APPENDIX C

FIELD FORMS, GROUNDWATER MONITORING

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-02R

Project Name: Kelly-Moore
Date: 3/21/2022
Project Number: PS21204540.01
Weather Conditions: Rainy, mid 40s F
Location: Seattle, WA
Sampler: Jacklyn Perkins
Wind Speed/Direction: (inside)

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 21.63'
Initial Depth to Water (ft): ~~7.42~~ 7.06
Wellhead Condition: good
Groundwater Elevation (ft): 14.57
Depth of Well Casing (ft):
Actual Purge Volume (gal): 2 gallons

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.07	12:43	6.35	0.199	15.0	133.4	0.33	13.9	
7.07	12:48	6.15	0.202	15.0	138.0	0.19	10.5	
7.08	12:53	6.15	0.194	14.9	138.2	0.17	9.02	
7.07	12:58	6.15	0.189	14.9	139.5	0.18	6.62	
7.07	13:03	6.14	0.185	14.9	141.5	0.18	4.81	
7.07	13:08	6.10	0.183	14.9	142.9	0.15	10.3	
7.07	13:13	6.10	0.182	14.9	143.6	0.16	10.3	
7.07	13:18	6.05	0.180	14.8	145.6	0.14	7.80	
7.07	13:23	6.05	0.180	14.8	144.7	0.15	6.50	

Sample ID No.: KMW-02R-
Water Level Ind. Model & No.: Solinst Model 101
ORP/DO Meter Model & No.: YSI-Pro ~~Dss~~ Plus
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: ~~12:26~~ 12:37
Purge Completion Time: 13:25
Average Purge Rate (mL/min): 160
Analytical Lab: Friedman & Bruya Inc.
Sample Collection Time: 13:35
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations:
MS/MSD sample

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-03R

Project Name: Kelly-Moore

Date: 3/21/2022

Project Number: PS21204540.01

Weather Conditions: rainy, mid 40sF

Location: Seattle, WA

Sampler: Jacklyn Perkins

Wind Speed/Direction: (inside)

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 21.54'

Initial Depth to Water (ft): 7.42

Wellhead Condition: good

Groundwater Elevation (ft): 14.12'

Depth of Well Casing (ft):

Actual Purge Volume (gal): 1.75

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.48	10:48	7.64	0.79	16.5	165.9	0.37	3.42	
7.54	10:53	7.41	0.75	16.6	80.8	0.31	2.66	
7.55	10:58	7.31	0.71	16.6	44.2	0.27	2.20	
7.55	11:03	7.27	0.69	16.7	32.3	0.30	2.75	
7.53	11:07	7.24	0.67	16.6	21.8	0.26	2.43	
7.54	11:12	7.23	0.65	16.7	14.1	0.25	2.79	
7.55	11:17	7.21	0.65	16.7	11.3	0.23	1.73	
7.54	11:22	7.21	0.63	16.7	7.2	0.20	1.65	
7.54	11:27	7.21	0.61	16.7	4.5	0.18	1.54	
7.55	11:32	7.22	0.60	16.7	2.4	0.20	2.38	

Sample ID No.: KMW-03R-

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro Dss Plus

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 10:43

Purge Completion Time: 11:32

Average Purge Rate (mL/min): 130

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 11:35

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-04

Project Name: Kelly-Moore
Date: 3/22/22
Project Number: PS21204540.01
Weather Conditions: 50°F, cloudy
Location: Seattle, WA
Sampler: Jacklyn Perkins
Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 18.56'
Initial Depth to Water (ft): 4.72
Wellhead Condition:
Groundwater Elevation (ft): 13.78'
Depth of Well Casing (ft):
Actual Purge Volume (gal): 2.5 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	✓ Temp. (°C)	✓ ORP (mv)	✓ DO (mg/L)	Turbidity (NTUs)	Notes
4.72	11:13	6.37	0.263	12.7	148.4	0.22	59.7	possible 0.01 NPL
4.72	11:18	6.34	0.269	12.6	144.1	0.22	87.8	turned pump ↑ bottle (pump stopped)
4.72	11:23	6.33	0.275	12.7	138.4	0.29	26.0	
4.72	11:28	6.36	0.277	12.5	133.3	0.51	23.8	
	11:33	6.30	0.277	12.6	134.5	0.63		- STOP -
pump battery died, waited for new one to be delivered/disturbed tubing while diagnosing issue								
4.72	12:46	6.51	0.262	13.1	170.8	1.15	36.7	
4.72	12:51	6.23	0.261	12.8	167.3	1.01	24.4	
4.72	12:55	6.19	0.263	12.8	162.6	0.98	28.1	
4.72	13:00	6.20	0.271	12.8	156.8	1.03	26.5	
4.72	13:04	6.19	0.273	12.8	154.5	1.07	22.7	
4.72	13:07	6.18	0.275	12.7	153.9	1.15	22.5	
4.72	13:11	6.17	0.278	12.7	152.4	1.28	19.5	
4.72	13:15	6.152	0.279	12.7	152.7	1.48	15.0	bubbles on meter

See back side for [cont'd]

Sample ID No.: KMW-04-
Water Level Ind. Model & No.: Solinst Model 101
ORP/DO Meter Model & No.: YSI-Pro ~~Dss~~ pWJ
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:07 / 12:43
Purge Completion Time:
Average Purge Rate (mL/min): 230
Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 13:35
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations:
* possible 0.01 LNAPL @ surface of wtr

KMW-04 [continued] 3/22/22

WL	Time	PH	SPC	TEMP	ORP	DO	NTU
4.72	13:18	6.10	0.281	12.6	152.9	1.63	15.1
4.72	13:22	6.06	0.282	12.6	154.6	2.00	11.7
4.72	13:26	6.07	0.282	12.7	155.3	2.05	12.6
4.72	13:29	6.07	0.282	12.7	155.8	2.19	11.0

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-06

Project Name: Kelly-Moore

Date: 3/22/22

Project Number: PS21204540.01

Weather Conditions: 50°F, rainy

Location: Seattle, WA

Sampler: Jacklyn Perkins

Wind Speed/Direction: 3mph SE

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 19.80'

Initial Depth to Water (ft): 5.83'

Wellhead Condition:

Groundwater Elevation (ft): 13.92'

Depth of Well Casing (ft):

Actual Purge Volume (gal): 0.75 gallon

PURGING MEASUREMENTS

WL (ft btoc)	Time	✓ pH (std. units)	✓ SC (ms/cm)	✓ Temp. (°C)	✓ ORP (mv)	✓ DO (mg/L)	Turbidity (NTUs)	Notes
5.83	8:53	6.45	0.492	13.9	138.5	0.38	36.9	
5.81	8:58	6.47	0.474	13.4	95.7	0.22	30.4	*pulled from ypf#
5.82	9:03	6.47	0.468	13.3	77.0	0.20	34.4	
5.82	9:08	6.48	0.469	13.3	66.3	0.19	30.7	
5.82	9:13	6.48	0.469	13.4	58.3	0.17	32.2	
5.81	9:18	6.49	0.470	13.3	54.8	0.16	29.4	

Sample ID No.: KMW-06-

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122 interface

ORP/DO Meter Model & No.: YSI-Pro ~~Dss~~ plus

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 08:47

Purge Completion Time: 09:18

Average Purge Rate (mL/min): 90

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 09:25

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

*contaminated 1 VOA, discarded sample ypf and bottle, only 5 VOAs total for this well

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-07

Project Name: Kelly-Moore

Project Number: PS21204540.01
Location: Seattle, WA
Sampler: Jacklyn Perkins

Date: 3/21/22
Weather Conditions:

Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 21.63'
Initial Depth to Water (ft): 7.09
Wellhead Condition:

Groundwater Elevation (ft): 14.38'
Depth of Well Casing (ft):
Actual Purge Volume (gal): 2.5

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.12	15:46	6.38	0.296	15.8	139.4	0.41	38.4	
7.12	15:51	6.23	0.283	15.8	131.8	0.41	43.2	
7.12	15:56	6.23	0.275	15.8	129.3	0.13	29.8	
7.12	16:01	6.23	0.266	15.9	126.4	0.15	22.7	
7.12	16:06	6.23	0.264	16.0	126.5	0.15	21.5	
7.12	16:11	6.18	0.282	16.1	130.5	0.16	23.2	
7.12	16:16	6.14	0.298	16.0	132.9	0.15	19.5	
7.12	16:20	6.13	0.304	16.0	133.5	0.15	19.4	
7.12	16:24	6.12	0.315	16.0	134.9	0.15	16.9	
7.13	16:27	6.11	0.323	16.0	136.3	0.13	12.6	
7.13	16:33	6.08	0.327	16.0	137.9	0.13	9.58	

Sample ID No.: KMW-07-
Water Level Ind. Model & No.: Solinst Model 101
ORP/DO Meter Model & No.: YSI-Pro ~~Dss~~ Plus
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 15:43
Purge Completion Time:
Average Purge Rate (mL/min): 230
Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 16:35
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-08

Project Name: Kelly-Moore

Date: 3/21/2022

Project Number: PS21204540.01

Weather Conditions:

Location: Seattle, WA

Sampler: Jacklyn Perkins

Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 21.65'

Initial Depth to Water (ft): 7.24

Wellhead Condition: Good

Groundwater Elevation (ft): 14.54'

Depth of Well Casing (ft):

Actual Purge Volume (gal): 2 gallons

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.30	14:14	6.17	0.734	15.8	116.9	0.15	246	
7.30	14:19	6.13	0.680	15.3	117.6	0.12	163	
7.30	14:24	6.12	0.621	15.4	117.3	0.15	78.1	
7.30	14:29	6.10	0.583	15.6	118.3	0.20	50.5	
7.30	14:34	6.15	0.86	15.5	109.3	0.15	74.1	
7.30	14:39	6.13	0.68	15.5	105.2	0.19	124	
7.30	14:44	6.08	0.572	15.5	110.7	0.21	45.2	
7.30	14:49	6.07	0.68	15.5	109.7	0.21	45.0	

Sample ID No.: KMW-08-

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro ~~Dss~~ Plus

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 1404

Purge Completion Time:

Average Purge Rate (mL/min): 200

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 14:55

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-09

Project Name: Kelly-Moore
Date: 3/22/22
Project Number: PS21204540.01
Weather Conditions: Sunny
Location: Seattle, WA
Sampler: Jacklyn Perkins
Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 18.14'
Initial Depth to Water (ft): 4.18
Wellhead Condition:
Groundwater Elevation (ft): 13.86'
Depth of Well Casing (ft):
Actual Purge Volume (gal): 1.5 gallons

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units) ✓	SC (ms/cm) ✓	Temp. (°C) ✓	ORP (mv)	DO (mg/L) ✓	Turbidity (NTUs)	Notes
4.18	14:37	6.36	0.392	14.7	156.5	0.22	90.2	
	14:43							
4.18	14:48	6.39	0.389	14.8	118.5	0.12	62.9	
4.18	14:53	6.41	0.383	14.7	106.3	0.11	63.8	
4.18	14:57	6.42	0.379	14.67	89.4	0.11	68.3	
4.18	15:01	6.45	0.375	14.7	73.8	0.09	53.8	
4.18	15:04	6.45	0.373	14.7	67.1	0.09	48.3	
4.18	15:07	6.48	0.369	14.7	60.1	0.12	45.2	
4.18	15:10	6.47	0.368	14.6	55.2	0.09	40.2	

Sample ID No.: KMW-09-
Water Level Ind. Model & No.: Solinst Model 101
ORP/DO Meter Model & No.: YSI-Pro Dss pDO
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 14:33
Purge Completion Time:
Average Purge Rate (mL/min): 170
Analytical Lab: Friedman & Bruya Inc.
Sample Collection Time: 15:25
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-10

Project Name: Kelly-Moore

Date: 3/22/22

Project Number: PS21204540.01

Weather Conditions:

Location: Seattle, WA

Sampler: Jacklyn Perkins

Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 20.39'

Initial Depth to Water (ft): 6.81'

Wellhead Condition: ~~6.81~~

Groundwater Elevation (ft): 13.51'

Depth of Well Casing (ft):

Actual Purge Volume (gal): ~~3 gal~~ 2.5 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
6.81	16:28	6.50	0.539	14.5	60.0	0.14	57.5	
6.81	16:32	6.48	0.530	14.4	46.4	0.13	52.2	
6.82	16:36	6.51	0.528	14.5	33.2	0.13	50.5	
6.82	16:40	6.54	0.530	14.5	22.8	0.10	46.1	
6.82	16:44	6.56	0.535	14.6	14.8	0.10	43.9	
6.82	16:48	6.57	0.535	14.5	7.7	0.11	38.0	
6.82	16:52	6.57	0.534	14.6	4.2	0.09	28.4	

Sample ID No.: KMW-10-

Water Level Ind. Model & No.: Solinst Model 101

ORP/DO Meter Model & No.: YSI-Pro ~~Dss~~ plus

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 16:23

Purge Completion Time:

Average Purge Rate (mL/min): 200

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 17:05

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

*duplicate sample - KMW-DUP @ 11:35

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-02R

Project Name: Kelly-Moore
Date: 8/19/2022
Project Number: PS21204540.01
Weather Conditions:
Location: Seattle, WA
Sampler: JS Perkins
Wind Speed/Direction: inside

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 21.63'
Initial Depth to Water (ft): 9.30
Wellhead Condition: good
Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal): 5 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units) ✓	SC (ms/cm) ✓	Temp. (°C) ✓	ORP (mv) ✓	DO (mg/L) ✓	Turbidity (NTUs)	Notes
9.39	9:43	5.59	214.9	14.6	159.4	1.54	60.09	Colorless, no sedn
9.39	9:47	5.59	211.1	14.8	166.5	1.42	56.04	
9.39	9:50	5.60	201.8	15.1	176.3	1.44	49.74	
9.40	9:53	5.64	206.4	15.1	187.7	1.37	13.67	
9.40	9:56	5.66	208.6	15.1	193.5	1.29	30.92	
9.40	10:01	5.70	209.4	15.0	200.4	1.26	38.90	
9.40	10:04	5.71	209.4	14.9	203.7	1.25	13.55	
9.43	10:07	5.71	208.9	15.0	205.6	1.22	11.30	
9.43	10:11	5.72	209.7	15.0	202.9	1.21	15.67	

Sample ID No.: KMW-02R- 08192022
Water Level Ind. Model & No.: Solinst Model ~~101~~ 122
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 9:40
Purge Completion Time:
Average Purge Rate (mL/min): 400
Analytical Lab: Friedman & Bruya Inc.
Sample Collection Time: 10:00
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations: Collect MS/MSD

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-~~01~~ 03R

Project Name: Kelly-Moore

Date: 08/19/2022

Project Number: PS21204540.01

Weather Conditions:

Location: Seattle, WA

Sampler: J. Peerbhoy

Wind Speed/Direction: inside

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): ~~[illegible]~~ 21.54'

Initial Depth to Water (ft): 9.40

Wellhead Condition:

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 3 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
9.73	14:27	6.84	387.1	17.5	-13.6	1.70	36.60	colorless, initial diesel odor
9.73	14:30	6.93	354.5	17.5	-30.0	1.35	30.30	odor gone
9.74	14:34	6.99	340.1	17.5	-46.5	1.26	24.52	
9.74	14:38	7.00	342.9	17.5	-55.6	1.21	17.85	
9.74	14:41	7.02	335.4	17.5	-60.4	1.17	10.26	
9.74	14:44	7.03	337.4	17.5	-64.2	1.13	8.50	

Sample ID No.: KMW-~~01~~ 03R-08192022

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: ~~13~~ 14:22

Purge Completion Time:

Average Purge Rate (mL/min): 400

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 14:30

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-04

Project Name: Kelly-Moore

Date: 08/17/2022

Project Number: PS21204540.01

Weather Conditions: Sunny, 80°F

Location: Seattle, WA

Sampler: J. Perkins

Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"

Groundwater Elevation (ft): 12.05'

Top of Casing Elevation (ft): 18.56'

Depth of Well Casing (ft):

Initial Depth to Water (ft): 6.51'

Actual Purge Volume (gal):

Wellhead Condition: fair/poor - extensive biological growth / should replace plug

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
6.63'	12:~~58~~	6.28	207.6	17.4	-23.3	1.30	~~36~~.75	greyish, much sediment/organic material
6.63'	12:59	5.75	155.3	17.7	21.3	1.32	23.54	
6.63'	13:02	5.70	155.1	17.6	37.9	1.24	12.66	
6.63'	13:06	5.69	157.7	17.6	45.3	1.21	11.96	
6.63'	13:10	5.77	167.2	17.6	37.8	1.18	8.06	
6.63'	13:14	5.73	163.3	17.6	43.6	1.20	~~6.89~~ 5.47	
6.63'	13:18	5.77	167.9	17.6	42.9	1.17	8.26	

Sample ID No.: KMW-04-08172022

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 12:50

Sample Collection Time: 13:30

Purge Completion Time:

Purging Method: Low-Flow

Average Purge Rate (mL/min): 450

Sample Containers Used: Lab Provided

Analytical Lab: Friedman & Bruya Inc.

Chemical Analyses: See COC

Other Field Observations: water in wellhead, try to replace plug

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-06

Project Name: Kelly-Moore

Project Number: PS21204540.01
Location: Seattle, WA
Sampler: J. Perkins

Date: 8/16/22
Weather Conditions: none
Wind Speed/Direction: Sunny, 65°F

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 19.80'
Initial Depth to Water (ft): 7.71
Wellhead Condition: good

Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal): 5 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
7.84	8:18	6.12	517	17.5	-44.8	1.45	70.53	dark grey/sed
7.84	8:22	6.16	558	18.2	-58.3	1.23	80.63	
7.84	8:26	6.05	580	18.3	-54.9	1.17	99.56	bubbles
7.84	8:29	6.06	606	18.4	-56.1	1.12	46.40	
7.84	8:32	6.07	611	18.4	-57.5	1.13	39.09	
7.84	8:35	6.09	611	18.4	-59.1	1.07	44.62	end purge

Sample ID No.: KMW-06-08162022
Water Level Ind. Model & No.: Solinst Model ~~101~~ 122
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 8:18
Purge Completion Time:
Average Purge Rate (mL/min): 350
Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 8:45
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations: replaced tubing

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-~~0BR~~07

Project Name: Kelly-Moore

Date: 08-19-2022

Project Number: PS21204540.01

Weather Conditions:

Location: Seattle, WA

Sampler: J. Perkins

Wind Speed/Direction: inside

WELL INFORMATION

Casing Diameter (In): 2"

Top of Casing Elevation (ft): ~~0.00~~ 21.63'

Initial Depth to Water (ft): 9.36

Wellhead Condition: good

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 5gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
9.36	10:28	6.07	279.5	16.0	72.0	1.40	24.13	colorless, no sods
9.46	10:31	6.04	276.3	16.1	72.6	1.28	26.58	
9.46	10:36	6.02	272.0	16.1	73.9	1.24	16.77	
9.48	10:41	5.98	272.6	16.2	76.5	1.20	11.23	
9.48	10:45	5.95	276.1	16.2	77.4	1.18	12.54	
9.48	11:49	5.93	278.1	16.2	76.9	1.17	11.40	

Sample ID No.: KMW-~~0BR~~07-08192022

Water Level Ind. Model & No.: Solinst Model 101, 122

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: ~~1028~~ 11:28

Purge Completion Time:

Average Purge Rate (mL/min): 400

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 12:00

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-08

Project Name: Kelly-Moore
Date: 8/19/2022
Project Number: PS21204540.01
Weather Conditions:
Location: Seattle, WA
Sampler: J. Perkins
Wind Speed/Direction: inside

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 21.65'
Initial Depth to Water (ft): 9.56
Wellhead Condition: Good
Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal): 3.5 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
9.66	13:09	5.81	235.3	16.5	124.0	1.32	27.35	colorless, no odor
9.66	13:12	5.83	240.2	16.5	122.6	1.27	26.47	
9.66	13:15	5.82	242.7	16.5	121.0	1.22	27.29	
9.66	13:19	5.82	244.6	16.5	119.2	1.20	26.93	

Sample ID No.: KMW-08- 08192022
Water Level Ind. Model & No.: Solinst Model ~~101~~ 122
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 13:05
Purge Completion Time:
Average Purge Rate (mL/min): 400
Analytical Lab: Friedman & Bruya Inc.
Sample Collection Time: 13:30
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations:

Updated 8/15/22

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-09

Project Name: Kelly-Moore

Date: 8/16/2022

Project Number: PS21204540.01

Weather Conditions: Sunny 65°F

Location: Seattle, WA

Sampler: J. Perkins

Wind Speed/Direction: South

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft): 18.14'

Initial Depth to Water (ft): 6.09'

Wellhead Condition: good

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 6 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
6.12	9:41	6.15	405.6	17.0	-19.1	1.58	27.05	colorless, some sed
6.13	9:46	6.17	363.9	17.4	-33.0	1.16	62.21	
6.13	9:49	6.18	362.6	17.5	-35.5	1.12	44.69	
6.13	9:52	6.19	364.5	17.5	-38.6	1.11	52.56	
6.14	9:56	6.19	370.7	17.5	-39.6	1.10	56.87	
6.14	9,59	6.19	373.2	17.5	-41.3	1.07	53.39	end purge

Sample ID No.: KMW-09- 08162022

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: ~~9:15~~ 9:40

Purge Completion Time:

Average Purge Rate (mL/min): ~~350~~ 400

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 10:15

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

replaced tubing

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-10

Project Name: Kelly-Moore
Date: 8/17/2022
Project Number: PS21204540.01
Weather Conditions: Sunny, 75°F
Location: Seattle, WA
Sampler: J. Perkins
Wind Speed/Direction:

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft): 20.39'
Initial Depth to Water (ft): 8.49'
Wellhead Condition: fair
Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal): 4 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
11:01	8.53'	6.27	581	16.8	-22.6	1.45	148.04	greyish, sads
11:05	8.53'	6.30	563	17.0	-45.7	1.25	21.45	
11:09	8.53'	6.32	555	16.8	-53.2	1.18	19.92	
11:14	8.53	6.33	549	16.7	-60.8	1.13	21.78	
11:19	8.53	6.32	554	16.8	-63.6	1.11	26.56	
11:24	8.53	6.32	556	16.8	-66.0	1.09	14.79	
11:29	8.53	6.32	553	16.7	-67.0	1.09	16.33	
11:33	8.53	6.31	538	16.8	-67.8	1.07	15.66	

Sample ID No.: KMW-10-08172022 DUP = KMW-DUP-08172022
Water Level Ind. Model & No.: Solinst Model 101 122
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 11:00
Purge Completion Time:
Average Purge Rate (mL/min): 250
Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 11:30 DUP: 12:30
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations: Duplicate

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-11

Project Name: Kelly-Moore

Project Number: PS21204540.01
Location: Seattle, WA
Sampler: J Perkins

Date: 8/17/2022
Weather Conditions: 70°F Sunny
Wind Speed/Direction: <5mph

WELL INFORMATION

Casing Diameter (in): 2"
Top of Casing Elevation (ft):
Initial Depth to Water (ft): 8.67'
Wellhead Condition: new

Groundwater Elevation (ft):
Depth of Well Casing (ft):
Actual Purge Volume (gal): 3 gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
8.72	10:04	6.47	165.0	14.3	~~-3.0~~	1.50	72.59	Colorless, no odor
8.73	10:07	6.41	162.6	14.3	-22.5	1.33	29.64	
8.72	10:10	6.39	162.0	14.4	-25.2	1.27	27.78	
8.72	10:14	6.38	161.6	14.4	-27.5	1.24	22.13	

Sample ID No.: KMW-11- 08172022
Water Level Ind. Model & No.: Solinst Model ~~101~~ 122
ORP/DO Meter Model & No.: YSI-Pro Dss
Purge Equipment Used: Peristaltic Pump with dedicated tubing
Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 10:00
Purge Completion Time: 10:15
Average Purge Rate (mL/min): 475
Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 1030
Purging Method: Low-Flow
Sample Containers Used: Lab Provided
Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- KMW-12

Project Name: Kelly-Moore

Date: 8/16/2022

Project Number: PS21204540.01

Weather Conditions: Sunny ~~70~~ °F

Location: Seattle, WA

Sampler: J. Perkins

Wind Speed/Direction: ~~SW~~ NW <5mph

WELL INFORMATION

Casing Diameter (in): 2"

Top of Casing Elevation (ft):

Initial Depth to Water (ft): 6.27'

Wellhead Condition: new

Groundwater Elevation (ft):

Depth of Well Casing (ft):

Actual Purge Volume (gal): 3.5gal

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units) ✓	SC (ms/cm) ✓	Temp. (°C) ✓	ORP (mv)	DO (mg/L) ✓	Turbidity (NTUs) ✓	Notes
10:33↔6.27'		6.96	1105	15.5	8.2	1.89	6.78	colorless, no sed
10:38↔6.36'		6.60	510	16.0	-42.4	1.26	11.34	
~~10:43~~ 6.36'		6.42	489.6	16.3	-41.7	1.16	10.01	
6.36'	10:47	6.23	474.7	16.8	-16.0	1.13	9.74	
6.36'	10:52	6.20	472.6	17.0	-19.3	1.13	10.11	
6.36'	10:55	6.21	472.3	17.1	-27.0	1.10	9.65	
6.36'	10:59	6.21	467.9	17.1	-33.8	1.08	8.55	
6.36'	11:04	6.22	467.6	17.2	-36.9	1.08	9.51	

Sample ID No.: KMW-12- 08162022

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122 only 1 nitric poly, 1 amber

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 10:30

Purge Completion Time: 11:04

Average Purge Rate (mL/min): ~~475~~ 450

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 11:15

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- BFK-926

Project Name: Kelly-Moore

Date: 8/17/2022

Project Number: PS21204540.01

Weather Conditions: 65°F, Sunny

Location: Seattle, WA

Sampler: J. Perkins

Wind Speed/Direction: <5mph

WELL INFORMATION

Casing Diameter (in): 2"

Groundwater Elevation (ft):

Top of Casing Elevation (ft):

Depth of Well Casing (ft):

Initial Depth to Water (ft): 7.65'

Actual Purge Volume (gal): 5gal

Wellhead Condition: fair

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH ✓ (std. units)	SC ✓ (ms/cm)	Temp. ✓ (°C)	ORP ✓ (mv)	DO ✓ (mg/L)	Turbidity (NTUs)	Notes
7.65	8:31	6.26	474.3	16.2		1.86	82.15	reddish yellow, sed/organics
7.66	8:35	6.24	463.4	16.2	-9.2	1.53	72.81	
7.66	8:39	6.24	462.6	16.3	-20.0	1.47	51.34	
7.66	8:44	6.23	451.4	16.4	-24.9	1.91	55.69	
7.66	8:49	6.23	437.9	16.5	-25.8	2.00	51.65	
7.66	8:53	6.23	433.3	16.5	-25.9	1.94	38.33	
7.66	8:58	6.23	429.1	16.5	-26.5	1.81	30.10	
7.66	9:01	6.23	424.3	16.5	-26.2	1.80	23.58	
7.66	9:04	6.23	430.1	16.5	-26.1	1.75	22.68	

Sample ID No.: BFK-926- 08172022

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 8:30

Purge Completion Time:

Average Purge Rate (mL/min): 475

Analytical Lab: Friedman & Bruya Inc.

Sample Collection Time: 09:00

Purging Method: Low-Flow

Sample Containers Used: Lab Provided

Chemical Analyses: See COC

Other Field Observations:

wood.

GROUNDWATER SAMPLING LOG
Low Flow Sampling

MONITORING WELL/PIEZOMETER NUMBER- BFK-927

Project Name: Kelly-Moore

Date: 8/16/2022

Project Number: PS21204540.01

Weather Conditions: Sunny 70°F

Location: Seattle, WA

Sampler: D. Perkins

Wind Speed/Direction: <5mph W

WELL INFORMATION

Casing Diameter (in): 2"

Groundwater Elevation (ft):

Top of Casing Elevation (ft):

Depth of Well Casing (ft):

Initial Depth to Water (ft): 6.32

Actual Purge Volume (gal): 7gal

Wellhead Condition: bolts rusted shut, otherwise fair

PURGING MEASUREMENTS

WL (ft btoc)	Time	pH (std. units)	SC (ms/cm)	Temp. (°C)	ORP (mv)	DO (mg/L)	Turbidity (NTUs)	Notes
6.37'	12:31	6.17	717.6	19.2	-64.2	2.00	65.39	greyish, some seds, yellowish
6.37'	12:35	6.18	718	18.8	-65.7	1.48	52.94	
6.38'	12:40	6.18	682	18.3	-66.4	1.15	52.44	sheen in bucket w/
6.38'	12:45	6.17	677	18.4	-64.8	1.13	25.43	
6.38'	12:49	6.16	667	18.4	-63.9	1.10	26.57	chunky biofilm
6.38	12:53	6.16	657	18.4	-62.7	1.10	23.89	
	12:57	—	—	—	—	—	—	pumped opaque, brownish red w/ organic high NTU of >650
	13:05	—	—	—	—	—	—	same, max 400 NTU
6.38'	13:21	6.18	581	18.4	-41.5	1.22	68.37	
6.38'	13:24	6.18	581	18.4	-43.3	1.10	34.56	
6.38'	13:27	6.17	592	18.3	-44.7	1.06	32.11	
6.38	13:30	6.17	581	18.3	-45.5	1.05	34.67	

Sample ID No.: BFK-927-08162022

Water Level Ind. Model & No.: Solinst Model ~~101~~ 122

ORP/DO Meter Model & No.: YSI-Pro Dss

Purge Equipment Used: Peristaltic Pump with dedicated tubing

Sampling Equipment Used: YSI Pro Dss

Purge Start Time: 12:28

Sample Collection Time: 1300

Purge Completion Time: 13:30

Purging Method: Low-Flow

Average Purge Rate (mL/min): 400

Sample Containers Used: Lab Provided

Analytical Lab: Friedman & Bruya Inc.

Chemical Analyses: See COC

Other Field Observations: new tubing, water is brown/grey/yellow, organic material common

APPENDIX D

FIELD FORMS AND ANALYTICAL DATA, SVE MONITORING

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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fbi@isomedia.com
www.friedmanandbruya.com

January 25, 2022

Scott Adamek, Project Manager
Wood Environment & Infrastructure
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Adamek:

Included are the results from the testing of material submitted on January 12, 2022 from the Kelly Moore, F&BI 201138 project. There are 6 pages included in this report.

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: Christy Duitman
WEI0125R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on January 12, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 201138 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
201138 -01	Eff-1-12-2022
201138 -02	Inf-1-12-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff-1-12-2022	Client:	Wood Environment & Infrastructure
Date Received:	01/12/22	Project:	Kelly Moore, F&BI 201138
Date Collected:	01/12/22	Lab ID:	201138-01 1/5
Date Analyzed:	01/20/22	Data File:	011929.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	100	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.6	<0.5
Toluene	<94	<25
Ethylbenzene	<2.2	<0.5
m,p-Xylene	<4.3	<1
o-Xylene	<2.2	<0.5
Gasoline Range Organics	<1,600	<400

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf-1-12-2022	Client:	Wood Environment & Infrastructure
Date Received:	01/12/22	Project:	Kelly Moore, F&BI 201138
Date Collected:	01/12/22	Lab ID:	201138-02 1/7.8
Date Analyzed:	01/20/22	Data File:	011930.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	2.6	0.82
Toluene	<150	<39
Ethylbenzene	<3.4	<0.78
m,p-Xylene	<6.8	<1.6
o-Xylene	<3.4	<0.78
Gasoline Range Organics	11,000	2,700

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 201138
Date Collected:	Not Applicable	Lab ID:	02-126 MB
Date Analyzed:	01/19/22	Data File:	011911.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 01/25/22
Date Received: 01/12/22
Project: Kelly Moore, F&BI 201138

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 201228-01 1/5.3 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	6.3	6.3	0
Toluene	ug/m3	<100	<100	nm
Ethylbenzene	ug/m3	3.3	3.3	0
m,p-Xylene	ug/m3	16	15	6
o-Xylene	ug/m3	8.7	8.6	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	96	70-130
Toluene	ug/m3	51	107	70-130
Ethylbenzene	ug/m3	59	97	70-130
m,p-Xylene	ug/m3	120	102	70-130
o-Xylene	ug/m3	59	104	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 analyte 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 due to sample matrix effects.

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.

201138

SAMPLE CHAIN OF CUSTODY

MF 1/12/22

Page # 1 of 1

Report To Scott Adamek & Christy Dittman
Company Woodard Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 2063421778 5033396551 Email scott.adamek@woodpic.com christy.dittman@woodpic.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane BTEX by TO15	Notes
Eff_1-12-2022	01			IA / (SG)	1-12-22	30"	9:42	0"	9:50						X	Dura: 8 min SN: 8267
Inf_1-12-2022	02			IA / (SG)	1-12-22	30"	10:00	-0"	10:08						X	Dura: 8min SN: 8530
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

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:		Gavin Klockeman	JHA	1-12-22	1415
Received by:	MyLinhPham	MyLinhPham	FBI	1/12/22	1415
Relinquished by:					
Received by:			Samples received at 7.0 °C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

February 15, 2022

Scott Adamek , Project Manager
Wood Environment & Infrastructure
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Adamek:

Included are the results from the testing of material submitted on February 7, 2022 from the Kelly Moore, F&BI 202104 project. There are 6 pages included in this report.

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: Christy Duitman
WEI0215R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on February 7, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 202104 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
202104 -01	Eff_2-7-2022
202104 -02	Inf_2-7-2022

The TO-15 calibration standard failed the acceptance criteria for several analytes. The data were flagged accordingly.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_2-7-2022	Client:	Wood Environment & Infrastructure
Date Received:	02/07/22	Project:	Kelly Moore, F&BI 202104
Date Collected:	02/07/22	Lab ID:	202104-01 1/5.2
Date Analyzed:	02/10/22	Data File:	020931.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.7	<0.52
Toluene	<98	<26
Ethylbenzene	<2.3	<0.52
m,p-Xylene	<4.5	<1
o-Xylene	<2.3	<0.52
Gasoline Range Organics	<1,700	<420

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_2-7-2022	Client:	Wood Environment & Infrastructure
Date Received:	02/07/22	Project:	Kelly Moore, F&BI 202104
Date Collected:	02/07/22	Lab ID:	202104-02 1/37
Date Analyzed:	02/10/22	Data File:	020932.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	104	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<12	<3.7
Toluene	<700	<180
Ethylbenzene	<16	<3.7
m,p-Xylene	<32	<7.4
o-Xylene	<16	<3.7
Gasoline Range Organics	15,000	3,700

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 202104
Date Collected:	Not Applicable	Lab ID:	02-0224 MB
Date Analyzed:	02/09/22	Data File:	020913.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 02/15/22
Date Received: 02/07/22
Project: Kelly Moore, F&BI 202104

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 202134-02 1/5.9 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.9	<1.9	nm
Toluene	ug/m3	<110	<110	nm
Ethylbenzene	ug/m3	<2.6	<2.6	nm
m,p-Xylene	ug/m3	<5.1	<5.1	nm
o-Xylene	ug/m3	<2.6	<2.6	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	89	70-130
Toluene	ug/m3	51	91	70-130
Ethylbenzene	ug/m3	59	98	70-130
m,p-Xylene	ug/m3	120	98	70-130
o-Xylene	ug/m3	59	107	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 analyte 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 due to sample matrix effects.

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

202404

02.07.22

Report To Scott Adamek + Christy Dutman
Company NOOD Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 425 305 8675 Email scott.adamek@woodplc.com christy.dutman@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

Page # 1 of 1

TURNAROUND TIME
☐ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	BTEX VOA TO15 TPH-Gas as Hexane	Notes
EFF-2-7-2022	01	3666		IA / (SG)	2-7-22	-30	11:16	Ø	11:23						X	SN: 3666 Dura: 7 min 3666
INF-2-7-2022	02	3311		IA / (SG)	2-7-22	-30	11:26	Ø	11:36						X	SN: 3311 Dura: 10 min 3311
				IA / SG												Tu 21:
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Klockeman	JHA	2-7-22	13:04
Received by:	Tokala Christensen	F+B	2-7-22	13:04
Relinquished by:				
Received by:		Samples received at 15 °C		

Friedman & Bruya, Inc.
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Fax (206) 283-5044

FORMS\COC\COCTO-15.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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fbi@isomedia.com
www.friedmanandbruya.com

March 22, 2022

Scott Adamek, Project Manager
Wood Environment & Infrastructure
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Adamek:

Included are the results from the testing of material submitted on March 8, 2022 from the Kelly Moore, F&BI 203143 project. There are 6 pages included in this report.

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: Christy Duitman
WEI0322R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 8, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 203143 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
203143 -01	Eff_3-8-2022
203143 -02	Inf_3-8-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_3-8-2022	Client:	Wood Environment & Infrastructure
Date Received:	03/08/22	Project:	Kelly Moore, F&BI 203143
Date Collected:	03/08/22	Lab ID:	203143-01 1/5.2
Date Analyzed:	03/12/22	Data File:	031128.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	88	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.7	<0.52
Toluene	<98	<26
Ethylbenzene	<2.3	<0.52
m,p-Xylene	<4.5	<1
o-Xylene	<2.3	<0.52
Gasoline Range Organics	<1,700	<420

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_3-8-2022	Client:	Wood Environment & Infrastructure
Date Received:	03/08/22	Project:	Kelly Moore, F&BI 203143
Date Collected:	03/17/22	Lab ID:	203143-02 1/8.0
Date Analyzed:	03/18/22	Data File:	031732.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	86	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<2.6	<0.8
Toluene	<150	<40
Ethylbenzene	<3.5	<0.8
m,p-Xylene	<6.9	<1.6
o-Xylene	<3.5	<0.8
Gasoline Range Organics	<2,600	<640

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 203143
Date Collected:	Not Applicable	Lab ID:	02-0564 MB
Date Analyzed:	03/11/22	Data File:	031112.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	89	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 03/22/22
Date Received: 03/08/22
Project: Kelly Moore, F&BI 203143

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 203099-01 1/5.8 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.9	<1.9	nm
Toluene	ug/m3	<110	<110	nm
Ethylbenzene	ug/m3	<2.5	<2.5	nm
m,p-Xylene	ug/m3	<5	<5	nm
o-Xylene	ug/m3	<2.5	<2.5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	104	70-130
Toluene	ug/m3	51	105	70-130
Ethylbenzene	ug/m3	59	105	70-130
m,p-Xylene	ug/m3	120	109	70-130
o-Xylene	ug/m3	59	110	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 analyte 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 due to sample matrix effects.

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.

203143

SAMPLE CHAIN OF CUSTODY

03/08/22

Page # 1 of 1

Report To Scott Adamek & Christy Dutman
Company Wood Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 2063421778 Email Scott.adamek@woodplc.com
5033346551 christy.dutman@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas w/ Hexane BTEX by TO15	Notes
Eff_3-8-2022	01		01	IA / (SG)	3-8-22	30	10:34	Ø	10:41						X	Dura: 7 min SW: 2296
Inf_3-8-2022	02		18	IA / (SG)	3-8-22	30	10:45	Ø	10:59						X	Dura: 14 min SW: 2299
			TWC 3/8	IA / SG											X	
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Rockeman	JHA	3-8-22	1200
Received by:	Michael Gaddell	FCR	3-8-22	1200
Relinquished by:				
Received by:		Samples received at 19 °C		

Friedman & Bruya, Inc.
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Seattle, WA 98119-2029
Ph. (206) 285-8282
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

April 25, 2022

Scott Adamek, Project Manager
Wood Environment & Infrastructure
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Mr Adamek:

Included are the results from the testing of material submitted on April 8, 2022 from the Kelly Moore, F&BI 204109 project. There are 7 pages included in this report.

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: Christy Duitman
WEI0425R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 8, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 204109 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
204109 -01	Eff_4-8-2022
204109 -02	Inf_4-8-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_4-8-2022	Client:	Wood Environment & Infrastructure
Date Received:	04/08/22	Project:	Kelly Moore, F&BI 204109
Date Collected:	04/19/22	Lab ID:	204109-01 1/5
Date Analyzed:	04/19/22	Data File:	041917.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.6	<0.5
Toluene	<94	<25
Ethylbenzene	<2.2	<0.5
m,p-Xylene	<4.3	<1
o-Xylene	<2.2	<0.5
Naphthalene	<1.3	<0.25
Gasoline Range Organics	<1700	<400

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_4-8-2022	Client:	Wood Environment & Infrastructure
Date Received:	04/08/22	Project:	Kelly Moore, F&BI 204109
Date Collected:	04/19/22	Lab ID:	204109-02 1/7.6
Date Analyzed:	04/19/22	Data File:	041918.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	14	4.5
Toluene	<140	<38
Ethylbenzene	<3.3	<0.76
m,p-Xylene	<6.6	<1.5
o-Xylene	<3.3	<0.76
Naphthalene	<2	<0.38
Gasoline Range Organics	6,800	1,700

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 204109
Date Collected:	04/19/22	Lab ID:	02-0934 MB
Date Analyzed:	04/19/22	Data File:	041915.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Naphthalene	<0.26	<0.05
Gasoline Range Organics	<330	<80

Date of Report: 04/25/22
Date Received: 04/08/22
Project: Kelly Moore, F&BI 204109

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 204120-01 1/9 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<2.9	<2.9	nm
Toluene	ug/m3	<170	<170	nm
Ethylbenzene	ug/m3	<3.9	<3.9	nm
m,p-Xylene	ug/m3	<7.8	<7.8	nm
o-Xylene	ug/m3	<3.9	<3.9	nm
Naphthalene	ug/m3	<2.4	<2.4	nm

Date of Report: 04/25/22
Date Received: 04/08/22
Project: Kelly Moore, F&BI 204109

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	106	70-130
Toluene	ug/m3	51	98	70-130
Ethylbenzene	ug/m3	59	99	70-130
m,p-Xylene	ug/m3	120	103	70-130
o-Xylene	ug/m3	59	105	70-130
Naphthalene	ug/m3	71	105	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 analyte 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 due to sample matrix effects.

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

204109

04.08.22

Report To Scott Adamek & Christy Dustman
Company WOOD Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 2063421778 5033346551 Email Scott.adamek@woodplc.com christy.dustman@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

Page # 1 of 1

TURNAROUND TIME
- [x] Standard
- [ ] RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Default: Clean after 3 days
- [ ] Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas by Hexane BTEX by TO15	Notes
EFF_4-8-2022	01	3412	259	IA / (SG)	4-8-2022	30"	9:54	1"	10:02						X	Dura: 8 min SN: 3412
Inf_4-8-2022	02	3432	302	IA / (SG)	4-8-2022	30"	10:10	0"	10:16						X	Dura: 6 min SN: 3432
		TWC 418	TWC 418	IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Hockeman	JMA	4-8-22	11:10
Received by: Gavin Hockeman	FT Tokala C	FTB	4/8/22	11:10
Relinquished by: Tokala Christensen				
Received by:		Samples received at		22 °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.
Vineta Mills, M.S.
Eric Young, B.S.

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

May 19, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
One Union Square
600 University Street, Suite 600
Seattle, WA 98101

Dear Ms Duitman:

Included are the results from the testing of material submitted on May 10, 2022 from the Kelly Moore, F&BI 205151 project. There are 6 pages included in this report.

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
WEI0519R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on May 10, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 205151 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
205151 -01	Eff_5-10-2022
205151 -02	Inf_5-10-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_5-10-2022	Client:	Wood Environment & Infrastructure
Date Received:	05/10/22	Project:	Kelly Moore, F&BI 205151
Date Collected:	05/10/22	Lab ID:	205151-01 1/5.1
Date Analyzed:	05/12/22	Data File:	051122.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.6	<0.51
Toluene	<96	<25
Ethylbenzene	<2.2	<0.51
m,p-Xylene	<4.4	<1
o-Xylene	<2.2	<0.51
Gasoline Range Organics	<1,700	<410

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_5-10-2022	Client:	Wood Environment & Infrastructure
Date Received:	05/10/22	Project:	Kelly Moore, F&BI 205151
Date Collected:	05/10/22	Lab ID:	205151-02 1/8.2
Date Analyzed:	05/12/22	Data File:	051123.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<2.6	<0.82
Toluene	<150	<41
Ethylbenzene	<3.6	<0.82
m,p-Xylene	<7.1	<1.6
o-Xylene	<3.6	<0.82
Gasoline Range Organics	3,300	810

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 205151
Date Collected:	Not Applicable	Lab ID:	02-1090 mb
Date Analyzed:	05/11/22	Data File:	051113.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	92	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 05/19/22
Date Received: 05/10/22
Project: Kelly Moore, F&BI 205151

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 202156-01 1/6.2 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	28	27	4
Toluene	ug/m3	130	140	7
Ethylbenzene	ug/m3	7.9	7.7	3
m,p-Xylene	ug/m3	27	26	4
o-Xylene	ug/m3	8.1	7.7	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	98	70-130
Toluene	ug/m3	51	112	70-130
Ethylbenzene	ug/m3	59	87	70-130
m,p-Xylene	ug/m3	120	93	70-130
o-Xylene	ug/m3	59	97	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 analyte 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 due to sample matrix effects.

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.

205151

SAMPLE CHAIN OF CUSTODY

0570-22

Page # 1 of 1

Report To Christy Dutman
Company WOOD Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 5033346551 Email christy.dutman@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas <5 Hex BTEX by TO15	Notes
Eff_5-10-2022	01			IA / (SG)	5-10-22	30	10:03	0	10:12						X	Dura: 9 min SN: 8232
Inf_5-10-2022	02			IA / (SG)	5-10-22	29	10:19	0	10:27						X	Dura: 8 min SN: 9561
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												Samples received at 22 °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:	Gavin Klockeman	JHA	5-10-22	1533
Received by:	Michael Eckl	F&B Inc	5/10/22	1133
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 14, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
Lake Washington Blvd NE, Suite 200
Kirkland, WA 98033

Dear Ms Duitman:

Included are the results from the testing of material submitted on June 7, 2022 from the Kelly Moore PO C014104200, F&BI 206110 project. There are 6 pages included in this report.

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
WEI0614R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on June 7, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore PO C014104200, F&BI 206110 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
206110 -01	Eff_6-7-2022
206110 -02	Inf_6-7-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_6-7-2022	Client:	Wood Environment & Infrastructure
Date Received:	06/07/22	Project:	Kelly Moore PO C014104200
Date Collected:	06/07/22	Lab ID:	206110-01 1/4
Date Analyzed:	06/09/22	Data File:	060830.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	84	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.3	<0.4
Toluene	<75	<20
Ethylbenzene	<1.7	<0.4
m,p-Xylene	<3.5	<0.8
o-Xylene	<1.7	<0.4
Gasoline Range Organics	<1,300	<320

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_6-7-2022	Client:	Wood Environment & Infrastructure
Date Received:	06/07/22	Project:	Kelly Moore PO C014104200
Date Collected:	06/07/22	Lab ID:	206110-02 1/5
Date Analyzed:	06/09/22	Data File:	060831.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	105	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	6.1	1.9
Toluene	<94	<25
Ethylbenzene	<2.2	<0.5
m,p-Xylene	<4.3	<1
o-Xylene	<2.2	<0.5
Gasoline Range Organics	11,000	2,800

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore PO C014104200
Date Collected:	Not Applicable	Lab ID:	02-1355 MB
Date Analyzed:	06/08/22	Data File:	060821.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	80	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 06/14/22
Date Received: 06/07/22
Project: Kelly Moore PO C014104200, F&BI 206110

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 206117-01 1/4.6 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.5	<1.5	nm
Toluene	ug/m3	<87	<87	nm
Ethylbenzene	ug/m3	<2	<2	nm
m,p-Xylene	ug/m3	<4	<4	nm
o-Xylene	ug/m3	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	97	70-130
Toluene	ug/m3	51	104	70-130
Ethylbenzene	ug/m3	59	98	70-130
m,p-Xylene	ug/m3	120	108	70-130
o-Xylene	ug/m3	59	111	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 analyte 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 due to sample matrix effects.

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.

206110

SAMPLE CHAIN OF CUSTODY

06-07-22

Page # 1 of 1

Report To Christy Dritman
Company WSDOT Environmental
Address 600 University St. Suite 1600
City, State, ZIP Seattle, WA 98101
Phone 5033316551 Email christy.dritman@wsdot.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean after 3 days
☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane/BTEX by TO15	Notes
IFF-6-7-2022	01			IA / (SG)	6-7-22	30	9:52	0	10:00						X	Dura: 8 min SW: 4184
INF-6-7-2022	02			IA / (SG)	6-7-22	30	10:07	1	10:18						X	Dura: 11 min SW: 4180
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

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:	Grain Klockeman	JHA	6-7-22	11:24
Received by:	Anne Bruya	F&B	6/7/22	11:4
Relinquished by:				
Received by:		Samples received at 24 °C		

FORMS\COC\COCTO-15.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 19, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
Lake Washington Blvd NE, Suite 200
Kirkland, WA 98033

Dear Ms Duitman:

Included are the results from the testing of material submitted on July 5, 2022 from the Kelly Moore, F&BI 207037 project. There are 6 pages included in this report.

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
WEI0719R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 5, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 207037 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
207037 -01	Eff_7-5-2022
207037 -02	Inf_7-5-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_7-5-2022	Client:	Wood Environment & Infrastructure
Date Received:	07/05/22	Project:	Kelly Moore, F&BI 207037
Date Collected:	07/05/22	Lab ID:	207037-01 1/5.2
Date Analyzed:	07/14/22	Data File:	071328.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	83	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.7	<0.52
Toluene	<98	<26
Ethylbenzene	<2.3	<0.52
m,p-Xylene	<4.5	<1
o-Xylene	<2.3	<0.52
Gasoline Range Organics	<1,700	<420

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_7-5-2022	Client:	Wood Environment & Infrastructure
Date Received:	07/05/22	Project:	Kelly Moore, F&BI 207037
Date Collected:	07/05/22	Lab ID:	207037-02 1/8.3
Date Analyzed:	07/14/22	Data File:	071329.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	103	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	6.8	2.1
Toluene	<160	<41
Ethylbenzene	<3.6	<0.83
m,p-Xylene	<7.2	<1.7
o-Xylene	<3.6	<0.83
Gasoline Range Organics	15,000	3,500

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 207037
Date Collected:	Not Applicable	Lab ID:	02-1631 MB
Date Analyzed:	07/13/22	Data File:	071313.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	81	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 07/19/22
Date Received: 07/05/22
Project: Kelly Moore, F&BI 207037

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 207121-01 1/10 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	4.1	4.0	2
Toluene	ug/m3	<190	<190	nm
Ethylbenzene	ug/m3	<4.3	<4.3	nm
m,p-Xylene	ug/m3	<8.7	<8.7	nm
o-Xylene	ug/m3	<4.3	<4.3	nm
Naphthalene	ug/m3	2.9	3.7	24

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	92	70-130
Toluene	ug/m3	51	101	70-130
Ethylbenzene	ug/m3	59	92	70-130
m,p-Xylene	ug/m3	120	100	70-130
o-Xylene	ug/m3	59	105	70-130
Naphthalene	ug/m3	71	126	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 analyte 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 due to sample matrix effects.

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

7/5/22

Page # 1 of 1

207037

Report To Christy Duitman

Company Wood Environmental

Address 600 University St. Suite 600

City, State, ZIP Seattle, WA 98101

Phone 5033346551 Email christy.duitman@woodplc.com

SAMPLERS (*signature*)	
PROJECT NAME & ADDRESS Kelly Moore	PO #
NOTES:	INVOICE TO

TURNAROUND TIME
- X Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- X Default: Clean after 3 days
- ☐ Archive (Fee may apply)

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH Gasoline Range BTEX by TO15	Notes
Eff_7·5·2022	01	3249	62	IA / (SG)	7·5·22	30	9:22	Ø	9:29						X	Dura: 7 min SN: 3249
Inf_7·5·2022	02	4185	305	IA / (SG)	7·5·22	30	9:38	Ø	9:44						X	Dura: 6 min SN 4185
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

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:	Gavin Klockeman	JHA	7·5·22	12:19
Received by: W. Madden	W. Madden	F+BI	7·5·22	12:19
Relinquished by:				
Received by:		Samples received at 22°C		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 29, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
600 University St. Suite 600
Seattle, WA 98101

Dear Ms Duitman:

Included are the results from the testing of material submitted on August 17, 2022 from the Kelly Moore, F&BI 208249 project. There are 6 pages included in this report.

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
WEI0829R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on August 17, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 208249 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
208249 -01	Eff_8-17-2022
208249 -02	Inf_8-17-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_8-17-2022	Client:	Wood Environment & Infrastructure
Date Received:	08/17/22	Project:	Kelly Moore, F&BI 208249
Date Collected:	08/17/22	Lab ID:	208249-01 1/5.4
Date Analyzed:	08/24/22	Data File:	082319.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	90	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.7	<0.54
Toluene	<100	<27
Ethylbenzene	<2.3	<0.54
m,p-Xylene	5.1	1.2
o-Xylene	<2.3	<0.54
Gasoline Range Organics	<1,800	<430

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_8-17-2022	Client:	Wood Environment & Infrastructure
Date Received:	08/17/22	Project:	Kelly Moore, F&BI 208249
Date Collected:	08/17/22	Lab ID:	208249-02 1/8.3
Date Analyzed:	08/24/22	Data File:	082320.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<2.7	<0.83
Toluene	<160	<41
Ethylbenzene	<3.6	<0.83
m,p-Xylene	<7.2	<1.7
o-Xylene	<3.6	<0.83
Gasoline Range Organics	3,500	850

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 208249
Date Collected:	Not Applicable	Lab ID:	02-1934 mb
Date Analyzed:	08/23/22	Data File:	082314.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	93	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 08/29/22
Date Received: 08/17/22
Project: Kelly Moore, F&BI 208249

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 208227-02 1/5.6 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.8	<1.8	nm
Toluene	ug/m3	<110	<110	nm
Ethylbenzene	ug/m3	<2.4	<2.4	nm
m,p-Xylene	ug/m3	<4.9	<4.9	nm
o-Xylene	ug/m3	<2.4	<2.4	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	87	70-130
Toluene	ug/m3	51	101	70-130
Ethylbenzene	ug/m3	59	92	70-130
m,p-Xylene	ug/m3	120	94	70-130
o-Xylene	ug/m3	59	96	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 analyte 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 due to sample matrix effects.

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.

208249

SAMPLE CHAIN OF CUSTODY

8/17/22

Page # 1 of 1

Report To Christy Duitman
Company Dood Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle WA 98101
Phone 5033716557 Email christy.duitman@doodplc.com

SAMPLERS (*signature*) [redacted]

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean following final report delivery
☐ Hold (Fee may apply):

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane BTEX by TO15	Notes
EFF_8·17·2022	01	2433	F03	IA / (SG)	8·17·22	29.5"	11:25	Ø	11:32						X	SN: 2433 Dura: 7 min
INF_8·17·2022	02	3311	12	IA / (SG)	8·17·22	30"	11:37	Ø	11:46						X	SN: 3311 Dura: 9 min
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

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:	Grain Modeman	JHF	8·17·22	1430
Received by:	Nhut TRUONG	FBI	8/17/22	1432
Relinquished by:				
Received by:		Samples received at 34 °C		

FORMS\COC\COCTO-15.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 12, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
3500 188th St SW, Suite 601
Lynnwood, WA 98037

Dear Ms Duitman:

Included are the results from the testing of material submitted on September 27, 2022 from the Kelly Moore, F&BI 209428 project. There are 7 pages included in this report.

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
WEI1012R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on September 27, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 209428 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
209428 -01	Eff_9-27-2022
209428 -02	Inf_9-27-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_9-27-2022	Client:	Wood Environment & Infrastructure
Date Received:	09/27/22	Project:	Kelly Moore, F&BI 209428
Date Collected:	09/27/22	Lab ID:	209428-01 1/5
Date Analyzed:	09/30/22	Data File:	092929.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	95	70	130

Compounds:	Concentration ug/m3	ppbv
2-Propanol	<43	<17
Benzene	<1.6	<0.5
Toluene	<94	<25
Ethylbenzene	<2.2	<0.5
m,p-Xylene	<4.3	<1
o-Xylene	<2.2	<0.5
Gasoline Range Organics	<1,600	<400

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_9-27-2022	Client:	Wood Environment & Infrastructure
Date Received:	09/27/22	Project:	Kelly Moore, F&BI 209428
Date Collected:	09/27/22	Lab ID:	209428-02 1/15
Date Analyzed:	09/30/22	Data File:	092930.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	119	70	130

Compounds:	Concentration ug/m3	ppbv
2-Propanol	<130	<52
Benzene	<4.8	<1.5
Toluene	<280	<75
Ethylbenzene	<6.5	<1.5
m,p-Xylene	<13	<3
o-Xylene	<6.5	<1.5
Gasoline Range Organics	62,000	15,000

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 209428
Date Collected:	Not Applicable	Lab ID:	02-2298 mb
Date Analyzed:	09/29/22	Data File:	092912.D
Matrix:	Air	Instrument:	GCMS8
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	94	70	130

Compounds:	Concentration ug/m3	ppbv
2-Propanol	<8.6	<3.5
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 10/12/22
Date Received: 09/27/22
Project: Kelly Moore, F&BI 209428

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 209363-10 1/6.4 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<2	<2	nm
Toluene	ug/m3	<120	<120	nm
Ethylbenzene	ug/m3	<2.8	<2.8	nm
m,p-Xylene	ug/m3	8.7	8.5	2
o-Xylene	ug/m3	3.6	3.4	6

Date of Report: 10/12/22
Date Received: 09/27/22
Project: Kelly Moore, F&BI 209428

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	92	70-130
Toluene	ug/m3	51	106	70-130
Ethylbenzene	ug/m3	59	87	70-130
m,p-Xylene	ug/m3	120	91	70-130
o-Xylene	ug/m3	59	99	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 analyte 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 due to sample matrix effects.

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

209428

09/27/22

Page # 1 of 1

Report To Christy Dustman

Company Wood Environmental

Address 600 University St. Suite 600

City, State, ZIP Seattle WA 98101

Phone 5033341655 Email christy.dustman@woodplc.com

SAMPLERS (*signature*)	
PROJECT NAME & ADDRESS Kelly Moore	PO #
NOTES:	INVOICE TO

TURNAROUND TIME
- X Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- X Default: Clean following final report delivery
- ☐ Hold (Fee may apply):

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane BTEX by TO15	Notes
Eff_9-27-2022	01			IA / (SG)	9-27-22	30"	10:37	Ø	10:45						X	SN:9565 Dura:7min
Inf_9-27-2022	02			IA / (SG)	9-27-22	30"	10:48	Ø	10:55						X	SN:8525 Dura:7min
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

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:		Gavin Blackman	JHA	9-27-22	1137
Received by:		ANH PHAN	FSB	09/27/22	11:37
Relinquished by:					
Received by:			Samples received at 20 °C		

FORMS\COC\COCTO-15.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

October 21, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
3500 188th St SW, Suite 601
Lynnwood, WA 98037

Dear Ms Duitman:

Included are the results from the testing of material submitted on October 11, 2022 from the Kelly Moore, F&BI 210142 project. There are 6 pages included in this report.

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
WEI1021R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on October 11, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 210142 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
210142 -01	EFF_10-11-2022
210142 -02	INF_10-11-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	EFF_10-11-2022	Client:	Wood Environment & Infrastructure
Date Received:	10/11/22	Project:	Kelly Moore, F&BI 210142
Date Collected:	10/11/22	Lab ID:	210142-01 1/4.5
Date Analyzed:	10/14/22	Data File:	101330.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	99	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	7.5	2.3
Toluene	<85	<22
Ethylbenzene	<2	<0.45
m,p-Xylene	<3.9	<0.9
o-Xylene	<2	<0.45
Gasoline Range Organics	<330	<80

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INF_10-11-2022	Client:	Wood Environment & Infrastructure
Date Received:	10/11/22	Project:	Kelly Moore, F&BI 210142
Date Collected:	10/11/22	Lab ID:	210142-02 1/6.7
Date Analyzed:	10/14/22	Data File:	101331.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	105	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<2.1	<0.67
Toluene	<130	<33
Ethylbenzene	<2.9	<0.67
m,p-Xylene	<5.8	<1.3
o-Xylene	<2.9	<0.67
Gasoline Range Organics	49,000	12,000

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 210142
Date Collected:	Not Applicable	Lab ID:	02-2481 mb
Date Analyzed:	10/13/22	Data File:	101311.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	96	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 10/21/22
Date Received: 10/11/22
Project: Kelly Moore, F&BI 210142

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 210130-01 1/8.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<2.8	<2.8	nm
Toluene	ug/m3	<160	<160	nm
Ethylbenzene	ug/m3	5.4	5.5	2
m,p-Xylene	ug/m3	26	27	4
o-Xylene	ug/m3	14	14	0
Naphthalene	ug/m3	4.9	4.8	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	98	70-130
Toluene	ug/m3	51	105	70-130
Ethylbenzene	ug/m3	59	102	70-130
m,p-Xylene	ug/m3	120	99	70-130
o-Xylene	ug/m3	59	100	70-130
Naphthalene	ug/m3	71	106	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 analyte 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 due to sample matrix effects.

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

210142

10-11-22

Page # 1 of 1

Report To Christy Duitman

Company WOOD Environmental

Address 600 University St Suite 6000

City, State, ZIP Seattle WA 98101

Phone 5033316551 Email christy.duitman@woodplc.com

SAMPLERS (*signature*)	
PROJECT NAME & ADDRESS Kelly Moore	PO #
NOTES:	INVOICE TO

TURNAROUND TIME
- ☒ Standard
- ☐ RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- ☒ Default: Clean following final report delivery
- ☐ Hold (Fee may apply):

SAMPLE INFORMATION										ANALYSIS REQUESTED						
Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane BTEX low TO15	Notes
Eff_10-11-2022	01			IA / (SG)	10-11-22	29"	10:31	Ø	10:38						X	SN: 3429 Dura: 7 min
Inf_10-11-2022	02			IA / (SG)	10-11-22	30"	10:42	Ø	10:48						X	SN: 3677 Dura: 6 min
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gaia Klockeman	JHA	10-11-22	11:35
Received by:	ANH PHAN	F&B	10/11/22	11:35
Relinquished by:				
Received by:		Samples received at 20 °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.
Vineta Mills, M.S.
Eric Young, B.S.

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

November 18, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
3500 188th St SW, Suite 601
Lynnwood, WA 98037

Dear Ms Duitman:

Included are the results from the testing of material submitted on November 8, 2022 from the Kelly Moore, F&BI 211127 project. There are 7 pages included in this report.

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
WEI1118R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 8, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 211127 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
211127 -01	EFF_11-8-2022
211127 -02	INF_11-8-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	EFF_11-8-2022	Client:	Wood Environment & Infrastructure
Date Received:	11/08/22	Project:	Kelly Moore, F&BI 211127
Date Collected:	11/08/22	Lab ID:	211127-01 1/4.5
Date Analyzed:	11/11/22	Data File:	111117.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	89	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.4	<0.45
Toluene	<85	<22
Ethylbenzene	<2	<0.45
m,p-Xylene	<3.9	<0.9
o-Xylene	<2	<0.45
Gasoline Range organics	<1,500	<360

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	INF_11-8-2022	Client:	Wood Environment & Infrastructure
Date Received:	11/08/22	Project:	Kelly Moore, F&BI 211127
Date Collected:	11/08/22	Lab ID:	211127-02 1/7
Date Analyzed:	11/11/22	Data File:	111118.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	97	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<2.2	<0.7
Toluene	<130	<35
Ethylbenzene	<3	<0.7
m,p-Xylene	<6.1	<1.4
o-Xylene	<3	<0.7
Gasoline Range organics	37,000	9,000

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 211127
Date Collected:		Lab ID:	02-2754 MB
Date Analyzed:	11/11/22	Data File:	111112.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	89	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range organics	<330	<80

Date of Report: 11/18/22
Date Received: 11/08/22
Project: Kelly Moore, F&BI 211127

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 211161-02 1/5.7 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	13	13	0
Toluene	ug/m3	<110	<110	nm
Ethylbenzene	ug/m3	<2.5	<2.5	nm
m,p-Xylene	ug/m3	13	13	0
o-Xylene	ug/m3	<2.5	<2.5	nm

Date of Report: 11/18/22
Date Received: 11/08/22
Project: Kelly Moore, F&BI 211127

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	91	70-130
Toluene	ug/m3	51	98	70-130
Ethylbenzene	ug/m3	59	89	70-130
m,p-Xylene	ug/m3	120	96	70-130
o-Xylene	ug/m3	59	100	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 analyte 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 due to sample matrix effects.

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.

211127

SAMPLE CHAIN OF CUSTODY 11/08/22

Page # 1 of 1

Report To Christy Dutman
Company Wood Environmental
Address 600 University St. Suite 600
City, State, ZIP Seattle, WA 98101
Phone 5033346551 Email christy.dutman@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
☒ Standard
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☒ Default: Clean following final report delivery
☐ Hold (Fee may apply):

SAMPLE INFORMATION

Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	ANALYSIS REQUESTED: TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane BTEX by TO15	Notes
Eff_11.8.2022	01			IA / (SG)	11.8.22	30"	10:13	Ø	10:22						X	Dura: 4 min SN: 3483
Inf_11.8.2022	02			IA / (SG)	11.8.22	30"	10:28	Ø	10:35						X	Dura: 7 min SN: 3667
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

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

FORMS\COC\COCTO-15.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Knickerman	SHA	11.8.22	10:56
Received by:		FBB	11/8/22	1056
Relinquished by:				
Received by:				

Samples received at 14 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South
Seattle, WA 98108
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 20, 2022

Christy Duitman, Project Manager
Wood Environment & Infrastructure
3500 188th St SW, Suite 601
Lynnwood, WA 98037

Dear Ms Duitman:

Included are the results from the testing of material submitted on December 6, 2022 from the Kelly Moore, F&BI 212062 project. There are 6 pages included in this report.

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
WEI1220R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on December 6, 2022 by Friedman & Bruya, Inc. from the Wood Environment & Infrastructure Kelly Moore, F&BI 212062 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Wood Environment & Infrastructure
212062 -01	Eff_12-6-2022
212062 -02	Inf_12-6-2022

The TO-15 gasoline range concentrations were quantified using a single point calibration at 80 ppbv.

All quality control requirements were acceptable.

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Eff_12-6-2022	Client:	Wood Environment & Infrastructure
Date Received:	12/06/22	Project:	Kelly Moore, F&BI 212062
Date Collected:	12/06/22	Lab ID:	212062-01 1/4.6
Date Analyzed:	12/14/22	Data File:	121330.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	85	70	130

Compounds:	Concentration ug/m3	ppbv
Benzene	<1.5	<0.46
Toluene	<87	<23
Ethylbenzene	<2	<0.46
m,p-Xylene	<4	<0.92
o-Xylene	<2	<0.46
Gasoline Range Organics	<1,500	<370

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Inf_12-6-2022	Client:	Wood Environment & Infrastructure
Date Received:	12/06/22	Project:	Kelly Moore, F&BI 212062
Date Collected:	12/06/22	Lab ID:	212062-02 1/33
Date Analyzed:	12/14/22	Data File:	121331.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	91	70	130

	Concentration	
Compounds:	ug/m3	ppbv
Benzene	<11	<3.3
Toluene	<620	<160
Ethylbenzene	<14	<3.3
m,p-Xylene	<29	<6.6
o-Xylene	<14	<3.3
Gasoline Range Organics	22,000	5,400

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Wood Environment & Infrastructure
Date Received:	Not Applicable	Project:	Kelly Moore, F&BI 212062
Date Collected:	Not Applicable	Lab ID:	02-2958 MB
Date Analyzed:	12/13/22	Data File:	121312.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	bat

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
4-Bromofluorobenzene	85	70	130

Compounds:	Concentration ug/m3	Concentration ppbv
Benzene	<0.32	<0.1
Toluene	<19	<5
Ethylbenzene	<0.43	<0.1
m,p-Xylene	<0.87	<0.2
o-Xylene	<0.43	<0.1
Gasoline Range Organics	<330	<80

Date of Report: 12/20/22
Date Received: 12/06/22
Project: Kelly Moore, F&BI 212062

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: 212012-01 1/5.0 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 30)
Benzene	ug/m3	<1.6	<1.6	nm
Toluene	ug/m3	<94	<94	nm
Ethylbenzene	ug/m3	<2.2	<2.2	nm
m,p-Xylene	ug/m3	<4.3	<4.3	nm
o-Xylene	ug/m3	<2.2	<2.2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/m3	43	102	70-130
Toluene	ug/m3	51	99	70-130
Ethylbenzene	ug/m3	59	93	70-130
m,p-Xylene	ug/m3	120	94	70-130
o-Xylene	ug/m3	59	96	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 analyte 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 due to sample matrix effects.

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.

212062

SAMPLE CHAIN OF CUSTODY

12/06/22

Page # 1 of 1

Report To [redacted] Christy Deitman

Company WOOD Environmental

Address 600 University St. Suite 600

City, State, ZIP Seattle, WA 98101

Phone 5033346551 Email christy.deitman@woodplc.com

SAMPLERS (*signature*)

PROJECT NAME & ADDRESS: Kelly Moore

PO #

NOTES:

INVOICE TO

TURNAROUND TIME
- [x] Standard
- [ ] RUSH

Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Default: Clean following final report delivery
- [ ] Hold (Fee may apply):

SAMPLE INFORMATION

Sample Name	Lab ID	Canister ID	Flow Cont. ID	Reporting Level: IA=Indoor Air SG=Soil Gas (Circle One)	Date Sampled	Initial Vac. ("Hg)	Field Initial Time	Final Vac. ("Hg)	Field Final Time	ANALYSIS REQUESTED: TO15 Full Scan	TO15 BTEXN	TO15 cVOCs	APH	Helium	TPH-Gas as Hexane BTEX by TO15	Notes
EFF-12-6-2022	01			IA / (SG)	12-6-22	30"	9:50	Ø	10:00							Dura: 10 min SN: 8099
Inf-12-6-2022	02			IA / (SG)	12-6-22	30"	10:05	Ø	10:12						X	Dura: 7 min SN: 8539
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												
				IA / SG												

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Gavin Kloberanz	FBT	TO-12-6-22	10:53
Received by:	Khan Phan	FEBT	12/6/22	10:53
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
5500 4th Avenue South
Seattle, WA 98108
Ph. (206) 285-8282
Fax (206) 283-5044

APPENDIX E

FIELD FORMS, SVE-AS OPERATIONS & MONITORING

SVE System Monthly Inspection Log. *Kelly Moore.* *Date*: 01-12-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	Good
Control Pump (Regenerative Blower)	y	(On / Off)
Entrainment Pump (Transfer Pump)	y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	y	Good
Knockout Tank (record level)	y	% full 5% @ 3 gal
Knockout Water Tote (record level)	y	% full 50% @ 125 gal
Dilution Valve Status	y	100% Closed
Recirculation Valve Status	y	open 60%

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	19,208	
Catox In (T_1)	°F	739°F	>650
Catox Out (T_2)	°F	649°F	600 – 650
Heat Ex (T_3)	°F	407°F	300 – 400
Flow	SCFM	24 CFM	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.0" wc @ 26 CFM
PI – 1	"WC (vacuum)	34" H2O VAC
TI – 1	°F	50°F
FE-2	"WC	~~0.2~~ 0.2" wc

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold (OFF)	OFF	OFF			
SVE – 13			1	OFF	N/A
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold	1000-Hrs	No PID, In Fault Mode			
SVE - 01	OFF		off - 1		
SVE – 03	OFF		off - 1		
SVE – 05	OFF		off - 1		
SVE – 07	1002-Hrs		7	34"	0.03 @ 12.50 CFM
SVE – 08	1005-Hrs		4	34"	0.00 @ 7. CFM
SVE – 06	off		off - 1		
SVE – 04			off - 1		
SVE – 02			off - 1		
SVE Influent	N/A				
SVE Effluent					

Influent Sample ID: INF. 1-12-2022
Influent Sample Time: 1000-Hrs

Effluent Sample ID: EFF. 1-12-2022
Effluent Sample Time: 0942-Hrs

Field Representative (Print and Sign): George Hagen Date of Visit: 1-12-2022

AS System Monthly Inspection Log, *Kelly Moore.* Date: 01-12-22

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	100% Closed

Air Sparge System off. High Ground water

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,709	
PI – 3	psi	off	0 - 30
TI – 3	°F	"	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,710	
PI – 4	psi	off	0 - 30
TI – 4	°F	"	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A	N/A	N/A	N/A
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes.

System operational C our arrival, Upon screening a Vapor stream Via PID for VOC's we pulled water to the PID making it inoperable, No VOC Values Will be collected today. We Collected The January 2022 Systems samples & Data. We Rewrapped Heat tape & insulation on the Water Storage tote, Conveyance line & H.O. Tank Site Tube, We Changed oil on the Sparge & CATOX Blowers, CATOX Blower Making a loud Metal to Metal noise, FAILURE IMMINENT! D ordered a new P.D. Blower for the CATOX. The CATOX Blower makes less noise under a load, CATOX is operational. Changed Chart Paper. Delivered New Batch of Chart Paper & ink To The Site. Cleaned Site, Removed debris & trash.

Field Representative (Print and Sign): George Hagan Date of Visit: 1-12-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 2-7-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	OK
Control Pump (Regenerative Blower)	Yes	(On) / Off)
Entrainment Pump (Transfer Pump)	Yes	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Yes	OK
Knockout Tank (record level)	40	% full 8 gal
Knockout Water Tote (record level)	70	% full 175 gal
Dilution Valve Status	Yes 100% closed	
Recirculation Valve Status	yes	70% open

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	19827.79	
Catox In (T_1)	°F	693	>650
Catox Out (T_2)	°F	650	600 – 650
Heat Ex (T_3)	°F	414 ~~444~~ 6k	300 – 400
Flow	SCFM	68 CFM	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.000 "H_2O
PI – 1	"WC (vacuum)	44" H_2O
TI – 1	°F	44°
FE-2	"WC	0.4" H_2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	N/A	N/A			
SVE – 13		West manifold off line	N/A	N/A	N/A
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold	11:50	1.0			
SVE - 01	off				
SVE – 03	off				
SVE – 05	off				
SVE – 07	11:46	3.0	7		
SVE – 08	1143	7.2	4		
SVE – 06	off				
SVE – 04	off				
SVE – 02	off				
SVE Influent	11:10 ~~0.5~~	~~0.0~~ gh	FNF @ 1.8 APM	VOC'S	GA
SVE Effluent	11:08	1.0 gh	EFF @ 0.0 ppm	VOC'S	GA

Influent Sample ID: Inf_2-7-2022
Influent Sample Time: 11:26

Effluent Sample ID: EFF_2-7-2022
Effluent Sample Time: 11:16

Field Representative (Print and Sign): [signature] Date of Visit: 2-7-2022

Gavin Hockemeyer
G. Hargens

AS System Monthly Inspection Log, *Kelly Moore*. Date: 2-7-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Yes	
Regenerative Blower	Yes	(Auto / Hand / Off)
Heat Exchanger	Yes	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Yes	
Vent Valve Status	Yes	

* Air Sparge Currently Offline

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12711.6	
PI – 3	psi	N/A	0 - 30
TI – 3	°F	N/A	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12712.5	
PI – 4	psi	N/A	0 - 30
TI – 4	°F	N/A	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A	N/A	N/A	N/A
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes. on Site 0330

Changed chart paper. System Starts to pull water at 48" H_2O blower vacuum. Lowered vacuum to around 44" H_2O to avoid that, System Vac @ 42" H_2O Collected Feb. 2022 System's vapor samples & system data today. Realigned SVE Blower Belt guard. Ran air Sparge Blower. Tightened 4" unions on East Manifold. Off site @ 1300 Hrs

Field Representative (Print and Sign): G. Haegan Date of Visit: 2.7.22

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 03-08-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Control Pump (Regenerative Blower)	y	(On) / Off)
Entrainment Pump (Transfer Pump)	y	(Auto) / Hand / Off) Checked. Working O.K
Pressure Gauges/Flow Meters	y	
Knockout Tank (record level)	y	% full 8 gal
Knockout Water Tote (record level)	y	% full 175 gal - unchanged from 2-7-22
Dilution Valve Status	y	100% Closed
Recirculation Valve Status	y	40% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	20,488	
Catox In (T_1)	°F	739°F	>650
Catox Out (T_2)	°F	617°F	600 – 650
Heat Ex (T_3)	°F	384°F	300 – 400
Flow	SCFM	30 CFM	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.000 "H2O
PI – 1	"WC (vacuum)	42" H2O
TI – 1	°F	45°F
FE-2	"WC	0.001

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	N/A	off			
SVE – 13			N/A	N/A	N/A
SVE – 12					
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold	1105	0.00 PPM	0.000 "H2O @ 30 CFM		
SVE - 01	N/A				
SVE – 03	N/A				
SVE – 05	N/A				
SVE – 07	1100	0.00 PPM	7 - 100% open	42" H2O	0.000 "H2O
SVE – 08	1055	0.00 PPM	5 - 60% open	42" H2O	0.000 "H2
SVE – 06	N/A				
SVE – 04	N/A				
SVE – 02	N/A				
SVE Influent	1015	0.00 PPM			
SVE Effluent	1010	0.00 PPM			

Influent Sample ID: INF-3-8-2022
Influent Sample Time: 1045

Effluent Sample ID: EFF-3-8-2022
Effluent Sample Time: 1034 - H2S

Field Representative (Print and Sign): George Hagen Date of Visit: 3-8-22

PID Was Calibrated 3-7-22 - O.K. PID FIELD Bump TEST Via 100 ppm Cal gas - PID Read 98.3ppm - O.K.

AS System Monthly Inspection Log, *Kelly Moore*. Date: 03-08-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,714.0	
PI – 3	psi	OFF	0 - 30
TI – 3	°F	OFF	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,714.9	
PI – 4	psi	OFF	0 - 30
TI – 4	°F	OFF	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	OFF	N/A	N/A	N/A
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes.

SVE - CATOX operational upon arrival. The Honeywell DPR-1000 chart recorder is broken and no longer recording parameters. We Screened the System Vapor streams via PID & Record Values, Recorded system data. Collected the March 2022 Systems Vapor samples. No VOC's to the system via PID, notified Scott with WOOD. Ran Air Sparge blowers while on site.

Field Representative (Print and Sign): George Hagen Date of Visit: 3-8-22

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 4-8-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 8% @ 6 gal Oil
Knockout Water Tote (record level)	Y	% full 80% ~~@ 160 gal~~ 190 gal
Dilution Valve Status	Y	100% Closed
Recirculation Valve Status	Y	60% open

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	20,801	
Catox In (T_1)	°F	733°F	>650
Catox Out (T_2)	°F	655°F	600 – 650
Heat Ex (T_3)	°F	410°F	300 – 400
Flow	SCFM	32.0 CFM	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.001 "H2O
PI – 1	"WC (vacuum)	44" H2O
TI – 1	°F	48°F
FE-2	"WC	0.01 " H2O

Post Blower Temp 115°F

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	West Manifold				
SVE – 13	100% off line	N/A	N/A	N/A	N/A
SVE – 12	N/A	N/A			
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold	1029	2.1 ppm			<-32 CFM
SVE - 01	0952	Valve Closed	1	0	N/A
SVE – 03	0952	Valve Closed	1	42" H2O	N/A
SVE – 05	0952	Valve Closed	1	42" H2O	N/A
SVE – 07	0953	1.4 ppm	7	44" H2O	0.001" H2O @ 12 CFM
SVE – 08	0953	2.0 ppm	4	44" H2O	0.000" H2O @ 14 CFM
SVE – 06	0953	Valve Closed	1	0	N/A
SVE – 04	0954	Valve Closed	1	0	N/A
SVE – 02	0954	Valve Closed	1	0	N/A
SVE Influent	0939	0.4 PPM	NEC 100%		
SVE Effluent	0935	0.0 ppm			

Influent Sample ID: INF_4-8-2022
Influent Sample Time: 10:10

Effluent Sample ID: EFF_4-8-2022
Effluent Sample Time: 9:54

Field Representative (Print and Sign): George Haagen Date of Visit: 4-8-2022

AS System Monthly Inspection Log, *Kelly Moore.* Date: 4-8-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	100% closed air Sparge off.

Air Sparge System off due to High Groundwater

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,714.7	
PI – 3	psi	N/A	0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,715.6	
PI – 4	psi	N/A	0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A	N/A	N/A	N/A
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes. 0900 hrs on site.

SVE-CA70X operational @ our arrival, Ran air sparge blower while on site, shut it down @ our departure. Today we Collected the April 2022 System's Vapor samples, and recorded the System data. Conducted House Keeping in the area removing Weeds & Trash. @1055-Hrs off Site

Field Representative (Print and Sign): George Hogan Date of Visit: 4-8-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 5-10-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 75% @ 190 Gal
Knockout Water Tote (record level)	Y	% full 0% No H2O
Dilution Valve Status	Y	Closed 100%
Recirculation Valve Status	Y	open 60%

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	20,301.	
Catox In (T_1)	°F	742°F	>650
Catox Out (T_2)	°F	651°F	600 – 650
Heat Ex (T_3)	°F	420°F	300 – 400
Flow	SCFM	48	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.002" H2O
PI – 1	"WC (vacuum)	50" H2O
TI – 1	°F	52°F
FE-2	"WC	0.01 " H2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	N/A				
SVE – 13	1	N/A			
SVE – 12	West Manifold off line				
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold	10:36	0.2ppm			
SVE - 01	N/A		1 off		
SVE – 03	N/A		1 off		
SVE – 05	N/A		1 off		
SVE – 07	10:31	0.9ppm	7	50" H2O	0.002" H2O
SVE – 08	10:33	0.5ppm	4	50" H2O	0.001" H2O
SVE – 06	N/A		1 off		
SVE – 04	N/A		1 off		
SVE – 02	N/A		1 off		
SVE Influent	1019	0.2 ppm			
SVE Effluent	1003	0.0 ppm			

Influent Sample ID: INF_5-10-22
Influent Sample Time: 1019 - Hrs

GAC Effluent Sample ID: 1003 Hrs
Effluent Sample Time: EFF_5-10-22

Field Representative (Print and Sign): George Haagen Date of Visit: 5-10-2022

AS System Monthly Inspection Log, *Kelly Moore.* Date: 5-10-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

EXERCISED AIR SPARGE BLOWER WHILE ON SITE.

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,716.1	
PI – 3	psi	N/A	0 - 30
TI – 3	°F	—	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,717.0	
PI – 4	psi	N/A	0 - 30
TI – 4	°F	—	150 – 200

AIR SPARGE - System off due to High H2O.

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A			
AS – 2	N/A			
AS – 3	N/A			
AS – 4	N/A			
AS – 5	N/A			

Additional Notes. High groundwater has the west Manifold & Air sparge System off line. SVE CATOX operational on arrival. Changed Chart paper, exercised air Sparge system. Logged VOC's due to high groundwater. Recorded system data. Collected the May 2022 Systems Vapor samples. I Tried to increase the applied Vacuum, anything above 50" H2O the system starts to pull Water. Cleaned area. SVE-CATOX Hour Meter is defective, Will Replace ASAP.

Field Representative (Print and Sign): George Haugen Date of Visit: 5-10-2022

George Haugen

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 6-7-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Control Pump (Regenerative Blower)	y	(On) / Off)
Entrainment Pump (Transfer Pump)	y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	y	
Knockout Tank (record level)	y	% full Empty
Knockout Water Tote (record level)	y	% full 80% Full @ 195 gal
Dilution Valve Status	y	100% Closed
Recirculation Valve Status	y	40% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	576.33	
Catox In (T_1)	°F	694 °F	>650
Catox Out (T_2)	°F	652 °F	600 – 650
Heat Ex (T_3)	°F	420 °F	300 – 400
Flow	SCFM	49	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.001 "H2O
PI – 1	"WC (vacuum)	52" H2O
TI – 1	°F	53 °F
FE-2	"WC	0.08 "H2O

FID Measurements

Location	Time	~~FID~~ PID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	off due to high				
SVE – 13	Ground water Submerging the SVE Wells.				N/A
SVE – 12	N/A	N/A	N/A	N/A	
SVE – 11					
SVE – 10					
SVE – 09					
Eastern manifold	1035	1.3 ppm			
SVE - 01	N/A off				
SVE – 03	off				
SVE – 05	off				
SVE – 07	1031	0.8 ppm	7	46.5 "H2O	0.0
SVE – 08	1028	11.0 ppm	4	51 "H2O	0.0
SVE – 06	off				
SVE – 04	off				
SVE – 02	off				
SVE Influent	0936	1.6 ppm			
SVE Effluent	0930	0.0 ppm			

Influent Sample ID: INF_6-7-2022 ~~06-07-2022~~ gh
Influent Sample Time: 1007 ~~Hrs~~

Effluent Sample ID: EFF_6-7-2022
Effluent Sample Time: 0952 ~~Hrs~~

Field Representative (Print and Sign): George Hogan Date of Visit: 6-7-2022

AS System Monthly Inspection Log, *Kelly Moore.* Date: 6-7-2022

Visual/Audio Inspection Air Sparge System + West Manifold off line due to High Ground water levels Submerging the SVE Wells.

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / (Off))
Heat Exchanger	Y	(Auto / Hand / (Off))
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,717.3	
PI – 3	psi	N/A	0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,718.8	
PI – 4	psi	N/A	0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	N/A	N/A	N/A	N/A
AS – 2				
AS – 3				
AS – 4				
AS – 5				

Additional Notes. SVE - CATOX operational @ our arrival (0900 - Hrs) Started and ran the Air Sparge System To exercise the blower. Recorded the System's data. Collected the June 2022 SVE-CATOX Systems Vapor Samples today. Measured Depth To Water in 3- on-site Monitor Wells - KM-04: 5.50' BGS. KM-06: 6.63' BGS, KM-09: 5.02' BGS The average G.W. elevation drop is 0.80' from 3.21.22 up to Today. The SVE Wells are submerged in G.W. until the elevation is below 7' BGS @ Wells 04 + 09.

Field Representative (Print and Sign): George Hagen Date of Visit: 6-7-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 7-5-22

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 1% - Full
Knockout Water Tote (record level)	Y	% full 75% Full @ 195 gal
Dilution Valve Status	Y	
Recirculation Valve Status	Y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	1,247.76 - 10hrs	
Catox In (T_1)	°F	693 F	>650
Catox Out (T_2)	°F	652 F	600 – 650
Heat Ex (T_3)	°F	423 F	300 – 400
Flow	SCFM	52-CFM	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.001 "H_2O
PI – 1	"WC (vacuum)	51 "H_2O
TI – 1	°F	52 F
FE-2	"WC	0.02" H_2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	N/A	off			
SVE – 13	↓	↓	N/A	N/A	N/A
SVE – 12	↓	↓	↓	↓	↓
SVE – 11	↓	↓	↓	↓	↓
SVE – 10	↓	↓	↓	↓	↓
SVE – 09	↓	↓	↓	↓	↓
Eastern manifold	0958	1.0 PPM			
SVE - 01	OFF	→	→	→	→
SVE – 03	OFF	→	→	→	→
SVE – 05	OFF	→	→	→	→
SVE – 07	0956	1.0 PPM	7	50"	0.0 "H_2O
SVE – 08	0953	10.4 PPM	4	52"	0.0 "H_2O
SVE – 06	OFF	→	→	→	→
SVE – 04	OFF	→	→	→	→
SVE – 02	OFF	→	→	→	→
SVE Influent	0910	1.5 PPM			
SVE Effluent	0900	0.0 PPM			

Influent Sample ID: INF_7-5-22
Influent Sample Time: 0944

Effluent Sample ID: EFF_7-5-22
Effluent Sample Time: 0922

Field Representative (Print and Sign): George Hagan Date of Visit: 7-5-22

AS System Monthly Inspection Log, *Kelly Moore.* Date: 7-5-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

Air Sparge System OFF LINE Due To High ground Water Table Submerging - West SE Wells

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,718	
PI – 3	psi	N/A	0 - 30
TI – 3	°F		150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,719	
PI – 4	psi	N/A	0 - 30
TI – 4	°F		150 – 200

Air Flow Monitoring

G.W. Elevations

Location	GH Time	GH Valve Position (record appx angle) Dates 6.7.22	Dates 7.5.22	GH Pressure (psi)	GH Air Flow (SCFM)
AS – 1	Well			N/A	N/A
AS – 2	04	5.50'	5.79'		
AS – 3	06	6.63'	6.94'		
AS – 4	09	5.02'	5.33'		
AS – 5	N/A				

Additional Notes.

SVE CATOX operational @ our 0845 Hrs arrival. Today we Collected The July 2022 Systems Vapor sample & data collection. Ran air Sparge Skid for ½ Hr. Measured D.T.W in Monitor Wells 4, 6 + 9 and recorded Values above. The ideal Water level to operate the West Manifold is > 7.50' BGS. We Conducted Systems Maintenance Today Changed oil, Cleaned Filters, General Site Housekeeping.

Field Representative (Print and Sign): George Hagan Date of Visit: 7.5.22

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 8-2-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 15% @ 10-Gal.
Knockout Water Tote (record level)	Y	% full 10% @ 20-Gal.
Dilution Valve Status	Y	100% Closed
Recirculation Valve Status	Y	100% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	1,904.15	
Catox In (T_1)	°F	694°F	>650
Catox Out (T_2)	°F	659°F	600 – 650
Heat Ex (T_3)	°F	359°F	300 – 400
Flow	SCFM	246	<300

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.0 " H_2O
PI – 1	"WC (vacuum)	20 " H_2O
TI – 1	°F	75°F
FE-2	"WC	4.3 " H_2O

PID GM.

~~FID~~ Measurements

Location	Time	PID ~~FID~~ GM Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)	
					" H_2O	CFM
Western Manifold	1245	109.7				
SVE – 13		118.7	7	8 " H_2O	0.00	95
SVE – 12		217.9	7	10 " H_2O	0.01	35
SVE – 11		58.4	7	8 " H_2O	0.02	115
SVE – 10		237.7	7	9 " H_2O	0.00	42
SVE – 09		2.8	2	3 " H_2O	0.01	13
Eastern manifold	OFF					
SVE - 01	East manifold Produces Water and no VOC's From The SVE wells, off line.					
SVE – 03						
SVE – 05						
SVE – 07						
SVE – 08						
SVE – 06						
SVE – 04						
SVE – 02						
SVE Influent	1300	124.2 PPM				
SVE Effluent	1256	3.9 PPM	D.E. 96.9%			

Influent Sample ID: N/A
Influent Sample Time: N/A

Effluent Sample ID: N/A
Effluent Sample Time: N/A

Field Representative (Print and Sign): C. Horgan Date of Visit: 8-2-2022

AS System Monthly Inspection Log, *Kelly Moore*. *Date*: 8-2-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	12,722.7	Hr / min
PI – 3	psi	8.0 PSI	0 - 30
TI – 3	°F	220°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	12,723.6	HR/min
PI – 4	psi	6.0 PSI	0 - 30
TI – 4	°F	91°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1250 -Hrs	25% open	3.5	11.0
AS – 2	"	"	2.0	11.0
AS – 3	"	"	3.5	11.5
AS – 4	"	"	4.0	11.5
AS – 5	"	"	3.5	11.0

Additional Notes. Activated air Sparge + West Manifold. East Manifold Shut off as it produces a High Volume of H2O (Wells 7+8 @ 3.0ppm-VOC's @ 65" H2O-Vac), Took Water levels @ Wells 4 - 6.26', 6 - 7.45' & 9 - 5.82'. West Manifold Producing Higher VOC's (124.2 PPM & No H2O To the system @ 20" H2O Vac). No system samples today, Samples scheduled for 8-17-2022. Changed chart Paper.

Field Representative (Print and Sign): C. Hogan Date of Visit: 8-2-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 8-17-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 8 gal 40% Full
Knockout Water Tote (record level)	Y	% full 5.10% Full @ 50 or 55 gal
Dilution Valve Status	Y	100% Closed
Recirculation Valve Status	Y	100% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	Got Distracted Did Not Take. G.H	
Catox In (T_1)	°F	694 F	>650
Catox Out (T_2)	°F	649 F	600 – 650
Heat Ex (T_3)	°F	351 F	300 – 400
Flow	SCFM	297	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.000 "H2O
PI – 1	"WC (vacuum)	20 "H2O
TI – 1	°F	69 F
FE-2	"WC	3.3 "H2O

FID Measurements

Location	Time	FID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	1017	5.1			
SVE – 13		2.2 PPM	2	2.5 "H2O	0.001 "H2O
SVE – 12		2.6 PPM	7	8.5 "H2O	0.001 "H2O
SVE – 11		0.2 PPM	7	6.5 "H2O	0.000 "H2O
SVE – 10		4.0 PPM	7	10.0 "H2O	0.000 "H2O
SVE – 09		0.0 PPM	7	8.0 "H2O	0.000 "H2O
Eastern manifold	OFF				
SVE - 01			N/A	N/A	N/A
SVE – 03					
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02		4.7 GH			
SVE Influent		4.7			
SVE Effluent		0.1			

Influent Sample ID: 4.7 GH INF_8.17.22
Influent Sample Time: 1137

Effluent Sample ID: EFF_08.17.22
Effluent Sample Time: 1122-1124

Field Representative (Print and Sign): George Hagan Date of Visit: 8-17-22

AS System Monthly Inspection Log, *Kelly Moore.* Date: 8.17-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	open 20%.

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	13,079.8	Hrs Min.
PI – 3	psi	8.0	0 - 30
TI – 3	°F	220°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	13,080.7	Hrs Min.
PI – 4	psi	8.0	0 - 30
TI – 4	°F	90°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1015 - Hrs	40%, open	4.0	9.0 gpm ~~3.0~~ CFM
AS – 2			3.0	
AS – 3			3.5	
AS – 4			4.0	
AS – 5			3.75	

Additional Notes. on site @ 0850. Also on Site Christy from WOOD. Todd & Morey From Kelly Moore. Gavin, Neil & John from IHA. Today We Collected the System's data & August 2022 System Vapor samples. Reviewed System's operations with Todd from Kelly Moore. Low VOC's from the West Manifold, No VOC's from the East Manifold. West Manifold & Air Sparge Wells, Increased Sparge Air flow from 11 To 13 CFM. Values dropped, Decrease Sparge air flow from 13 to 9 CFM. Values decreased By a few PPM. We made no additional adjustments.

Field Representative (Print and Sign): George Hagan Date of Visit: 8.17-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 9-13-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full 1/3 Full 8-gal
Knockout Water Tote (record level)	Y	% full 50 gal, 1/5TH Full
Dilution Valve Status	Y	100% Closed
Recirculation Valve Status	Y	100% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	2,889.51	
Catox In (T_1)	°F	693	>650
Catox Out (T_2)	°F	646	600 – 650
Heat Ex (T_3)	°F	634	300 – 400
Flow	SCFM	300	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.001 "H2O
PI – 1	"WC (vacuum)	19 "H2O
TI – 1	°F	64°F
FE-2	"WC	5.05 "H2O

FID Measurements

Location	Time	~~FID~~ PID GA Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	1045	NO VOC'S VIA		8.0"	
SVE – 13		PID, PID	~~gh 7~~	~~2.25"~~	0.001" @ 97 CFM
SVE – 12		LAMP FAILED	7	9.0"	0.001" @ 37 CFM
SVE – 11		WHILE ON	7	6.0"	0.001 @ 109 CFM
SVE – 10		SITE,	7	8.0"	0.001 @ 43 CFM
SVE – 09		SUMMA VESSEL	~~gh 7~~ 2	2.25"	0.000 @ 11 CFM
Eastern manifold		SAMPLES			
SVE - 01		COLLECTED	EAST MANIFOLD	OFF	LINE
SVE – 03		TODAY			
SVE – 05					
SVE – 07					
SVE – 08					
SVE – 06					
SVE – 04					
SVE – 02					
SVE Influent					
SVE Effluent					

Influent Sample ID: INF_9-13-22
Influent Sample Time: 1104-Hrs

Effluent Sample ID: EFF_9-13-2022
Effluent Sample Time: 1047-Hrs

Field Representative (Print and Sign): George Hogan, Gavin Klosterman Date of Visit: 9-13-2022

AS System Monthly Inspection Log, *Kelly Moore.* *Date*: 9-13-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Regenerative Blower	y	(Auto) / Hand / Off)
Heat Exchanger	y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	y	
Vent Valve Status	y	open 30%

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	13,703.0	H/M
PI – 3	psi	7.0	0 - 30
TI – 3	°F	194°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	13,709.3	H/M
PI – 4	psi	6.0	0 - 30
TI – 4	°F	82°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1040-Hrs	25% open	3.25	9.5
AS – 2		25% open	2.50	9.0
AS – 3		25% open	3.00	9.0
AS – 4		25% open	3.75	9.0
AS – 5		25% open	3.00	9.5

Additional Notes.

System operational - No issues. Measured Water levels - KM04 - 6.90' KM06 - 8.10', KM09 - 6.47'. The lamp in our RAE-3000 PID Failed While on site today, No Field VOC Values were collected today. We did Collect Vapor samples for lab analysis Today. We Recorded the Systems data.

Field Representative (Print and Sign): George Haygan Gavin Kloekemeyer Date of Visit: 9-13-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 10-11-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	y	
Control Pump (Regenerative Blower)	y	(On / Off)
Entrainment Pump (Transfer Pump)	y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	y	
Knockout Tank (record level)	y	% full 20% Full @ 6-gal
Knockout Water Tote (record level)	y	% full 40% Full @ 115gal
Dilution Valve Status	y	
Recirculation Valve Status	y	

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	3,561.9	
Catox In (T_1)	°F	688 °F	>650
Catox Out (T_2)	°F	640 °F	600 – 650
Heat Ex (T_3)	°F	355 °F	300 – 400
Flow	SCFM	295	<300
LEL	%	N/A	5-15

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.001 "H2O
PI – 1	"WC (vacuum)	62" H2O
TI – 1	°F	57" H2O
FE-2	"WC	5.2

FID Measurements

Location	Time	~~FID~~ PID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	0919	0.0 PPM			
SVE – 13	0919	0.0 PPM	2.0	2.00"	0.000 " H2O
SVE – 12	0916	0.0 PPM	2.0	3.00"	0.000 " H2O
SVE – 11	0916	0.0 PPM	2.0	2.00"	0.001" H2O
SVE – 10	0915	0.0 PPM	2.0	2.00"	0.000" H2O
SVE – 09	0915	0.0 PPM	2.0	2.50"	0.002" H2O
Eastern manifold	1025	5.3 PPM			
SVE - 01	Closed				
SVE – 03	Closed			20" H2O	closed
SVE – 05	Closed			26" H2O	Closed
SVE – 07	1023	9.0 PPM	7 – 100% open	54" H2O	0.001" H2O
SVE – 08	1020	3.5 PPM	7 – 100% open	56" H2O	0.001" H2O
SVE – 06	Closed				
SVE – 04	Closed				
SVE – 02	Closed				
SVE Influent	1029	9.4 PPM			
SVE Effluent	1027	0.0 PPM			

see Notes Page 2

Influent Sample ID: INF 10.11.2022
Influent Sample Time: _____

Effluent Sample ID: EFF 10.11.2022
Effluent Sample Time: 1031 HRS

Field Representative (Print and Sign): George Hagen, Gavin Kleckeman Date of Visit: 10-11-2022

AS System Monthly Inspection Log, *Kelly Moore.* *Date*: 10-11-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto / Hand / Off)
Heat Exchanger	Y	(Auto / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	14,378.7	
PI – 3	psi	5.5	0 - 30
TI – 3	°F	173°F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	14,379.6	
PI – 4	psi	5.0	0 - 30
TI – 4	°F	72°F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1009	20% open	2.0 PSI	5.50 CFM
AS – 2	"	"	1.50 PSI	5.50 "
AS – 3	"	"	2.50 PSI	6.0 "
AS – 4	"	"	3.50 PSI	5.0 "
AS – 5	"	"	2.50 PSI	5.0 "

Additional Notes. on site @ 0845 hrs.
SVE-CATOX & Air Sparge systems are operational. Screened all VOC Source areas, adjusted the System to achieve the highest influent VOC Values. Collected the October 2022 Systems Vapor samples and Recorded the Systems data. Changed chart paper. Reprogramed + tested Auto dialer. Pulled Water to K.O. Tank. Opened Well SVE-04 to position 3 to reduce Water to the System. System Vacuum now @ 54" H2O. All operational @ our 1115 departure. C.A.

Field Representative (Print and Sign): George Hagen
Gavin Kleckamen
Date of Visit: 10-11-2022

SVE System Monthly Inspection Log. *Kelly Moore.* Date: 12-6-2022

Visual/Audio Inspection. Located at; 5400 Airport Way South Seattle, WA

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Control Pump (Regenerative Blower)	Y	(On) / Off)
Entrainment Pump (Transfer Pump)	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Knockout Tank (record level)	Y	% full
Knockout Water Tote (record level)	Y	% full 75gal – 35% Full
Dilution Valve Status	Y	100% Closed
Recirculation Valve Status	Y	100% Closed

CATOX Screen Readings

Item	Units	Reading	Operating Range
Hour Meter	H-M	4,906	
Catox In (T_1)	°F	667	>650
Catox Out (T_2)	°F	609	600 – 650
Heat Ex (T_3)	°F	318	300 – 400
Flow	SCFM	284	<300

System Gauge Readings

Item	Units	Reading
FE – 1	"WC	0.001
PI – 1	"WC (vacuum)	25 "H2O
TI – 1	°F	48 °F
FE-2	"WC	5.5 "H2O

FID Measurements

Location	Time	~~FID~~ PID Reading (ppm)	Valve Position (record notch)	Vacuum ("WC)	Differential Pressure ("WC)
Western Manifold	1015	12.0			
SVE – 13		24.6	4	7 "H2O	0.000 "H2O
SVE – 12		16.5	4	11 "H2O	0.000 "H2O
SVE – 11		2.9	4	3 "H2O	0.001 "H2O
SVE – 10		2.7	4	10.75 "H2O	0.000 "H2O
SVE – 09		0.0	3	7.75 "H2O	0.000 "H2O
Eastern manifold	1025	0.6			
SVE - 01		Closed	1	N/A	
SVE – 03		Closed	1	N/A	
SVE – 05		Closed	1	N/A	
SVE – 07		0.0	4	16 "H2O	0.000 "H2O
SVE – 08		7.8	7	18 "H2O	0.001 "H2O
SVE – 06		Closed	1	N/A	
SVE – 04		Closed	1	N/A	
SVE – 02		Closed	1	N/A	
SVE Influent	0948	1.2			
SVE Effluent	0942	0.0			

Influent Sample ID: INF. 12.6.2022
Influent Sample Time: 1012 - HRS

Effluent Sample ID: EFF. 12-6-2022
Effluent Sample Time: 1000 - HRS

Field Representative (Print and Sign): George Hogan, Gavin Kloosterman Date of Visit: 12.6.2022

AS System Monthly Inspection Log, *Kelly Moore.* *Date*: 12-6-2022

Visual/Audio Inspection

Item	Inspected (Y/N)	Condition (Cracks, leaks, non-operational gauges, etc.)
Above Ground Piping	Y	
Regenerative Blower	Y	(Auto) / Hand / Off)
Heat Exchanger	Y	(Auto) / Hand / Off)
Pressure Gauges/Flow Meters	Y	
Vent Valve Status	Y	10% open

System Gauge Readings

Before Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Sparge Blower	Hour's / Minutes	15,723.6	
PI – 3	psi	8.0	0 - 30
TI – 3	°F	188 °F	150 – 200

After Heat Exchanger

Item	Units	Reading	Operating Range
Hour Meter Heat Exchanger	Hour's / Minutes	15,724.6	
PI – 4	psi	7.75	0 - 30
TI – 4	°F	55 °F	150 – 200

Air Flow Monitoring

Location	Time	Valve Position (record appx angle)	Pressure (psi)	Air Flow (SCFM)
AS – 1	1010 - HRS	25% open	3.5	10.5
AS – 2	"	"	2.5	10.0
AS – 3	"	"	3.0	10.25
AS – 4	"	"	4.0	10.0
AS – 5	"	"	3.5	10.25

Additional Notes. December 2022 system's Vapor samples and data Collected Today. No influent Voc's @ first Screening. System adjusted as follows': ADDED, air flow from 5 CFM To 10 CFM @ Air Sparge Wells 1 through 5. West Manifold Vacuum opened from position 2 to 4 @ Wells 10, 11, 12 & 13 @ Well 09 Position 2 To 3. East Manifold Well 8 open To Position 7 Well 7 from position 7 to 4. Tote Now @ 85 gal. Air dilution and recirculation Valves 100% Closed

Field Representative (Print and Sign): George Hugen Date of Visit: 12-6-2022
Gwin Mackeman