment Plant. Effluent from each of the three MPE systems is sampled on a monthly basis at points adjacent to each MPE system (Figure B-1). The minimum, maximum and average effluent concentrations are reported in monthly DMRs submitted to Ecology.

The SWD permit was modified in May 2015[9] by Ecology to allow the injection of additives of Tolcide® and AN-400 (phosphonate) to control the bio-fouling problem in the Unit 1 treatment system to improve treatment efficiency. The following revisions are specified in the permit modification (Ecology 2015):

Permit Modification

On page 5, two parameters and their effluent limits are being added to S1 of the permit for Outfall 001 which reads as follows:

Parameter	**Maximum Daily**
Tolcide PS20A (CAS ID 2809-21-4)	10 mg/L
AN-400 (CAS ID 55566-30-8)	3.2 mg/L

On page 6, two parameters and a footnote are being added to S2 of the permit for Outfall 001 which reads as follows:

Parameter	**Units**	**Sampling Frequency**	**Sampling Type**
Tolcide PS20A (CAS ID 2809-21-4)	mg/L	Quarterly	Grab[f]
AN-400 (CAS ID 55566-30-8)	mg/L	Quarterly	Grab[f]
[f] Analytical test methods are titration test kits (LaMotte).			

Although not specifically called out in the permit modification (Ecology 2015), Ecology is requiring the submittal of separate quarterly DMRs listing the quarterly grab sample results of the effluent concentrations for Tolcide® and AN-400 (phosphonate).

[9] *Ecology. 2015. Addendum to Fact Sheet; Permit No. ST0007834; TOC Holdings Co. May 11.*

B.2 PSCAA ORDER OF APPROVAL

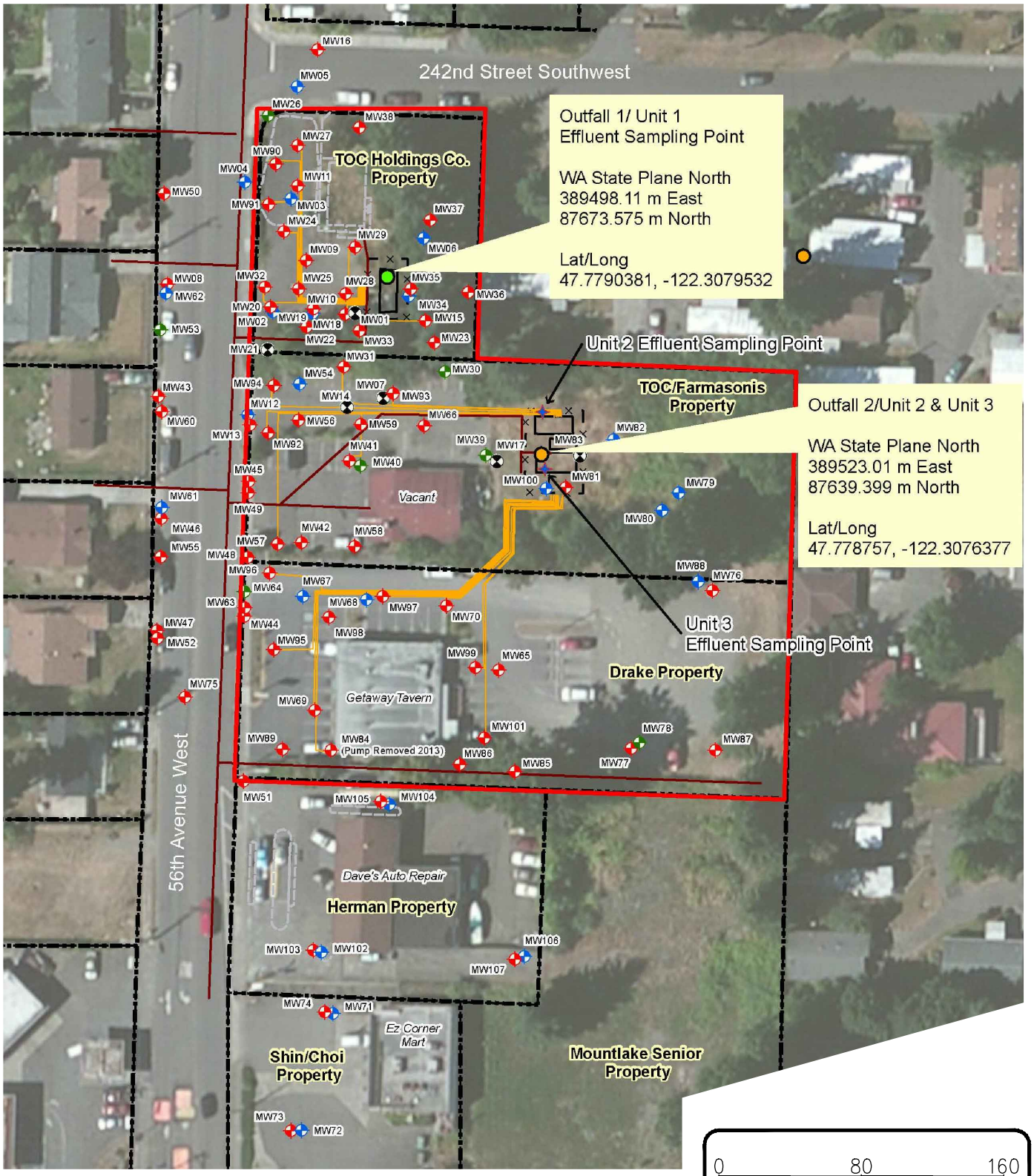
The PSCAA issued an Order of Approval for NOC 10384 on May 13, 2012, which established the conditions and restrictions for the operation of the CATOX units. The key conditions and restrictions are summarized below:

- Emissions from each of the three SVE blowers shall be routed through their associated CATOX.
- The flow through each CATOX shall not exceed 350 standard cubic feet per minute. The flow rate shall be monitored monthly.
- The temperature of the vapor entering the catalytic bed shall be at least 240 degrees Celsius (464 degrees Fahrenheit), and the temperature of the vapor exiting the oxidizer bed shall not exceed 620 degrees Celsius (1148 degrees Fahrenheit).
- The destruction and removal efficiency of the GRPH flowing into and out of the CATOX shall be 95 percent unless the concentration of GRPH in the vapor exiting the CATOX does not exceed 50 parts per million volume (ppmv).
- The CATOX units may be removed and SVE emissions can be vented directly to the atmosphere through a stack provided the benzene and GRPH concentrations remain below 0.5 and 50 ppmv, respectively, for a period of 3 consecutive months. [For this reason, the systems were modified to bypass the CATOX during Fourth Quarter 2014 (Units 2 and 3) and First Quarter 2015 (Unit 1)].
- The CATOX shall be reactivated if concentrations of benzene or GRPH exceed 0.5 or 50 ppmv, respectively. Samples are collected on a monthly basis to monitor the concentrations of benzene and GRPH from the stacks.

B.3 SPECIAL USE PERMIT

The SUP executed between TOC and the City of Mountlake Terrace (City) addresses interim remedial activities that extend into City rights-of-way (ROWs). Specifically, the SUP:

> Allows the discharge of treated wastewater to the City sanitary sewer network for conveyance to the City of Edmonds publicly owned treatment works under the State Waste Discharge Permit, and retroactively administers the installation, maintenance, sampling, repair and/or decommissioning of monitoring wells that are located within City ROWs.



SOURCE: STANTEC - 2014

HydroCon
510 Allen St. Suite B Kelso, Wa 98626, Ph(360)-703-6086

DATE: 9-14-15
DWN: JJT
CHK: MS
APPROVED: MS
PRJ. MGR: CH
PROJECT NO: 01-176

FIGURE B-1
STATE WASTE DISCHARGE PERMIT ST0007384
OUTFALL SAMPLING LOCATIONS
TOC HOLDINGS CO, FACILITY NO. 01-176
24205 56TH AVENUE WEST
MOUNTLAKE TERRACE, WA.

C:\Users\Josh\Desktop\Autocad Backup\Hydrocon-Autocad\01-176 MLT2015\pdf figure set\01-176_Figure Set.dwg 2.17.2014

APPENDIX C

Analytical Laboratory Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 25, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 20, 2016 from the TOC_01-176, WORFDB8 F&BI 601233 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0125R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601233 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601233 -01	1VEFF

All quality control requirements were acceptable.

Date of Report: 01/25/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601233
Date Extracted: 01/21/16
Date Analyzed: 01/21/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1VEFF 601233-01	<0.1	<0.1	<0.1	<0.3	<10	83
Method Blank 06-106 MB	<0.1	<0.1	<0.1	<0.3	<10	74

Date of Report: 01/25/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601233

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601233-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	95	70-130
Toluene	mg/m^3	5.0	95	70-130
Ethylbenzene	mg/m^3	5.0	105	70-130
Xylenes	mg/m^3	15	100	70-130
Gasoline	mg/m^3	100	113	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601233

SAMPLE CHAIN OF CUSTODY

ME 01-20-16

Send Report To Craig Hultgren

Company Hydroscan

Address 510 Alma St Suite B

City, State, ZIP Kelso WA 98626

Phone #_____ Fax #_____

SAMPLERS *(signature)*

PROJECT NAME/NO. 01-176

PO#

REMARKS

Page # 1 of 1

TURNAROUND TIME
- ☑ Standard (2 Weeks)
- ☐ RUSH_____
- Rush charges authorized by _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS							Notes
INFF	AB	1-20-16	0945	Vapor	2		X	X										
																	Samples received at 18 °C	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hultgren	Hydroscan	1-20-16	1200
Received by:	Jon Shimazu	FBI	"	"
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
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fbi@isomedia.com
www.friedmanandbruya.com

February 2, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 29, 2016 from the TOC_01-176, WORFDB8 F&BI 601363 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0202R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 29, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601363 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601363 -01	1VEFF

All quality control requirements were acceptable.

Date of Report: 02/02/16
Date Received: 01/29/16
Project: TOC_01-176, WORFDB8 F&BI 601363
Date Extracted: 01/29/16
Date Analyzed: 01/26/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1VEFF 601363-01	<0.1	0.16	<0.1	0.77	20	80
Method Blank 06-164 MB	<0.1	<0.1	<0.1	<0.3	<10	78

Date of Report: 02/02/16
Date Received: 01/29/16
Project: TOC_01-176, WORFDB8 F&BI 601363

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601363-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	0.16	0.15	0
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	0.77	0.74	4
Gasoline	mg/m^3	20	19	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	91	70-130
Toluene	mg/m^3	5.0	90	70-130
Ethylbenzene	mg/m^3	5.0	100	70-130
Xylenes	mg/m^3	15	96	70-130
Gasoline	mg/m^3	100	116	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601363

SAMPLE CHAIN OF CUSTODY

MG 01/29/16

Page 1 of 1

Report To Craig Haltgren

Company HydroCon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: TOC 01-176

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
- ☑ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
1VEFF	01 AB	1-29-16	0730	Vapor	2			X	X								

Samples received at 20 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hansberger	HydroCon	1-29-16	0925
Received by:	Nhan Phan	FBI	1-29-16	0725
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Samples received at _____ °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 9, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 3, 2016 from the TOC_01-176, WORFDB8 F&BI 602049 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0209R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 3, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602049 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602049 -01	IVEFF

All quality control requirements were acceptable.

Date of Report: 02/09/16
Date Received: 02/03/16
Project: TOC_01-176, WORFDB8 F&BI 602049
Date Extracted: 02/04/16
Date Analyzed: 02/04/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
IVEFF 602049-01	<0.1	<0.1	<0.1	<0.3	<10	79
Method Blank 06-190 MB	<0.1	<0.1	<0.1	<0.3	<10	80

Date of Report: 02/09/16
Date Received: 02/03/16
Project: TOC_01-176, WORFDB8 F&BI 602049

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 602049-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	90	70-130
Toluene	mg/m^3	5.0	89	70-130
Ethylbenzene	mg/m^3	5.0	98	70-130
Xylenes	mg/m^3	15	95	70-130
Gasoline	mg/m^3	100	116	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

602049

SAMPLE CHAIN OF CUSTODY

ME 2/3/16

Report To: Craig Hultgren

Company: HydroCon

Address: 5W Allen St Suite B

City, State, ZIP: Kelso WA 98626

Phone ______ Email ______

SAMPLERS (signature): [signature]

PROJECT NAME: 01-176

PO #:

REMARKS:

INVOICE TO:

Page # 1 of 1

TURNAROUND TIME
- ✓ ☐ Standard Turnaround
- ☐ RUSH ______

Rush charges authorized by: ______

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other ______

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
1VEFF	01 A-B	2-3-16	1115	Vapor	2			X	X								

Samples received at 19 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Robert A. Hunsberger	HydroCon	2-3-16	1225
Received by: [signature]	Nhan Phan	FEBI	2/3/16	V
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Samples received at ______ °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 22, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 20, 2016 from the TOC_01-176, WORFDB8 F&BI 601236 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601236 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601236 -01	1WINF
601236 -02	1WEFF

All quality control requirements were acceptable.

Date of Report: 01/22/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601236
Date Extracted: 01/20/16
Date Analyzed: 01/20/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
1WINF 601236-01	<1	3.7	<1	39	250	95
1WEFF 601236-02	<1	<1	<1	<3	<100	94
Method Blank 06-087 MB	<1	<1	<1	<3	<100	91

Date of Report: 01/22/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601236

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601209-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	107	65-118
Toluene	ug/L (ppb)	50	106	72-122
Ethylbenzene	ug/L (ppb)	50	107	73-126
Xylenes	ug/L (ppb)	150	104	74-118
Gasoline	ug/L (ppb)	1,000	99	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601236

SAMPLE CHAIN OF CUSTODY

ME01-20-16

V2

Page # 1 of 1

Send Report To Craig Hultgren

Company Hydroscan

Address 510 Alla St Suite B

City, State, ZIP Kelso WA 98626

Phone # _____ Fax # _____

SAMPLERS (signature) [signature]

PROJECT NAME/NO. 01-176

PO#

REMARKS

TURNAROUND TIME
- ☑ Standard (2 Weeks)
- ☐ RUSH _____

Rush charges authorized by _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS							Notes
1WINF	01 A-C	1-20-16	0950	water	3		X	X										
1W EFF	02	1-20-16	0955	water	3		X	X										
																	Samples received at 4 °C	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Robert A. Hansberger	Hydroscan	1-20-16	1240
Received by: [signature]	Jean Shimazu	FBI	1	1
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 25, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 20, 2016 from the TOC_01-176, WORFDB8 F&BI 601234 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0125R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601234 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601234 -01	2VEFF

All quality control requirements were acceptable.

Date of Report: 01/25/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601234
Date Extracted: 01/21/16
Date Analyzed: 01/21/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2VEFF 601234-01	<0.1	<0.1	<0.1	<0.3	<10	81
Method Blank 06-106 MB	<0.1	<0.1	<0.1	<0.3	<10	74

Date of Report: 01/25/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601234

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601233-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	95	70-130
Toluene	mg/m^3	5.0	95	70-130
Ethylbenzene	mg/m^3	5.0	105	70-130
Xylenes	mg/m^3	15	100	70-130
Gasoline	mg/m^3	100	113	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601234

SAMPLE CHAIN OF CUSTODY

ME 01-20-16

Page # 1 of 1

Send Report To Craig Haltgren

Company Hydrocon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone #_____ Fax #_____

SAMPLERS *(signature)*

PROJECT NAME/NO. 01-16

PO#

REMARKS

TURNAROUND TIME
- ☑ Standard (2 Weeks)
- ☐ RUSH_____
- Rush charges authorized by _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS							Notes
2VEFF	01 AB	1-20-16	1030	vapor	2		X	X										
																Samples received at 18 °C		

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Robert A. Hershman	Hydrocon	1-20-16	1200
Received by:		Jon Shimazu	FBI	1-20-16	1
Relinquished by:					
Received by:					

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 22, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 20, 2016 from the TOC_01-176, WORFDB8 F&BI 601237 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601237 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601237 -01	2WINF
601237 -02	2WEFF

All quality control requirements were acceptable.

Date of Report: 01/22/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601237
Date Extracted: 01/20/16
Date Analyzed: 01/20/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2WINF 601237-01	<1	<1	<1	<3	<100	95
2WEFF 601237-02	<1	<1	<1	<3	<100	94
Method Blank 06-087 MB	<1	<1	<1	<3	<100	91

Date of Report: 01/22/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601237

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601209-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	107	65-118
Toluene	ug/L (ppb)	50	106	72-122
Ethylbenzene	ug/L (ppb)	50	107	73-126
Xylenes	ug/L (ppb)	150	104	74-118
Gasoline	ug/L (ppb)	1,000	99	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601237

SAMPLE CHAIN OF CUSTODY ME 01-20-16

V2

Send Report To Craig Huttgren
Company Hydrocon
Address 5W Allen St Ste B
City, State, ZIP Kdw WA 98626
Phone # _____ Fax # _____

SAMPLERS (signature) [redacted]
PROJECT NAME/NO. 01176
PO#
REMARKS

Page # 1 of 1

TURNAROUND TIME
☑ Standard (2 Weeks)
☐ RUSH _____
Rush charges authorized by _____

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS							Notes
						ANALYSES REQUESTED												
2WINF	01 AC	1-2016	1040	water	3		X	X										
2WEFF	02 V	1-2016	1045	water	3		X	X										
																		Samples received at 4 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	[redacted]	Robert A Huttgren	Hydrocon	1-20-16	1240
Received by:	[redacted]	Jan Shinara	FBI	1	1
Relinquished by:					
Received by:					

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

January 25, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 20, 2016 from the TOC_01-176, WORFDB8 F&BI 601235 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0125R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on January 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601235 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601235 -01	3VEFF

All quality control requirements were acceptable.

Date of Report: 01/25/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601235
Date Extracted: 01/21/16
Date Analyzed: 01/21/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
3VEFF 601235-01	<0.1	<0.1	<0.1	<0.3	<10	84
Method Blank 06-106 MB	<0.1	<0.1	<0.1	<0.3	<10	74

Date of Report: 01/25/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601235

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601233-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	95	70-130
Toluene	mg/m^3	5.0	95	70-130
Ethylbenzene	mg/m^3	5.0	105	70-130
Xylenes	mg/m^3	15	100	70-130
Gasoline	mg/m^3	100	113	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601235

SAMPLE CHAIN OF COUSTODY

ME 01-20-16

Page # 1 of 1

Send Report To Craig Hultgren

Company HydroCon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone # ______ Fax # ______

SAMPLERS (signature) [signature]	
PROJECT NAME/NO. 01-176	PO#
REMARKS	

TURNAROUND TIME
☑ Standard (2 Weeks)
☐ RUSH ______
Rush charges authorized by ______
SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Return samples
☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS							Notes
3VEFF	01 AB	1-20-16	1015	Vapor	2		X	X										

Samples received at 18 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Robert A. Hultgren	HydroCon	1-20-16	1240
Received by: [signature]	Joe Shimazu	FBI	1-20-16	↓
Relinquished by:				
Received by:				

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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fbi@isomedia.com
www.friedmanandbruya.com

January 22, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on January 20, 2016 from the TOC_01-176, WORFDB8 F&BI 601238 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0122R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 20, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 601238 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
601238 -01	3WINF
601238 -02	3WEFF

All quality control requirements were acceptable.

Date of Report: 01/22/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601238
Date Extracted: 01/20/16
Date Analyzed: 01/20/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
3WINF 601238-01	<1	<1	<1	<3	<100	91
3WEFF 601238-02	<1	<1	<1	<3	<100	93
Method Blank 06-087 MB	<1	<1	<1	<3	<100	91

Date of Report: 01/22/16
Date Received: 01/20/16
Project: TOC_01-176, WORFDB8 F&BI 601238

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 601209-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	107	65-118
Toluene	ug/L (ppb)	50	106	72-122
Ethylbenzene	ug/L (ppb)	50	107	73-126
Xylenes	ug/L (ppb)	150	104	74-118
Gasoline	ug/L (ppb)	1,000	99	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

601238

SAMPLE CHAIN OF CUSTODY

ME01-20-16

V2

Send Report To Craig Haltgren

Company Hydrocon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone #_____ Fax #_____

SAMPLERS *(signature)* [redacted]

PROJECT NAME/NO. 01-176

PO#

REMARKS

Page # 1 of 1

TURNAROUND TIME
- ☑ Standard (2 Weeks)
- ☐ RUSH_____

Rush charges authorized by _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Return samples
- ☐ Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by8260	SVOCs by 8270	HFS							Notes
SW INF	01	1-20-16	1020	water	5		X	X										
SW EFF	02	1-20-16	1025	water	3		X	X										
																	Samples received at 4 °C	

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Robert A. Hansberger	Hydrocon	1-20-16	1240
Received by: [signature]	Jon Shimon	FBJ	1-20-16	1
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 1, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602382 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0301R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 23, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602382 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602382 -01	1VEFF

All quality control requirements were acceptable.

Date of Report: 03/01/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602382
Date Extracted: 02/25/16
Date Analyzed: 02/25/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1VEFF 602382-01	<0.1	<0.1	<0.1	<0.3	11	96
Method Blank 06-313 MB	<0.1	<0.1	<0.1	<0.3	<10	97

Date of Report: 03/01/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602382

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 602360-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	83	70-130
Toluene	mg/m^3	5.0	88	70-130
Ethylbenzene	mg/m^3	5.0	94	70-130
Xylenes	mg/m^3	15	94	70-130
Gasoline	mg/m^3	100	117	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

602382

SAMPLE CHAIN OF CUSTODY ME 02-23-16

Report To Craig Haltigen
Company HydroCon
Address 510 Allen St Suite B
City, State, ZIP Kelso WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: Tox 01-176
PO #
REMARKS
INVOICE TO

Page # 1 of 1

TURNAROUND TIME
☑ Standard (10 Business Days)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS					Notes
INEFF	01 AB	2-23-16	0940	WA	2		X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Harshberger	HydroCon	2-23-16	1230
Received by:	DOU	F&BE	2-23-16	12:3
Relinquished by:				
Received by:				

Samples received at 19 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 1, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602383 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0301R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 23, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602383 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602383 -01	2VEFF

All quality control requirements were acceptable.

Date of Report: 03/01/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602383
Date Extracted: 02/25/16
Date Analyzed: 02/25/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2VEFF 602383-01	<0.1	<0.1	<0.1	<0.3	<10	95
Method Blank 06-313 MB	<0.1	<0.1	<0.1	<0.3	<10	97

Date of Report: 03/01/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602383

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 602360-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	83	70-130
Toluene	mg/m^3	5.0	88	70-130
Ethylbenzene	mg/m^3	5.0	94	70-130
Xylenes	mg/m^3	15	94	70-130
Gasoline	mg/m^3	100	117	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

602383

SAMPLE CHAIN OF CUSTODY

ME 02-23-16

Report To: Craig Haltgren

Company: HydroCon

Address: 510 Allen St Suite B

City, State, ZIP: Kelso WA 98626

Phone: ______ Email: ______

SAMPLERS (signature)	
PROJECT NAME: Toc 01-176	PO #
REMARKS	INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- ☑ Standard (10 Business Days)
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS					Notes
2VEFF	01 A-B	2-23-16	0920	[illegible]	2		X	X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hansberger	HydroCon	2-23-16	1230
Received by:	[illegible]	[illegible]	2-22-16	12:31
Relinquished by:				
Received by:				

FORMS\COC\COC.DOC

Samples received at 19 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 1, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602384 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0301R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 23, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602384 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602384 -01	3VEFF

All quality control requirements were acceptable.

Date of Report: 03/01/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602384
Date Extracted: 02/25/16
Date Analyzed: 02/25/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
3VEFF 602384-01	<0.1	<0.1	<0.1	<0.3	<10	95
Method Blank 06-313 MB	<0.1	<0.1	<0.1	<0.3	<10	97

Date of Report: 03/01/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602384

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 602360-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	83	70-130
Toluene	mg/m^3	5.0	88	70-130
Ethylbenzene	mg/m^3	5.0	94	70-130
Xylenes	mg/m^3	15	94	70-130
Gasoline	mg/m^3	100	117	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

602-384

SAMPLE CHAIN OF CUSTODY

ME 02-23-16

Report To Craig Haltigen
Company HydroCon
Address 510 Allen st Suite B
City, State, ZIP Kelso WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: Tue 01-176
PO #
REMARKS
INVOICE TO

Page # 1 of 1

TURNAROUND TIME
☑ Standard (10 Business Days)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS					Notes
3VEFF	01 A-B	2-23-16	0900	Vapor	2		X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hansberger	HydroCon	2-23-16	1230
Received by:	DOD	F&B	2-23-16	12:35
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

Samples received at 19 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included is the amended report from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602387 project. The sample ID 2WEFF has been amended to 1WEFF per the chain of custody.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0226R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 26, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602387 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0226R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 23, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602387 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602387 -01	1WINF
602387 -02	1WEFF

All quality control requirements were acceptable.

Date of Report: 02/26/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602387
Date Extracted: 02/24/16
Date Analyzed: 02/24/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1WINF 602387-01	<1	2.8	2.0	48	300	93
1WEFF 602387-02	<1	<1	<1	<3	<100	94
Method Blank 06-305 MB	<1	<1	<1	<3	<100	90

Date of Report: 02/26/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602387

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 602392-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	96	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	96	73-126
Xylenes	ug/L (ppb)	150	92	74-118
Gasoline	ug/L (ppb)	1,000	100	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

602387

SAMPLE CHAIN OF CUSTODY

ME 02-23-16 V2

Report To Craig Haltigen
Company HydroCon
Address 510 Allen St Suite B
City, State, ZIP Kelso WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: Tue 01-176
PO #
REMARKS
INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- ✓ Standard (10 Business Days)
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS					Notes
1WINF		2-23-16	1000	water	3		X	X								
1WEFF		"	1005	water	3		X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hansberger	HydroCon	2-23-16	1230
Received by:	DOU	F+B	2-23-16	12:35
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 26, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602385 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0226R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 23, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602385 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602385 -01	2WINF
602385 -02	2WEFF

All quality control requirements were acceptable.

Date of Report: 02/26/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602385
Date Extracted: 02/23/16
Date Analyzed: 02/23/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2WINF 602385-01	<1	<1	<1	<3	<100	91
2WEFF 602385-02	<1	<1	<1	<3	<100	90
Method Blank 06-310 MB	<1	<1	<1	<3	<100	91

Date of Report: 02/26/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602385

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES USING EPA METHOD 8021B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	50	96	96	65-118	0
Toluene	ug/L (ppb)	50	95	95	72-122	0
Ethylbenzene	ug/L (ppb)	50	99	97	73-126	2
Xylenes	ug/L (ppb)	150	94	93	74-118	1

Date of Report: 02/26/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602385

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 602335-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Gasoline	ug/L (ppb)	1,000	<100	101	105	53-117	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	99	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

SAMPLE CHAIN OF CUSTODY ME 02-23-16 V2

602385

Report To Craig Haltigen
Company HydroCon
Address 510 Allen st Suite B
City, State, ZIP Kelso WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: Tue 01-176
PO #
REMARKS
INVOICE TO

Page # 1 of 1

TURNAROUND TIME
☑ Standard (10 Business Days)
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS					Notes
2WINF	01 A-B	2-23-16	0925	water	3		X	X								
2WEFF	02 T	"	0930	water	3		X	X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Robert A. Hardberger	HydroCon	2-23-16	1230
Received by:	D d vo	F&BI	2-23-16	12.35
Relinquished by:				
Received by:				

Samples received at 4 °C

FORMS\COC\COC.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

February 25, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on February 23, 2016 from the TOC_01-176, WORFDB8 F&BI 602386 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0225R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 23, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 602386 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
602386 -01	3WINF
602386 -02	3WEFF

All quality control requirements were acceptable.

Date of Report: 02/25/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602386
Date Extracted: 02/23/16
Date Analyzed: 02/23/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
3WINF 602386-01	<1	<1	<1	<3	<100	85
3WEFF 602386-02	<1	<1	<1	<3	<100	90
Method Blank 06-309 MB	<1	<1	<1	<3	<100	90

Date of Report: 02/25/16
Date Received: 02/23/16
Project: TOC_01-176, WORFDB8 F&BI 602386

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 602329-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	78	79	2
Toluene	ug/L (ppb)	1.2	1.3	5
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	280	280	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	96	65-118
Toluene	ug/L (ppb)	50	94	72-122
Ethylbenzene	ug/L (ppb)	50	97	73-126
Xylenes	ug/L (ppb)	150	93	74-118
Gasoline	ug/L (ppb)	1,000	102	69-134

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

002386

SAMPLE CHAIN OF CUSTODY ME 02-23-16 V2

Report To Craig Haltgren

Company HydroCon

Address 510 Allen St Suite B

City, State, ZIP Kelso WA 98626

Phone ______ Email ______

SAMPLERS (signature) [signature]

PROJECT NAME	PO #
Toc 01-176	
REMARKS	INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- ☑ Standard (10 Business Days)
- ☐ RUSH ______
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☐ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other ______

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	HFS					Notes
3WINF	01 A-C	2-23-16	0905	water	3		X	X								
3WEFF	02 ↓	"	0916	water	3		X	X								

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Robert A. Harshberger	HydroCon	2-23-16	1230
Received by: [signature]	D O VO	F&BI	2-23-16	12:35
Relinquished by:				
Received by:				

FORMS\COC\COC.DOC

Samples received at 4 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on March 21, 2016 from the TOC_01-176, WORFDB8 F&BI 603363 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0329R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 603363 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
603363 -01	1VEFF

All quality control requirements were acceptable.

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603363
Date Extracted: 03/24/16
Date Analyzed: 03/24/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
1VEFF 603363-01	<0.1	<0.1	<0.1	<0.3	<10	85
Method Blank 06-555 MB	<0.1	<0.1	<0.1	<0.3	<10	92

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603363

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 603361-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	100	70-130
Toluene	mg/m^3	5.0	93	70-130
Ethylbenzene	mg/m^3	5.0	103	70-130
Xylenes	mg/m^3	15	100	70-130
Gasoline	mg/m^3	100	116	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603363

SAMPLE CHAIN OF CUSTODY ME 03-21-16

Report To Craig Hultgren, Rob Honsberger
Company Hydrocon Environmental
Address 510 Allen St Ste. B
City, State, ZIP Kelso, WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: TOC MLT 01-176
PO#
REMARKS
INVOICE TO

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
						ANALYSES REQUESTED											
IVEFF	01 A-B	3/21/16	0855	Air	2			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Warren Rajkovich	Hydrocon	3/21/16	1327
Received by:	Michael Erdahl	FGBM	↓	↓
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Samples received at 21 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on March 21, 2016 from the TOC_01-176, WORFDB8 F&BI 603366 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0329R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 603366 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
603366 -01	1WINF
603366 -02	1WEFF

All quality control requirements were acceptable.

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603366
Date Extracted: 03/21/16
Date Analyzed: 03/21/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
1WINF 603366-01	<1	<1	<1	4.2	<100	85
1WEFF 603366-02	<1	<1	<1	<3	<100	89
Method Blank 06-495 MB	<1	<1	<1	<3	<100	91

Analysis For Total Metals By EPA Method 200.8

Client ID:	1WEFF	Client:	HydroCon
Date Received:	03/21/16	Project:	TOC_01-176, WORFDB8 F&BI 603366
Date Extracted:	03/23/16	Lab ID:	603366-02
Date Analyzed:	03/24/16	Data File:	603366-02.031
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Analyte:	Concentration ug/L (ppb)
Lead	3.04

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-176, WORFDB8 F&BI 603366
Date Extracted:	03/23/16	Lab ID:	I6-166 mb
Date Analyzed:	03/23/16	Data File:	I6-166 mb.039
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603366

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 603334-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	100	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	94	73-126
Xylenes	ug/L (ppb)	150	90	74-118
Gasoline	ug/L (ppb)	1,000	100	69-134

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603366

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 603292-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	1.46	102	101	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	103	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603366

SAMPLE CHAIN OF CUSTODY

ME 03-21-16 AI2 /V2

Report To Craig Hultgren, Rob Honsberger
Company Hydrocon Environmental
Address 510 Allen St Ste. B
City, State, ZIP Kelso, WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: TOC MLT 01-176
PO#
REMARKS
INVOICE TO

Page # _____ of _____

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Lead				Notes
						ANALYSES REQUESTED											
1WINF	01 A-C	3/21/16	~~Water~~ 0900	H2O	3			X	X								
1WEFF	02 A-D	3/21/16	~~Water~~ 0905	H2O	4			X	X				X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Warren Rajkovich	Hydrocon	3/21/16	1327
Received by:	Michael Erdahl	FEBruce	↓	↓
Relinquished by:				
Received by:				

Samples received at 3 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on March 21, 2016 from the TOC_01-176, WORFDB8 F&BI 603362 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0329R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 603362 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
603362 -01	2VEFF

All quality control requirements were acceptable.

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603362
Date Extracted: 03/24/16
Date Analyzed: 03/24/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
2VEFF 603362-01	<0.1	<0.1	<0.1	<0.3	<10	91
Method Blank 06-555 MB	<0.1	<0.1	<0.1	<0.3	<10	92

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603362

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 603361-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	100	70-130
Toluene	mg/m^3	5.0	93	70-130
Ethylbenzene	mg/m^3	5.0	103	70-130
Xylenes	mg/m^3	15	100	70-130
Gasoline	mg/m^3	100	116	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603362

SAMPLE CHAIN OF CUSTODY

ME 03-21-16

Report To Craig Hultgren, Rob Honsberger
Company Hydrocon Environmental
Address 510 Allen St Ste. B
City, State, ZIP Kelso, WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: TOC MLT 01-176
PO#
REMARKS
INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
Rush charges authorized by: _____

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
ANALYSES REQUESTED																	
2 VEFF	01 A-B	3/21/16	0840	Air	2			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Warren Rajkovich	Hydrocon	3/21/16	1327
Received by:	Michael Erdahl	FGBm	↓	↓
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Samples received at 21 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on March 21, 2016 from the TOC_01-176, WORFDB8 F&BI 603364 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0329R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 603364 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
603364 -01	2WINF
603364 -02	2WEFF

All quality control requirements were acceptable.

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603364
Date Extracted: 03/21/16
Date Analyzed: 03/21/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
2WINF 603364-01	<1	<1	<1	<3	<100	87
2WEFF 603364-02	<1	<1	<1	<3	<100	95
Method Blank 06-495 MB	<1	<1	<1	<3	<100	91

Analysis For Total Metals By EPA Method 200.8

Client ID:	2WEFF	Client:	HydroCon
Date Received:	03/21/16	Project:	TOC_01-176, WORFDB8 F&BI 603364
Date Extracted:	03/23/16	Lab ID:	603364-02
Date Analyzed:	03/24/16	Data File:	603364-02.029
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Analysis For Total Metals By EPA Method 6020A

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-176, WORFDB8 F&BI 603364
Date Extracted:	03/23/16	Lab ID:	I6-166 mb
Date Analyzed:	03/23/16	Data File:	I6-166 mb.039
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603364

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 603334-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	100	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	94	73-126
Xylenes	ug/L (ppb)	150	90	74-118
Gasoline	ug/L (ppb)	1,000	100	69-134

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603364

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 603292-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	1.46	102	101	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	103	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603364

SAMPLE CHAIN OF CUSTODY

ME 03-21-16

AI2 / V2

Page # 1 of 1

Report To Craig Hultgren, Rob Honsberger

Company Hydracon Environmental

Address 510 Allen St Ste. B

City, State, ZIP Kelso, WA 98626

Phone _____ Email _____

SAMPLERS (signature)

PROJECT NAME: TOC MLT 01-176

PO#

REMARKS

INVOICE TO

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH _____
- Rush charges authorized by: _____

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Lead				Notes
2WINF	01 A-C	3/21/16	0845	H_2O	3			X	X								
2WEFF	02 A-D	3/21/16	0850	H_2O	4			X	X				X				

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Warren Rajkovich	Hydracon	3/21/16	1327
Received by:	Michael Endahl	F&B	3/21/16	1327
Relinquished by:				
Received by:				

Samples received at 3 °C

Friedman & Bruya, Inc.
2012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on March 21, 2016 from the TOC_01-176, WORFDB8 F&BI 603361 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0329R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 603361 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
603361 -01	3VEFF

All quality control requirements were acceptable.

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603361
Date Extracted: 03/24/16
Date Analyzed: 03/24/16

RESULTS FROM THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING MODIFIED METHODS 8021B AND NWTPH-Gx

Results Reported as mg/m^3

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
3VEFF 603361-01	<0.1	<0.1	<0.1	<0.3	<10	92
Method Blank 06-555 MB	<0.1	<0.1	<0.1	<0.3	<10	92

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603361

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING MODIFIED EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 603361-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	mg/m^3	<0.1	<0.1	nm
Toluene	mg/m^3	<0.1	<0.1	nm
Ethylbenzene	mg/m^3	<0.1	<0.1	nm
Xylenes	mg/m^3	<0.3	<0.3	nm
Gasoline	mg/m^3	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/m^3	5.0	100	70-130
Toluene	mg/m^3	5.0	93	70-130
Ethylbenzene	mg/m^3	5.0	103	70-130
Xylenes	mg/m^3	15	100	70-130
Gasoline	mg/m^3	100	116	70-130

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603361

SAMPLE CHAIN OF CUSTODY

ME 03-21-16

Report To Craig Hultgren, Rob Honsberger
Company Hydrocon Environmental
Address 510 Allen St Ste. B
City, State, ZIP Kelso, WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: TOC MLT 01-176
PO#:
REMARKS:
INVOICE TO:

Page # 1 of 1

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
Rush charges authorized by: _____

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM					Notes
ANALYSES REQUESTED																	
3VEFF	01 A-B	3/21/16	0825	Air	2			X	X								

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Warren Rayforich	Hydrocon	3/21/16	1327
Received by:	Michael Erdahl	F&B	↓	↓
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
2018 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Samples received at 21 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 29, 2016

Craig Hultgren, Project Manager
HydroCon
510 Allen St, Suite B
Kelso, WA 98626

Dear Mr. Hultgren:

Included are the results from the testing of material submitted on March 21, 2016 from the TOC_01-176, WORFDB8 F&BI 603365 project. There are 7 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Rob Honsberger, Allison Greiner
HDC0329R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 21, 2016 by Friedman & Bruya, Inc. from the HydroCon TOC_01-176, WORFDB8 F&BI 603365 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	HydroCon
603365 -01	3WINF
603365 -02	3WEFF

All quality control requirements were acceptable.

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603365
Date Extracted: 03/21/16
Date Analyzed: 03/21/16

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
3WINF 603365-01	<1	<1	<1	<3	<100	88
3WEFF 603365-02	<1	<1	<1	<3	<100	90
Method Blank 06-495 MB	<1	<1	<1	<3	<100	91

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	3WEFF	Client:	HydroCon
Date Received:	03/21/16	Project:	TOC_01-176, WORFDB8 F&BI 603365
Date Extracted:	03/23/16	Lab ID:	603365-02
Date Analyzed:	03/24/16	Data File:	603365-02.030
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Analysis For Total Metals By EPA Method 6020A

Client ID:	Method Blank	Client:	HydroCon
Date Received:	NA	Project:	TOC_01-176, WORFDB8 F&BI 603365
Date Extracted:	03/23/16	Lab ID:	I6-166 mb
Date Analyzed:	03/23/16	Data File:	I6-166 mb.039
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Analyte:	Concentration ug/L (ppb)
Lead	<1

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603365

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 603334-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	100	65-118
Toluene	ug/L (ppb)	50	92	72-122
Ethylbenzene	ug/L (ppb)	50	94	73-126
Xylenes	ug/L (ppb)	150	90	74-118
Gasoline	ug/L (ppb)	1,000	100	69-134

Date of Report: 03/29/16
Date Received: 03/21/16
Project: TOC_01-176, WORFDB8 F&BI 603365

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 603292-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	ug/L (ppb)	10	1.46	102	101	75-125	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	ug/L (ppb)	10	103	80-120

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

603365

SAMPLE CHAIN OF CUSTODY

ME 03-21-16 AI2/V2

Page # 1 of 1

Report To Craig Hultgren, Rob Honsberger
Company Hydrocon Environmental
Address 510 Allen St Ste. B
City, State, ZIP Kelso, WA 98626
Phone _____ Email _____

SAMPLERS (signature)
PROJECT NAME: TOC MLT 01-176
PO#
REMARKS
INVOICE TO

TURNAROUND TIME
- ☒ Standard Turnaround
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☒ Dispose after 30 days
- ☐ Archive Samples
- ☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Lead				Notes
3WNF	01A-C	3-21-16	0830	H2O	3			X	X								
3WEEF	02A-D	1	0835	H2O	4			X	X				X				

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Warren Rajkovich	Hydrocon	3/21/16	1327
Received by:	Michael Erdahl	FEBrc	↓	↓
Relinquished by:				
Received by:				

Samples received at 3 °C

Friedman & Bruya, Inc.
2012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282