FIELD ACTIVITIES SUMMARY REPORT

TOW PATH ROAD LANDFILL
REGION 5

INACTIVE LANDFILL INITIATIVE
WORK ASSIGNMENTS # D007623-33 / D009811-02

Prepared For:

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7012

Prepared By:

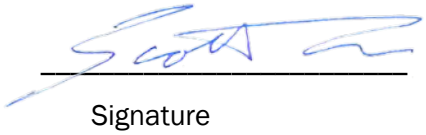
RAMBOLL

SEPTEMBER 28, 2020

CERTIFICATION

Tow Path Road Landfill, Halfmoon, NY

I, Scott Tucker, certify that all activities detailed in this Field Activity Summary Report were conducted as described and in full accordance with the approved workplan and any DEC approved modifications, unless otherwise noted herein.

Scott Tucker	9/28/2020	
Regional Coordinator	Date	Signature

Reviewed/Accepted By:

Division of Materials Management	Date	Signature

New York State Department of Environmental Conservation
Division of Materials Management
Inactive Landfill Initiative
Field Activities Summary

Landfill Name: **Tow Path Road Landfill**

Region: **5**

Database ID: **5254**

Date of Field Activities: **1/9-10/2020, 2/11-14/2020, 3/25-/26/2020**

Summary of Field Activities

Field activities were conducted according to the Hydrogeologic Investigation at the Tow Path Road Landfill NYSDEC Region 5 – Saratoga County Town of Half Moon, New York Site Specific Work Plan with the following deviations: A total of two monitoring wells were installed, developed, and sampled. Additionally, three existing piezometers and ten seep samples were collected. Field activities were performed in accordance with the Field Activities Plan (FAP) with the following deviations: Due to shallow well installation, well construction did not include choker sand above the bentonite seal for both wells and the filter pack did not extend below the screen in MW-01. TPP-1 was inadvertently sampled and is reported. MW-02 TPP-1, and TPP-2 samples were collected with a waterra. Locations of monitoring wells and seep locations are shown on Figure 1. Groundwater flow direction is shown on Figure 2.

Monitoring Wells Installed

Monitoring Well ID	Northing	Easting	Elevation	Well Development Date	Comments
MW-01	4740474.9	602473.61	191.63	1/10/2020	Location ID: 5-SAR-001-MW-01
MW-02	4741452.08	602960.05	192.32	1/10/2020	Location ID: 5-SAR-001-MW-02

Monitoring Wells Sampled

Monitoring Well ID	Date	Sample Collected (yes/no)	Comments
MW-01	3/26/2020	Yes	Field Sample ID: 5-SAR-001-006-01
MW-02	2/14/2020	Yes	Field Sample ID: 5-SAR-001-005-06
TPP-1	2/14/2020	Yes	Field Sample ID: 5-SAR-001-005-04
TPP-2	2/14/2020	Yes	Field Sample ID: 5-SAR-001-005-01
TPP-3	3/26/2020	Yes	Field Sample ID: 5-SAR-001-006-02

Other Samples

Sample Location	Sample Type	Date	Comments
SP-01a	Seep	2/12/2020	Field Sample ID: 5-SAR-001-004-02, Field Duplicate Sample ID: 5-SAR-001-004-03
SP-01b	Seep	2/12/2020	Field Sample ID: 5-SAR-001-004-01
SP-02	Seep	2/12/2020	Field Sample ID: 5-SAR-001-004-04
SP-8a	Seep	2/12/2020	Field Sample ID: 5-SAR-001-004-05
SP-8b	Seep	2/13/2020	Field Sample ID: 5-SAR-001-004-08
SP-11	Seep	2/13/2020	Field Sample ID: 5-SAR-001-004-12
SP-13a	Seep	2/12/2020	Field Sample ID: 5-SAR-001-004-06
SP-13b	Seep	2/13/2020	Field Sample ID: 5-SAR-001-004-11
SP-19	Seep	2/13/2020	Field Sample ID: 5-SAR-001-004-10
SP-20	Seep	2/13/2020	Field Sample ID: 5-SAR-001-004-09

Figures

Figure 1	Sample Locations
Figure 2	Groundwater Flow Direction and Emergent Contaminants Results Summary

Attachments

Attachment 1	Tow Path Road Landfill Work Plan
Attachment 2	Boring and Well Construction Logs
Attachment 3	Sampling Logs
Attachment 4	Analytical Laboratory Level II Data Deliverable

PROJECT: 169000XXXX | DATED: 8/25/2020 | DESIGNER: MONETANT

I:\Parsons-Eng.8653\65982.Inactive-Landfi\Docs\DWG\MXD\Specifc Sites\Region 5\Tow Path\FASR\SAMPLE_LOCATIONS.mxd

Notes

1. PARCELS GEOREFERENCED FROM SARATOGA COUNTY TAX MAP NYSDEC MEMORANDUM DATED SEPTEMBER 1, 2017 TITLED TOW PATH ROAD LANDFILL, HALFMOON (T), SARATOGA COUNTY
2. CONTOURS PROVIDED BY NYS CLEARING HOUSE
3. SEEP LOCATIONS ARE APPROXIMATED FROM GPS DATA COLLECTED IN THE FIELD

MW-02
5-SAR-001-005-06

MW-01
5-SAR-001-006-01

SP-19
5-SAR-001-004-10

SP-20
5-SAR-001-004-09

SP-13b
5-SAR-001-004-11

TPP-1
5-SAR-001-005-04

TPP-3
5-SAR-001-006-02

SP-13a
5-SAR-001-004-06

SP-11
5-SAR-001-004-12

SP-8b
5-SAR-001-004-08

SP-8a
5-SAR-001-004-05

TPP-2
5-SAR-001-005-01

SP-01a
5-SAR-001-004-02, 5-SAR-001-004-03

SP-01b
5-SAR-001-004-01

SP-02
5-SAR-001-004-04

SEEP-30
SEEP-29b
SEEP-29a
SEEP-28
SEEP-27
SEEP-25
SEEP-26a
SEEP-23
SEEP-24
SEEP-22
SEEP-21b
SEEP-21a
Tow Path LF
SEEP-18b
SEEP-18a
SEEP-17b
SEEP-17a
SEEP-16
SEEP-14c
SEEP-14b
SEEP-15
SEEP-14a
SEEP-12b
SEEP-10a
SEEP-12a
SEEP-10b
SEEP-09
SEEP-07
SEEP-06a
SEEP-06b
SEEP-05
SEEP-03a
SEEP-04
SEEP-03b

Mohawk River

Service Layer Credits: NYS ITS GIS Program Office

LEGEND

- MONITORING WELL
- SEEP INSPECTION
- ELEVATION CONTOUR
- WATER FEATURE AND FLOW
- GENERAL GROUNDWATER FLOW DIRECTION
- APPROXIMATE LANDFILL EXTENT
- PARCEL BOUNDARY

0 425 850 Feet

SAMPLE LOCATIONS

NEW YORK STATE DEPARTMENT OF CONSERVATION
TOW PATH ROAD LANDFILL
TOWN OF HALF MOON, NEW YORK
REGION 5 SARATOGA COUNTY

FIGURE 01

O'BRIEN & GERE ENGINEERS, INC.
A RAMBOLL COMPANY

RAMBOLL

Notes

1. PARCELS GEOREFERENCED FROM SARATOGA COUNTY TAX MAP NYSDEC MEMORANDUM DATED SEPTEMBER 1, 2017 TITLED TOW PATH ROAD LANDFILL, HALFMOON (T), SARATOGA COUNTY
2. CONTOURS PROVIDED BY NYS CLEARING HOUSE
3. GROUNDWATER FLOW INTERPRETTED FROM SURFACE FEATURES, FIELD RESULTS INCONCLUSIVE.
4. DATA PRESENTED HAS NOT BEEN VALIDATED
5. SEEP LOCATIONS ARE APPROXIMATED FROM GPS DATA COLLECTED IN THE FIELD

Notes:
-Data from sampling completed by OBG, Part of Ramboll, in February and March 2020 is presented in boxes.
-ND = Non detect at method detection limit
-Grey Shading indicates exceedance of NYSDEC action limits.
- ng/L = nanograms per liter
- ug/L = micrograms per liter
- J = The reported value is estimated
- B = Compound was found in the blank and sample.
- E = Result exceeded calibration range.

MW-02	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	150 B ng/L
Perfluorooctanoic acid (PFOA)	44 B ng/L

MW-02
5-SAR-001-005-06

MW-01	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	89 ng/L
Perfluorooctanoic acid (PFOA)	28 ng/L

MW-01
5-SAR-001-006-01

SP-19	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	7.7 ng/L
Perfluorooctanoic acid (PFOA)	1.8 ng/L

SP-19
5-SAR-001-004-10

SP-20	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	20 ng/L
Perfluorooctanoic acid (PFOA)	3.1 ng/L

SP-20
5-SAR-001-004-09

SP-13b	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	150 ng/L
Perfluorooctanoic acid (PFOA)	21 ng/L

SP-13b
5-SAR-001-004-11

TPP-1
5-SAR-001-005-04

TPP-1	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	ND
Perfluorooctanoic acid (PFOA)	ND

TPP-3	
1,4-Dioxane (P-Dioxane)	3.0 E ug/L
Perfluorooctanesulfonic acid (PFOS)	1.5 J ng/L
Perfluorooctanoic acid (PFOA)	13 ng/L

TPP-3
5-SAR-001-006-02

SP-13a	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	120 ng/L
Perfluorooctanoic acid (PFOA)	20 ng/L

SP-13a
5-SAR-001-004-06

SP-11	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	120 ng/L
Perfluorooctanoic acid (PFOA)	38 ng/L

SP-11
5-SAR-001-004-12

SP-8b
5-SAR-001-004-08

SP-8b	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	260 ng/L
Perfluorooctanoic acid (PFOA)	98 ng/L

SP-8a
5-SAR-001-004-05

SP-8a	
1,4-Dioxane (P-Dioxane)	0.14 J ug/L
Perfluorooctanesulfonic acid (PFOS)	240 ng/L
Perfluorooctanoic acid (PFOA)	75 ng/L

TPP-2
5-SAR-001-005-01

TPP-2	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	100 B ng/L
Perfluorooctanoic acid (PFOA)	28 B ng/L

SP-01a
5-SAR-001-004-02, 5-SAR-001-004-03

SP-01a		FD
1,4-Dioxane (P-Dioxane)	ND	ND
Perfluorooctanesulfonic acid (PFOS)	140 ng/L	160 ng/L
Perfluorooctanoic acid (PFOA)	25 ng/L	28 ng/L

SP-01b
5-SAR-001-004-01

SP-01b	
1,4-Dioxane (P-Dioxane)	ND
Perfluorooctanesulfonic acid (PFOS)	150 ng/L
Perfluorooctanoic acid (PFOA)	26 ng/L

SP-02
5-SAR-001-004-04

SP-02	
1,4-Dioxane (P-Dioxane)	0.18 J ug/L
Perfluorooctanesulfonic acid (PFOS)	110 ng/L
Perfluorooctanoic acid (PFOA)	18 ng/L

SEEP-30, SEEP-29b, SEEP-29a, SEEP-28, SEEP-27, SEEP-25, SEEP-26a, SEEP-23, SEEP-24, SEEP-22, SEEP-21b, SEEP-21a, SEEP-18b, SEEP-18a, SEEP-17b, SEEP-17a, SEEP-16, SEEP-14c, SEEP-14b, SEEP-15, SEEP-14a, SEEP-12b, SEEP-10a, SEEP-12a, SEEP-10b, SEEP-09, SEEP-07, SEEP-06b, SEEP-06a, SEEP-05, SEEP-03a, SEEP-04, SEEP-03b

Tow Path LF

Mohawk River

Service Layer Credits: NYS ITS GIS Program Office

LEGEND

- MONITORING WELL
- SEEP INSPECTION
- ELEVATION CONTOUR
- WATER FEATURE AND FLOW
- GENERAL GROUNDWATER FLOW DIRECTION
- APPROXIMATE LANDFILL EXTENT
- PARCEL BOUNDARY

0 425 850 Feet

GROUNDWATER FLOW DIRECTION AND EMERGENT CONTAMINANTS RESULTS SUMMARY

NEW YORK STATE DEPARTMENT OF CONSERVATION
TOW PATH ROAD LANDFILL
TOWN OF HALF MOON, NEW YORK
REGION 5 SARATOGA COUNTY

FIGURE 02

O'BRIEN & GERE ENGINEERS, INC.
A RAMBOLL COMPANY

RAMBOLL

ATTACHMENT 1

TOW PATH ROAD LANDFILL WORK PLAN

Site-Specific Work Plan for:

HYDROGEOLOGIC INVESTIGATION
AT THE
TOW PATH ROAD LANDFILL
NYSDEC REGION 5 – SARATOGA COUNTY
TOWN OF HALF MOON, NEW YORK

Prepared For:

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7012

Prepared By:

OBG Part of Ramboll
333 W. Washington St.
Syracuse, New York 13202
Phone: (315) 956-6100
Fax: (315) 463-7554

June 2019

TABLE OF CONTENTS

Page

1.0 PROJECT BACKGROUND 1
2.0 PROJECT OBJECTIVES 1
3.0 SITE SETTING AND HISTORY 1
3.1 Groundwater and Surface Water Occurrence and Flow 1
4.0 HYDROGEOLOGICAL INVESTIGATION AND SCOPE OF WORK 2
4.1 Subsurface Utility Clearing 2
4.2 Monitoring Well Installations 2
4.3 Groundwater and Seep Sampling 3
5.0 INVESTIGATION REPORTING 3

LIST OF TABLES

Table 1 Analytical Parameters

LIST OF FIGURES

Figure 1 Site Plan

Site Specific Work Plan For Hydrogeologic Investigation At Tow Path Road Landfill Site

1.0 PROJECT BACKGROUND

This hydrogeologic investigation is part of the New York State Department of Environmental Conservation's (NYSDEC's) Inactive Landfills Initiative. The objective of the Initiative is to assess inactive landfills in New York State for potential impacts to drinking water sources and other potential receptors.

2.0 PROJECT OBJECTIVES

The objective of this hydrogeological investigation is to provide an initial assessment of the potential for impacts to groundwater in the immediate vicinity of the Tow Path Road Landfill **(Exhibit 1)**. This objective will be accomplished by installing two monitoring wells, sampling two shallow overburden groundwater monitoring wells, sampling two overburden piezometers, sampling up to ten seeps and analyzing the samples for a suite of target organic and inorganic contaminants. The sample data will be evaluated to assess current groundwater quality, and if emerging contaminants are present.

3.0 SITE SETTING AND HISTORY

The Tow Path Road Landfill, also known as the Old Halfmoon Landfill, is a DER Class 3 Site (#546013) located parallel to the north shore of the Mohawk River, generally aligned with Tow Path Road and Old Canal Road. Waste was reportedly placed in the Old Erie Canal and the landfill is approximately 2.5 miles long. The Tow Path Road section is generally bound by woodlands on along the north side of the road with some residences and the Mohawk River along the southern side of the road. The Old Canal Road section consists of a public greenspace and bike path and is bound by numerous residences along the northwest side of the road and the Mohawk River along the southern side of the road.

According to a NYSDEC Memorandum titled *Tow Path Road Landfill, Halfmoon (T), Saratoga County* and dated September 1, 2017, the landfill originated in the late 1950's and was operated by the Town of Halfmoon until October 1968, when the site was closed under a NYS Supreme Court order. Several industries disposed of waste at the site. Public water was extended to the area in 1995-1996.

A February 2017 inspection of the landfill identified many seeps along Tow Path Road. In early September 2017, O'Brien & Gere Engineers, Inc, Part of Ramboll (OBG), performed a seep reconnaissance and identified evidence of 30 seeps with the majority (21 seep) located along Town Path Road. In late September 2017, OBG completed sampling and analysis of five seeps along Tow Path Road and one seep along Old Canal Road. Per-and polyfluorinated alkyl substances (PFAS) compounds were detected in seep water.

3.1 GROUNDWATER AND SURFACE WATER OCCURRENCE AND FLOW

The Mohawk River flows east adjacent to the eastern landfill limits.

Based on approximate elevations of the ground surface and Mohawk River, it is assumed that groundwater will occur within approximately 10-ft of the ground surface and will flow east towards the Mohawk River.

According to the surficial geology map of New York State (Hudson Mohawk Sheet) the landfill is underlain by a mixture of recent alluvium, lacustrine silt and clay, and lacustrine sand and bedrock. According to the bedrock geology map of New

York State (Hudson Mohawk Sheet) the bedrock present beneath the landfill is the Austin Glen Formation made up of graywacke and shale. Boring logs for the site indicated bedrock was encountered at approximately 34 feet below grade.

4.0 HYDROGEOLOGICAL INVESTIGATION AND SCOPE OF WORK

Field activities will be conducted in accordance with the Quality Assurance Project Plan (QAPP), Field Activities Plan (FAP), and Health and Safety Plan (HASP), which have been prepared and approved specifically for the NYSDEC Inactive Landfill Initiative program. Site-specific elements and specific job safety analyses for soil borings and monitoring well installations will be added to the Health and Safety Plan specifically for the Dolgeville SLF (V) Landfill site.

A Community Air Monitoring Plan will be implemented for real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area during invasive activities on-site.

The specific field procedures to be used during this investigation are described in the FAP. That document describes the drilling methods, well installation and sampling methods, and handling of investigation-derived waste. The QAPP describes the analytical procedures to be used by the laboratory in analyzing the groundwater samples.

Two monitoring wells will be installed, and existing piezometers and newly installed wells will be sampled to evaluate general groundwater quality as described below. The well locations are shown in **Figure 1**, which will be installed where equipment access is achievable. Each well will be installed along the presumed southern landfill limits to function as a downgradient well between the Mohawk River and the landfill; however, due to the proximity to the river's edge it is possible that a well may be installed within waste. Wells will be installed in public greenspace adjacent to an existing bike path. Exact well placement will be evaluated in the field to best accommodate access. Additionally, seeps will be sampled as outlined below.

4.1 SUBSURFACE UTILITY CLEARING

The local DIG SAFE service will be used to mark out subsurface utility lines near the proposed monitoring well locations. Monitoring well boring locations will be adjusted in the field as necessary to avoid subsurface obstructions and utilities. Each well boring location will also be hand-dug to 5 feet to ensure the location is clear of subsurface utilities. The proposed well locations are shown on **Figure 1**.

4.2 MONITORING WELL INSTALLATIONS

Following hand-clearing, the borings for the monitoring wells will be installed into the overburden using hollow-stem augers or another acceptable technique based on the conditions present (**Figure 1**). Alternate drilling techniques are described in the FAP. Soil samples will be collected continuously at each boring location. Samples will be physically described in the field using both the Burmeister and USCS soil classification systems. A photoionization detector (PID) will be used to record the headspace readings of each soil sample.

The borings will be advanced to the first water-bearing zone that is considered acceptable for placing a monitoring well that will yield a volume of representative groundwater sufficient for sampling. Landfill seeps along the limits of fill of the landfill indicate the potential for shallow groundwater. In the event that shallow groundwater is encountered, wells will be screened at least 5 ft below grade to minimize mixing of the surface water with the groundwater in the well.

While unlikely, it is possible that the first water-bearing zone will be encountered at the bedrock-overburden interface. If field observations verify this and bedrock drilling is required, shallow bedrock wells will be installed using a combination of hollow stem auguring and rotary (including air hammer) drilling methods. Initially, 6.25-inch inside diameter hollow stem augers will be advanced to the bedrock surface. During auger advancement, soil samples will be collected continuously

from the ground surface to the top of bedrock. Upon reaching the top of bedrock, a nominal 6-inch diameter roller bit will be used to drill a socket approximately 6 inches into the bedrock. A 4-inch diameter temporary steel casing will be installed through the auger string as the auger string is retracted. A borehole will be advanced 5-feet into the bedrock using rotary drilling methods (including air hammer) to an estimated depth of 20-ft below grade. Rock chips will be collected to describe the bedrock and screen for evidence of staining or other chemically-related impacts. In addition, soil and rock chips will be screened with a photoionization detector (PID) to allow evaluation of the bulk volatile organic concentration.

In the event that groundwater isn't encountered in overburden, bedrock drilling will be completed similar to the above description; however, the borehole will be completed with bedrock coring methods.

Monitoring wells will be constructed of 2-inch inside-diameter polyvinyl chloride (PVC) casing with a 5 to 10-foot long, #10-slot screen and compatible sand pack material. In areas where there is no evidence of standing water, the well screen will be extended above the water table interface. The top of the screen will be no less than 5 ft below grade and may be deeper to isolate the well from standing surface water as previously described. Each well will be completed with a locking protective casing with approximately 3 feet of stick-up. Should shallow groundwater or other site conditions dictate, modifications to the well design will be made in the field by the supervising geologist.

If a bedrock well is required as a result of the first water-bearing zone being observed at the bedrock-overburden interface, PVC monitoring wells will be constructed with the same general construction as outlined above, however; the well screen will straddle the bedrock overburden interface.

If a bedrock well is required as a result of no groundwater encountered in overburden, PVC monitoring wells will be completed in the bedrock boring consistent with the FAP.

Following installation, the new monitoring wells will be developed to remove material which may have settled in and around the well screen. Development will use methods described in the FAP. Following well development, the locations and elevations of the monitoring well PVC casings will be established relative to an arbitrary onsite datum using a Total Station surveying instrument.

Drilling equipment will be decontaminated by pressure washing between borings and before entering or leaving the site.

Drill cuttings from borings will be spread along the ground adjacent to the borehole. However, soils that contain visible wastes, free product, NAPL, or otherwise are grossly contaminated will be containerized for subsequent characterization and disposal. Water generated during the investigation will be discharged to an unpaved area of the site.

4.3 GROUNDWATER AND SEEP SAMPLING

Prior to sampling, newly installed wells and existing piezometers (TPP-2 [Shallow Overburden] and TPP-3 [Middle Overburden]) will be developed. Groundwater samples will be collected from each new well and piezometers TPP-2 and TPP-3 utilizing FAP approved sampling techniques and analyzed as described in the FAP. If a well yield is insufficient to support low flow sampling, the sampling will be completed using another acceptable technique as outlined in the FAP. The wells will be purged prior to sampling, and all sampling equipment will be dedicated to that sampling location or will be decontaminated between sampling locations using the methods provided in the FAP.

Additionally, up to ten of the twenty-five seeps not sampled in 2017 will be sampled.

5.0 INVESTIGATION REPORTING

Sampling logs, analytical data, and a site work summary will be provided at the completion of field activities for the site.

TABLE 1 – ANALYTICAL PARAMETERS

Parameter	Method	Parameter	Method
Leachate Indicators		**Inorganics**	
Ammonia	350.1 / SM20 4500NH3 B/D	Aluminum	SW6010C
Chemical Oxygen Demand	410.4	Antimony	SW6010C
Total Organic Carbon	EPA 9060 / SM20 5310B/C	Arsenic	SW6010C
Total Dissolved Solids	SM20 2540C	Barium	SW6010C
Sulfate	300	Boron	SW6010C
Alkalinity	SM20 2320B	Beryllium	SW6010C
Chloride	300	Cadmium	SW6010C
Bromide	300	Calcium	SW6010C
Total hardness as CaCO3	SM20 2340C	Chromium	SW6010C
		Cobalt	SW6010C
PAHs + 1,4-Dioxane		Copper	SW6010C
Acenaphthene	8270D SIM	Iron	SW6010C
Acenaphthylene	8270D SIM	Lead	SW6010C
Anthracene	8270D SIM	Magnesium	SW6010C
Benzo(a)anthracene	8270D SIM	Manganese	SW6010C
Benzo(a)pyrene	8270D SIM	Nickel	SW6010C
Benzo(b)fluoranthene	8270D SIM	Potassium	SW6010C
Benzo(g,h,i)perylene	8270D SIM	Selenium	SW6010C
Benzo(k)fluoranthene	8270D SIM	Silver	SW6010C
Chrysene	8270D SIM	Sodium	SW6010C
Dibenzo(a,h)anthracene	8270D SIM	Thallium	SW6010C
Fluoranthene	8270D SIM	Vanadium	SW6010C
Fluorene	8270D SIM	Zinc	SW6010C
Indeno(1,2,3-cd)pyrene	8270D SIM	Mercury	SW7470A
Naphthalene	8270D SIM	Mercury	E1631
Phenanthrene	8270D SIM	Dissolved Mercury	E1631
Pyrene	8270D SIM		
1-4-Dioxane	8270D SIM		

TABLE 1 – ANALYTICAL PARAMETERS
(Continued)

Parameter	Method	Parameter	Method
Volatiles			
Acetone	SW8260C	Ethylbenzene	SW8260C
Acrylonitrile	SW8260C	2-Hexanone	SW8260C
Benzene	SW8260C	Bromomethane	SW8260C
Bromochloromethane	SW8260C	Chloromethane (Methyl chloride)	SW8260C
Bromodichloromethane	SW8260C	Dibromomethane	SW8260C
Bromoform	SW8260C	Methylene chloride	SW8260C
Carbon disulfide	SW8260C	2-Butanone (Methyl ethyl ketone)	SW8260C
Carbon tetrachloride	SW8260C	Idomethane (Methyl iodide)	SW8260C
Chlorobenzene	SW8260C	4-Methyl-2-pentanone (Methyl isobutyl ketone)	SW8260C
Chloroethane	SW8260C	Styrene	SW8260C
Chloroform	SW8260C	1,1,1,2-Tetrachloroethane	SW8260C
Dibromochloromethane	SW8260C	1,1,2,2-Tetrachloroethane	SW8260C
1,2-Dibromo-3-chloropropane	SW8260C	Tetrachloroethene	SW8260C
1,2-Dibromoethane (Ethylene dibromide)	SW8260C	Toluene	SW8260C
1,2-Dichlorobenzene	SW8260C	1,1,1-Trichloroethane	SW8260C
1,4-Dichlorobenzene	SW8260C	1,1,2-Trichloroethane	SW8260C
trans-1,4-Dichloro-2-butene	SW8260C	Trichloroethene	SW8260C
1,1-Dichloroethane	SW8260C	Trichlorofluoromethane	SW8260C
1,2-Dichloroethane	SW8260C	1,2,3-Trichloropropane	SW8260C
1,1-Dichloroethene	SW8260C	Vinyl acetate	SW8260C
cis-1,2-Dichloroethene	SW8260C	Vinyl chloride	SW8260C
trans-1,2-Dichloroethene	SW8260C	o-Xylene	SW8260C
1,2-Dichloropropane	SW8260C	m,p-Xylene	SW8260C
cis-1,3-Dichlororpropene	SW8260C	Xylenes, Total	SW8260C
trans-1,3-Dichlororpropene	SW8260C		

TABLE 1 – ANALYTICAL PARAMETERS
(Continued)

Parameter	Method	Parameter	Method
Volatiles			
Acetone	SW8260C	Ethylbenzene	SW8260C
Acrylonitrile	SW8260C	2-Hexanone	SW8260C
Benzene	SW8260C	Bromomethane	SW8260C
Bromochloromethane	SW8260C	Chloromethane (Methyl chloride)	SW8260C
Bromodichloromethane	SW8260C	Dibromomethane	SW8260C
Bromoform	SW8260C	Methylene chloride	SW8260C
Carbon disulfide	SW8260C	2-Butanone (Methyl ethyl ketone)	SW8260C
Carbon tetrachloride	SW8260C	Idomethane (Methyl iodide)	SW8260C
Chlorobenzene	SW8260C	4-Methyl-2-pentanone (Methyl isobutyl ketone)	SW8260C
Chloroethane	SW8260C	Styrene	SW8260C
Chloroform	SW8260C	1,1,1,2-Tetrachloroethane	SW8260C
Dibromochloromethane	SW8260C	1,1,2,2-Tetrachloroethane	SW8260C
1,2-Dibromo-3-chloropropane	SW8260C	Tetrachloroethene	SW8260C
1,2-Dibromoethane (Ethylene dibromide)	SW8260C	Toluene	SW8260C
1,2-Dichlorobenzene	SW8260C	1,1,1-Trichloroethane	SW8260C
1,4-Dichlorobenzene	SW8260C	1,1,2-Trichloroethane	SW8260C
trans-1,4-Dichloro-2-butene	SW8260C	Trichloroethene	SW8260C
1,1-Dichloroethane	SW8260C	Trichlorofluoromethane	SW8260C
1,2-Dichloroethane	SW8260C	1,2,3-Trichloropropane	SW8260C
1,1-Dichloroethene	SW8260C	Vinyl acetate	SW8260C
cis-1,2-Dichloroethene	SW8260C	Vinyl chloride	SW8260C
trans-1,2-Dichloroethene	SW8260C	o-Xylene	SW8260C
1,2-Dichloropropane	SW8260C	m,p-Xylene	SW8260C
cis-1,3-Dichlororpropene	SW8260C	Xylenes, Total	SW8260C
trans-1,3-Dichlororpropene	SW8260C		

TABLE 1 – ANALYTICAL PARAMETERS
(Continued)

Parameter	Method
Perfluorobutanoic acid (PFBA)	Modified 537
Perfluoropentanoic acid (PFPeA)	Modified 537
Perfluorohexanoic acid (PFHxA)	Modified 537
Perfluoroheptanoic acid (PFHpA)	Modified 537
Perfluorooctanoic acid (PFOA)	Modified 537
Perfluorononanoic acid (PFNA)	Modified 537
Perfluorodecanoic acid (PFDA)	Modified 537
Perfluoroundecanoic acid (PFUnA)	Modified 537
Perfluorododecanoic acid (PFDoA)	Modified 537
Perfluorotridecanoic Acid (PFTriA)	Modified 537
Perfluorotetradecanoic acid (PFTeA)	Modified 537
Perfluorobutanesulfonic acid (PFBS)	Modified 537
Perfluorohexanesulfonic acid (PFHxS)	Modified 537
Perfluoroheptanesulfonic Acid (PFHpS)	Modified 537
Perfluorooctanesulfonic acid (PFOS)	Modified 537
Perfluorodecanesulfonic acid (PFDS)	Modified 537
Perfluorooctane Sulfonamide (FOSA)	Modified 537
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	Modified 537
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	Modified 537
6:2 Fluorotelomer sulfonate (6:2FTS)	Modified 537
8:2 Fluorotelomer sulfonate (8:2FTS)	Modified 537

FIGURE 1



LEGEND

- 2017 SAMPLE SEEP
- NON-SAMPLED SEEP
- PARCEL LIMIT
- PROPOSED MONITORING WELL
- EXISTING WELL
- APPROXIMATE LANDFILL EXTENT

SEEP-05 = SEEP ID #
SQ FT = APPROXIMATE AREA
US/CM = SPECIFIC CONDUCTIVITY

NEW YORK STATE
DEPARTMENT OF CONSERVATION
TOW PATH ROAD LANDFILL
HALFMOON, NEW YORK
SARATOGA COUNTY

0 450 900 1,800
Feet

SITE PLAN

N

8653.65982
JUNE 2019

O'BRIEN & GERE ENGINEERS, INC.

6/25/2019 7:57:24 AM

I:\Parsons-Eng.8653\65982.Inactive-Landfi\Docs\DWG\MXD\Specifc Sites\Region 5\Tow Path\Tow_Path_Seeps_Sample_Locations_NTP2.mxd

ATTACHMENT 2

BORING AND WELL CONSTRUCTION LOGS

RAMBOLL

SOIL BORING LOG

BORING ID: MW-01
INSPECTOR: Allie Berry

PROJECT:	ILI R5	SITE NAME:	Tow Path Road LF	DATE STARTED:	1/9/2020
CLIENT:	NYSDEC	SITE LOC.:	Halfmoon, NY	DATE COMPLETED:	1/9/2020
JOB #:	65982	BORING LOC.:	Southern location	FINAL STATIC WL:	7.02

DRILLING CONT.:	Aztech	DRILLING METHOD:	HSA/Direct Push	NORTHING:	4740474.9
FOREMAN:	Bob Gannon	HAMMER / FALL:	N/A	EASTING:	602473.61
RIG TYPE:	Geoprobe 3230 DT	SAMPLER TYPE:	Split Spoon	ELEVATION:	191.63
PURPOSE:	MW Installation	SAMPLER DIAMETER:	2 "	DATUM:	TOC

Sample No.	Sample Start Depth (ft.)	Sample End Depth (ft.)	Penetration / Recovery	Blows/6"	"N" Value	MATERIAL DESCRIPTION	General Stratum Descrip.	Field Testing	
								PID (ppm)	USCS
						0-5' Hand cleared - dark brown organic		0	
						material, some silt and some gravel			
1	5	7	2/0.3			5-6.7' poor recovery			
						6.7-7' olive gray 5Y 4/1 saturated fine SAND,	SAND	0	SW
						some waste encountered, strong chemical			
						odor			
2	7	9	2/1			7-8' poor recovery			
						8-9' olive gray 5Y 4/1 saturated CLAY,	CLAY	0	OH
						very little fine sand			
3	9	11	2/1			9-10' poor recovery			
						10-11' olive gray 5Y 4/1 saturated CLAY,	CLAY	0	OH
						with some poorly sorted gravel			
4	11	13	2/0.5			11-12.5' poor recovery			
						12.5-13' olive gray 5Y 4/1 saturated CLAY	CLAY	0	CL
						and fine, well sorted SAND, some gravel	and SAND		
5	13	13.8	0.8/0.8			13-13.8' olive gray 5Y 4/1 saturated CLAY	CLAY	0	CL
						and fine, well sorted SAND, some wood	and		
						fragments	SAND		
						Well Construction:			
						screen 13.8-3.8'			
						sand 13.8-2.8'			
						choke sand 2.8-2'			
						bentonite 2-0.5'			
						grout 0.5-surface			

NOTES:

I:\Parsons-Eng.8653\65982.Inactive-Landfi\N-D\Region_5\LF Documents\Saratoga County\Tow Path Road Landfill\OBG\Field Materials\Soil Borings\TowPathRd_MW-01_010920.xlsx

RAMBOLL

SOIL BORING LOG

BORING ID: MW-02
INSPECTOR: Allie Berry

PROJECT:	ILI R5	SITE NAME:	Tow Path Road LF	DATE STARTED:	1/9/2020
CLIENT:	NYSDEC	SITE LOC.:	Half Moon, NY	DATE COMPLETED:	1/9/2020
JOB #:	65982	BORING LOC.:	Northern location	FINAL STATIC WL:	7.02

DRILLING CONT.:	Aztech	DRILLING METHOD:	HSA/Direct Push	NORTHING:	4741452.08
FOREMAN:	Bob Gannon	HAMMER / FALL:	N/A	EASTING:	602960.05
RIG TYPE:	Geoprobe 3230 DT	SAMPLER TYPE:	Split Spoon	ELEVATION:	192.32
PURPOSE:	MW Installation	SAMPLER DIAMETER:	2 "	DATUM:	TOC

Sample No.	Sample Start Depth (ft.)	Sample End Depth (ft.)	Penetration / Recovery	Blows/6"	"N" Value	MATERIAL DESCRIPTION	General Stratum Descrip.	Field Testing	
								PID (ppm)	USCS
						0-5' Hand cleared - dark brown organic		0	
						material, some silt and some gravel			
1	5	7	2/0.4			5-6.6' poor recovery			
						6.6-7' olive gray 5Y 4/1 saturated fine,	SAND	0	SC
						medium, coarse SAND and CLAY, some	and		
						waste present	CLAY		
2	7	9	2/0.4			7-8.6' poor recovery			
						8.6-9' olive gray 5Y 4/1 saturated fine,	SAND	0	SC
						medium, coarse SAND and CLAY	and CLAY		
3	9	11	2/1.2			9-9.8' poor recovery			
						9.8-10.3' olive gray 5Y 4/1 saturated fine,	SAND	0	SC
						medium, coarse SAND and CLAY	and CLAY		
						10.3-11' greenish gray 5GY 6/1 saturated	CLAY	0	CH
						CLAY, high plasticity			
4	11	13	2/0.7			11-12.3' poor recovery			
						12.3-12.6' olive gray 5Y 4/1 saturated fine	SAND	0	SC
						SAND and CLAY	and CLAY		
						12.6-13' greenish gray 5GY 6/1 saturated	CLAY	0	OH
						high plasticity CLAY and some silt			
5	13	15	2/1.3			13-13.7' poor recovery			
						13.7-15' olive gray 5Y 4/1 saturated fine	SAND	0	SC
						SAND and CLAY	and CLAY		
6	15	17	2/2.0			15-17' greenish gray 5GY 6/1 saturated	CLAY	0	OH
						high plasticity CLAY and some silt			

NOTES:

I:\Parsons-Eng.8653\65982.Inactive-Landfi\N-D\Region_5\LF Documents\Saratoga County\Tow Path Road Landfill\OBG\Field Materials\Soil Borings\TowPathRd_MW-02_010920.xlsx

RAMBOLL

SOIL BORING LOG

BORING ID: MW-02

INSPECTOR: Allie Berry

Sample No.	Sample Start Depth (ft.)	Sample End Depth (ft.)	Penetration / Recovery	Blows/6"	"N" Value	MATERIAL DESCRIPTION	General Stratum Descrip.	Field Testing	
								PID (ppm)	Other
						Well Construction:			
						screen 16-6'			
						sand 17-5'			
						choke sand 5-4'			
						bentonite 4-1'			
						grout 1-surface			

NOTES:

I:\Parsons-Eng.8653\65982.Inactive-Landfi\N-D\Region_5\LF Documents\Saratoga County\Tow Path Road Landfill\OBG\Field Materials\Soil Borings\TowPathRd_MW-02_010920.xlsx

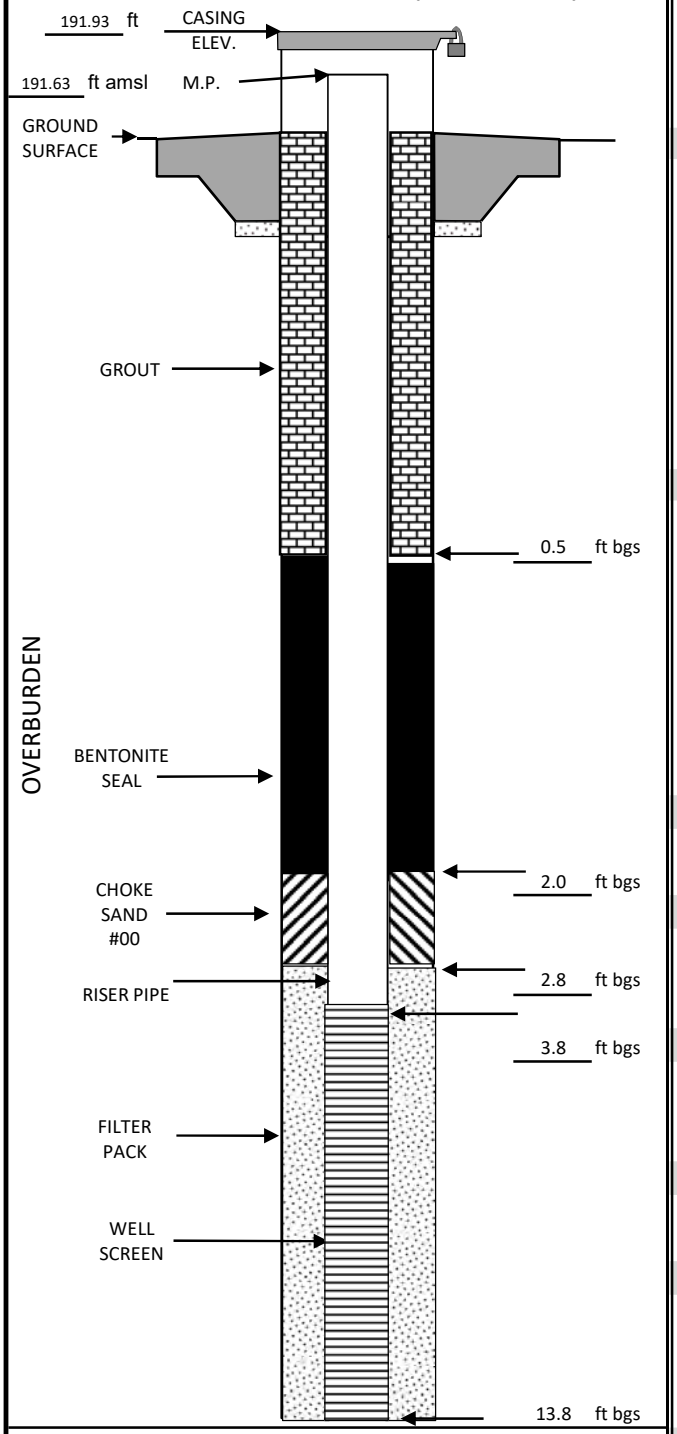
WELL COMPLETION LOG

RAMBOLL

Well ID:	MW-01
Northing:	4740474.9
Easting:	602473.61

Site Name:	Tow Path Rd LF	Drilling Subcontractor:	Aztech Tech.	Date Drilled:	1/9/2020
Site Location:	Half Moon, NY	Master Driller:	Bob Gannon	Date Installed:	1/9/2020
Project #:	65982				
Client:	NYSDEC	Installation Inspector:	Allie Berry	Date Developed:	1/10/2020

WELL CONSTRUCTION DETAIL (NOT TO SCALE)



ft bgs - Feet Below Ground Surface
in. - Inches
M.P. - Measurement Point
ft bmp - Feet Below Measuring Point
PVC - Polyvinyl Chloride

INSPECTION NOTES

Well Type: Permanent Monitoring
Static Water Level: 3.55 ft bgs
Measurement Point: PVC

Borehole Advancement

Overburden

Method 1: Hand Clearing **Diameter:** 4 in
Interval 1: 0.0 to 5.0 ft bgs
Method 2: Hollow Stem Auger **Diameter:** 6 in
Interval 2: 5.0 to 13.8 ft bgs
P. Casing: Steel **Interval:** -3.54 to 2.0 ft bgs
Sampling Method:
Type: Split Spoon **Diameter:** 2 in
Weight: NA **Fall:** NA
Interval: 5.0 to 13.8 ft bgs

Bedrock

Method: Diameter: in.
Interval: to ft bgs
P. Casing 2: Interval: to ft bgs
P. Casing 3: Interval: to ft bgs
Sampling Method:
Type: Diameter: in.
Interval: to ft bgs

Well Construction

Riser Pipe

Material: PVC **Diameter:** 2 in
Interval: -3.24 to 3.8 ft bgs **Joint:** Thread

Screen

Material: PVC **Diameter:** 2 in
Slot Size: 0.010" **Joint:** Thread
Interval: 13.8 to 3.8 ft bgs

Sump

Material: **Diameter:**
Interval: to ft bgs **Joint:**

Filter Pack

Type: Silica Sand **Grade:** #1
Interval: 13.8 to 2.8 ft bgs

Seal(s)

Type:	#00 Silica Sand	**Interval:**	2.0	to 2.8	ft bgs
Type:	Bentonite chips	**Interval:**	0.5	to 2.0	ft bgs
Type:	Grout	**Interval:**	0.0	to 0.5	ft bgs
Type:		**Interval:**		to	ft bgs

Surface Completion

Type: Stick-Up, cement pad

Additional Notes:

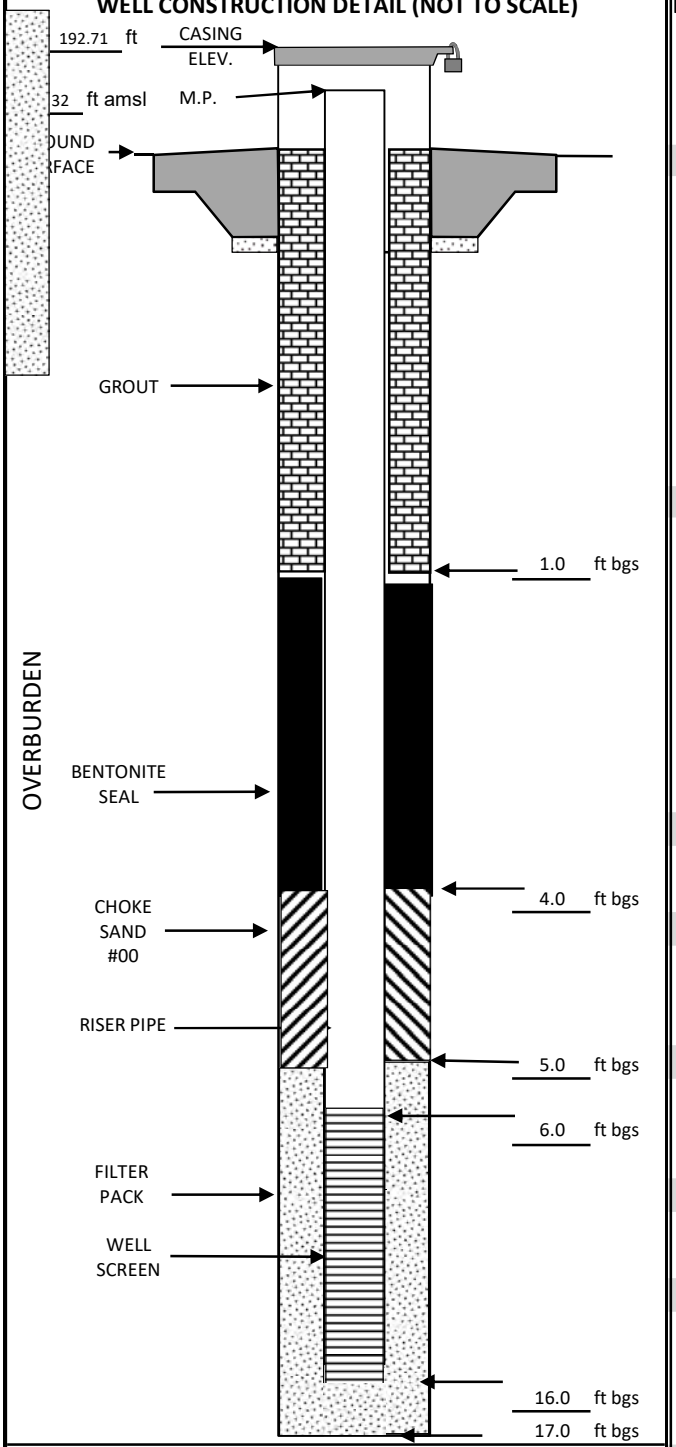
WELL COMPLETION LOG

RAMBOLL

Well ID:	MW-02
Northing:	4741452.08
Easting:	602960.05

Site Name:	Tow Path Rd LF	Drilling Subcontractor:	Aztech Tech.	Date Drilled:	1/9/2020
Site Location:	Half Moon, NY	Master Driller:	Bob Gannon	Date Installed:	1/9/2020
Project #:	65982				
Client:	NYSDEC	Installation Inspector:	Allie Berry	Date Developed:	1/10/2020

WELL CONSTRUCTION DETAIL (NOT TO SCALE)



ft bgs - Feet Below Ground Surface
ft bmp - Feet Below Measuring Point
in. - Inches
PVC - Polyvinyl Chloride
M.P. - Measurement Point

INSPECTION NOTES

Well Type: Permanent Monitoring
Static Water Level: 5.78 ft bgs
Measurement Point: PVC

Borehole Advancement

Overburden

Method 1: Hand Clearing **Diameter:** 4 in
Interval 1: 0.0 to 5.0 ft bgs
Method 2: Hollow Stem Auger **Diameter:** 6 in
Interval 2: 5.0 to 17.0
P. Casing: Steel **Interval:** -3.14 to 2.0 ft bgs
Sampling Method:
Type: Split Spoon **Diameter:** 2 in
Weight: **Fall:**
Interval: 5.0 to 17.0 ft bgs

Bedrock

Method: Diameter: in.
Interval: to ft bgs
P. Casing 2: Interval: to ft bgs
P. Casing 3: Interval: to ft bgs
Sampling Method:
Type: Diameter: in.
Interval: to ft bgs

Well Construction

Riser Pipe

Material: PVC **Diameter:** 2 in
Interval: -2.75 to 6.0 ft bgs **Joint:** Thread

Screen

Material: PVC **Diameter:** 2 in
Slot Size: 0.010" **Joint:** Thread
Interval: 16.0 to 6.0 ft bgs

Sump

Material: **Diameter:**
Interval: to ft bgs **Joint:**

Filter Pack

Type: Silica Sand **Grade:** #1
Interval: 17 to 5 ft bgs

Seal(s)

Type:	#00 Silica Sand	**Interval:**	5.0	to	4.0 ft bgs
Type:	Bentonite chips	**Interval:**	4.0	to	1.0 ft bgs
Type:	Grout/cement/ben.	**Interval:**	1.0	to	0.0 ft bgs
Type:		**Interval:**		to	ft bgs

Surface Completion

Type: Stick-Up, cement pad

Additional Notes: prepack screen used

TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

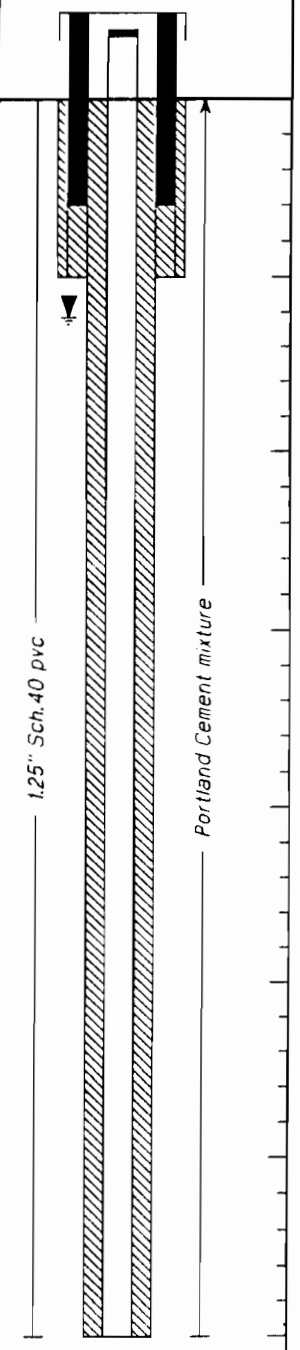
Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-1

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-10-93/5-12-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: SE of site,200 FT E of Clam Steam Tavern
Total Depth (ft): 100.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 6.15

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY
	SS-1	9-9				Brown silty fine sand, little gravel and roots, leaves (dry).	
		9-20	1.5	BG			
	SS-2	12-50					
		23-15	1.0	BG		Fragments of weathered shale mixed with brown silty fine sand,	
5	SS-3	9-9				trace of roots (dry).	
		8-7	0.2	BG		Poor recovery of gravel size weathered shale (dry).	
	SS-4	13-5					
		15-18	0.2	BG		Poor recovery of gravel size shall (water encountered about 7 ft below grade).	
	SS-5	9-2					
10		4-6	0.1	BG		Same as above (little cobbles, wet).	
	SS-6	8-4					
		3-8	1.0	BG		Gray silty clay, little gravel (shale,wet).	
	SS-7	3-2					
		3-6	1.3	BG		Same as above.	
15	SS-8	16-11					
		10-6	1.0	BG		Gray silty clay, some gravel (wet).	
	SS-9	5-7				Gray clay , little silt and gravel (compacted).	
		15-26	1.7	BG			
	SS-10	11-24				Same as above	
20		25-25	1.3	BG		Fine to medium gray sand, little silt (loose, wet).	
	SS-11	2-2	1.0				
		1-1	1.6	BG		Fine to medium gray sand interbedded with thin layers of silty clay (wet).	
	SS-12	5-5					
		5-4	1.1	BG		Medium gray sand, some fine sand, little coarse sand.	
25	SS-13	10-10					
		8-6	1.0	BG		Same as above.	
	SS-14	11-15					
		8-5	.9	BG			
	SS-15	8-12					
30		9-13	1.4	BG		Same as above.	
	SS-16	5-7					
		9-11	1.5	BG			
	SS-17	6-8				Same as above (more Finner).	
		12-9	1.2				
	SS-18	11-18					
35						Highly weathered gray shale, some gray clay.	

WELL DIAGRAM



Lawler Matusky & Skelly Engineers

TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-1

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-10-93/5-12-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: SE of site, 200 FT E of Clam Steam Tavern
Total Depth (ft): 100.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 6.15

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
	SS-18	13-10	1.4	BG				
	SS-19	27-13	0.5	BG		weathered gray shale fragments.		
						Augered through bedrock.		
40						Started coring into bedrock using HQ 3.79 in. O.D. (2-ft run).		
						Gray shale with calcite filling fractures. Bedding plane with 45 degree angle .Few fractures as a result of coring.		
45						Shale interbedded with gray sandstone .		
						Highly calcite filling bedding plans fractures (angled fractures) .Few fractures at the shale/sandstone boundaries.		
50						Same as above (trace of pyrite found within the shale beds).		
55						4 ft of a solid piece of sandstone (no fractures).		
						Shale interbedded with sandstone (few bedding plane fractures).		
60						Shale interbedded with graywacke sandstone, calcite filling fractures.		
65						Graywacke sandstone with few bedding plane fractures.		
						Thin layer of black shale.		
						Sandstone layer with a thickness of 2 ft.		
70								

1.25" Sch.40 pvc

Portland Cement mixture

TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-1

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-10-93/5-12-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: SE of site, 200 FT E of Clam Steam Tavern
Total Depth (ft): 100.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 6.15

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
75						5 ft of Graywacke sandstone, 2 calcite filling fractures were noticed at 72 and 73.5 ft.		
80						4 ft of solid sandstone (no fractures). Black shale interbedded with sandstone. Gray sandstone. Black shale (no fractures). A bedding plane fracture. Graywacke sandstone		
85						Fine gray sandstone interbedded with thin layers (4-6 in.) of black shale (some fractures).		
90						Same as above.		
95						Same as above. Well was installed at 95 ft (85-95 ft screen interval). E.O.B		
100								
105								

1.25" Sch.40 pvc
0.010 PVC Screen
Bentonite seal
0.00 Morie Sand

Lawler Matusky & Skelly Engineers

TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-2

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-12-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA

Surface Elevation (ft):
Location Description: SE of site, 200 FT E of Clam Steam Tavern
Total Depth (ft): 12.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 6.9

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
0						Brown silty fine sand, little gravel and roots, leaves (dry). Fragments of weathered shale mixed with brown silty fine sand, trace of roots (dry).		
5						Gravel size weathered shale (dry). Gravel size shale (water encountered about 7 ft below grade).		
10						Same as above (little cobbles, wet). Gray silty clay, little gravel (shale,wet). Well was installed at 12 ft (7-12 ft screen interval). E.O.B		
15								
20								

WELL DIAGRAM: 2" Sch.40 pvc; Portland Grout mix; Bentonite seal; # 0.00 Morie Sand; 0.010 PVC Screen

Lawler Matusky & Skelly Engineers

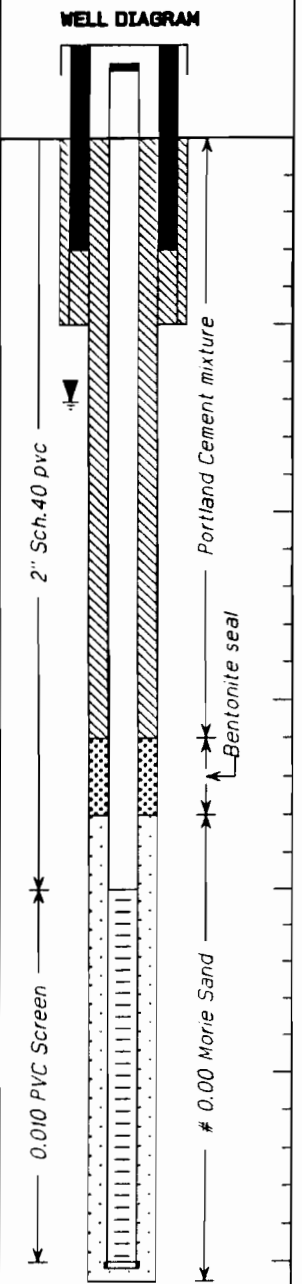
TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-3

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-12-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA

Surface Elevation (ft):
Location Description: SE of site,200 FT E of Clam Steam Tavern
Total Depth (ft): 30.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 7.05

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY
0						Brown silty fine sand, little gravel and roots, leaves (dry).	
						Fragments of weathered shale mixed with brown silty fine sand,	
5						trace of roots (dry).	
						Gravel size weathered shale (dry).	
						Gravel size shale (water encountered about 7 ft below grade).	
10						Same as above (little cobbles, wet).	
						Gray silty clay, little gravel (shale,wet).	
						Same as above.	
15						Gray silty clay, some gravel (wet).	
						Gray clay , little silt and gravel (compacted).	
						Same as above	
20						Fine to medium gray sand, little silt (loose, wet).	
						Fine to medium gray sand interbedded with thin layers of silty clay (wet).	
25						Medium gray sand, some fine sand, little coarse sand.	
						Same as above.	
30						Well was installed at 30 ft (20-30 ft screen interval).	
						E.O.B	



Lawler Matusky & Skelly Engineers

TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-4

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-13-93/5-14-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: Middle of the site, 25 ft E of TEST PIT # 4
Total Depth (ft): 100.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 1.15

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY
	SS-1	3-2				Grassy covered surface, top soil of grayish brown silty sand (dry).	
		2-3	0.9	BG			
	SS-2	2-3				Same as above (some gravel and construction debris, dry).	
		2-6	0.5	15			
5	SS-3	6-28				Brown silty fine sand, little gravel of rock fragments (wet).	
		19-8	0.6	12			
	SS-4	5-5				Gray silty fine sand, some weathered gravel, little clay, trace of roots (wet).	
		9-15	0.5	2			
	SS-5	6-2				Gray silty clay , little fine sand, trace gravel (wet).	
10		2-4	1.3	15			
	SS-6	3-1				Gray silty clay interbedded with silty fine sand, little gravel (wet).	
		3-8	1.6	2			
	SS-7	2-1				Gray fine to very fine sand, little silty clay, trace gravel.	
		1-1	1.3	2			
15	SS-8	2-11					
		1-2	1.4	1		Gray sandy clay, little silt, (wet).	
	SS-9	2-2				Gray silty fine sand interbedded with thin layers of silty clay.	
		2-2	1.3	BG			
	SS-10	1-1					
20		1-1	1.0	BG		Gray fine sand, little silty clay (very loose).	
	SS-11	2-1					
		4-3	1.0	BG		Same as above.	
	SS-12	3-4					
		8-8	1.3	4		Gray silty clay, little fine sand (compacted).	
25	SS-13	7-4					
		6-5	1.8	BG		Gray clay, trace fine sand and gravel	
	SS-14	7-75					
		13-14	1.3	1		Same as above (little silt).	
	SS-15	16-8					
30		7-8	1.7	BG		Same as above (more coarse grains).	
	SS-16	4-6					
		6-7	1.0	BG		Gray silty clay, some fine sand, little gravel.	
	SS-17	10-9					
		5-4	1.9	BG		Same as above.	
35	SS-18	11-5					

WELL DIAGRAM

1.25" Sch.40 pvc

Portland Cement mixture

Lawler Matusky & Skelly Engineers

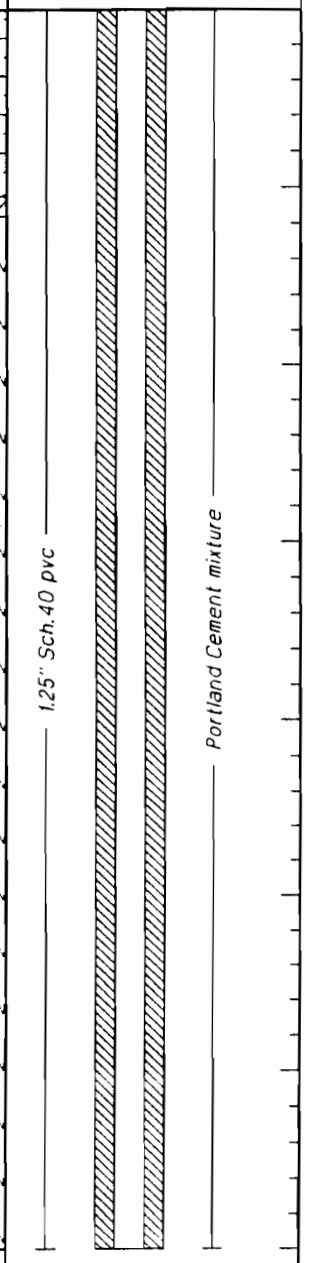
TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-4

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-087
Date Started/Completed: 5-13-93/5-14-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: Middle of the site, 25 ft E of TEST PIT # 4
Total Depth (ft): 100.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 1.15

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
	SS-18	5-5	1.7	BG		Same as above.		
	SS-19	5-3				Gray silty clay, little gravel interbedded with thin layers of silty sand.		
		4-6	1.9	BG		Same as above (more gravel).		
	SS-20	23-47						
40		25-27	1.0	7		Highly weathered gray shale, some gray clay.		
						Augered slowly through bedrock.		
45						Started coring into bedrock using HQ 3.79 in. O.D. (2.5-ft run).		
						Gray shale with some calcite filling fractures. 45 degree bedding plane angle.		
						Fine sandstone layers (2-ft thick) interbedded with 8 in. black shale		
50						Very fine sandstone and graywake , thin layers of shale. .Few fractures at the shale/sandstone boundaries.		
55						Same as above (few fractures at 57:57.5 ft zone).		
60						4 ft of a solid piece of sandstone (no fractures).		
65						Shale interbedded with sandstone (few bedding plane fractures).		
						5-ft section ofgraywacke sandstone with a single fracture at 88 -ft.		
70								



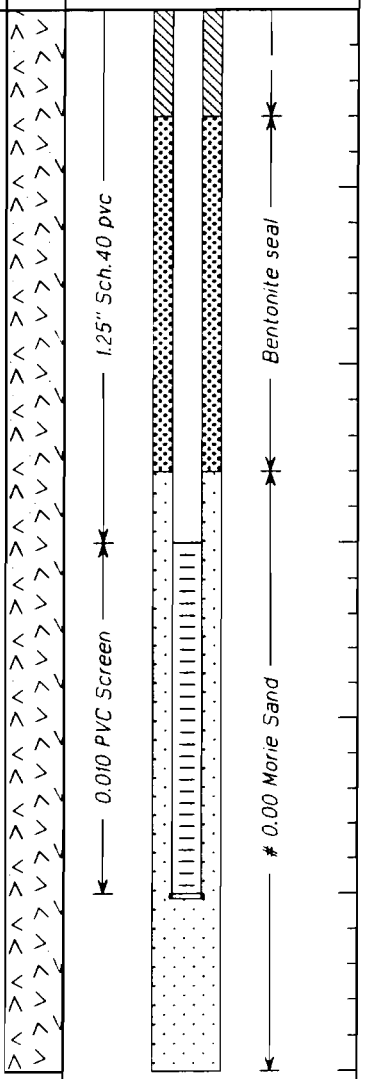
TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-4

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-13-93/5-14-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: Middle of the site, 25 ft E of TEST PIT # 4
Total Depth (ft): 100.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 1.15

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
						6 in. layer of black shale.		
						4.5 ft layer graywacke sandstone with calcite filling fractures		
75						fine grain sandstone with few calcite filling fractures.		
80						Sandstone layer with fine to coarse grain size transition . Mud clastics were found into the sandstone layer. (only 2 fractures at 80:85 ft zone		
85						Graywacke sandstone interbedded with thin layers (6 in.) of black shale, a fracture was noticed at 87.5 ft. Some shale layers were pushed into the sandstone below.		
90						Graywake sandstone interbedded with shale (shale layer were fractured at the bottom).		
95						More graywake sandstone with thin layers of shale , few fractures noticed at the bedding planes (sandstone/shale boudaries).		
100						Well was installed at 95 ft (85-95 ft screen interval). E.O.B		
105								



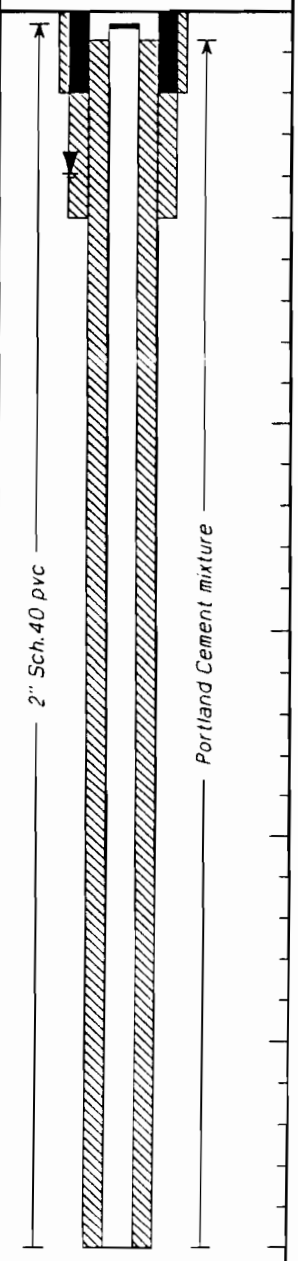
TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-5

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-087
Date Started/Completed: 5-17-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: Middle of the site, 25 ft E of TEST PIT # 4
Total Depth (ft): 55.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 3.93

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
						Grassy covered surface, top soil of grayish brown silty sand (dry).		
						Same as above (some gravel and construction debris, dry).		
5						Brown silty fine sand, little gravel of rock fragments (wet).		
						Gray silty fine sand, some weathered gravel, little clay, trace of roots (wet).		
						Gray silty clay , little fine sand, trace gravel (wet).		
10						Gray silty clay interbedded with silty fine sand, little gravel (wet).		
						Gray fine to very fine sand, little silty clay, trace gravel.		
						Gray sandy clay, little silt, (wet).		
15						Gray silty fine sand interbedded with thin layers of silty clay.		
						Gray fine sand, little silty clay (very loose).		
20						Same as above.		
						Gray silty clay, little fine sand (compacted).		
						Gray clay, trace fine sand and gravel		
25						Same as above (little silt).		
						Same as above (more coarse grains).		
30								



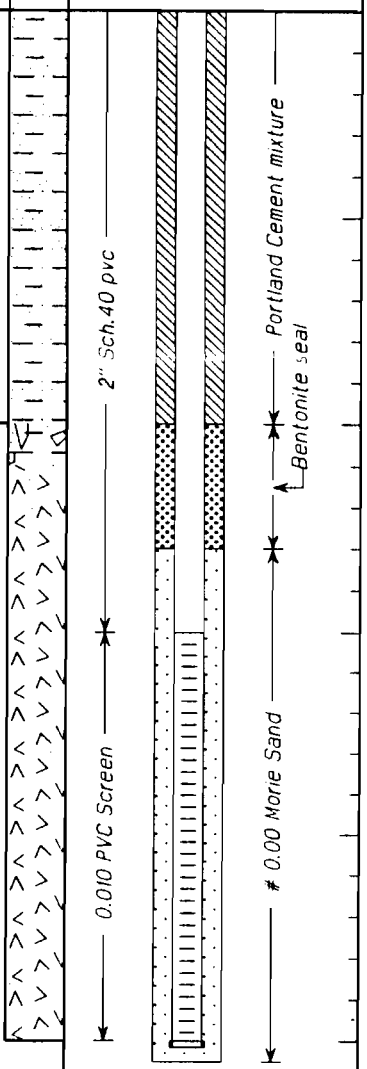
TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site | Boring/Well I.D. TPP-5

Project Location: Town of Halfmoon, Saratoga Co, N.Y.
LMS Project #: 576-067
Date Started/Completed: 5-17-93
Drilling Company: American Auger & Ditching Co., Inc.
Drilling Method: 4.25 in HSA/HQ 3.79 in. Coring

Surface Elevation (ft):
Location Description: Middle of the site, 25 ft E of TEST PIT # 4
Total Depth (ft): 55.00
Geologist: Tarik Zarrouk
Initial Water Level (ft): 3.93

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
35						Gray silty clay, some fine sand, little gravel.		
						Same as above.		
						Same as above.		
						Gray silty clay, little gravel interbedded with thin layers of silty sand.		
40						Same as above (more gravel).		
						Highly weathered gray shale, some gray clay. (possible bedrock).		
						Augered slowly through bedrock.		
						Started coring into bedrock using HQ 3.79 in. O.D. (2.5-ft run).		
45						Gray shale with some calcite filling fractures. 45 degree bedding plane angle.		
						Fine sandstone layers (2-ft thick) interbedded with 8 in. black shale (calcite filling fractures).		
50						Very fine to coarse sandstone and graywake, thin layers of shale. Few fractures at the shale/sandstone boundaries.		
55						Well was installed at 55 ft (45-55 ft screen interval). E.O.B		
60								



TEST BORING LOG/PEIZOMETER CONSTRUCTION DIAGRAM

Project Name: Tow Path Road Landfill Site

Boring/Well I.D. TPP-6

Project Location: Town of Halfmoon, Saratoga Co, N.Y.

LMS Project #: 576-067

Date Started/Completed: 5-17-93/5-18-93

Drilling Company: American Auger & Ditching Co., Inc.

Drilling Method: 4.25 in HSA

Surface Elevation (ft):

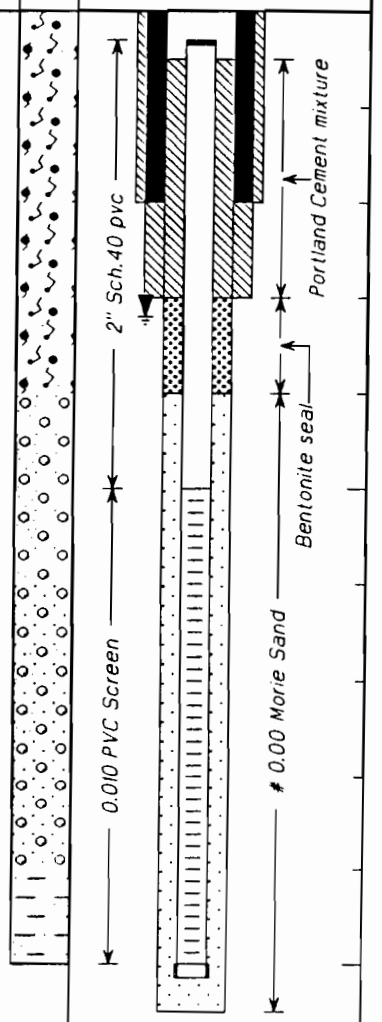
Location Description: Middle of the site, 25 ft E of TEST PIT # 4

Total Depth (ft): 10.00

Geologist: Tarik Zarrouk

Initial Water Level (ft): 3.2

DEPTH FT.	SAMPLE NUMBER	BLOWS/.5ft.	RECOVERY	PID/FID (ppm) VALUES	PID/FID (ppm) PROFILE	GEOLOGIC DESCRIPTION	LITHOLOGY	WELL DIAGRAM
						Grassy covered surface, top soil of grayish brown silty sand (dry).		
						Same as above (some gravel and construction debris, dry).		
5						Brown silty fine sand, little gravel of rock fragments (wet).		
						Gray silty fine sand, some weathered gravel, little clay, trace of roots (wet).		
						Gray silty clay , little fine sand, trace gravel (wet).		
10						Well was installed at 10 ft (5-10 ft screen interval). E.O.B		



ATTACHMENT 3

SAMPLING LOGS

RAMBOLL

Low Flow Ground Water Sampling Log

Date	3/26/2020	Personnel	SET	Weather	50°F, Sunny
Site Name	Tow Path Road LF	Evacuation Method	Peristaltic Pump	Well #	MW-01
Site Location	Half Moon NY	Sampling Method	Low Flow	Project #	65982

Well information:

Depth of Well *	15.82	ft.	* Measurements taken from	
Depth to Water *	3.10	ft.	X	Top of Well Casing
Length of Water Column	12.72	ft.		Top of Protective Casing
Depth to Intake *	13.00	ft. bgs		(Other, Specify)

Start Purge Time: 13:30

		3.0%	0.1	3%	10 mV	10%	10%	100-500 ml/min
Elapsed Time (min)	**Depth To Water (ft)**	**Temperature (Celsius)**	**pH (S.U.)**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential (mV)**	**Dissolved Oxygen (mg/l)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
0	3.10	9.3	6.55	2.73	-119.2	1.41	Overrange	500
5	3.12	7.4	6.78	2.76	-91.2	1.80	39.6	450
10	3.11	7.3	6.76	2.73	-81.7	1.49	19.5	450
15	3.11	7.5	6.75	2.72	-76.4	1.73	15.5	450
20	3.11	7.4	6.75	2.73	-74.6	1.38	4.46	450
25	3.11	7.0	6.75	2.71	-73.3	1.66	7.36	450
30	3.12	7.1	6.76	2.72	-73.2	1.64	4.76	450
35	3.12	7.2	6.79	2.72	-71.4	1.62	4.34	450
40	3.12	7.1	6.77	2.72	-69.9	1.63	4.31	450

End Purge Time: 14:10

Water sample: 5-SAR-001-006-01

Time collected: 14:15

Total volume of purged water removed: 4.5 gallons

Physical appearance at start		Physical appearance at sampling	
Color	Opaque gray	Color	Clear
Odor	Strong chemical	Odor	Strong chemical
Sheen/Free Product	None	Sheen/Free Product	None

Field Test Results:

Dissolved ferrous iron:	N/A
Dissolved total iron:	N/A
Dissolved total manganese:	N/A

Analytical Parameters: Per QAPP

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS	250 mL Plastic	2	No	None	NA
1,4 - Dioxane	1 L Amber Glass	2	No	None	NA
SVOCs	250 mL Amber Glass	2	No	None	NA
VOCs	40 mL Glass VOA	3	No	HCl	NA
TOC	40 mL Glass VOA	2	No	HCl	NA
Metals/Hardness	250 mL Plastic	2	No	Nitric Acid	NA
SO4/Chloride/Bromide	60 mL Plastic	1	No	None	NA
TDS	500 mL Plastic	1	No	None	NA
Alkalinity	125 mL Plastic	1	No	None	NA
Ammonia/COD	250 mL Plastic	1	No	Sulfuric Acid	NA

RAMBOLL

Low Flow Ground Water Sampling Log

Date	2/14/2020	Personnel	MAZ, SET	Weather	Sunny and Windy, 12° F
Site Name	Tow Path Road LF	Evacuation Method	Waterra	Well #	MW-02
Site Location	Half Moon, NY	Sampling Method	Low Flow	Project #	65982

Well information:

Depth of Well *	15.95	ft.	* Measurements taken from	
Depth to Water *	5.72	ft.	X	Top of Well Casing
Length of Water Column	10.23	ft.		Top of Protective Casing
Depth to Intake *	6.00	ft. bgs		(Other, Specify)

Start Purge Time: 13:45

		3%	0.1	3%	10 mV	10%	10%	100-500 ml/min
Elapsed Time (min)	**Depth To Water (ft)**	**Temperature (Celsius)**	**pH (S.U.)**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential (mV)**	**Dissolved Oxygen (mg/l)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
0	5.72	5.6	7.23	1.570	-14.1	1.12	54.4	500
5	5.79	6.4	6.95	1.570	-40.3	1.85	49.5	500
10	5.79	7.3	6.89	1.580	-45.4	1.20	45.2	500
15	5.8	6.4	6.89	1.598	-55.1	2.08	32.6	500
20	5.82	6.3	6.86	1.580	-61.9	1.44	29.3	500
25	5.74	6.2	6.92	1.560	-80.6	1.90	25.0	500
30	5.73	6.7	6.85	1.570	-61.2	1.44	11.9	500
35	5.75	6.5	6.85	1.570	-70.2	1.45	11.6	500
40	5.75	6.3	6.84	1.570	-68.1	1.50	10.3	500

End Purge Time: 14:25

Water sample:

Time collected: 14:30

Total volume of purged water removed: 20 Liters

Physical appearance at start		Physical appearance at sampling	
Color	Gray	Color	Clear
Odor	None	Odor	None
Sheen/Free Product	None	Sheen/Free Product	None

Field Test Results:

Dissolved ferrous iron:	N/A
Dissolved total iron:	N/A
Dissolved total manganese:	N/A

Analytical Parameters: Per QAPP 5-SAR-001-005-06

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS	250 mL Plastic	2	No	None	NA
1,4 - Dioxane	1 L Amber Glass	2	No	None	NA
SVOCs	250 mL Amber Glass	2	No	None	NA
VOCs	40 mL Glass VOA	3	No	HCl	NA
TOC	40 mL Glass VOA	2	No	HCl	NA
Metals/Hardness	250 mL Plastic	1	No	Nitric Acid	NA
SO4/Chloride/Bromide	60 mL Plastic	1	No	None	NA
TDS	500 mL Plastic	1	No	None	NA
Alkalinity	125 mL Plastic	1	No	None	NA
Ammonia/COD	250 mL Plastic	1	No	Sulfuric Acid	NA

RAMBOLL

Low Flow Ground Water Sampling Log

Date	2/14/2020	Personnel	MAZ, SET	Weather	Sunny and Windy, 12°F
Site Name	Tow Path Road LF	Evacuation Method	Waterra	Well #	TPP-1
Site Location	Half Moon, NY	Sampling Method	Low Flow	Project #	65982

Well information:

Depth of Well *	95.20	ft.	* Measurements taken from	
Depth to Water *	10.22	ft.	X	Top of Well Casing
Length of Water Column	84.98	ft.		Top of Protective Casing
Depth to Intake *	90.00	ft. bgs		(Other, Specify)

Start Purge Time: 12:00

		3.0%	0.1	3%	10 mV	10%	10%	100-500 ml/min
Elapsed Time (min)	**Depth To Water (ft)**	**Temperature (Celsius)**	**pH (S.U.)**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential (mV)**	**Dissolved Oxygen (mg/l)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
0	10.22	4.2	9.07	7.72	1.4	8.33	11.7	1,300
5	10.37	9.4	9.40	8.03	129.0	1.73	38.7	900
10	10.11	8.9	9.46	8.33	123.2	1.15	53.8	700
15	9.91	9.3	9.47	8.30	120.7	1.17	58.1	700
20	9.67	8.9	9.47	8.30	118.5	1.21	57.0	500
25	9.62	8.9	9.47	8.27	117.3	1.39	56.8	500
30	9.61	8.7	9.47	8.25	116.4	1.30	45.4	500
35	9.59	8.5	9.47	8.27	114.2	1.50	47.0	500
40	9.59	8.2	9.49	8.30	111.8	1.38	48.7	500
45	10.01	8.3	9.47	8.32	110.8	1.34	48.9	500
50	9.87	8.3	9.49	8.32	111.1	1.38	48.5	500

End Purge Time: 12:50

Water sample:

Time collected: 13:00

Total volume of purged water removed: 26.6 Liters

Physical appearance at start		Physical appearance at sampling	
Color	Gray	Color	Opaque Gray
Odor	None	Odor	None
Sheen/Free Product	None	Sheen/Free Product	None

Field Test Results:

Dissolved ferrous iron:	N/A
Dissolved total iron:	N/A
Dissolved total manganese:	N/A

Analytical Parameters: Per QAPP 5-SAR-001-005-04

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS	250 mL Plastic	2	No	None	NA
1,4 - Dioxane	1 L Amber Glass	2	No	None	NA
SVOCs	250 mL Amber Glass	2	No	None	NA
VOCs	40 mL Glass VOA	3	No	HCl	NA
TOC	40 mL Glass VOA	2	No	HCl	NA
Metals/Hardness	250 mL Plastic	1	No	Nitric Acid	NA
SO4/Chloride/Bromide	60 mL Plastic	1	No	None	NA
TDS	500 mL Plastic	1	No	None	NA
Alkalinity	125 mL Plastic	1	No	None	NA
Ammonia/COD	250 mL Plastic	1	No	Sulfuric Acid	NA

Low Flow Ground Water Sampling Log

Date	2/14/2020	Personnel	MAZ, SET	Weather	Sunny and Windy,12˚F
Site Name	Tow Path Road LF	Evacuation Method	Waterra	Well #	TPP-2
Site Location	Half Moon NY	Sampling Method	Low Flow	Project #	65982

Well information:

Depth of Well *	14.29	ft.	* Measurements taken from	
Depth to Water *	7.68	ft.	X	Top of Well Casing
Length of Water Column	6.61	ft.		Top of Protective Casing
Depth to Intake *	9.00	ft. bgs		(Other, Specify)

Start Purge Time: 9:40

		3.0%	0.1	3%	10 mV	10%	10%	100-500 ml/min
Elapsed Time (min)	**Depth To Water (ft)**	**Temperature (Celsius)**	**pH (S.U.)**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential (mV)**	**Dissolved Oxygen (mg/l)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
0	7.68	2.5	7.86	1.71	107.4	2.32	8.35	250
5	7.99	4.5	7.12	1.62	105.1	6.28	6.42	250
10	8.01	4.3	7.03	1.62	108.1	6.33	4.89	250
15	8.04	4.1	7.01	1.00	110.0	6.69	3.50	250
20	8.07	3.7	7.05	1.62	111.7	6.58	3.06	250
25	8.08	4.3	7.00	1.61	111.8	6.38	3.01	250
30	8.10	4.3	7.00	1.63	112.2	6.69	2.70	250
35	8.09	4.3	6.97	1.62	113.6	6.46	2.23	250

End Purge Time: 10:15

Water sample:

Time collected: 10:15

Total volume of purged water removed: 8.75 Liters

Physical appearance at start		Physical appearance at sampling	
Color	Clear	Color	Clear
Odor	None	Odor	None
Sheen/Free Product	None	Sheen/Free Product	None

Field Test Results:

Dissolved ferrous iron:	N/A
Dissolved total iron:	N/A
Dissolved total manganese:	N/A

Analytical Parameters: Per QAPP 5-SAR-001-005-01

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS	250 mL Plastic	2	No	None	NA
1,4 - Dioxane	1 L Amber Glass	2	No	None	NA
SVOCs	250 mL Amber Glass	2	No	None	NA
VOCs	40 mL Glass VOA	3	No	HCl	NA
TOC	40 mL Glass VOA	2	No	HCl	NA
Metals/Hardness	250 mL Plastic	1	No	Nitric Acid	NA
SO4/Chloride/Bromide	60 mL Plastic	1	No	None	NA
TDS	500 mL Plastic	1	No	None	NA
Alkalinity	125 mL Plastic	1	No	None	NA
Ammonia/COD	250 mL Plastic	1	No	Sulfuric Acid	NA

RAMBOLL

Low Flow Ground Water Sampling Log

Date	3/26/2020	Personnel	SET	Weather	50°F, Sunny
Site Name	Tow Path Road LF	Evacuation Method	Peristaltic Pump	Well #	TPP-3
Site Location	Half Moon NY	Sampling Method	Low Flow	Project #	65982

Well information:

Depth of Well *	32.10	ft.	* Measurements taken from	
Depth to Water *	8.95	ft.	X	Top of Well Casing
Length of Water Column	23.15	ft.		Top of Protective Casing
Depth to Intake *	27.00	ft. bgs		(Other, Specify)

Start Purge Time: 15:10

		3.0%	0.1	3%	10 mV	10%	10%	100-500 ml/min
Elapsed Time (min)	**Depth To Water (ft)**	**Temperature (Celsius)**	**pH (S.U.)**	**Conductivity (ms/cm)**	**Oxidation Reduction Potential (mV)**	**Dissolved Oxygen (mg/l)**	**Turbidity (NTU)**	**Flow Rate (mL/min)**
0	8.95	10.6	6.69	1.45	-45.3	2.19	58.80	500
5	9.02	10.8	6.69	1.41	-35.6	1.94	36.60	500
10	9.02	10.9	6.69	1.41	-37.6	1.81	23.70	450
15	9.02	10.7	6.68	1.41	-37.2	1.40	19.70	450
20	9.02	10.8	6.68	1.41	-40.2	1.39	14.40	450
25	9.02	10.8	6.68	1.41	-41.6	1.39	9.35	450
30	9.02	10.8	6.68	1.41	-40.6	1.41	7.13	450
35	9.02	10.7	6.69	1.41	-41.8	1.40	7.60	450
40	9.02	10.8	6.68	1.41	-40.3	1.41	7.55	450

End Purge Time: 15:50

Water sample: 5-SAR-001-006-02

Time collected: 16:00

Total volume of purged water removed: 4.5 gallons

Physical appearance at start		Physical appearance at sampling	
Color	Clear	Color	Clear
Odor	None	Odor	Slightly metallic
Sheen/Free Product	None	Sheen/Free Product	None

Field Test Results:

Dissolved ferrous iron:	N/A
Dissolved total iron:	N/A
Dissolved total manganese:	N/A

Analytical Parameters: Per QAPP

Sample	Container Type	# Collected	Field Filtered	Preservative	Container pH
PFAS	250 mL Plastic	2	No	None	NA
1,4 - Dioxane	1 L Amber Glass	2	No	None	NA
SVOCs	250 mL Amber Glass	2	No	None	NA
VOCs	40 mL Glass VOA	3	No	HCl	NA
TOC	40 mL Glass VOA	2	No	HCl	NA
Metals/Hardness	250 mL Plastic	2	No	Nitric Acid	NA
SO4/Chloride/Bromide	60 mL Plastic	1	No	None	NA
TDS	500 mL Plastic	1	No	None	NA
Alkalinity	125 mL Plastic	1	No	None	NA
Ammonia/COD	250 mL Plastic	1	No	Sulfuric Acid	NA

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/12/2020, 14:00		
WEATHER:	Overcast, 36˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-02		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	0.5'		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-01a (Location ID: 5-SAR-001-SP-01a)
PHYSICAL APPEARANCE:	orange/brown, organic sheen
DEPTH TO BOTTOM:	~0.5'
DRAINAGE DIRECTION:	SE
UPSTREAM FROM:	Seep-01b
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Clear/orange
ODOR:	slight metallic
SUSPENDED MATTER:	89.1 NTU
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	8.0°C	REDOX:	-82.6 mV
pH	7.04 s.u.	DISSOLVED O2:	3.18 mg/L
CONDUCTIVITY:	1.92 ms/cm	OTHER:	Turbidity = 89.1 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	5-SAR-001-004-03 (Location ID: 5-SAR-001-SP-01a)
ANALYZE QA/QC SAMPLES FOR:	Per QAPP
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	11:20		
WEATHER:	Cloudy, 36˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-01		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	2 "		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-01b (Location ID: 5-SAR-0010SP-01b)
PHYSICAL APPEARANCE:	Brown, bacterial sheen present
DEPTH TO BOTTOM:	2 "
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Seep-01a
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Clear
ODOR:	Metallic-like
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	7.0 °C	REDOX:	-101.8 mV
pH	7.67 s.u.	DISSOLVED O2:	3.32 mg/L
CONDUCTIVITY:	2.01 ms/cm	OTHER:	Turbidity = 6.21 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/12/2020, 15:00		
WEATHER:	Overcast, 34˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-04		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	2"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-02 (Location: 5-SAR-001-SP-02)
PHYSICAL APPEARANCE:	Orange/brown, bacterial sheen present
DEPTH TO BOTTOM:	2"
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Off-site
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Brown, clear
ODOR:	Chemical-like
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	7.3°C	REDOX:	-74.9 mV
pH	7.02 s.u.	DISSOLVED O2:	3.02 mg/L
CONDUCTIVITY:	1.305 ms/cm	OTHER:	Turbidity = 9.4 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/12/2020 16:00		
WEATHER:	Overcast, 36˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-05		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	1"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-8a (5-SAR-001-SP-8a)
PHYSICAL APPEARANCE:	Brown, bacterial sheen present
DEPTH TO BOTTOM:	1"
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Seep-7
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Clear
ODOR:	Chemical like odor
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	5.5°C	REDOX:	- 55.1 mV
pH	6.99 s.u.	DISSOLVED O2:	5.81 mg/L
CONDUCTIVITY:	1.35 ms/cm	OTHER:	Turbidity = 13.6 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	5-SAR-001-004-07 (PFAs Field blank)
ANALYZE QA/QC SAMPLES FOR:	PFAs
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/13/2020 12:30		
WEATHER:	Rainy and sleet, 32˚F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-08		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	6"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-8b (5-SAR-001-SP-8b)
PHYSICAL APPEARANCE:	Orange/brown, organic sheen present
DEPTH TO BOTTOM:	6"
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Seep-8a
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Clear, light yellow
ODOR:	Metallic odor
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	6.5°C	REDOX:	28.5 mV
pH	7.21 s.u.	DISSOLVED O2:	7.87 mg/L
CONDUCTIVITY:	0.93 ms/cm	OTHER:	Turbidity = 9.0 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/13/2020 14:30		
WEATHER:	Rainy and sleet, 32˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-12		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	2"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-11 (5-SAR-001-SP-11)
PHYSICAL APPEARANCE:	Orange/brown, faint bacterial sheen present
DEPTH TO BOTTOM:	4"
DRAINAGE DIRECTION:	Unknown
UPSTREAM FROM:	Unknown
DOWNSTREAM FROM:	Unknown

SAMPLE DESCRIPTION

COLOR:	Clear
ODOR:	None
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	3.2°C	REDOX:	50.3 mV
pH	6.95 s.u.	DISSOLVED O2:	5.95 mg/L
CONDUCTIVITY:	1.33 ms/cm	OTHER:	Turbidity = 10.67 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	4-SCH-003-001
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/12/2020 17:30		
WEATHER:	Overcast, 36˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-06		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	6"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-13a (Location ID: 5-SAR-001-SP-13a)
PHYSICAL APPEARANCE:	Orange/brown, bacterial sheen present
DEPTH TO BOTTOM:	6"
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Off-site
DOWNSTREAM FROM:	Seep-12b

SAMPLE DESCRIPTION

COLOR:	Clear
ODOR:	Chemical-like odor
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	3.7°C	REDOX:	- 9.8 mV
pH	7.35 s.u.	DISSOLVED O2:	5.67 mg/L
CONDUCTIVITY:	4.99 ms/cm	OTHER:	Turbidity = 9.88 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	NA
ANALYZE QA/QC SAMPLES FOR:	NA
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

MS/MSD taken at this location

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/13/2020 13:45		
WEATHER:	Rainy and Sleet, 32˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-11		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	2"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-13b (5-SAR-001-SP-13b)
PHYSICAL APPEARANCE:	Orange/brown
DEPTH TO BOTTOM:	6"
DRAINAGE DIRECTION:	South
UPSTREAM FROM:	Seep-13a
DOWNSTREAM FROM:	Offsite

SAMPLE DESCRIPTION

COLOR:	Orange
ODOR:	Faint metallic
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	1.9°C	REDOX:	24.9 mV
pH	6.82 s.u.	DISSOLVED O2:	6.40 mg/L
CONDUCTIVITY:	5.46 ms/cm	OTHER:	Turbidity = 6.39 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/13/2020 13:15:00 PM		
WEATHER:	Rainy, 32˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-10		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	3"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-19 (Location: 5-SAR-001-SP-19)
PHYSICAL APPEARANCE:	Orange/Brown, no sheen present
DEPTH TO BOTTOM:	3"
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Off-site
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Clear
ODOR:	Slightly metallic odor
SUSPENDED MATTER:	None
OTHER:	N/A

FIELD TESTS

TEMPERATURE:	1.1°C	REDOX:	-9.1 mV
pH	7.06 s.u.	DISSOLVED O2:	7.39 mg/L
CONDUCTIVITY:	0.275 ms/cm	OTHER:	Turbidity = 9.39 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

PARSONS
SUFACE WATER/SEEP SAMPLING RECORD

SITE NAME:	Tow Path Road LF		
PROJECT NUMBER:	65982		
SAMPLING/TIME:	2/13/2020 12:45		
WEATHER:	Rain and Sleet, 32˚ F		
SAMPLERS:	Matthew Zerkle	of	Ramboll
	Sarah Travaly	of	Ramboll
SAMPLE ID:	5-SAR-001-004-09		
SAMPLING METHOD:	Grab		
DEPTH OF SAMPLE:	3"		

DESCRIPTION OF SAMPLING POINT

LOCATION:	Seep-20 (Location: 5-SAR-001-SP-20)
PHYSICAL APPEARANCE:	Orange/Brown, no sheen present
DEPTH TO BOTTOM:	3"
DRAINAGE DIRECTION:	East
UPSTREAM FROM:	Off-site
DOWNSTREAM FROM:	Off-site

SAMPLE DESCRIPTION

COLOR:	Clear
ODOR:	Slightly metallic odor
SUSPENDED MATTER:	None
OTHER:	

FIELD TESTS

TEMPERATURE:	2.1°C	REDOX:	- 41.3 mV
pH	7.28 s.u.	DISSOLVED O2:	8.63 mg/L
CONDUCTIVITY:	2.73 ms/cm	OTHER:	Turbidity = 11.90 NTU

SAMPLE ANALYSIS / QA/QC / CHAIN OF CUSTODY

ANALYSE FOR:	Per QAPP
QA/QC SAMPLE ID:	N/A
ANALYZE QA/QC SAMPLES FOR:	N/A
DATE/TIME REFRIGERATED:	2/13/2020 16:30
CHAIN OF CUSTOFY NUMBER:	5-SAR-001-004
SHIPPED VIA:	Eurofins Courier
LABORATORY:	Eurofins

COMMENTS / MISCELLANEOUS

ATTACHMENT 4

ANALYTICAL LABORATORY LEVEL II DATA DELIVERABLE

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-166390-1
Client Project/Site: Tow Path LF, Region 5

For:
O'Brien & Gere Engineers, Inc.
PO BOX 4873
Syracuse, New York 13221-4873

Attn: Scott Tucker

Authorized for release by:
2/27/2020 4:27:20 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

John Schove, Project Manager II
(716)504-9838
john.schove@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 6
Client Sample Results 15
Surrogate Summary 59
Isotope Dilution Summary 60
QC Sample Results 63
QC Association Summary 89
Lab Chronicle 97
Certification Summary 104
Method Summary 105
Sample Summary 106
Chain of Custody 107
Receipt Checklists 113

Definitions/Glossary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-166390-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-166390-1

Comments
No additional comments.

Receipt
The samples were received on 2/14/2020 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 1.7º C, 1.9º C, 2.0º C, 2.0º C, 2.1º C, 2.2º C, 2.4º C and 2.6º C.

Receipt Exceptions

The PFAS samples received for the following login were at the laboratory outside the required temperature criteria with a temperature of 8.0ºC: 480-166390.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCV) associated with batch 480-518210 recovered outside acceptance criteria, low biased, for Carbon disulfide. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported. The following samples are impacted: 5-SAR-001-004-01 (480-166390-1), 5-SAR-001-004-02 (480-166390-2), 5-SAR-001-004-03 (480-166390-3), 5-SAR-001-004-04 (480-166390-4), 5-SAR-001-004-05 (480-166390-5), 5-SAR-001-004-06 (480-166390-7), 5-SAR-001-004-08 (480-166390-8), 5-SAR-001-004-09 (480-166390-9), 5-SAR-001-004-10 (480-166390-10), 5-SAR-001-004-11 (480-166390-11) and 5-SAR-001-004-12 (480-166390-12).

Method 8260C: The continuing calibration verification (CCV) associated with batch 480-518207 recovered above the upper control limit for Chlorodibromomethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: 5-SAR-001-004-14 (480-166390-14).

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

GC/MS Semi VOA
Method 8270D SIM ID: The 1,4-Dioxane result reported for samples 5-SAR-001-004-06 (480-166390-7[MS]), 5-SAR-001-004-06 (480-166390-7[MSD]) and (LCS 480-517911/2-A) have an E flag qualifier indicating the results are over the calibration range on the raw data. The actual amounts are within the calibration range; however, the E flag is generated based upon the bias corrected concentration. The LIMS system calculates a bias correction based on the recovery of the 1,4-Dioxane-d8 isotope.

Method 8270D SIM ID: The breakdown of 4,4'-DDT in the tuning evaluation exceeded 20%. Breakdown is not a criteria of the method but rather an internal check performed by the laboratory to evaluate the peak shape of 1,4-Dioxane and 1,4-Dioxane-d8. No adverse performance was observed and QC recoveries were in control. The data have been reported: (DFTPP 480-519094/2).

Method 8270D SIM ID: The breakdown of 4,4'-DDT in the tuning evaluation exceeded 20%. Breakdown is not a criteria of the method but rather an internal check performed by the laboratory to evaluate the peak shape of 1,4-Dioxane and 1,4-Dioxane-d8. No adverse performance was observed and QC recoveries were in control. The data have been reported.

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

HPLC/IC
Method 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: 5-SAR-001-004-01 (480-166390-1), 5-SAR-001-004-02 (480-166390-2), 5-SAR-001-004-03 (480-166390-3), 5-SAR-001-004-04 (480-166390-4), 5-SAR-001-004-05 (480-166390-5) and 5-SAR-001-004-12 (480-166390-12). Elevated reporting limits (RLs) are provided.

Method 300.0: The following samples were reported with elevated reporting limits for all analytes: 5-SAR-001-004-06 (480-166390-7), 5-SAR-001-004-08 (480-166390-8) and 5-SAR-001-004-11 (480-166390-11). The sample was analyzed at a dilution based on screening results.

Job ID: 480-166390-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

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

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

LCMS
Method 537 (modified): The method blank for preparation batch 200-152581 and analytical batch 200-152591contained Perfluorobutanoic acid (PFBA) and Perfluorononanoic acid (PFNA) above the method detection limit. This target analyte concentration was less than the practical quantitation limit (PQL); therefore, re-extraction and re-analysis of samples was not performed.

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

General Chemistry
Method SM 2540C: Due to the matrix, the initial volume(s) used for the following samples deviated from the standard procedure: 5-SAR-001-004-01 (480-166390-1), 5-SAR-001-004-02 (480-166390-2), 5-SAR-001-004-03 (480-166390-3) and 5-SAR-001-004-12 (480-166390-12). The reporting limits (RLs) have been adjusted proportionately.

Method 350.1: The continuing calibration blank (CCB) for analytical batch 480-518434 contained Ammonia above the reporting limit (RL). All reported samples associated with this CCB were either ND for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCB; therefore, re-analysis of samples was not performed. The affected samples are: 5-SAR-001-004-06 (480-166390-7), 5-SAR-001-004-09 (480-166390-9), 5-SAR-001-004-10 (480-166390-10), 5-SAR-001-004-11 (480-166390-11) and 5-SAR-001-004-12 (480-166390-12).

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

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

Detection Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-01 — Lab Sample ID: 480-166390-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	2.4		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	6.9		1.0	0.75	ug/L	1		8260C	Total/NA
Toluene	4.7		1.0	0.51	ug/L	1		8260C	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20		18	1.4	ng/L	1		537 (modified)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	13	J	18	1.6	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.4		1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	6.8	B	1.8	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.1	J	1.8	0.71	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.5		1.8	0.87	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		1.8	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.9		1.8	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	8.5		1.8	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.7	J B	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	150		1.8	0.56	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	26		1.8	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	9.0		1.8	0.58	ng/L	1		537 (modified)	Total/NA
Aluminum	0.14	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.21		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.060		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	97.4		0.50	0.10	mg/L	1		6010C	Total/NA
Iron	34.7		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0039	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	12.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.52	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0014	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	5.3		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	240		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.019		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	444	B	5.0	2.8	mg/L	10		300.0	Total/NA
Ammonia	2.5	B	0.040	0.018	mg/L	2		350.1	Total/NA
Chemical Oxygen Demand	37.4		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	3.7		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	259		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	308		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	930		20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-02 — Lab Sample ID: 480-166390-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	2.9		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	7.3		1.0	0.75	ug/L	1		8260C	Total/NA
Toluene	15		1.0	0.51	ug/L	1		8260C	Total/NA
Acenaphthene	0.31	J	0.50	0.30	ug/L	1		8270D_LL_PAH	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	17	J	18	1.4	ng/L	1		537 (modified)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	12	J	18	1.6	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.6		1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	7.4	B	1.8	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.3	J	1.8	0.71	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Client Sample ID: 5-SAR-001-004-02 (Continued) — Lab Sample ID: 480-166390-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanesulfonic Acid (PFHpS)	2.6		1.8	0.87	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.6		1.8	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.8		1.8	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	9.5		1.8	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.8	B	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	140		1.8	0.56	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	25		1.8	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	9.5		1.8	0.58	ng/L	1		537 (modified)	Total/NA
Aluminum	0.095	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.19		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.049		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	89.9		0.50	0.10	mg/L	1		6010C	Total/NA
Iron	23.6		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	11.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.40	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0017	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	5.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	239		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.027		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	450	B	5.0	2.8	mg/L	10		300.0	Total/NA
Ammonia	2.3	B	0.040	0.018	mg/L	2		350.1	Total/NA
Chemical Oxygen Demand	37.5		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	3.5		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	241		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	288		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	824		20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-03 — Lab Sample ID: 480-166390-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	2.9		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	7.2		1.0	0.75	ug/L	1		8260C	Total/NA
Toluene	14		1.0	0.51	ug/L	1		8260C	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	17		17	1.3	ng/L	1		537 (modified)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	12	J	17	1.4	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.5		1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	7.5	B	1.7	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.3	J	1.7	0.65	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.9		1.7	0.80	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.1		1.7	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.6		1.7	0.67	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	11		1.7	0.64	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.9	B	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	160		1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	28		1.7	0.68	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	11		1.7	0.53	ng/L	1		537 (modified)	Total/NA
Aluminum	0.091	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.20		0.0020	0.00070	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-03 (Continued) — Lab Sample ID: 480-166390-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.051		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	92.6		0.50	0.10	mg/L	1		6010C	Total/NA
Iron	24.7		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	11.8		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.41	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0014	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	5.6		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	249		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.027		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	454	B	5.0	2.8	mg/L	10		300.0	Total/NA
Ammonia	2.3	B	0.040	0.018	mg/L	2		350.1	Total/NA
Chemical Oxygen Demand	38.3		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	3.8		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	241		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	288		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	918		20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-04 — Lab Sample ID: 480-166390-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	1.1		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	3.7		1.0	0.75	ug/L	1		8260C	Total/NA
1,4-Dioxane	0.18	J	0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	14	J	18	1.4	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	8.3	B	1.8	0.91	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.89	J	1.8	0.70	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.6	J	1.8	0.87	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.1		1.8	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.6		1.8	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	22		1.8	0.69	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.4	J B	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	110		1.8	0.56	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	18		1.8	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	26		1.8	0.58	ng/L	1		537 (modified)	Total/NA
Aluminum	0.35		0.20	0.060	mg/L	1		6010C	Total/NA
Arsenic	0.0061	J	0.015	0.0056	mg/L	1		6010C	Total/NA
Barium	0.16		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.062		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	128		0.50	0.10	mg/L	1		6010C	Total/NA
Cobalt	0.0011	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0019	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	29.4		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	18.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.66	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0093	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	11.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	92.3		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.011		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	152	B	2.5	1.4	mg/L	5		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-04 (Continued) — Lab Sample ID: 480-166390-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ammonia	4.5	B	0.10	0.045	mg/L	5		350.1	Total/NA
Chemical Oxygen Demand	161		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	7.0		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	436		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	416		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	82.0		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-05 — Lab Sample ID: 480-166390-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	1.8		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	14		1.0	0.75	ug/L	1		8260C	Total/NA
1,4-Dioxane	0.14	J	0.20	0.10	ug/L	1		8270D SIM ID	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	13	J	17	1.3	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.1		1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	12	B	1.7	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.1	J	1.7	0.64	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	6.0		1.7	0.79	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	11		1.7	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	22		1.7	0.67	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	15		1.7	0.64	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.8	B	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	240		1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	75		1.7	0.68	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	12		1.7	0.53	ng/L	1		537 (modified)	Total/NA
Aluminum	0.34		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.14		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.089		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	106		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0019	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Cobalt	0.0026	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Iron	34.5		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	18.9		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.96	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0032	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	2.8		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	121		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0077	J	0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	194	B	2.5	1.4	mg/L	5		300.0	Total/NA
Ammonia	6.1	B	0.10	0.045	mg/L	5		350.1	Total/NA
Chemical Oxygen Demand	44.5		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	5.9		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	369		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	348		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	652		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-07 — Lab Sample ID: 480-166390-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.53	J	1.7	0.41	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-07 (Continued) — Lab Sample ID: 480-166390-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.6	J B	1.7	0.85	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.79	J	1.7	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.5	J	1.7	0.64	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.7	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.82	J	1.7	0.69	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.0	J	1.7	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 5-SAR-001-004-06 — Lab Sample ID: 480-166390-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.5	J	17	1.3	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	1.9	B	1.7	0.87	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.4		1.7	0.83	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.7	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.3		1.7	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.6	J	1.7	0.66	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.0	J B	1.7	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	120		1.7	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	20		1.7	0.71	ng/L	1		537 (modified)	Total/NA
Aluminum	0.085	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.19		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.037		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	51.1		0.50	0.10	mg/L	1		6010C	Total/NA
Cobalt	0.0017	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0059	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	15.4		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0069	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	5.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.38	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0089	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	0.85		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	22.9		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.020		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	43.2	B	1.0	0.56	mg/L	2		300.0	Total/NA
Sulfate	1.8	J B	4.0	0.70	mg/L	2		300.0	Total/NA
Ammonia	0.99	F1 B ^	0.020	0.0090	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	27.0		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	5.7		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	158		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	160		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	191		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-08 — Lab Sample ID: 480-166390-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,2-Dichlorobenzene	0.83	J	1.0	0.79	ug/L	1		8260C	Total/NA
1,4-Dichlorobenzene	3.4		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	18		1.0	0.75	ug/L	1		8260C	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	11	J	16	1.2	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-08 (Continued) — Lab Sample ID: 480-166390-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	35		16	1.4	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	11		1.6	0.40	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	13	B	1.6	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.3	J	1.6	0.63	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	6.9		1.6	0.78	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	15		1.6	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	31		1.6	0.65	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	20		1.6	0.62	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.1	B	1.6	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	260		1.6	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	98		1.6	0.66	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	17		1.6	0.51	ng/L	1		537 (modified)	Total/NA
Barium	0.13		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.10		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	95.8		0.50	0.10	mg/L	1		6010C	Total/NA
Cobalt	0.00083	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Iron	24.7		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	16.5		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.51	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0014	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	2.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	52.6		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0060	J	0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	85.8	B	2.5	1.4	mg/L	5		300.0	Total/NA
Ammonia	3.8	B	0.040	0.018	mg/L	2		350.1	Total/NA
Chemical Oxygen Demand	52.6		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	8.8		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	340		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	324		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	450		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-09 — Lab Sample ID: 480-166390-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.0	J	17	1.3	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	0.91	J B	1.7	0.85	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J	1.7	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	21		1.7	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.1		1.7	0.69	ng/L	1		537 (modified)	Total/NA
Aluminum	0.14	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.068		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.011	J	0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	20.0		0.50	0.10	mg/L	1		6010C	Total/NA
Cobalt	0.00065	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0024	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	8.8		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0048	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	2.8		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.15	B	0.0030	0.00040	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-09 (Continued) — Lab Sample ID: 480-166390-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	0.0026	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	0.68		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	19.1		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.011		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	34.6	B	0.50	0.28	mg/L	1		300.0	Total/NA
Sulfate	4.2	B	2.0	0.35	mg/L	1		300.0	Total/NA
Ammonia	0.25	F1 B ^	0.020	0.0090	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	21.1		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	3.8		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	58.8		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	60.0		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	138		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-10 — Lab Sample ID: 480-166390-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.47	J	1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	1.3	J B	1.7	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.99	J	1.7	0.67	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.7		1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.8		1.7	0.67	ng/L	1		537 (modified)	Total/NA
Aluminum	0.24		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.034		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.0077	J	0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	23.2		0.50	0.10	mg/L	1		6010C	Total/NA
Copper	0.0029	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	2.3		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0051	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	3.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.061	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0016	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	1.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	19.6		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.013		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	37.9	B	0.50	0.28	mg/L	1		300.0	Total/NA
Sulfate	13.2	B	2.0	0.35	mg/L	1		300.0	Total/NA
Chemical Oxygen Demand	19.5		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	3.7		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	64.6		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	76.0		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	167		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-11 — Lab Sample ID: 480-166390-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.2	J	10	3.0	ug/L	1		8260C	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.1	J	17	1.3	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	2.5	B	1.7	0.84	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	3.0		1.7	0.80	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-11 (Continued) — Lab Sample ID: 480-166390-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.7	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.9		1.7	0.67	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.3	J	1.7	0.64	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.1	J B	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	150		1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	21		1.7	0.68	ng/L	1		537 (modified)	Total/NA
Barium	0.18		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.031		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	52.8		0.50	0.10	mg/L	1		6010C	Total/NA
Cobalt	0.0021	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0072	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	17.0		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0099	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	6.0		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.47	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0092	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	0.73		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	37.0		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.025		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	69.2	B	1.0	0.56	mg/L	2		300.0	Total/NA
Sulfate	0.94	J B	4.0	0.70	mg/L	2		300.0	Total/NA
Ammonia	0.32	B ^	0.10	0.045	mg/L	5		350.1	Total/NA
Chemical Oxygen Demand	93.5		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	7.4		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	149		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	164		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	267		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-12 — Lab Sample ID: 480-166390-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.2	J	10	3.0	ug/L	1		8260C	Total/NA
Chlorobenzene	1.9		1.0	0.75	ug/L	1		8260C	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	3.1	J	17	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.3		1.7	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	4.1	B	1.7	0.83	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.5		1.7	0.79	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.5		1.7	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		1.7	0.66	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.7		1.7	0.63	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.1	J B	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	120		1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	38		1.7	0.67	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.5	J	1.7	0.52	ng/L	1		537 (modified)	Total/NA
Barium	0.20		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.050		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	107		0.50	0.10	mg/L	1		6010C	Total/NA
Cobalt	0.0010	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Iron	12.1		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0035	J	0.010	0.0030	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-004-12 (Continued) — Lab Sample ID: 480-166390-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Magnesium	11.7		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.44	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0032	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	1.8		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	199		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.026		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	286	B	2.5	1.4	mg/L	5		300.0	Total/NA
Ammonia	1.0	B ^	0.020	0.0090	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	38.4		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	6.0		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	265		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	332		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	1060		20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-004-13 — Lab Sample ID: 480-166390-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	0.49	J	1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	1.5	J B	1.8	0.89	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.92	J	1.8	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.4	J	1.8	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J	1.8	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.72	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.1	J	1.8	0.56	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 5-SAR-001-004-14 — Lab Sample ID: 480-166390-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	0.61	J	1.0	0.44	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-01
Date Collected: 02/12/20 11:20
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 14:41	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 14:41	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 14:41	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 14:41	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 14:41	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 14:41	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 14:41	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 14:41	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 14:41	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 14:41	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 14:41	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 14:41	1
1,4-Dichlorobenzene	**2.4**		1.0	0.84	ug/L			02/19/20 14:41	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 14:41	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 14:41	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 14:41	1
Acetone	ND		10	3.0	ug/L			02/19/20 14:41	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 14:41	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 14:41	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 14:41	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 14:41	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 14:41	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 14:41	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 14:41	1
Chlorobenzene	**6.9**		1.0	0.75	ug/L			02/19/20 14:41	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 14:41	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 14:41	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 14:41	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 14:41	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 14:41	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 14:41	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 14:41	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 14:41	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 14:41	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 14:41	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 14:41	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 14:41	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 14:41	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 14:41	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 14:41	1
Toluene	**4.7**		1.0	0.51	ug/L			02/19/20 14:41	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 14:41	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 14:41	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 14:41	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 14:41	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 14:41	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 14:41	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 14:41	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 14:41	1

Client Sample ID: 5-SAR-001-004-01

Date Collected: 02/12/20 11:20
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-1

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*02/19/20 14:41*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*02/19/20 14:41*	*1*
Dibromofluoromethane (Surr)	*102*		*75 - 123*		*02/19/20 14:41*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*02/19/20 14:41*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/21/20 22:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*27*		*15 - 110*	*02/17/20 15:06*	*02/21/20 22:28*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 18:46	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 18:46	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 18:46	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 18:46	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 18:46	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 18:46	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 18:46	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 18:46	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 18:46	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 18:46	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 18:46	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 18:46	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 18:46	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 18:46	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 18:46	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 18:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*96*		*48 - 120*	*02/17/20 15:13*	*02/19/20 18:46*	*1*
Nitrobenzene-d5	*85*		*46 - 120*	*02/17/20 15:13*	*02/19/20 18:46*	*1*
p-Terphenyl-d14	*62*		*24 - 136*	*02/17/20 15:13*	*02/19/20 18:46*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.7	ng/L		02/20/20 10:57	02/20/20 23:55	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	5.1	ng/L		02/20/20 10:57	02/20/20 23:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**20**		18	1.4	ng/L		02/20/20 10:57	02/20/20 23:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**13**	**J**	18	1.6	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorobutanesulfonic acid (PFBS)	**4.4**		1.8	0.45	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorobutanoic acid (PFBA)	**6.8**	**B**	1.8	0.92	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.83	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorodecanoic acid (PFDA)	**1.1**	**J**	1.8	0.71	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.54	ng/L		02/20/20 10:57	02/20/20 23:55	1

Client Sample ID: 5-SAR-001-004-01

Date Collected: 02/12/20 11:20
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**2.5**		1.8	0.87	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluoroheptanoic acid (PFHpA)	**3.8**		1.8	0.84	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorohexanesulfonic acid (PFHxS)	**7.9**		1.8	0.74	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorohexanoic acid (PFHxA)	**8.5**		1.8	0.70	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorononanoic acid (PFNA)	**1.7**	**J B**	1.8	0.25	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorooctanesulfonamide (PFOSA)	ND		9.2	9.2	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorooctanesulfonic acid (PFOS)	**150**		1.8	0.56	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorooctanoic acid (PFOA)	**26**		1.8	0.74	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluoropentanoic acid (PFPeA)	**9.0**		1.8	0.58	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.85	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.55	ng/L		02/20/20 10:57	02/20/20 23:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.72	ng/L		02/20/20 10:57	02/20/20 23:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*82*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C2 PFDoA	*95*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C2 PFHxA	*86*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C2 PFUnA	*76*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C2 PFTeDA	*92*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C3 PFBS	*92*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C4 PFBA	*84*		*25 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C4 PFOA	*92*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C4 PFOS	*78*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C4 PFHpA	*89*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C5 PFNA	*78*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C5 PFPeA	*95*		*25 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
13C8 FOSA	*75*		*25 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
18O2 PFHxS	*93*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
d5-NEtFOSAA	*84*		*50 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
M2-6:2 FTS	*120*		*25 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*
M2-8:2 FTS	*104*		*25 - 150*	*02/20/20 10:57*	*02/20/20 23:55*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.14**	**J**	0.20	0.060	mg/L		02/17/20 08:25	02/18/20 15:34	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 15:34	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 15:34	1
Barium	**0.21**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 15:34	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 15:34	1
Boron	**0.060**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 15:34	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 15:34	1
Calcium	**97.4**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:34	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 15:34	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 15:34	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 15:34	1
Iron	**34.7**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 15:34	1
Lead	**0.0039**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 15:34	1

Client Sample ID: 5-SAR-001-004-01

Lab Sample ID: 480-166390-1

Date Collected: 02/12/20 11:20

Matrix: Water

Date Received: 02/14/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**12.4**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 15:34	1
Manganese	**0.52**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 15:34	1
Nickel	**0.0014**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 15:34	1
Potassium	**5.3**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:34	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 15:34	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 15:34	1
Sodium	**240**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 15:34	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 15:34	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 15:34	1
Zinc	**0.019**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 15:34	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		2.0	0.73	mg/L			02/17/20 21:05	10
Chloride	**444**	**B**	5.0	2.8	mg/L			02/17/20 21:05	10
Sulfate	ND		20.0	3.5	mg/L			02/17/20 21:05	10
Ammonia	**2.5**	**B**	0.040	0.018	mg/L			02/24/20 12:46	2
Chemical Oxygen Demand	**37.4**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**3.7**		1.0	0.43	mg/L			02/16/20 13:10	1
Alkalinity, Total	**259**		5.0	0.79	mg/L			02/17/20 16:57	1
Total hardness as CaCO3	**308**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**930**		20.0	8.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-02

Lab Sample ID: 480-166390-2

Date Collected: 02/12/20 14:00

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 15:06	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 15:06	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 15:06	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 15:06	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 15:06	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 15:06	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 15:06	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 15:06	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 15:06	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 15:06	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 15:06	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 15:06	1
1,4-Dichlorobenzene	**2.9**		1.0	0.84	ug/L			02/19/20 15:06	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 15:06	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 15:06	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 15:06	1
Acetone	ND		10	3.0	ug/L			02/19/20 15:06	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-02
Date Collected: 02/12/20 14:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 15:06	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 15:06	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 15:06	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 15:06	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 15:06	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 15:06	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 15:06	1
Chlorobenzene	**7.3**		1.0	0.75	ug/L			02/19/20 15:06	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 15:06	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 15:06	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 15:06	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 15:06	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 15:06	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 15:06	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 15:06	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 15:06	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 15:06	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 15:06	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 15:06	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 15:06	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 15:06	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 15:06	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 15:06	1
Toluene	**15**		1.0	0.51	ug/L			02/19/20 15:06	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 15:06	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 15:06	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 15:06	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 15:06	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 15:06	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 15:06	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 15:06	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 15:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*108*		*77 - 120*		*02/19/20 15:06*	*1*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*		*02/19/20 15:06*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*02/19/20 15:06*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*02/19/20 15:06*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 16:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*02/17/20 15:06*	*02/25/20 16:43*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**0.31**	**J**	0.50	0.30	ug/L		02/17/20 15:13	02/19/20 19:15	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 19:15	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 19:15	1

Client Sample ID: 5-SAR-001-004-02

Date Collected: 02/12/20 14:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-2

Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 19:15	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 19:15	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 19:15	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 19:15	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 19:15	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 19:15	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 19:15	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 19:15	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 19:15	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 19:15	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 19:15	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 19:15	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 19:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*95*		*48 - 120*	*02/17/20 15:13*	*02/19/20 19:15*	*1*
Nitrobenzene-d5	*84*		*46 - 120*	*02/17/20 15:13*	*02/19/20 19:15*	*1*
p-Terphenyl-d14	*61*		*24 - 136*	*02/17/20 15:13*	*02/19/20 19:15*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.7	ng/L		02/20/20 10:57	02/21/20 00:03	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	5.0	ng/L		02/20/20 10:57	02/21/20 00:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**17**	**J**	18	1.4	ng/L		02/20/20 10:57	02/21/20 00:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**12**	**J**	18	1.6	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorobutanesulfonic acid (PFBS)	**4.6**		1.8	0.45	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorobutanoic acid (PFBA)	**7.4**	**B**	1.8	0.92	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.82	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorodecanoic acid (PFDA)	**1.3**	**J**	1.8	0.71	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.54	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.6**		1.8	0.87	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluoroheptanoic acid (PFHpA)	**3.6**		1.8	0.83	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	**6.8**		1.8	0.73	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorohexanoic acid (PFHxA)	**9.5**		1.8	0.70	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorononanoic acid (PFNA)	**1.8**	**B**	1.8	0.25	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorooctanesulfonamide (PFOSA)	ND		9.2	9.2	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorooctanesulfonic acid (PFOS)	**140**		1.8	0.56	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorooctanoic acid (PFOA)	**25**		1.8	0.74	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluoropentanoic acid (PFPeA)	**9.5**		1.8	0.58	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.84	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.55	ng/L		02/20/20 10:57	02/21/20 00:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.71	ng/L		02/20/20 10:57	02/21/20 00:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*73*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:03*	*1*

Client Sample ID: 5-SAR-001-004-02

Date Collected: 02/12/20 14:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	80		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C2 PFHxA	95		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C2 PFUnA	75		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C2 PFTeDA	86		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C3 PFBS	87		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C4 PFBA	87		25 - 150	02/20/20 10:57	02/21/20 00:03	1
13C4 PFOA	89		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C4 PFOS	77		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C4 PFHpA	98		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C5 PFNA	73		50 - 150	02/20/20 10:57	02/21/20 00:03	1
13C5 PFPeA	102		25 - 150	02/20/20 10:57	02/21/20 00:03	1
13C8 FOSA	72		25 - 150	02/20/20 10:57	02/21/20 00:03	1
18O2 PFHxS	102		50 - 150	02/20/20 10:57	02/21/20 00:03	1
d3-NMeFOSAA	82		50 - 150	02/20/20 10:57	02/21/20 00:03	1
d5-NEtFOSAA	78		50 - 150	02/20/20 10:57	02/21/20 00:03	1
M2-6:2 FTS	113		25 - 150	02/20/20 10:57	02/21/20 00:03	1
M2-8:2 FTS	98		25 - 150	02/20/20 10:57	02/21/20 00:03	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.095**	**J**	0.20	0.060	mg/L		02/17/20 08:25	02/18/20 15:38	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 15:38	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 15:38	1
Barium	**0.19**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 15:38	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 15:38	1
Boron	**0.049**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 15:38	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 15:38	1
Calcium	**89.9**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:38	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 15:38	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 15:38	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 15:38	1
Iron	**23.6**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 15:38	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 15:38	1
Magnesium	**11.4**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 15:38	1
Manganese	**0.40**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 15:38	1
Nickel	**0.0017**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 15:38	1
Potassium	**5.4**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:38	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 15:38	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 15:38	1
Sodium	**239**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 15:38	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 15:38	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 15:38	1
Zinc	**0.027**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 15:38	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:39	1

Client Sample ID: 5-SAR-001-004-02

Lab Sample ID: 480-166390-2

Date Collected: 02/12/20 14:00

Matrix: Water

Date Received: 02/14/20 08:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		2.0	0.73	mg/L			02/17/20 21:19	10
Chloride	**450**	**B**	5.0	2.8	mg/L			02/17/20 21:19	10
Sulfate	ND		20.0	3.5	mg/L			02/17/20 21:19	10
Ammonia	**2.3**	**B**	0.040	0.018	mg/L			02/24/20 12:46	2
Chemical Oxygen Demand	**37.5**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**3.5**		1.0	0.43	mg/L			02/16/20 15:11	1
Alkalinity, Total	**241**		5.0	0.79	mg/L			02/17/20 17:03	1
Total hardness as CaCO3	**288**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**824**		20.0	8.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-03

Lab Sample ID: 480-166390-3

Date Collected: 02/12/20 14:00

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 15:30	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 15:30	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 15:30	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 15:30	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 15:30	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 15:30	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 15:30	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 15:30	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 15:30	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 15:30	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 15:30	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 15:30	1
1,4-Dichlorobenzene	**2.9**		1.0	0.84	ug/L			02/19/20 15:30	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 15:30	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 15:30	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 15:30	1
Acetone	ND		10	3.0	ug/L			02/19/20 15:30	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 15:30	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 15:30	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 15:30	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 15:30	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 15:30	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 15:30	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 15:30	1
Chlorobenzene	**7.2**		1.0	0.75	ug/L			02/19/20 15:30	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 15:30	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 15:30	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 15:30	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 15:30	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 15:30	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 15:30	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 15:30	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 15:30	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 15:30	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-03
Date Collected: 02/12/20 14:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 15:30	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 15:30	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 15:30	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 15:30	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 15:30	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 15:30	1
Toluene	**14**		1.0	0.51	ug/L			02/19/20 15:30	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 15:30	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 15:30	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 15:30	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 15:30	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 15:30	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 15:30	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 15:30	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 15:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*02/19/20 15:30*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*02/19/20 15:30*	*1*
Dibromofluoromethane (Surr)	*96*		*75 - 123*		*02/19/20 15:30*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*02/19/20 15:30*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 17:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*40*		*15 - 110*	*02/17/20 15:06*	*02/25/20 17:08*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 19:43	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 19:43	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 19:43	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 19:43	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 19:43	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 19:43	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 19:43	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 19:43	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 19:43	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 19:43	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 19:43	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 19:43	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 19:43	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 19:43	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 19:43	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*95*		*48 - 120*	*02/17/20 15:13*	*02/19/20 19:43*	*1*
Nitrobenzene-d5	*84*		*46 - 120*	*02/17/20 15:13*	*02/19/20 19:43*	*1*

Client Sample ID: 5-SAR-001-004-03

Date Collected: 02/12/20 14:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-3

Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
p-Terphenyl-d14	*64*		*24 - 136*	*02/17/20 15:13*	*02/19/20 19:43*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/20/20 10:57	02/21/20 00:11	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.6	ng/L		02/20/20 10:57	02/21/20 00:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**17**		17	1.3	ng/L		02/20/20 10:57	02/21/20 00:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**12**	**J**	17	1.4	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorobutanesulfonic acid (PFBS)	**4.5**		1.7	0.41	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorobutanoic acid (PFBA)	**7.5**	**B**	1.7	0.84	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.76	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorodecanoic acid (PFDA)	**1.3**	**J**	1.7	0.65	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.9**		1.7	0.80	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluoroheptanoic acid (PFHpA)	**4.1**		1.7	0.77	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorohexanesulfonic acid (PFHxS)	**7.6**		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorohexanoic acid (PFHxA)	**11**		1.7	0.64	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorononanoic acid (PFNA)	**1.9**	**B**	1.7	0.23	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.4	8.4	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorooctanesulfonic acid (PFOS)	**160**		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorooctanoic acid (PFOA)	**28**		1.7	0.68	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluoropentanoic acid (PFPeA)	**11**		1.7	0.53	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.78	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 00:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.66	ng/L		02/20/20 10:57	02/21/20 00:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	*68*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C2 PFDoA	*74*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C2 PFHxA	*83*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C2 PFUnA	*75*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C2 PFTeDA	*82*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C3 PFBS	*82*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C4 PFBA	*74*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C4 PFOA	*77*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C4 PFOS	*70*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C4 PFHpA	*86*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C5 PFNA	*67*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C5 PFPeA	*90*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
13C8 FOSA	*62*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
18O2 PFHxS	*88*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
d3-NMeFOSAA	*77*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*
M2-6:2 FTS	*100*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:11*	*1*

Client Sample ID: 5-SAR-001-004-03

Lab Sample ID: 480-166390-3

Date Collected: 02/12/20 14:00
Matrix: Water
Date Received: 02/14/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	88		25 - 150	02/20/20 10:57	02/21/20 00:11	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.091**	**J**	0.20	0.060	mg/L		02/17/20 08:25	02/18/20 15:42	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 15:42	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 15:42	1
Barium	**0.20**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 15:42	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 15:42	1
Boron	**0.051**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 15:42	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 15:42	1
Calcium	**92.6**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:42	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 15:42	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 15:42	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 15:42	1
Iron	**24.7**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 15:42	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 15:42	1
Magnesium	**11.8**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 15:42	1
Manganese	**0.41**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 15:42	1
Nickel	**0.0014**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 15:42	1
Potassium	**5.6**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:42	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 15:42	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 15:42	1
Sodium	**249**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 15:42	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 15:42	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 15:42	1
Zinc	**0.027**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 15:42	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		2.0	0.73	mg/L			02/17/20 21:34	10
Chloride	**454**	**B**	5.0	2.8	mg/L			02/17/20 21:34	10
Sulfate	ND		20.0	3.5	mg/L			02/17/20 21:34	10
Ammonia	**2.3**	**B**	0.040	0.018	mg/L			02/24/20 12:47	2
Chemical Oxygen Demand	**38.3**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**3.8**		1.0	0.43	mg/L			02/16/20 15:42	1
Alkalinity, Total	**241**		5.0	0.79	mg/L			02/17/20 17:09	1
Total hardness as CaCO3	**288**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**918**		20.0	8.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-04

Lab Sample ID: 480-166390-4

Date Collected: 02/12/20 15:00
Matrix: Water
Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 15:54	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-04
Date Collected: 02/12/20 15:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 15:54	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 15:54	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 15:54	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 15:54	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 15:54	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 15:54	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 15:54	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 15:54	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 15:54	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 15:54	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 15:54	1
1,4-Dichlorobenzene	**1.1**		1.0	0.84	ug/L			02/19/20 15:54	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 15:54	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 15:54	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 15:54	1
Acetone	ND		10	3.0	ug/L			02/19/20 15:54	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 15:54	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 15:54	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 15:54	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 15:54	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 15:54	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 15:54	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 15:54	1
Chlorobenzene	**3.7**		1.0	0.75	ug/L			02/19/20 15:54	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 15:54	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 15:54	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 15:54	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 15:54	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 15:54	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 15:54	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 15:54	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 15:54	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 15:54	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 15:54	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 15:54	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 15:54	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 15:54	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 15:54	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 15:54	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 15:54	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 15:54	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 15:54	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 15:54	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 15:54	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 15:54	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 15:54	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 15:54	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 15:54	1

Client Sample ID: 5-SAR-001-004-04

Date Collected: 02/12/20 15:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-4

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*02/19/20 15:54*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*02/19/20 15:54*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*02/19/20 15:54*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*02/19/20 15:54*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.18**	**J**	0.20	0.10	ug/L		02/17/20 15:06	02/26/20 13:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*25*		*15 - 110*	*02/17/20 15:06*	*02/26/20 13:55*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 20:11	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 20:11	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 20:11	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 20:11	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 20:11	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 20:11	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 20:11	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 20:11	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 20:11	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 20:11	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 20:11	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 20:11	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 20:11	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 20:11	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 20:11	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 20:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*95*		*48 - 120*	*02/17/20 15:13*	*02/19/20 20:11*	*1*
Nitrobenzene-d5	*86*		*46 - 120*	*02/17/20 15:13*	*02/19/20 20:11*	*1*
p-Terphenyl-d14	*60*		*24 - 136*	*02/17/20 15:13*	*02/19/20 20:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.6	ng/L		02/20/20 10:57	02/21/20 00:20	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	5.0	ng/L		02/20/20 10:57	02/21/20 00:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**14**	**J**	18	1.4	ng/L		02/20/20 10:57	02/21/20 00:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.6	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		1.8	0.45	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorobutanoic acid (PFBA)	**8.3**	**B**	1.8	0.91	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.82	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorodecanoic acid (PFDA)	**0.89**	**J**	1.8	0.70	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.54	ng/L		02/20/20 10:57	02/21/20 00:20	1

Client Sample ID: 5-SAR-001-004-04

Date Collected: 02/12/20 15:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-4

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**1.6**	**J**	1.8	0.87	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluoroheptanoic acid (PFHpA)	**4.1**		1.8	0.83	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorohexanesulfonic acid (PFHxS)	**4.6**		1.8	0.73	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorohexanoic acid (PFHxA)	**22**		1.8	0.69	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorononanoic acid (PFNA)	**1.4**	**J B**	1.8	0.25	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorooctanesulfonamide (PFOSA)	ND		9.1	9.1	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorooctanesulfonic acid (PFOS)	**110**		1.8	0.56	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorooctanoic acid (PFOA)	**18**		1.8	0.74	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluoropentanoic acid (PFPeA)	**26**		1.8	0.58	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.84	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.55	ng/L		02/20/20 10:57	02/21/20 00:20	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.71	ng/L		02/20/20 10:57	02/21/20 00:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*93*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C2 PFDoA	*93*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C2 PFHxA	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C2 PFUnA	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C3 PFBS	*94*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C4 PFBA	*84*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C4 PFOA	*92*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C4 PFOS	*95*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C4 PFHpA	*91*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C5 PFNA	*85*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C5 PFPeA	*89*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
13C8 FOSA	*84*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
18O2 PFHxS	*97*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
d3-NMeFOSAA	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
d5-NEtFOSAA	*89*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
M2-6:2 FTS	*110*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*
M2-8:2 FTS	*105*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:20*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.35**		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 15:57	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 15:57	1
Arsenic	**0.0061**	**J**	0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 15:57	1
Barium	**0.16**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 15:57	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 15:57	1
Boron	**0.062**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 15:57	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 15:57	1
Calcium	**128**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:57	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 15:57	1
Cobalt	**0.0011**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 15:57	1
Copper	**0.0019**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 15:57	1
Iron	**29.4**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 15:57	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 15:57	1

Client Sample ID: 5-SAR-001-004-04

Lab Sample ID: 480-166390-4

Date Collected: 02/12/20 15:00

Matrix: Water

Date Received: 02/14/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**18.4**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 15:57	1
Manganese	**0.66**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 15:57	1
Nickel	**0.0093**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 15:57	1
Potassium	**11.1**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:57	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 15:57	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 15:57	1
Sodium	**92.3**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 15:57	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 15:57	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 15:57	1
Zinc	**0.011**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 15:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/17/20 21:48	5
Chloride	**152**	**B**	2.5	1.4	mg/L			02/17/20 21:48	5
Sulfate	ND		10.0	1.7	mg/L			02/17/20 21:48	5
Ammonia	**4.5**	**B**	0.10	0.045	mg/L			02/24/20 12:48	5
Chemical Oxygen Demand	**161**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**7.0**		1.0	0.43	mg/L			02/16/20 16:12	1
Alkalinity, Total	**436**		5.0	0.79	mg/L			02/17/20 17:17	1
Total hardness as CaCO3	**416**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**82.0**		10.0	4.0	mg/L			02/18/20 14:04	1

Client Sample ID: 5-SAR-001-004-05

Lab Sample ID: 480-166390-5

Date Collected: 02/12/20 16:00

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 16:18	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 16:18	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 16:18	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 16:18	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 16:18	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 16:18	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 16:18	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 16:18	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 16:18	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 16:18	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 16:18	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 16:18	1
1,4-Dichlorobenzene	**1.8**		1.0	0.84	ug/L			02/19/20 16:18	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 16:18	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 16:18	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 16:18	1
Acetone	ND		10	3.0	ug/L			02/19/20 16:18	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-05
Date Collected: 02/12/20 16:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 16:18	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 16:18	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 16:18	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 16:18	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 16:18	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 16:18	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 16:18	1
Chlorobenzene	**14**		1.0	0.75	ug/L			02/19/20 16:18	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 16:18	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 16:18	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 16:18	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 16:18	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 16:18	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 16:18	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 16:18	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 16:18	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 16:18	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 16:18	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 16:18	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 16:18	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 16:18	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 16:18	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 16:18	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 16:18	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 16:18	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 16:18	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 16:18	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 16:18	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 16:18	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 16:18	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 16:18	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*02/19/20 16:18*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*02/19/20 16:18*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*02/19/20 16:18*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*02/19/20 16:18*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**0.14**	**J**	0.20	0.10	ug/L		02/17/20 15:06	02/25/20 17:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*02/17/20 15:06*	*02/25/20 17:55*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 20:39	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 20:39	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 20:39	1

Client Sample ID: 5-SAR-001-004-05

Date Collected: 02/12/20 16:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-5

Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 20:39	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 20:39	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 20:39	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 20:39	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 20:39	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 20:39	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 20:39	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 20:39	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 20:39	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 20:39	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 20:39	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 20:39	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 20:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*87*		*48 - 120*	*02/17/20 15:13*	*02/19/20 20:39*	*1*
Nitrobenzene-d5	*79*		*46 - 120*	*02/17/20 15:13*	*02/19/20 20:39*	*1*
p-Terphenyl-d14	*45*		*24 - 136*	*02/17/20 15:13*	*02/19/20 20:39*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/20/20 10:57	02/21/20 00:36	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.6	ng/L		02/20/20 10:57	02/21/20 00:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**13**	**J**	17	1.3	ng/L		02/20/20 10:57	02/21/20 00:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorobutanesulfonic acid (PFBS)	**9.1**		1.7	0.41	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorobutanoic acid (PFBA)	**12**	**B**	1.7	0.84	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.75	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorodecanoic acid (PFDA)	**1.1**	**J**	1.7	0.64	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	**6.0**		1.7	0.79	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluoroheptanoic acid (PFHpA)	**11**		1.7	0.76	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorohexanesulfonic acid (PFHxS)	**22**		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorohexanoic acid (PFHxA)	**15**		1.7	0.64	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorononanoic acid (PFNA)	**1.8**	**B**	1.7	0.23	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.4	8.4	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorooctanesulfonic acid (PFOS)	**240**		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorooctanoic acid (PFOA)	**75**		1.7	0.68	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluoropentanoic acid (PFPeA)	**12**		1.7	0.53	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.77	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 00:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.65	ng/L		02/20/20 10:57	02/21/20 00:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*68*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:36*	*1*

Client Sample ID: 5-SAR-001-004-05

Date Collected: 02/12/20 16:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-5

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	68		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C2 PFHxA	79		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C2 PFUnA	70		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C2 PFTeDA	76		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C3 PFBS	86		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C4 PFBA	62		25 - 150	02/20/20 10:57	02/21/20 00:36	1
13C4 PFOA	84		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C4 PFOS	68		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C4 PFHpA	87		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C5 PFNA	73		50 - 150	02/20/20 10:57	02/21/20 00:36	1
13C5 PFPeA	87		25 - 150	02/20/20 10:57	02/21/20 00:36	1
13C8 FOSA	58		25 - 150	02/20/20 10:57	02/21/20 00:36	1
18O2 PFHxS	87		50 - 150	02/20/20 10:57	02/21/20 00:36	1
d3-NMeFOSAA	76		50 - 150	02/20/20 10:57	02/21/20 00:36	1
d5-NEtFOSAA	75		50 - 150	02/20/20 10:57	02/21/20 00:36	1
M2-6:2 FTS	118		25 - 150	02/20/20 10:57	02/21/20 00:36	1
M2-8:2 FTS	95		25 - 150	02/20/20 10:57	02/21/20 00:36	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.34**		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:00	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:00	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:00	1
Barium	**0.14**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:00	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:00	1
Boron	**0.089**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:00	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:00	1
Calcium	**106**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:00	1
Chromium	**0.0019**	**J**	0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:00	1
Cobalt	**0.0026**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:00	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:00	1
Iron	**34.5**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:00	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:00	1
Magnesium	**18.9**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:00	1
Manganese	**0.96**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:00	1
Nickel	**0.0032**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:00	1
Potassium	**2.8**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:00	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:00	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:00	1
Sodium	**121**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:00	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:00	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:00	1
Zinc	**0.0077**	**J**	0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:00	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:46	1

Client Sample ID: 5-SAR-001-004-05

Lab Sample ID: 480-166390-5

Date Collected: 02/12/20 16:00
Matrix: Water
Date Received: 02/14/20 08:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/17/20 22:02	5
Chloride	**194**	**B**	2.5	1.4	mg/L			02/17/20 22:02	5
Sulfate	ND		10.0	1.7	mg/L			02/17/20 22:02	5
Ammonia	**6.1**	**B**	0.10	0.045	mg/L			02/24/20 12:51	5
Chemical Oxygen Demand	**44.5**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**5.9**		1.0	0.43	mg/L			02/16/20 16:42	1
Alkalinity, Total	**369**		5.0	0.79	mg/L			02/17/20 17:23	1
Total hardness as CaCO3	**348**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**652**		10.0	4.0	mg/L			02/18/20 14:04	1

Client Sample ID: 5-SAR-001-004-07

Lab Sample ID: 480-166390-6

Date Collected: 02/12/20 16:20
Matrix: Water
Date Received: 02/14/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.5	ng/L		02/20/20 10:57	02/21/20 00:45	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.7	ng/L		02/20/20 10:57	02/21/20 00:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.3	ng/L		02/20/20 10:57	02/21/20 00:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorobutanesulfonic acid (PFBS)	**0.53**	**J**	1.7	0.41	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorobutanoic acid (PFBA)	**1.6**	**J B**	1.7	0.85	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.76	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.65	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.80	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.77	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorohexanesulfonic acid (PFHxS)	**0.79**	**J**	1.7	0.68	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorohexanoic acid (PFHxA)	**1.5**	**J**	1.7	0.64	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.5	8.5	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J**	1.7	0.52	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorooctanoic acid (PFOA)	**0.82**	**J**	1.7	0.69	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluoropentanoic acid (PFPeA)	**1.0**	**J**	1.7	0.53	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.78	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 00:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.66	ng/L		02/20/20 10:57	02/21/20 00:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*89*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:45*	*1*
13C2 PFDoA	*84*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:45*	*1*
13C2 PFHxA	*94*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:45*	*1*
13C2 PFUnA	*78*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:45*	*1*
13C2 PFTeDA	*79*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:45*	*1*
13C3 PFBS	*95*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:45*	*1*

Client Sample ID: 5-SAR-001-004-07

Lab Sample ID: 480-166390-6

Date Collected: 02/12/20 16:20

Matrix: Water

Date Received: 02/14/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	98		25 - 150	02/20/20 10:57	02/21/20 00:45	1
13C4 PFOA	96		50 - 150	02/20/20 10:57	02/21/20 00:45	1
13C4 PFOS	103		50 - 150	02/20/20 10:57	02/21/20 00:45	1
13C4 PFHpA	98		50 - 150	02/20/20 10:57	02/21/20 00:45	1
13C5 PFNA	96		50 - 150	02/20/20 10:57	02/21/20 00:45	1
13C5 PFPeA	96		25 - 150	02/20/20 10:57	02/21/20 00:45	1
13C8 FOSA	89		25 - 150	02/20/20 10:57	02/21/20 00:45	1
18O2 PFHxS	104		50 - 150	02/20/20 10:57	02/21/20 00:45	1
d3-NMeFOSAA	107		50 - 150	02/20/20 10:57	02/21/20 00:45	1
d5-NEtFOSAA	95		50 - 150	02/20/20 10:57	02/21/20 00:45	1
M2-6:2 FTS	111		25 - 150	02/20/20 10:57	02/21/20 00:45	1
M2-8:2 FTS	110		25 - 150	02/20/20 10:57	02/21/20 00:45	1

Client Sample ID: 5-SAR-001-004-06

Lab Sample ID: 480-166390-7

Date Collected: 02/12/20 17:30

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 16:43	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 16:43	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 16:43	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 16:43	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 16:43	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 16:43	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 16:43	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 16:43	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 16:43	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 16:43	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 16:43	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 16:43	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 16:43	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 16:43	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 16:43	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 16:43	1
Acetone	ND		10	3.0	ug/L			02/19/20 16:43	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 16:43	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 16:43	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 16:43	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 16:43	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 16:43	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 16:43	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 16:43	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 16:43	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 16:43	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 16:43	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 16:43	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 16:43	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 16:43	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 16:43	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-06
Date Collected: 02/12/20 17:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-7
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 16:43	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 16:43	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 16:43	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 16:43	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 16:43	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 16:43	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 16:43	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 16:43	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 16:43	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 16:43	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 16:43	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 16:43	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 16:43	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 16:43	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 16:43	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 16:43	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 16:43	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*02/19/20 16:43*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*02/19/20 16:43*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*02/19/20 16:43*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*02/19/20 16:43*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/21/20 22:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*27*		*15 - 110*	*02/17/20 15:06*	*02/21/20 22:05*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 17:49	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 17:49	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 17:49	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 17:49	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 17:49	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 17:49	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 17:49	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 17:49	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 17:49	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 17:49	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 17:49	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 17:49	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 17:49	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 17:49	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 17:49	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 17:49	1

Client Sample ID: 5-SAR-001-004-06

Date Collected: 02/12/20 17:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-7

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*88*		*48 - 120*	*02/17/20 15:13*	*02/19/20 17:49*	*1*
Nitrobenzene-d5	*78*		*46 - 120*	*02/17/20 15:13*	*02/19/20 17:49*	*1*
p-Terphenyl-d14	*66*		*24 - 136*	*02/17/20 15:13*	*02/19/20 17:49*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.5	ng/L		02/20/20 10:57	02/21/20 00:53	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.8	ng/L		02/20/20 10:57	02/21/20 00:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**1.5**	**J**	17	1.3	ng/L		02/20/20 10:57	02/21/20 00:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.5	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.7	0.43	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorobutanoic acid (PFBA)	**1.9**	**B**	1.7	0.87	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.79	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.52	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.4**		1.7	0.83	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluoroheptanoic acid (PFHpA)	**1.8**		1.7	0.80	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorohexanesulfonic acid (PFHxS)	**6.3**		1.7	0.70	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorohexanoic acid (PFHxA)	**1.6**	**J**	1.7	0.66	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorononanoic acid (PFNA)	**1.0**	**J B**	1.7	0.24	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.7	8.7	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorooctanesulfonic acid (PFOS)	**120**		1.7	0.53	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorooctanoic acid (PFOA)	**20**		1.7	0.71	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.55	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.80	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.52	ng/L		02/20/20 10:57	02/21/20 00:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.68	ng/L		02/20/20 10:57	02/21/20 00:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*106*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C2 PFDoA	*99*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C2 PFHxA	*96*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C2 PFUnA	*94*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C2 PFTeDA	*100*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C3 PFBS	*97*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C4 PFBA	*90*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C4 PFOA	*99*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C4 PFOS	*105*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C4 PFHpA	*99*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C5 PFNA	*96*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C5 PFPeA	*101*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
13C8 FOSA	*98*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
18O2 PFHxS	*106*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
d3-NMeFOSAA	*106*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
d5-NEtFOSAA	*106*		*50 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*

Client Sample ID: 5-SAR-001-004-06

Date Collected: 02/12/20 17:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-7

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2 FTS	*126*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*
M2-8:2 FTS	*129*		*25 - 150*	*02/20/20 10:57*	*02/21/20 00:53*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.085**	**J**	0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:04	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:04	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:04	1
Barium	**0.19**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:04	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:04	1
Boron	**0.037**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:04	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:04	1
Calcium	**51.1**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:04	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:04	1
Cobalt	**0.0017**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:04	1
Copper	**0.0059**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:04	1
Iron	**15.4**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:04	1
Lead	**0.0069**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:04	1
Magnesium	**5.4**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:04	1
Manganese	**0.38**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:04	1
Nickel	**0.0089**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:04	1
Potassium	**0.85**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:04	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:04	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:04	1
Sodium	**22.9**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:04	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:04	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:04	1
Zinc	**0.020**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:04	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.40	0.15	mg/L			02/17/20 22:16	2
Chloride	**43.2**	**B**	1.0	0.56	mg/L			02/17/20 22:16	2
Sulfate	**1.8**	**J B**	4.0	0.70	mg/L			02/17/20 22:16	2
Ammonia	**0.99**	**F1 B ^**	0.020	0.0090	mg/L			02/19/20 18:52	1
Chemical Oxygen Demand	**27.0**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**5.7**		1.0	0.43	mg/L			02/16/20 20:12	1
Alkalinity, Total	**158**		5.0	0.79	mg/L			02/17/20 17:29	1
Total hardness as CaCO3	**160**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**191**		10.0	4.0	mg/L			02/18/20 14:04	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-08
Date Collected: 02/13/20 12:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-8
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 17:07	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 17:07	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 17:07	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 17:07	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 17:07	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 17:07	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 17:07	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 17:07	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 17:07	1
1,2-Dichlorobenzene	**0.83**	**J**	1.0	0.79	ug/L			02/19/20 17:07	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 17:07	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 17:07	1
1,4-Dichlorobenzene	**3.4**		1.0	0.84	ug/L			02/19/20 17:07	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 17:07	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 17:07	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 17:07	1
Acetone	ND		10	3.0	ug/L			02/19/20 17:07	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 17:07	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 17:07	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 17:07	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 17:07	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 17:07	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 17:07	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 17:07	1
Chlorobenzene	**18**		1.0	0.75	ug/L			02/19/20 17:07	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 17:07	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 17:07	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 17:07	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 17:07	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 17:07	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 17:07	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 17:07	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 17:07	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 17:07	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 17:07	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 17:07	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 17:07	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 17:07	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 17:07	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 17:07	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 17:07	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 17:07	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 17:07	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 17:07	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 17:07	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 17:07	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 17:07	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 17:07	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 17:07	1

Client Sample ID: 5-SAR-001-004-08

Date Collected: 02/13/20 12:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-8

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*02/19/20 17:07*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*02/19/20 17:07*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*02/19/20 17:07*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*02/19/20 17:07*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 18:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*27*		*15 - 110*	*02/17/20 15:06*	*02/25/20 18:18*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 21:08	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 21:08	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 21:08	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 21:08	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 21:08	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 21:08	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 21:08	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 21:08	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 21:08	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 21:08	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 21:08	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 21:08	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 21:08	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 21:08	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 21:08	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*88*		*48 - 120*	*02/17/20 15:13*	*02/19/20 21:08*	*1*
Nitrobenzene-d5	*79*		*46 - 120*	*02/17/20 15:13*	*02/19/20 21:08*	*1*
p-Terphenyl-d14	*52*		*24 - 136*	*02/17/20 15:13*	*02/19/20 21:08*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		16	2.4	ng/L		02/20/20 10:57	02/21/20 01:18	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		16	4.5	ng/L		02/20/20 10:57	02/21/20 01:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**11**	**J**	16	1.2	ng/L		02/20/20 10:57	02/21/20 01:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**35**		16	1.4	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorobutanesulfonic acid (PFBS)	**11**		1.6	0.40	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorobutanoic acid (PFBA)	**13**	**B**	1.6	0.82	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.73	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorodecanoic acid (PFDA)	**1.3**	**J**	1.6	0.63	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.48	ng/L		02/20/20 10:57	02/21/20 01:18	1

Client Sample ID: 5-SAR-001-004-08

Date Collected: 02/13/20 12:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-8

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**6.9**		1.6	0.78	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluoroheptanoic acid (PFHpA)	**15**		1.6	0.74	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorohexanesulfonic acid (PFHxS)	**31**		1.6	0.65	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorohexanoic acid (PFHxA)	**20**		1.6	0.62	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorononanoic acid (PFNA)	**2.1**	**B**	1.6	0.22	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.2	8.2	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorooctanesulfonic acid (PFOS)	**260**		1.6	0.50	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorooctanoic acid (PFOA)	**98**		1.6	0.66	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluoropentanoic acid (PFPeA)	**17**		1.6	0.51	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.75	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	0.49	ng/L		02/20/20 10:57	02/21/20 01:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.64	ng/L		02/20/20 10:57	02/21/20 01:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*89*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C2 PFDoA	*95*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C2 PFHxA	*85*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C2 PFUnA	*91*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C2 PFTeDA	*98*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C3 PFBS	*91*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C4 PFBA	*63*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C4 PFOA	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C4 PFOS	*85*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C4 PFHpA	*97*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C5 PFNA	*88*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C5 PFPeA	*83*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
13C8 FOSA	*76*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
18O2 PFHxS	*98*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
d3-NMeFOSAA	*97*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
d5-NEtFOSAA	*110*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
M2-6:2 FTS	*138*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*
M2-8:2 FTS	*116*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:18*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:22	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:22	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:22	1
Barium	**0.13**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:22	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:22	1
Boron	**0.10**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:22	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:22	1
Calcium	**95.8**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:22	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:22	1
Cobalt	**0.00083**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:22	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:22	1
Iron	**24.7**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:22	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:22	1

Client Sample ID: 5-SAR-001-004-08

Lab Sample ID: 480-166390-8

Date Collected: 02/13/20 12:30

Matrix: Water

Date Received: 02/14/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**16.5**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:22	1
Manganese	**0.51**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:22	1
Nickel	**0.0014**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:22	1
Potassium	**2.4**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:22	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:22	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:22	1
Sodium	**52.6**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:22	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:22	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:22	1
Zinc	**0.0060**	**J**	0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:22	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/17/20 23:27	5
Chloride	**85.8**	**B**	2.5	1.4	mg/L			02/17/20 23:27	5
Sulfate	ND		10.0	1.7	mg/L			02/17/20 23:27	5
Ammonia	**3.8**	**B**	0.040	0.018	mg/L			02/24/20 12:52	2
Chemical Oxygen Demand	**52.6**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**8.8**		1.0	0.43	mg/L			02/16/20 17:11	1
Alkalinity, Total	**340**		5.0	0.79	mg/L			02/17/20 18:02	1
Total hardness as CaCO3	**324**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**450**		10.0	4.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-09

Lab Sample ID: 480-166390-9

Date Collected: 02/13/20 12:45

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 17:31	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 17:31	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 17:31	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 17:31	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 17:31	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 17:31	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 17:31	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 17:31	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 17:31	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 17:31	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 17:31	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 17:31	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 17:31	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 17:31	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 17:31	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 17:31	1
Acetone	ND		10	3.0	ug/L			02/19/20 17:31	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-09
Date Collected: 02/13/20 12:45
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-9
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 17:31	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 17:31	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 17:31	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 17:31	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 17:31	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 17:31	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 17:31	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 17:31	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 17:31	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 17:31	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 17:31	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 17:31	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 17:31	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 17:31	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 17:31	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 17:31	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 17:31	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 17:31	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 17:31	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 17:31	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 17:31	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 17:31	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 17:31	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 17:31	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 17:31	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 17:31	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 17:31	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 17:31	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 17:31	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 17:31	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 17:31	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*		*02/19/20 17:31*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*02/19/20 17:31*	*1*
Dibromofluoromethane (Surr)	*93*		*75 - 123*		*02/19/20 17:31*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*02/19/20 17:31*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 18:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*26*		*15 - 110*	*02/17/20 15:06*	*02/25/20 18:42*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 21:36	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 21:36	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 21:36	1

Client Sample ID: 5-SAR-001-004-09

Date Collected: 02/13/20 12:45
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-9

Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 21:36	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 21:36	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 21:36	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 21:36	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 21:36	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 21:36	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 21:36	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 21:36	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 21:36	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 21:36	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 21:36	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 21:36	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 21:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*89*		*48 - 120*	*02/17/20 15:13*	*02/19/20 21:36*	*1*
Nitrobenzene-d5	*81*		*46 - 120*	*02/17/20 15:13*	*02/19/20 21:36*	*1*
p-Terphenyl-d14	*67*		*24 - 136*	*02/17/20 15:13*	*02/19/20 21:36*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.5	ng/L		02/20/20 10:57	02/21/20 01:26	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.7	ng/L		02/20/20 10:57	02/21/20 01:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**2.0**	**J**	17	1.3	ng/L		02/20/20 10:57	02/21/20 01:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.5	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.42	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorobutanoic acid (PFBA)	**0.91**	**J B**	1.7	0.85	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.77	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.66	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.81	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.78	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J**	1.7	0.68	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.65	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.5	8.5	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorooctanesulfonic acid (PFOS)	**21**		1.7	0.52	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorooctanoic acid (PFOA)	**3.1**		1.7	0.69	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.54	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.79	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 01:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 01:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*105*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*

Client Sample ID: 5-SAR-001-004-09

Date Collected: 02/13/20 12:45
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-9

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDoA	*100*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C2 PFHxA	*93*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C2 PFUnA	*99*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C2 PFTeDA	*105*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C3 PFBS	*101*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C4 PFBA	*96*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C4 PFOA	*97*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C4 PFOS	*114*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C4 PFHpA	*103*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C5 PFNA	*101*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C5 PFPeA	*103*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
13C8 FOSA	*96*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
18O2 PFHxS	*108*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
d3-NMeFOSAA	*124*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
d5-NEtFOSAA	*127*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
M2-6:2 FTS	*130*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*
M2-8:2 FTS	*125*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:26*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.14**	**J**	0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:26	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:26	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:26	1
Barium	**0.068**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:26	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:26	1
Boron	**0.011**	**J**	0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:26	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:26	1
Calcium	**20.0**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:26	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:26	1
Cobalt	**0.00065**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:26	1
Copper	**0.0024**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:26	1
Iron	**8.8**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:26	1
Lead	**0.0048**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:26	1
Magnesium	**2.8**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:26	1
Manganese	**0.15**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:26	1
Nickel	**0.0026**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:26	1
Potassium	**0.68**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:26	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:26	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:26	1
Sodium	**19.1**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:26	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:26	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:26	1
Zinc	**0.011**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:26	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:56	1

Client Sample ID: 5-SAR-001-004-09

Lab Sample ID: 480-166390-9

Date Collected: 02/13/20 12:45

Matrix: Water

Date Received: 02/14/20 08:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.20	0.073	mg/L			02/17/20 23:41	1
Chloride	**34.6**	**B**	0.50	0.28	mg/L			02/17/20 23:41	1
Sulfate	**4.2**	**B**	2.0	0.35	mg/L			02/17/20 23:41	1
Ammonia	**0.25**	**F1 B ^**	0.020	0.0090	mg/L			02/19/20 19:11	1
Chemical Oxygen Demand	**21.1**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**3.8**		1.0	0.43	mg/L			02/16/20 17:42	1
Alkalinity, Total	**58.8**		5.0	0.79	mg/L			02/17/20 18:07	1
Total hardness as CaCO3	**60.0**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**138**		10.0	4.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-10

Lab Sample ID: 480-166390-10

Date Collected: 02/13/20 13:15

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 17:55	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 17:55	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 17:55	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 17:55	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 17:55	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 17:55	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 17:55	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 17:55	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 17:55	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 17:55	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 17:55	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 17:55	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 17:55	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 17:55	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 17:55	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 17:55	1
Acetone	ND		10	3.0	ug/L			02/19/20 17:55	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 17:55	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 17:55	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 17:55	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 17:55	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 17:55	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 17:55	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 17:55	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 17:55	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 17:55	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 17:55	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 17:55	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 17:55	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 17:55	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 17:55	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 17:55	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 17:55	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 17:55	1

Client Sample ID: 5-SAR-001-004-10
Date Collected: 02/13/20 13:15
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-10
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 17:55	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 17:55	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 17:55	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 17:55	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 17:55	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 17:55	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 17:55	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 17:55	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 17:55	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 17:55	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 17:55	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 17:55	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 17:55	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 17:55	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*02/19/20 17:55*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*02/19/20 17:55*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*02/19/20 17:55*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*02/19/20 17:55*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 19:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*26*		*15 - 110*	*02/17/20 15:06*	*02/25/20 19:05*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 22:05	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 22:05	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 22:05	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 22:05	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 22:05	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 22:05	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 22:05	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 22:05	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 22:05	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 22:05	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 22:05	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 22:05	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 22:05	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 22:05	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 22:05	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 22:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*88*		*48 - 120*	*02/17/20 15:13*	*02/19/20 22:05*	*1*
Nitrobenzene-d5	*79*		*46 - 120*	*02/17/20 15:13*	*02/19/20 22:05*	*1*

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-10
Date Collected: 02/13/20 13:15
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-10
Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
p-Terphenyl-d14	*57*		*24 - 136*	*02/17/20 15:13*	*02/19/20 22:05*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/20/20 10:57	02/21/20 01:34	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.6	ng/L		02/20/20 10:57	02/21/20 01:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.2	ng/L		02/20/20 10:57	02/21/20 01:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorobutanesulfonic acid (PFBS)	**0.47**	**J**	1.7	0.41	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorobutanoic acid (PFBA)	**1.3**	**J B**	1.7	0.83	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.75	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.64	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.79	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.76	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorohexanesulfonic acid (PFHxS)	**0.99**	**J**	1.7	0.67	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.63	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.3	8.3	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorooctanesulfonic acid (PFOS)	**7.7**		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorooctanoic acid (PFOA)	**1.8**		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.52	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.77	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 01:34	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.65	ng/L		02/20/20 10:57	02/21/20 01:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	*105*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C2 PFDoA	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C2 PFHxA	*94*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C2 PFUnA	*91*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C3 PFBS	*103*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C4 PFBA	*99*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C4 PFOA	*98*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C4 PFOS	*105*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C4 PFHpA	*98*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C5 PFNA	*104*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C5 PFPeA	*106*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
13C8 FOSA	*95*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
18O2 PFHxS	*115*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
d3-NMeFOSAA	*114*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
d5-NEtFOSAA	*110*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*
M2-6:2 FTS	*114*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:34*	*1*

Client Sample ID: 5-SAR-001-004-10

Lab Sample ID: 480-166390-10

Date Collected: 02/13/20 13:15

Matrix: Water

Date Received: 02/14/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	110		25 - 150	02/20/20 10:57	02/21/20 01:34	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.24**		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:41	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:41	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:41	1
Barium	**0.034**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:41	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:41	1
Boron	**0.0077**	**J**	0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:41	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:41	1
Calcium	**23.2**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:41	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:41	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:41	1
Copper	**0.0029**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:41	1
Iron	**2.3**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:41	1
Lead	**0.0051**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:41	1
Magnesium	**3.6**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:41	1
Manganese	**0.061**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:41	1
Nickel	**0.0016**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:41	1
Potassium	**1.1**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:41	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:41	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:41	1
Sodium	**19.6**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:41	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:41	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:41	1
Zinc	**0.013**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:41	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.20	0.073	mg/L			02/17/20 23:55	1
Chloride	**37.9**	**B**	0.50	0.28	mg/L			02/17/20 23:55	1
Sulfate	**13.2**	**B**	2.0	0.35	mg/L			02/17/20 23:55	1
Ammonia	ND		0.020	0.0090	mg/L			02/19/20 19:16	1
Chemical Oxygen Demand	**19.5**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**3.7**		1.0	0.43	mg/L			02/16/20 21:41	1
Alkalinity, Total	**64.6**		5.0	0.79	mg/L			02/17/20 18:12	1
Total hardness as CaCO3	**76.0**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**167**		10.0	4.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-11

Lab Sample ID: 480-166390-11

Date Collected: 02/13/20 13:45

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 18:19	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-11
Date Collected: 02/13/20 13:45
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-11
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 18:19	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 18:19	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 18:19	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 18:19	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 18:19	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 18:19	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 18:19	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 18:19	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 18:19	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 18:19	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 18:19	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 18:19	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 18:19	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 18:19	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 18:19	1
Acetone	**3.2**	**J**	10	3.0	ug/L			02/19/20 18:19	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 18:19	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 18:19	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 18:19	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 18:19	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 18:19	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 18:19	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 18:19	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 18:19	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 18:19	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 18:19	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 18:19	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 18:19	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 18:19	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 18:19	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 18:19	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 18:19	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 18:19	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 18:19	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 18:19	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 18:19	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 18:19	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 18:19	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 18:19	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 18:19	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 18:19	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 18:19	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 18:19	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 18:19	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 18:19	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 18:19	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 18:19	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 18:19	1

Client Sample ID: 5-SAR-001-004-11

Date Collected: 02/13/20 13:45
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-11

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*02/19/20 18:19*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*02/19/20 18:19*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*02/19/20 18:19*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*02/19/20 18:19*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 19:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*25*		*15 - 110*	*02/17/20 15:06*	*02/25/20 19:28*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 15:52	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/20/20 15:52	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/20/20 15:52	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/20/20 15:52	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 15:52	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 15:52	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 15:52	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/20/20 15:52	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/20/20 15:52	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 15:52	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 15:52	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 15:52	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/20/20 15:52	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/20/20 15:52	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/20/20 15:52	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*87*		*48 - 120*	*02/17/20 15:13*	*02/20/20 15:52*	*1*
Nitrobenzene-d5	*77*		*46 - 120*	*02/17/20 15:13*	*02/20/20 15:52*	*1*
p-Terphenyl-d14	*61*		*24 - 136*	*02/17/20 15:13*	*02/20/20 15:52*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/20/20 10:57	02/21/20 01:43	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.6	ng/L		02/20/20 10:57	02/21/20 01:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**3.1**	**J**	17	1.3	ng/L		02/20/20 10:57	02/21/20 01:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorobutanesulfonic acid (PFBS)	**1.5**	**J**	1.7	0.41	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorobutanoic acid (PFBA)	**2.5**	**B**	1.7	0.84	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.76	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.65	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 01:43	1

Client Sample ID: 5-SAR-001-004-11

Date Collected: 02/13/20 13:45
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-11

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**3.0**		1.7	0.80	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.7	0.76	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorohexanesulfonic acid (PFHxS)	**5.9**		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorohexanoic acid (PFHxA)	**1.3**	**J**	1.7	0.64	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorononanoic acid (PFNA)	**1.1**	**J B**	1.7	0.23	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.4	8.4	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorooctanesulfonic acid (PFOS)	**150**		1.7	0.51	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorooctanoic acid (PFOA)	**21**		1.7	0.68	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.53	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.77	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 01:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.66	ng/L		02/20/20 10:57	02/21/20 01:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*72*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C2 PFDoA	*73*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C2 PFHxA	*84*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C2 PFUnA	*72*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C3 PFBS	*90*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C4 PFBA	*79*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C4 PFOA	*84*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C4 PFOS	*74*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C4 PFHpA	*88*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C5 PFNA	*69*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C5 PFPeA	*93*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
13C8 FOSA	*61*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
18O2 PFHxS	*91*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
d3-NMeFOSAA	*79*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
M2-6:2 FTS	*114*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*
M2-8:2 FTS	*102*		*25 - 150*	*02/20/20 10:57*	*02/21/20 01:43*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:45	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:45	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:45	1
Barium	**0.18**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:45	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:45	1
Boron	**0.031**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:45	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:45	1
Calcium	**52.8**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:45	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:45	1
Cobalt	**0.0021**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:45	1
Copper	**0.0072**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:45	1
Iron	**17.0**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:45	1
Lead	**0.0099**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:45	1

Client Sample ID: 5-SAR-001-004-11

Lab Sample ID: 480-166390-11

Date Collected: 02/13/20 13:45

Matrix: Water

Date Received: 02/14/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**6.0**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:45	1
Manganese	**0.47**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:45	1
Nickel	**0.0092**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:45	1
Potassium	**0.73**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:45	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:45	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:45	1
Sodium	**37.0**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:45	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:45	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:45	1
Zinc	**0.025**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:45	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.40	0.15	mg/L			02/18/20 00:09	2
Chloride	**69.2**	**B**	1.0	0.56	mg/L			02/18/20 00:09	2
Sulfate	**0.94**	**J B**	4.0	0.70	mg/L			02/18/20 00:09	2
Ammonia	**0.32**	**B ^**	0.10	0.045	mg/L			02/19/20 19:19	5
Chemical Oxygen Demand	**93.5**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**7.4**		1.0	0.43	mg/L			02/16/20 22:12	1
Alkalinity, Total	**149**		5.0	0.79	mg/L			02/17/20 18:19	1
Total hardness as CaCO3	**164**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**267**		10.0	4.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-12

Lab Sample ID: 480-166390-12

Date Collected: 02/13/20 14:30

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 18:43	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 18:43	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 18:43	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 18:43	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 18:43	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 18:43	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 18:43	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 18:43	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 18:43	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 18:43	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 18:43	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 18:43	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 18:43	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 18:43	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 18:43	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 18:43	1
Acetone	**3.2**	**J**	10	3.0	ug/L			02/19/20 18:43	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-12
Date Collected: 02/13/20 14:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-12
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 18:43	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 18:43	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 18:43	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 18:43	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 18:43	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 18:43	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 18:43	1
Chlorobenzene	**1.9**		1.0	0.75	ug/L			02/19/20 18:43	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 18:43	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 18:43	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 18:43	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 18:43	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 18:43	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 18:43	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 18:43	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 18:43	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 18:43	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 18:43	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 18:43	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 18:43	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 18:43	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 18:43	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 18:43	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 18:43	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 18:43	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 18:43	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 18:43	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 18:43	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 18:43	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 18:43	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 18:43	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*02/19/20 18:43*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*02/19/20 18:43*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*02/19/20 18:43*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*02/19/20 18:43*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/25/20 19:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*26*		*15 - 110*	*02/17/20 15:06*	*02/25/20 19:52*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 23:02	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 23:02	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 23:02	1

Client Sample ID: 5-SAR-001-004-12

Date Collected: 02/13/20 14:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-12

Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 23:02	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 23:02	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 23:02	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 23:02	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 23:02	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 23:02	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 23:02	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 23:02	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 23:02	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 23:02	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 23:02	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 23:02	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 23:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*87*		*48 - 120*	*02/17/20 15:13*	*02/19/20 23:02*	*1*
Nitrobenzene-d5	*79*		*46 - 120*	*02/17/20 15:13*	*02/19/20 23:02*	*1*
p-Terphenyl-d14	*55*		*24 - 136*	*02/17/20 15:13*	*02/19/20 23:02*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/20/20 10:57	02/21/20 01:51	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.5	ng/L		02/20/20 10:57	02/21/20 01:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**3.1**	**J**	17	1.2	ng/L		02/20/20 10:57	02/21/20 01:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorobutanesulfonic acid (PFBS)	**3.3**		1.7	0.41	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorobutanoic acid (PFBA)	**4.1**	**B**	1.7	0.83	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.74	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.64	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.5**		1.7	0.79	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluoroheptanoic acid (PFHpA)	**4.5**		1.7	0.75	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorohexanesulfonic acid (PFHxS)	**12**		1.7	0.66	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorohexanoic acid (PFHxA)	**3.7**		1.7	0.63	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorononanoic acid (PFNA)	**1.1**	**J B**	1.7	0.22	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.3	8.3	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorooctanesulfonic acid (PFOS)	**120**		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorooctanoic acid (PFOA)	**38**		1.7	0.67	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluoropentanoic acid (PFPeA)	**1.5**	**J**	1.7	0.52	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.76	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		02/20/20 10:57	02/21/20 01:51	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.65	ng/L		02/20/20 10:57	02/21/20 01:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*95*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:51*	*1*

Client Sample ID: 5-SAR-001-004-12

Date Collected: 02/13/20 14:30
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-12

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDoA	93		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C2 PFHxA	83		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C2 PFUnA	97		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C2 PFTeDA	99		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C3 PFBS	94		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C4 PFBA	82		25 - 150	02/20/20 10:57	02/21/20 01:51	1
13C4 PFOA	93		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C4 PFOS	100		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C4 PFHpA	97		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C5 PFNA	99		50 - 150	02/20/20 10:57	02/21/20 01:51	1
13C5 PFPeA	101		25 - 150	02/20/20 10:57	02/21/20 01:51	1
13C8 FOSA	75		25 - 150	02/20/20 10:57	02/21/20 01:51	1
18O2 PFHxS	102		50 - 150	02/20/20 10:57	02/21/20 01:51	1
d3-NMeFOSAA	105		50 - 150	02/20/20 10:57	02/21/20 01:51	1
d5-NEtFOSAA	93		50 - 150	02/20/20 10:57	02/21/20 01:51	1
M2-6:2 FTS	131		25 - 150	02/20/20 10:57	02/21/20 01:51	1
M2-8:2 FTS	138		25 - 150	02/20/20 10:57	02/21/20 01:51	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 16:48	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 16:48	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 16:48	1
Barium	**0.20**		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 16:48	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 16:48	1
Boron	**0.050**		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 16:48	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 16:48	1
Calcium	**107**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:48	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 16:48	1
Cobalt	**0.0010**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 16:48	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 16:48	1
Iron	**12.1**		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 16:48	1
Lead	**0.0035**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 16:48	1
Magnesium	**11.7**		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 16:48	1
Manganese	**0.44**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 16:48	1
Nickel	**0.0032**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 16:48	1
Potassium	**1.8**		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 16:48	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 16:48	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 16:48	1
Sodium	**199**		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 16:48	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 16:48	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 16:48	1
Zinc	**0.026**		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 16:48	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 16:00	1

Client Sample ID: 5-SAR-001-004-12

Lab Sample ID: 480-166390-12

Date Collected: 02/13/20 14:30

Matrix: Water

Date Received: 02/14/20 08:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/18/20 00:23	5
Chloride	**286**	**B**	2.5	1.4	mg/L			02/18/20 00:23	5
Sulfate	ND		10.0	1.7	mg/L			02/18/20 00:23	5
Ammonia	**1.0**	**B ^**	0.020	0.0090	mg/L			02/19/20 19:22	1
Chemical Oxygen Demand	**38.4**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**6.0**		1.0	0.43	mg/L			02/16/20 22:42	1
Alkalinity, Total	**265**		5.0	0.79	mg/L			02/17/20 18:25	1
Total hardness as CaCO3	**332**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**1060**		20.0	8.0	mg/L			02/18/20 15:40	1

Client Sample ID: 5-SAR-001-004-13

Lab Sample ID: 480-166390-13

Date Collected: 02/13/20 14:45

Matrix: Water

Date Received: 02/14/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.6	ng/L		02/20/20 10:57	02/21/20 01:59	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	4.9	ng/L		02/20/20 10:57	02/21/20 01:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.3	ng/L		02/20/20 10:57	02/21/20 01:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.5	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorobutanesulfonic acid (PFBS)	**0.49**	**J**	1.8	0.44	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorobutanoic acid (PFBA)	**1.5**	**J B**	1.8	0.89	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.80	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.69	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.53	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.85	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.81	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorohexanesulfonic acid (PFHxS)	**0.92**	**J**	1.8	0.71	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorohexanoic acid (PFHxA)	**1.4**	**J**	1.8	0.68	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.9	8.9	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J**	1.8	0.54	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.72	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluoropentanoic acid (PFPeA)	**1.1**	**J**	1.8	0.56	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.82	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.54	ng/L		02/20/20 10:57	02/21/20 01:59	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.70	ng/L		02/20/20 10:57	02/21/20 01:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*96*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:59*	*1*
13C2 PFDoA	*87*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:59*	*1*
13C2 PFHxA	*97*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:59*	*1*
13C2 PFUnA	*89*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:59*	*1*
13C2 PFTeDA	*85*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:59*	*1*
13C3 PFBS	*100*		*50 - 150*	*02/20/20 10:57*	*02/21/20 01:59*	*1*

Client Sample ID: 5-SAR-001-004-13

Lab Sample ID: 480-166390-13

Date Collected: 02/13/20 14:45

Matrix: Water

Date Received: 02/14/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	104		25 - 150	02/20/20 10:57	02/21/20 01:59	1
13C4 PFOA	96		50 - 150	02/20/20 10:57	02/21/20 01:59	1
13C4 PFOS	109		50 - 150	02/20/20 10:57	02/21/20 01:59	1
13C4 PFHpA	105		50 - 150	02/20/20 10:57	02/21/20 01:59	1
13C5 PFNA	103		50 - 150	02/20/20 10:57	02/21/20 01:59	1
13C5 PFPeA	112		25 - 150	02/20/20 10:57	02/21/20 01:59	1
13C8 FOSA	94		25 - 150	02/20/20 10:57	02/21/20 01:59	1
18O2 PFHxS	109		50 - 150	02/20/20 10:57	02/21/20 01:59	1
d3-NMeFOSAA	116		50 - 150	02/20/20 10:57	02/21/20 01:59	1
d5-NEtFOSAA	115		50 - 150	02/20/20 10:57	02/21/20 01:59	1
M2-6:2 FTS	114		25 - 150	02/20/20 10:57	02/21/20 01:59	1
M2-8:2 FTS	108		25 - 150	02/20/20 10:57	02/21/20 01:59	1

Client Sample ID: 5-SAR-001-004-14

Lab Sample ID: 480-166390-14

Date Collected: 02/13/20 00:00

Matrix: Water

Date Received: 02/14/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 14:02	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 14:02	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 14:02	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 14:02	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 14:02	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 14:02	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 14:02	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 14:02	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 14:02	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 14:02	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 14:02	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 14:02	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 14:02	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 14:02	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 14:02	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 14:02	1
Acetone	ND		10	3.0	ug/L			02/19/20 14:02	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 14:02	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 14:02	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 14:02	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 14:02	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 14:02	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 14:02	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 14:02	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 14:02	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 14:02	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 14:02	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 14:02	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 14:02	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 14:02	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 14:02	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-14
Date Collected: 02/13/20 00:00
Date Received: 02/14/20 08:00

Lab Sample ID: 480-166390-14
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 14:02	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 14:02	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 14:02	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 14:02	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 14:02	1
Methylene Chloride	**0.61**	**J**	1.0	0.44	ug/L			02/19/20 14:02	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 14:02	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 14:02	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 14:02	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 14:02	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 14:02	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 14:02	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 14:02	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 14:02	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 14:02	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 14:02	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 14:02	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*77 - 120*		*02/19/20 14:02*	*1*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*02/19/20 14:02*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*02/19/20 14:02*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*02/19/20 14:02*	*1*

Surrogate Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCA (77-120)	BFB (73-120)	DBFM (75-123)	TOL (80-120)
480-166390-1	5-SAR-001-004-01	101	106	102	103
480-166390-2	5-SAR-001-004-02	108	106	104	106
480-166390-3	5-SAR-001-004-03	98	100	96	96
480-166390-4	5-SAR-001-004-04	102	102	101	101
480-166390-5	5-SAR-001-004-05	103	97	97	96
480-166390-7	5-SAR-001-004-06	103	104	103	103
480-166390-7 MS	5-SAR-001-004-06	100	105	100	103
480-166390-7 MSD	5-SAR-001-004-06	87	95	87	90
480-166390-8	5-SAR-001-004-08	101	100	98	101
480-166390-9	5-SAR-001-004-09	94	100	93	96
480-166390-10	5-SAR-001-004-10	102	105	100	103
480-166390-11	5-SAR-001-004-11	103	105	98	102
480-166390-12	5-SAR-001-004-12	100	104	100	104
480-166390-14	5-SAR-001-004-14	88	96	94	97
LCS 480-518207/5	Lab Control Sample	87	98	96	100
LCS 480-518210/5	Lab Control Sample	96	99	98	97
MB 480-518207/7	Method Blank	87	97	94	97
MB 480-518210/7	Method Blank	97	102	94	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	FBP (48-120)	NBZ (46-120)	TPHd14 (24-136)
480-166390-1	5-SAR-001-004-01	96	85	62
480-166390-2	5-SAR-001-004-02	95	84	61
480-166390-3	5-SAR-001-004-03	95	84	64
480-166390-4	5-SAR-001-004-04	95	86	60
480-166390-5	5-SAR-001-004-05	87	79	45
480-166390-7	5-SAR-001-004-06	88	78	66
480-166390-7 MS	5-SAR-001-004-06	86	79	65
480-166390-7 MSD	5-SAR-001-004-06	94	85	66
480-166390-8	5-SAR-001-004-08	88	79	52
480-166390-9	5-SAR-001-004-09	89	81	67
480-166390-10	5-SAR-001-004-10	88	79	57
480-166390-11	5-SAR-001-004-11	87	77	61
480-166390-12	5-SAR-001-004-12	87	79	55
LCS 480-517915/2-A	Lab Control Sample	84	76	83
MB 480-517915/1-A	Method Blank	90	81	84

Surrogate Legend

FBP = 2-Fluorobiphenyl
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DXE (15-110)
480-166390-1	5-SAR-001-004-01	27
480-166390-2	5-SAR-001-004-02	28
480-166390-3	5-SAR-001-004-03	40
480-166390-4	5-SAR-001-004-04	25
480-166390-5	5-SAR-001-004-05	28
480-166390-7	5-SAR-001-004-06	27
480-166390-7 MS	5-SAR-001-004-06	28
480-166390-7 MSD	5-SAR-001-004-06	27
480-166390-8	5-SAR-001-004-08	27
480-166390-9	5-SAR-001-004-09	26
480-166390-10	5-SAR-001-004-10	26
480-166390-11	5-SAR-001-004-11	25
480-166390-12	5-SAR-001-004-12	26
LCS 480-517911/2-A	Lab Control Sample	31
MB 480-517911/1-A	Method Blank	28

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDA (50-150)	PFDoA (50-150)	PFHxA (50-150)	PFUnA (50-150)	PFTDA (50-150)	3C3-PFBS (50-150)	PFBA (25-150)	PFOA (50-150)
480-166390-1	5-SAR-001-004-01	82	95	86	76	92	92	84	92
480-166390-2	5-SAR-001-004-02	73	80	95	75	86	87	87	89
480-166390-3	5-SAR-001-004-03	68	74	83	75	82	82	74	77
480-166390-4	5-SAR-001-004-04	93	93	90	90	85	94	84	92
480-166390-5	5-SAR-001-004-05	68	68	79	70	76	86	62	84
480-166390-6	5-SAR-001-004-07	89	84	94	78	79	95	98	96
480-166390-7	5-SAR-001-004-06	106	99	96	94	100	97	90	99
480-166390-7 MS	5-SAR-001-004-06	101	94	91	102	97	100	86	94
480-166390-7 MSD	5-SAR-001-004-06	110	106	94	103	104	107	88	104
480-166390-8	5-SAR-001-004-08	89	95	85	91	98	91	63	90
480-166390-9	5-SAR-001-004-09	105	100	93	99	105	101	96	97
480-166390-10	5-SAR-001-004-10	105	90	94	91	90	103	99	98
480-166390-11	5-SAR-001-004-11	72	73	84	72	85	90	79	84
480-166390-12	5-SAR-001-004-12	95	93	83	97	99	94	82	93
480-166390-13	5-SAR-001-004-13	96	87	97	89	85	100	104	96
LCS 200-152581/2-A	Lab Control Sample	99	87	103	93	98	101	110	96
MB 200-152581/1-A	Method Blank	97	82	98	89	87	102	105	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOS (50-150)	PFHpA (50-150)	PFNA (50-150)	PFPeA (25-150)	PFOSA (25-150)	PFHxS (50-150)	NMeFOSA (50-150)	NEtFOSA (50-150)
480-166390-1	5-SAR-001-004-01	78	89	78	95	75	93	89	84
480-166390-2	5-SAR-001-004-02	77	98	73	102	72	102	82	78
480-166390-3	5-SAR-001-004-03	70	86	67	90	62	88	77	89
480-166390-4	5-SAR-001-004-04	95	91	85	89	84	97	90	89
480-166390-5	5-SAR-001-004-05	68	87	73	87	58	87	76	75

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Job ID: 480-166390-1
Project/Site: Tow Path LF, Region 5

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water
Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOS (50-150)	PFHpA (50-150)	PFNA (50-150)	PFPeA (25-150)	PFOSA (25-150)	PFHxS (50-150)	-NMeFOS/ (50-150)	-NEtFOSA (50-150)
480-166390-6	5-SAR-001-004-07	103	98	96	96	89	104	107	95
480-166390-7	5-SAR-001-004-06	105	99	96	101	98	106	106	106
480-166390-7 MS	5-SAR-001-004-06	108	102	99	104	91	103	109	118
480-166390-7 MSD	5-SAR-001-004-06	114	102	104	106	101	109	111	108
480-166390-8	5-SAR-001-004-08	85	97	88	83	76	98	97	110
480-166390-9	5-SAR-001-004-09	114	103	101	103	96	108	124	127
480-166390-10	5-SAR-001-004-10	105	98	104	106	95	115	114	110
480-166390-11	5-SAR-001-004-11	74	88	69	93	61	91	79	81
480-166390-12	5-SAR-001-004-12	100	97	99	101	75	102	105	93
480-166390-13	5-SAR-001-004-13	109	105	103	112	94	109	116	115
LCS 200-152581/2-A	Lab Control Sample	105	104	101	105	95	111	129	114
MB 200-152581/1-A	Method Blank	98	97	96	108	86	100	114	105

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)
480-166390-1	5-SAR-001-004-01	120	104
480-166390-2	5-SAR-001-004-02	113	98
480-166390-3	5-SAR-001-004-03	100	88
480-166390-4	5-SAR-001-004-04	110	105
480-166390-5	5-SAR-001-004-05	118	95
480-166390-6	5-SAR-001-004-07	111	110
480-166390-7	5-SAR-001-004-06	126	129
480-166390-7 MS	5-SAR-001-004-06	124	119
480-166390-7 MSD	5-SAR-001-004-06	140	138
480-166390-8	5-SAR-001-004-08	138	116
480-166390-9	5-SAR-001-004-09	130	125
480-166390-10	5-SAR-001-004-10	114	110
480-166390-11	5-SAR-001-004-11	114	102
480-166390-12	5-SAR-001-004-12	131	138
480-166390-13	5-SAR-001-004-13	114	108
LCS 200-152581/2-A	Lab Control Sample	107	118
MB 200-152581/1-A	Method Blank	101	117

Surrogate Legend

PFDA = 13C2 PFDA
PFDoA = 13C2 PFDoA
PFHxA = 13C2 PFHxA
PFUnA = 13C2 PFUnA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFBA = 13C4 PFBA
PFOA = 13C4 PFOA
PFOS = 13C4 PFOS
PFHpA = 13C4 PFHpA
PFNA = 13C5 PFNA
PFPeA = 13C5 PFPeA
PFOSA = 13C8 FOSA
PFHxS = 18O2 PFHxS
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

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

Lab Sample ID: MB 480-518207/7
Matrix: Water
Analysis Batch: 518207

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 11:31	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 11:31	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 11:31	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 11:31	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 11:31	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 11:31	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 11:31	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 11:31	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 11:31	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 11:31	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 11:31	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 11:31	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 11:31	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 11:31	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 11:31	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 11:31	1
Acetone	ND		10	3.0	ug/L			02/19/20 11:31	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 11:31	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 11:31	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 11:31	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 11:31	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 11:31	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 11:31	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 11:31	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 11:31	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 11:31	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 11:31	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 11:31	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 11:31	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 11:31	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 11:31	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 11:31	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 11:31	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 11:31	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 11:31	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 11:31	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 11:31	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 11:31	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 11:31	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 11:31	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 11:31	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 11:31	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 11:31	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 11:31	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 11:31	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 11:31	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 11:31	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 11:31	1

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

Lab Sample ID: MB 480-518207/7
Matrix: Water
Analysis Batch: 518207

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 11:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*		*02/19/20 11:31*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*02/19/20 11:31*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*02/19/20 11:31*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*02/19/20 11:31*	*1*

Lab Sample ID: LCS 480-518207/5
Matrix: Water
Analysis Batch: 518207

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	29.6		ug/L		118	80 - 120
1,1,1-Trichloroethane	25.0	24.7		ug/L		99	73 - 126
1,1,2,2-Tetrachloroethane	25.0	27.3		ug/L		109	76 - 120
1,1,2-Trichloroethane	25.0	26.5		ug/L		106	76 - 122
1,1-Dichloroethane	25.0	26.1		ug/L		104	77 - 120
1,1-Dichloroethene	25.0	24.0		ug/L		96	66 - 127
1,2,3-Trichloropropane	25.0	24.9		ug/L		100	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	26.3		ug/L		105	56 - 134
1,2-Dibromoethane	25.0	26.3		ug/L		105	77 - 120
1,2-Dichlorobenzene	25.0	26.3		ug/L		105	80 - 124
1,2-Dichloroethane	25.0	22.2		ug/L		89	75 - 120
1,2-Dichloropropane	25.0	26.6		ug/L		106	76 - 120
1,4-Dichlorobenzene	25.0	25.2		ug/L		101	80 - 120
2-Butanone (MEK)	125	127		ug/L		102	57 - 140
2-Hexanone	125	143		ug/L		115	65 - 127
4-Methyl-2-pentanone (MIBK)	125	138		ug/L		110	71 - 125
Acetone	125	125		ug/L		100	56 - 142
Acrylonitrile	250	254		ug/L		101	63 - 125
Benzene	25.0	25.5		ug/L		102	71 - 124
Bromodichloromethane	25.0	26.3		ug/L		105	80 - 122
Bromoform	25.0	32.9		ug/L		132	61 - 132
Bromomethane	25.0	24.2		ug/L		97	55 - 144
Carbon disulfide	25.0	24.8		ug/L		99	59 - 134
Carbon tetrachloride	25.0	26.8		ug/L		107	72 - 134
Chlorobenzene	25.0	24.9		ug/L		100	80 - 120
Chlorobromomethane	25.0	25.0		ug/L		100	72 - 130
Chloroethane	25.0	25.9		ug/L		104	69 - 136
Chloroform	25.0	22.1		ug/L		88	73 - 127
Chloromethane	25.0	27.5		ug/L		110	68 - 124
cis-1,2-Dichloroethene	25.0	24.1		ug/L		97	74 - 124
cis-1,3-Dichloropropene	25.0	28.2		ug/L		113	74 - 124
Dibromochloromethane	25.0	30.1		ug/L		121	75 - 125
Dibromomethane	25.0	24.7		ug/L		99	76 - 127
Ethylbenzene	25.0	25.6		ug/L		102	77 - 123
Iodomethane	25.0	24.1		ug/L		96	78 - 123

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

Lab Sample ID: LCS 480-518207/5
Matrix: Water
Analysis Batch: 518207

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
m,p-Xylene	25.0	25.5		ug/L		102	76 - 122
Methylene Chloride	25.0	22.3		ug/L		89	75 - 124
o-Xylene	25.0	26.1		ug/L		104	76 - 122
Styrene	25.0	26.5		ug/L		106	80 - 120
Tetrachloroethene	25.0	24.9		ug/L		100	74 - 122
Toluene	25.0	25.3		ug/L		101	80 - 122
trans-1,2-Dichloroethene	25.0	24.8		ug/L		99	73 - 127
trans-1,3-Dichloropropene	25.0	28.9		ug/L		116	80 - 120
trans-1,4-Dichloro-2-butene	25.0	23.9		ug/L		96	41 - 131
Trichloroethene	25.0	23.9		ug/L		96	74 - 123
Trichlorofluoromethane	25.0	22.2		ug/L		89	62 - 150
Vinyl acetate	50.0	56.9		ug/L		114	50 - 144
Vinyl chloride	25.0	27.8		ug/L		111	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*
Dibromofluoromethane (Surr)	*96*		*75 - 123*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: MB 480-518210/7
Matrix: Water
Analysis Batch: 518210

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/19/20 11:17	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/19/20 11:17	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/19/20 11:17	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/19/20 11:17	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/19/20 11:17	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/19/20 11:17	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/19/20 11:17	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/19/20 11:17	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/19/20 11:17	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/19/20 11:17	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/19/20 11:17	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/19/20 11:17	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/19/20 11:17	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/19/20 11:17	1
2-Hexanone	ND		5.0	1.2	ug/L			02/19/20 11:17	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/19/20 11:17	1
Acetone	ND		10	3.0	ug/L			02/19/20 11:17	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/19/20 11:17	1
Benzene	ND		1.0	0.41	ug/L			02/19/20 11:17	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/19/20 11:17	1
Bromoform	ND		1.0	0.26	ug/L			02/19/20 11:17	1
Bromomethane	ND		1.0	0.69	ug/L			02/19/20 11:17	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/19/20 11:17	1

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

Lab Sample ID: MB 480-518210/7
Matrix: Water
Analysis Batch: 518210

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/19/20 11:17	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/19/20 11:17	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/19/20 11:17	1
Chloroethane	ND		1.0	0.32	ug/L			02/19/20 11:17	1
Chloroform	ND		1.0	0.34	ug/L			02/19/20 11:17	1
Chloromethane	ND		1.0	0.35	ug/L			02/19/20 11:17	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/19/20 11:17	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/19/20 11:17	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/19/20 11:17	1
Dibromomethane	ND		1.0	0.41	ug/L			02/19/20 11:17	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/19/20 11:17	1
Iodomethane	ND		1.0	0.30	ug/L			02/19/20 11:17	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/19/20 11:17	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/19/20 11:17	1
o-Xylene	ND		1.0	0.76	ug/L			02/19/20 11:17	1
Styrene	ND		1.0	0.73	ug/L			02/19/20 11:17	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/19/20 11:17	1
Toluene	ND		1.0	0.51	ug/L			02/19/20 11:17	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/19/20 11:17	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/19/20 11:17	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/19/20 11:17	1
Trichloroethene	ND		1.0	0.46	ug/L			02/19/20 11:17	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/19/20 11:17	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/19/20 11:17	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/19/20 11:17	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/19/20 11:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*02/19/20 11:17*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*02/19/20 11:17*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*02/19/20 11:17*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*02/19/20 11:17*	*1*

Lab Sample ID: LCS 480-518210/5
Matrix: Water
Analysis Batch: 518210

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	24.5		ug/L		98	80 - 120
1,1,1-Trichloroethane	25.0	22.9		ug/L		92	73 - 126
1,1,2,2-Tetrachloroethane	25.0	24.1		ug/L		97	76 - 120
1,1,2-Trichloroethane	25.0	23.1		ug/L		92	76 - 122
1,1-Dichloroethane	25.0	22.6		ug/L		91	77 - 120
1,1-Dichloroethene	25.0	21.8		ug/L		87	66 - 127
1,2,3-Trichloropropane	25.0	23.5		ug/L		94	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	22.4		ug/L		90	56 - 134
1,2-Dibromoethane	25.0	24.1		ug/L		97	77 - 120
1,2-Dichlorobenzene	25.0	23.7		ug/L		95	80 - 124

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

Lab Sample ID: LCS 480-518210/5
Matrix: Water
Analysis Batch: 518210

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloroethane	25.0	22.6		ug/L		90	75 - 120
1,2-Dichloropropane	25.0	22.2		ug/L		89	76 - 120
1,4-Dichlorobenzene	25.0	22.8		ug/L		91	80 - 120
2-Butanone (MEK)	125	122		ug/L		98	57 - 140
2-Hexanone	125	121		ug/L		97	65 - 127
4-Methyl-2-pentanone (MIBK)	125	120		ug/L		96	71 - 125
Acetone	125	141		ug/L		113	56 - 142
Acrylonitrile	250	245		ug/L		98	63 - 125
Benzene	25.0	22.3		ug/L		89	71 - 124
Bromodichloromethane	25.0	22.6		ug/L		90	80 - 122
Bromoform	25.0	23.0		ug/L		92	61 - 132
Bromomethane	25.0	23.6		ug/L		94	55 - 144
Carbon disulfide	25.0	21.1		ug/L		84	59 - 134
Carbon tetrachloride	25.0	21.9		ug/L		87	72 - 134
Chlorobenzene	25.0	23.1		ug/L		92	80 - 120
Chlorobromomethane	25.0	23.7		ug/L		95	72 - 130
Chloroethane	25.0	23.7		ug/L		95	69 - 136
Chloroform	25.0	22.5		ug/L		90	73 - 127
Chloromethane	25.0	23.9		ug/L		95	68 - 124
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	74 - 124
cis-1,3-Dichloropropene	25.0	22.3		ug/L		89	74 - 124
Dibromochloromethane	25.0	23.5		ug/L		94	75 - 125
Dibromomethane	25.0	23.2		ug/L		93	76 - 127
Ethylbenzene	25.0	23.0		ug/L		92	77 - 123
Iodomethane	25.0	23.1		ug/L		92	78 - 123
m,p-Xylene	25.0	23.2		ug/L		93	76 - 122
Methylene Chloride	25.0	23.5		ug/L		94	75 - 124
o-Xylene	25.0	24.4		ug/L		97	76 - 122
Styrene	25.0	23.9		ug/L		96	80 - 120
Tetrachloroethene	25.0	23.3		ug/L		93	74 - 122
Toluene	25.0	23.1		ug/L		92	80 - 122
trans-1,2-Dichloroethene	25.0	23.3		ug/L		93	73 - 127
trans-1,3-Dichloropropene	25.0	23.5		ug/L		94	80 - 120
trans-1,4-Dichloro-2-butene	25.0	20.2		ug/L		81	41 - 131
Trichloroethene	25.0	22.0		ug/L		88	74 - 123
Trichlorofluoromethane	25.0	23.8		ug/L		95	62 - 150
Vinyl acetate	50.0	39.4		ug/L		79	50 - 144
Vinyl chloride	25.0	23.2		ug/L		93	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*
Dibromofluoromethane (Surr)	*98*		*75 - 123*
Toluene-d8 (Surr)	*97*		*80 - 120*

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

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518210

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	ND		25.0	27.6		ug/L		111	80 - 120
1,1,1-Trichloroethane	ND		25.0	27.3		ug/L		109	73 - 126
1,1,2,2-Tetrachloroethane	ND		25.0	28.7		ug/L		115	76 - 120
1,1,2-Trichloroethane	ND		25.0	27.8		ug/L		111	76 - 122
1,1-Dichloroethane	ND		25.0	27.0		ug/L		108	77 - 120
1,1-Dichloroethene	ND		25.0	25.8		ug/L		103	66 - 127
1,2,3-Trichloropropane	ND		25.0	28.2		ug/L		113	68 - 122
1,2-Dibromo-3-Chloropropane	ND		25.0	25.2		ug/L		101	56 - 134
1,2-Dibromoethane	ND		25.0	28.6		ug/L		114	77 - 120
1,2-Dichlorobenzene	ND		25.0	27.8		ug/L		111	80 - 124
1,2-Dichloroethane	ND		25.0	27.1		ug/L		108	75 - 120
1,2-Dichloropropane	ND		25.0	27.7		ug/L		111	76 - 120
1,4-Dichlorobenzene	ND		25.0	27.9		ug/L		111	78 - 124
2-Butanone (MEK)	ND		125	151		ug/L		120	57 - 140
2-Hexanone	ND		125	150		ug/L		120	65 - 127
4-Methyl-2-pentanone (MIBK)	ND		125	146		ug/L		117	71 - 125
Acetone	ND		125	139		ug/L		111	56 - 142
Acrylonitrile	ND		250	269		ug/L		108	63 - 125
Benzene	ND		25.0	27.6		ug/L		110	71 - 124
Bromodichloromethane	ND		25.0	26.1		ug/L		105	80 - 122
Bromoform	ND		25.0	24.6		ug/L		98	61 - 132
Bromomethane	ND		25.0	28.9		ug/L		116	55 - 144
Carbon disulfide	ND		25.0	23.1		ug/L		93	59 - 134
Carbon tetrachloride	ND		25.0	26.0		ug/L		104	72 - 134
Chlorobenzene	ND		25.0	29.4		ug/L		118	80 - 120
Chlorobromomethane	ND		25.0	27.4		ug/L		110	72 - 130
Chloroethane	ND		25.0	30.4		ug/L		122	69 - 136
Chloroform	ND		25.0	25.7		ug/L		103	73 - 127
Chloromethane	ND		25.0	28.3		ug/L		113	68 - 124
cis-1,2-Dichloroethene	ND		25.0	27.3		ug/L		109	74 - 124
cis-1,3-Dichloropropene	ND		25.0	26.9		ug/L		108	74 - 124
Dibromochloromethane	ND		25.0	26.1		ug/L		104	75 - 125
Dibromomethane	ND		25.0	27.4		ug/L		109	76 - 127
Ethylbenzene	ND		25.0	28.2		ug/L		113	77 - 123
Iodomethane	ND		25.0	26.6		ug/L		106	78 - 123
m,p-Xylene	ND		25.0	28.4		ug/L		114	76 - 122
Methylene Chloride	ND		25.0	25.7		ug/L		103	75 - 124
o-Xylene	ND		25.0	28.9		ug/L		115	76 - 122
Styrene	ND		25.0	28.7		ug/L		115	80 - 120
Tetrachloroethene	ND		25.0	28.2		ug/L		113	74 - 122
Toluene	ND		25.0	29.0		ug/L		116	80 - 122
trans-1,2-Dichloroethene	ND		25.0	27.0		ug/L		108	73 - 127
trans-1,3-Dichloropropene	ND		25.0	28.1		ug/L		113	80 - 120
trans-1,4-Dichloro-2-butene	ND		25.0	21.5		ug/L		86	41 - 131
Trichloroethene	ND		25.0	27.1		ug/L		108	74 - 123
Trichlorofluoromethane	ND		25.0	28.2		ug/L		113	62 - 150
Vinyl acetate	ND		50.0	45.2		ug/L		90	50 - 144
Vinyl chloride	ND		25.0	28.9		ug/L		115	65 - 133

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

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518210

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*
Dibromofluoromethane (Surr)	*100*		*75 - 123*
Toluene-d8 (Surr)	*103*		*80 - 120*

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518210

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	ND		25.0	27.1		ug/L		109	80 - 120	2	20
1,1,1-Trichloroethane	ND		25.0	26.2		ug/L		105	73 - 126	4	15
1,1,2,2-Tetrachloroethane	ND		25.0	26.1		ug/L		104	76 - 120	9	15
1,1,2-Trichloroethane	ND		25.0	26.5		ug/L		106	76 - 122	5	15
1,1-Dichloroethane	ND		25.0	25.6		ug/L		102	77 - 120	5	20
1,1-Dichloroethene	ND		25.0	24.0		ug/L		96	66 - 127	7	16
1,2,3-Trichloropropane	ND		25.0	25.0		ug/L		100	68 - 122	12	14
1,2-Dibromo-3-Chloropropane	ND		25.0	23.8		ug/L		95	56 - 134	6	15
1,2-Dibromoethane	ND		25.0	27.6		ug/L		110	77 - 120	4	15
1,2-Dichlorobenzene	ND		25.0	25.8		ug/L		103	80 - 124	8	20
1,2-Dichloroethane	ND		25.0	25.6		ug/L		102	75 - 120	6	20
1,2-Dichloropropane	ND		25.0	27.0		ug/L		108	76 - 120	3	20
1,4-Dichlorobenzene	ND		25.0	26.0		ug/L		104	78 - 124	7	20
2-Butanone (MEK)	ND		125	143		ug/L		115	57 - 140	5	20
2-Hexanone	ND		125	144		ug/L		115	65 - 127	4	15
4-Methyl-2-pentanone (MIBK)	ND		125	140		ug/L		112	71 - 125	4	35
Acetone	ND		125	135		ug/L		108	56 - 142	3	15
Acrylonitrile	ND		250	254		ug/L		102	63 - 125	6	20
Benzene	ND		25.0	26.4		ug/L		106	71 - 124	4	13
Bromodichloromethane	ND		25.0	25.1		ug/L		101	80 - 122	4	15
Bromoform	ND		25.0	23.4		ug/L		94	61 - 132	5	15
Bromomethane	ND		25.0	26.6		ug/L		106	55 - 144	8	15
Carbon disulfide	ND		25.0	21.9		ug/L		87	59 - 134	6	15
Carbon tetrachloride	ND		25.0	25.0		ug/L		100	72 - 134	4	15
Chlorobenzene	ND		25.0	28.2		ug/L		113	80 - 120	4	25
Chlorobromomethane	ND		25.0	25.9		ug/L		104	72 - 130	6	15
Chloroethane	ND		25.0	27.5		ug/L		110	69 - 136	10	15
Chloroform	ND		25.0	24.5		ug/L		98	73 - 127	5	20
Chloromethane	ND		25.0	26.5		ug/L		106	68 - 124	6	15
cis-1,2-Dichloroethene	ND		25.0	26.0		ug/L		104	74 - 124	5	15
cis-1,3-Dichloropropene	ND		25.0	25.1		ug/L		100	74 - 124	7	15
Dibromochloromethane	ND		25.0	26.1		ug/L		105	75 - 125	0	15
Dibromomethane	ND		25.0	25.7		ug/L		103	76 - 127	6	15
Ethylbenzene	ND		25.0	27.5		ug/L		110	77 - 123	2	15
Iodomethane	ND		25.0	25.0		ug/L		100	78 - 123	6	20
m,p-Xylene	ND		25.0	27.5		ug/L		110	76 - 122	3	16
Methylene Chloride	ND		25.0	24.8		ug/L		99	75 - 124	4	15
o-Xylene	ND		25.0	27.5		ug/L		110	76 - 122	5	16

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

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518210

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Styrene	ND		25.0	28.1		ug/L		112	80 - 120	2	20
Tetrachloroethene	ND		25.0	27.8		ug/L		111	74 - 122	2	20
Toluene	ND		25.0	27.5		ug/L		110	80 - 122	5	15
trans-1,2-Dichloroethene	ND		25.0	26.2		ug/L		105	73 - 127	3	20
trans-1,3-Dichloropropene	ND		25.0	27.4		ug/L		110	80 - 120	3	15
trans-1,4-Dichloro-2-butene	ND		25.0	20.4		ug/L		82	41 - 131	5	20
Trichloroethene	ND		25.0	26.4		ug/L		105	74 - 123	3	16
Trichlorofluoromethane	ND		25.0	25.5		ug/L		102	62 - 150	10	20
Vinyl acetate	ND		50.0	45.4		ug/L		91	50 - 144	0	23
Vinyl chloride	ND		25.0	26.8		ug/L		107	65 - 133	7	15

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*
Dibromofluoromethane (Surr)	*87*		*75 - 123*
Toluene-d8 (Surr)	*90*		*80 - 120*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-517911/1-A
Matrix: Water
Analysis Batch: 518558

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517911

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:06	02/21/20 20:32	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*02/17/20 15:06*	*02/21/20 20:32*	*1*

Lab Sample ID: LCS 480-517911/2-A
Matrix: Water
Analysis Batch: 518558

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517911

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	1.23	E	ug/L		123	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*31*		*15 - 110*

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518558

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517911

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	ND		1.00	1.21	E	ug/L		121	40 - 140		

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
1,4-Dioxane-d8	*28*		*15 - 110*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution) (Continued)

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518558

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517911

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		1.00	1.25	E	ug/L		125	40 - 140	3	20

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,4-Dioxane-d8	*27*		*15 - 110*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Lab Sample ID: MB 480-517915/1-A
Matrix: Water
Analysis Batch: 518282

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517915

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 15:55	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 15:55	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 15:55	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 15:55	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 15:55	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 15:55	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 15:55	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 15:55	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 15:55	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 15:55	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 15:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*90*		*48 - 120*	*02/17/20 15:13*	*02/19/20 15:55*	*1*
Nitrobenzene-d5	*81*		*46 - 120*	*02/17/20 15:13*	*02/19/20 15:55*	*1*
p-Terphenyl-d14	*84*		*24 - 136*	*02/17/20 15:13*	*02/19/20 15:55*	*1*

Lab Sample ID: LCS 480-517915/2-A
Matrix: Water
Analysis Batch: 518282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517915

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	26.9		ug/L		84	60 - 120
Acenaphthylene	32.0	27.6		ug/L		86	63 - 120
Anthracene	32.0	28.2		ug/L		88	69 - 131
Benzo[a]anthracene	32.0	27.8		ug/L		87	62 - 142
Benzo[a]pyrene	32.0	27.9		ug/L		87	46 - 156
Benzo[b]fluoranthene	32.0	30.4		ug/L		95	50 - 149
Benzo[g,h,i]perylene	32.0	30.1		ug/L		94	34 - 189
Benzo[k]fluoranthene	32.0	28.3		ug/L		88	47 - 147

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Lab Sample ID: LCS 480-517915/2-A
Matrix: Water
Analysis Batch: 518282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517915

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chrysene	32.0	28.1		ug/L		88	69 - 140
Dibenz(a,h)anthracene	32.0	30.0		ug/L		94	35 - 176
Fluoranthene	32.0	30.1		ug/L		94	67 - 133
Fluorene	32.0	28.8		ug/L		90	66 - 129
Indeno[1,2,3-cd]pyrene	32.0	29.6		ug/L		93	57 - 161
Naphthalene	32.0	24.9		ug/L		78	48 - 120
Phenanthrene	32.0	27.4		ug/L		86	67 - 130
Pyrene	32.0	26.8		ug/L		84	58 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*84*		*48 - 120*
Nitrobenzene-d5	*76*		*46 - 120*
p-Terphenyl-d14	*83*		*24 - 136*

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518282

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517915

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		32.0	26.8		ug/L		84	60 - 120
Acenaphthylene	ND		32.0	28.1		ug/L		88	63 - 120
Anthracene	ND		32.0	28.5		ug/L		89	69 - 131
Benzo[a]anthracene	ND		32.0	25.5		ug/L		80	62 - 142
Benzo[a]pyrene	ND		32.0	24.5		ug/L		77	46 - 156
Benzo[b]fluoranthene	ND		32.0	25.4		ug/L		79	50 - 149
Benzo[g,h,i]perylene	ND		32.0	25.2		ug/L		79	34 - 189
Benzo[k]fluoranthene	ND		32.0	25.9		ug/L		81	47 - 147
Chrysene	ND		32.0	25.9		ug/L		81	69 - 140
Dibenz(a,h)anthracene	ND		32.0	25.4		ug/L		79	35 - 176
Fluoranthene	ND		32.0	29.6		ug/L		93	67 - 133
Fluorene	ND		32.0	28.4		ug/L		89	66 - 129
Indeno[1,2,3-cd]pyrene	ND		32.0	25.1		ug/L		78	57 - 161
Naphthalene	ND		32.0	25.1		ug/L		78	48 - 120
Phenanthrene	ND		32.0	27.7		ug/L		86	67 - 130
Pyrene	ND		32.0	26.6		ug/L		83	58 - 136

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl	*86*		*48 - 120*
Nitrobenzene-d5	*79*		*46 - 120*
p-Terphenyl-d14	*65*		*24 - 136*

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518282

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517915

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	ND		32.0	30.0		ug/L		94	60 - 120	11	24
Acenaphthylene	ND		32.0	31.0		ug/L		97	63 - 120	10	18

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518282

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517915

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Anthracene	ND		32.0	30.0		ug/L		94	69 - 131	5	15
Benzo[a]anthracene	ND		32.0	25.4		ug/L		79	62 - 142	1	15
Benzo[a]pyrene	ND		32.0	24.3		ug/L		76	46 - 156	1	15
Benzo[b]fluoranthene	ND		32.0	25.1		ug/L		79	50 - 149	1	15
Benzo[g,h,i]perylene	ND		32.0	24.2		ug/L		76	34 - 189	4	15
Benzo[k]fluoranthene	ND		32.0	25.8		ug/L		81	47 - 147	0	22
Chrysene	ND		32.0	25.9		ug/L		81	69 - 140	0	15
Dibenz(a,h)anthracene	ND		32.0	24.5		ug/L		77	35 - 176	3	15
Fluoranthene	ND		32.0	31.1		ug/L		97	67 - 133	5	15
Fluorene	ND		32.0	31.1		ug/L		97	66 - 129	9	15
Indeno[1,2,3-cd]pyrene	ND		32.0	24.3		ug/L		76	57 - 161	3	15
Naphthalene	ND		32.0	28.4		ug/L		89	48 - 120	12	29
Phenanthrene	ND		32.0	29.5		ug/L		92	67 - 130	7	15
Pyrene	ND		32.0	27.5		ug/L		86	58 - 136	3	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl	*94*		*48 - 120*
Nitrobenzene-d5	*85*		*46 - 120*
p-Terphenyl-d14	*66*		*24 - 136*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 200-152581/1-A
Matrix: Water
Analysis Batch: 152591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152581

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		20	2.9	ng/L		02/20/20 10:57	02/20/20 22:40	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		20	5.5	ng/L		02/20/20 10:57	02/20/20 22:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.5	ng/L		02/20/20 10:57	02/20/20 22:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	1.7	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.49	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorobutanoic acid (PFBA)	1.41	J	2.0	1.0	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.90	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.77	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.95	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.91	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.80	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.76	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorononanoic acid (PFNA)	0.322	J	2.0	0.27	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorooctanesulfonamide (PFOSA)	ND		10	10	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.61	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.81	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.63	ng/L		02/20/20 10:57	02/20/20 22:40	1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 200-152581/1-A
Matrix: Water
Analysis Batch: 152591

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152581

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.92	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.60	ng/L		02/20/20 10:57	02/20/20 22:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.78	ng/L		02/20/20 10:57	02/20/20 22:40	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*97*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C2 PFDoA	*82*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C2 PFHxA	*98*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C2 PFUnA	*89*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C2 PFTeDA	*87*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C3 PFBS	*102*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C4 PFBA	*105*		*25 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C4 PFOA	*96*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C4 PFOS	*98*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C4 PFHpA	*97*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C5 PFNA	*96*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C5 PFPeA	*108*		*25 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
13C8 FOSA	*86*		*25 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
18O2 PFHxS	*100*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
d3-NMeFOSAA	*114*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
d5-NEtFOSAA	*105*		*50 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
M2-6:2 FTS	*101*		*25 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*
M2-8:2 FTS	*117*		*25 - 150*	*02/20/20 10:57*	*02/20/20 22:40*	*1*

Lab Sample ID: LCS 200-152581/2-A
Matrix: Water
Analysis Batch: 152591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152581

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	38.3	27.5		ng/L		72	50 - 150
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	37.9	31.3		ng/L		83	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.0		ng/L		92	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.8		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	34.6		ng/L		98	70 - 130
Perfluorobutanoic acid (PFBA)	40.0	35.9		ng/L		90	50 - 150
Perfluorodecanesulfonic acid (PFDS)	38.6	36.1		ng/L		94	50 - 150
Perfluorodecanoic acid (PFDA)	40.0	37.7		ng/L		94	70 - 130
Perfluorododecanoic acid (PFDoA)	40.0	42.0		ng/L		105	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.6		ng/L		101	50 - 150
Perfluoroheptanoic acid (PFHpA)	40.0	35.1		ng/L		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	30.2		ng/L		83	70 - 130
Perfluorohexanoic acid (PFHxA)	40.0	34.2		ng/L		86	70 - 130

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 200-152581/2-A
Matrix: Water
Analysis Batch: 152591

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152581

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	31.6		ng/L		79	70 - 130
Perfluorooctanesulfonamide (PFOSA)	40.0	34.7		ng/L		87	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	36.9		ng/L		99	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	41.8		ng/L		105	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	34.8		ng/L		87	50 - 150
Perfluorotetradecanoic acid (PFTeA)	40.0	44.6		ng/L		112	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	36.8		ng/L		92	70 - 130
Perfluoroundecanoic acid (PFUnA)	40.0	34.9		ng/L		87	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFDA	*99*		*50 - 150*
13C2 PFDoA	*87*		*50 - 150*
13C2 PFHxA	*103*		*50 - 150*
13C2 PFUnA	*93*		*50 - 150*
13C2 PFTeDA	*98*		*50 - 150*
13C3 PFBS	*101*		*50 - 150*
13C4 PFBA	*110*		*25 - 150*
13C4 PFOA	*96*		*50 - 150*
13C4 PFOS	*105*		*50 - 150*
13C4 PFHpA	*104*		*50 - 150*
13C5 PFNA	*101*		*50 - 150*
13C5 PFPeA	*105*		*25 - 150*
13C8 FOSA	*95*		*25 - 150*
18O2 PFHxS	*111*		*50 - 150*
d3-NMeFOSAA	*129*		*50 - 150*
d5-NEtFOSAA	*114*		*50 - 150*
M2-6:2 FTS	*107*		*25 - 150*
M2-8:2 FTS	*118*		*25 - 150*

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 152591

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 152581

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		33.4	29.2		ng/L		87	40 - 160
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		33.1	27.8		ng/L		84	40 - 160
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.5	J	34.9	35.3		ng/L		97	40 - 160
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		34.9	40.9		ng/L		117	40 - 160
Perfluorobutanesulfonic acid (PFBS)	1.3	J	30.9	31.5		ng/L		98	40 - 160
Perfluorobutanoic acid (PFBA)	1.9	B	34.9	34.6		ng/L		94	40 - 160
Perfluorodecanesulfonic acid (PFDS)	ND		33.6	33.9		ng/L		101	40 - 160

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 152591

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 152581

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	ND		34.9	34.3		ng/L		98	40 - 160
Perfluorododecanoic acid (PFDoA)	ND		34.9	35.7		ng/L		102	40 - 160
Perfluoroheptanesulfonic Acid (PFHpS)	2.4		33.2	36.7		ng/L		103	40 - 160
Perfluoroheptanoic acid (PFHpA)	1.8		34.9	31.8		ng/L		86	40 - 160
Perfluorohexanesulfonic acid (PFHxS)	6.3		31.8	35.5		ng/L		92	40 - 160
Perfluorohexanoic acid (PFHxA)	1.6	J	34.9	33.5		ng/L		91	40 - 160
Perfluorononanoic acid (PFNA)	1.0	J B	34.9	31.7		ng/L		88	40 - 160
Perfluorooctanesulfonamide (PFOSA)	ND		34.9	33.3		ng/L		95	40 - 160
Perfluorooctanesulfonic acid (PFOS)	120		32.4	170		ng/L		151	40 - 160
Perfluorooctanoic acid (PFOA)	20		34.9	58.9		ng/L		110	40 - 160
Perfluoropentanoic acid (PFPeA)	ND		34.9	31.2		ng/L		89	40 - 160
Perfluorotetradecanoic acid (PFTeA)	ND		34.9	40.0		ng/L		115	40 - 160
Perfluorotridecanoic acid (PFTriA)	ND		34.9	31.6		ng/L		90	40 - 160
Perfluoroundecanoic acid (PFUnA)	ND		34.9	34.5		ng/L		99	40 - 160

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C2 PFDA	*101*		*50 - 150*
13C2 PFDoA	*94*		*50 - 150*
13C2 PFHxA	*91*		*50 - 150*
13C2 PFUnA	*102*		*50 - 150*
13C2 PFTeDA	*97*		*50 - 150*
13C3 PFBS	*100*		*50 - 150*
13C4 PFBA	*86*		*25 - 150*
13C4 PFOA	*94*		*50 - 150*
13C4 PFOS	*108*		*50 - 150*
13C4 PFHpA	*102*		*50 - 150*
13C5 PFNA	*99*		*50 - 150*
13C5 PFPeA	*104*		*25 - 150*
13C8 FOSA	*91*		*25 - 150*
18O2 PFHxS	*103*		*50 - 150*
d3-NMeFOSAA	*109*		*50 - 150*
d5-NEtFOSAA	*118*		*50 - 150*
M2-6:2 FTS	*124*		*25 - 150*
M2-8:2 FTS	*119*		*25 - 150*

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 152591

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 152581

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		34.0	26.9		ng/L		79	40 - 160	8	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 152591

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 152581

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		33.7	26.6		ng/L		79	40 - 160	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.5	J	35.5	38.1		ng/L		103	40 - 160	7	20
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		35.5	40.2		ng/L		113	40 - 160	2	20
Perfluorobutanesulfonic acid (PFBS)	1.3	J	31.4	31.6		ng/L		96	40 - 160	0	20
Perfluorobutanoic acid (PFBA)	1.9	B	35.5	34.8		ng/L		93	40 - 160	1	30
Perfluorodecanesulfonic acid (PFDS)	ND		34.2	29.4		ng/L		86	40 - 160	14	30
Perfluorodecanoic acid (PFDA)	ND		35.5	32.5		ng/L		92	40 - 160	5	20
Perfluorododecanoic acid (PFDoA)	ND		35.5	33.1		ng/L		93	40 - 160	7	20
Perfluoroheptanesulfonic Acid (PFHpS)	2.4		33.8	34.7		ng/L		96	40 - 160	6	30
Perfluoroheptanoic acid (PFHpA)	1.8		35.5	36.0		ng/L		96	40 - 160	12	20
Perfluorohexanesulfonic acid (PFHxS)	6.3		32.3	35.9		ng/L		92	40 - 160	1	20
Perfluorohexanoic acid (PFHxA)	1.6	J	35.5	36.4		ng/L		98	40 - 160	8	20
Perfluorononanoic acid (PFNA)	1.0	J B	35.5	31.6		ng/L		86	40 - 160	0	20
Perfluorooctanesulfonamide (PFOSA)	ND		35.5	33.6		ng/L		94	40 - 160	1	30
Perfluorooctanesulfonic acid (PFOS)	120		33.0	147		ng/L		79	40 - 160	15	20
Perfluorooctanoic acid (PFOA)	20		35.5	56.7		ng/L		102	40 - 160	4	20
Perfluoropentanoic acid (PFPeA)	ND		35.5	30.8		ng/L		87	40 - 160	2	30
Perfluorotetradecanoic acid (PFTeA)	ND		35.5	40.6		ng/L		114	40 - 160	1	20
Perfluorotridecanoic acid (PFTriA)	ND		35.5	32.5		ng/L		92	40 - 160	3	20
Perfluoroundecanoic acid (PFUnA)	ND		35.5	34.5		ng/L		97	40 - 160	0	20

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C2 PFDA	*110*		*50 - 150*
13C2 PFDoA	*106*		*50 - 150*
13C2 PFHxA	*94*		*50 - 150*
13C2 PFUnA	*103*		*50 - 150*
13C2 PFTeDA	*104*		*50 - 150*
13C3 PFBS	*107*		*50 - 150*
13C4 PFBA	*88*		*25 - 150*
13C4 PFOA	*104*		*50 - 150*
13C4 PFOS	*114*		*50 - 150*
13C4 PFHpA	*102*		*50 - 150*
13C5 PFNA	*104*		*50 - 150*
13C5 PFPeA	*106*		*25 - 150*
13C8 FOSA	*101*		*25 - 150*
18O2 PFHxS	*109*		*50 - 150*
d3-NMeFOSAA	*111*		*50 - 150*
d5-NEtFOSAA	*108*		*50 - 150*
M2-6:2 FTS	*140*		*25 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 152591

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 152581

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
M2-8:2 FTS	138		25 - 150

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-517772/1-A
Matrix: Water
Analysis Batch: 518190

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517772

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/18/20 15:27	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/18/20 15:27	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/18/20 15:27	1
Barium	ND		0.0020	0.00070	mg/L		02/17/20 08:25	02/18/20 15:27	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/18/20 15:27	1
Boron	ND		0.020	0.0040	mg/L		02/17/20 08:25	02/18/20 15:27	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/18/20 15:27	1
Calcium	ND		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:27	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/18/20 15:27	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/18/20 15:27	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/18/20 15:27	1
Iron	ND		0.050	0.019	mg/L		02/17/20 08:25	02/18/20 15:27	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/18/20 15:27	1
Magnesium	ND		0.20	0.043	mg/L		02/17/20 08:25	02/18/20 15:27	1
Manganese	0.00114	J	0.0030	0.00040	mg/L		02/17/20 08:25	02/18/20 15:27	1
Nickel	ND		0.010	0.0013	mg/L		02/17/20 08:25	02/18/20 15:27	1
Potassium	ND		0.50	0.10	mg/L		02/17/20 08:25	02/18/20 15:27	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 15:27	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/18/20 15:27	1
Sodium	ND		1.0	0.32	mg/L		02/17/20 08:25	02/18/20 15:27	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/18/20 15:27	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/18/20 15:27	1
Zinc	ND		0.010	0.0015	mg/L		02/17/20 08:25	02/18/20 15:27	1

Lab Sample ID: LCS 480-517772/2-A
Matrix: Water
Analysis Batch: 518190

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10.0	9.63		mg/L		96	80 - 120
Antimony	0.200	0.221		mg/L		111	80 - 120
Arsenic	0.200	0.199		mg/L		99	80 - 120
Barium	0.200	0.199		mg/L		99	80 - 120
Beryllium	0.200	0.209		mg/L		105	80 - 120
Boron	0.200	0.193		mg/L		97	80 - 120
Cadmium	0.200	0.202		mg/L		101	80 - 120
Calcium	10.0	10.01		mg/L		100	80 - 120
Chromium	0.200	0.191		mg/L		95	80 - 120
Cobalt	0.200	0.187		mg/L		93	80 - 120
Copper	0.200	0.192		mg/L		96	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-517772/2-A
Matrix: Water
Analysis Batch: 518190

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	9.78		mg/L		98	80 - 120
Lead	0.200	0.188		mg/L		94	80 - 120
Magnesium	10.0	9.64		mg/L		96	80 - 120
Manganese	0.200	0.197		mg/L		98	80 - 120
Nickel	0.200	0.190		mg/L		95	80 - 120
Potassium	10.0	9.68		mg/L		97	80 - 120
Selenium	0.200	0.200		mg/L		100	80 - 120
Silver	0.0500	0.0468		mg/L		94	80 - 120
Sodium	10.0	9.54		mg/L		95	80 - 120
Thallium	0.200	0.197		mg/L		98	80 - 120
Vanadium	0.200	0.195		mg/L		97	80 - 120
Zinc	0.200	0.200		mg/L		100	80 - 120

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518190

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517772

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	0.085	J	10.0	9.28		mg/L		92	75 - 125
Antimony	ND		0.200	0.215		mg/L		108	75 - 125
Arsenic	ND		0.200	0.197		mg/L		99	75 - 125
Barium	0.19		0.200	0.387		mg/L		100	75 - 125
Beryllium	ND		0.200	0.202		mg/L		101	75 - 125
Boron	0.037		0.200	0.226		mg/L		95	75 - 125
Cadmium	ND		0.200	0.198		mg/L		99	75 - 125
Calcium	51.1		10.0	60.89	4	mg/L		97	75 - 125
Chromium	ND		0.200	0.188		mg/L		94	75 - 125
Cobalt	0.0017	J	0.200	0.186		mg/L		92	75 - 125
Copper	0.0059	J	0.200	0.196		mg/L		95	75 - 125
Iron	15.4		10.0	24.94		mg/L		95	75 - 125
Lead	0.0069	J	0.200	0.192		mg/L		93	75 - 125
Magnesium	5.4		10.0	14.74		mg/L		93	75 - 125
Manganese	0.38	B	0.200	0.573		mg/L		95	75 - 125
Nickel	0.0089	J	0.200	0.195		mg/L		93	75 - 125
Potassium	0.85		10.0	10.29		mg/L		94	75 - 125
Selenium	ND		0.200	0.196		mg/L		98	75 - 125
Silver	ND		0.0500	0.0468		mg/L		94	75 - 125
Sodium	22.9		10.0	32.14		mg/L		92	75 - 125
Thallium	ND		0.200	0.192		mg/L		96	75 - 125
Vanadium	ND		0.200	0.190		mg/L		95	75 - 125
Zinc	0.020		0.200	0.210		mg/L		95	75 - 125

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518190

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517772

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	0.085	J	10.0	9.29		mg/L		92	75 - 125	0	20
Antimony	ND		0.200	0.213		mg/L		107	75 - 125	1	20

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518190

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517772

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		0.200	0.195		mg/L		98	75 - 125	1	20
Barium	0.19		0.200	0.391		mg/L		102	75 - 125	1	20
Beryllium	ND		0.200	0.199		mg/L		100	75 - 125	1	20
Boron	0.037		0.200	0.226		mg/L		95	75 - 125	0	20
Cadmium	ND		0.200	0.197		mg/L		98	75 - 125	1	20
Calcium	51.1		10.0	61.09	4	mg/L		99	75 - 125	0	20
Chromium	ND		0.200	0.189		mg/L		95	75 - 125	0	20
Cobalt	0.0017	J	0.200	0.186		mg/L		92	75 - 125	0	20
Copper	0.0059	J	0.200	0.198		mg/L		96	75 - 125	1	20
Iron	15.4		10.0	25.15		mg/L		97	75 - 125	1	20
Lead	0.0069	J	0.200	0.192		mg/L		93	75 - 125	0	20
Magnesium	5.4		10.0	14.73		mg/L		93	75 - 125	0	20
Manganese	0.38	B	0.200	0.574		mg/L		95	75 - 125	0	20
Nickel	0.0089	J	0.200	0.195		mg/L		93	75 - 125	0	20
Potassium	0.85		10.0	10.32		mg/L		95	75 - 125	0	20
Selenium	ND		0.200	0.192		mg/L		96	75 - 125	2	20
Silver	ND		0.0500	0.0483		mg/L		97	75 - 125	3	20
Sodium	22.9		10.0	32.72		mg/L		98	75 - 125	2	20
Thallium	ND		0.200	0.191		mg/L		96	75 - 125	0	20
Vanadium	ND		0.200	0.190		mg/L		95	75 - 125	0	20
Zinc	0.020		0.200	0.210		mg/L		95	75 - 125	0	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-517829/1-A
Matrix: Water
Analysis Batch: 517931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517829

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:03	1

Lab Sample ID: LCS 480-517829/2-A
Matrix: Water
Analysis Batch: 517931

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517829

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00667	0.00705		mg/L		106	80 - 120		

Lab Sample ID: MB 480-517831/1-A
Matrix: Water
Analysis Batch: 517931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517831

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:41	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 480-517831/2-A
Matrix: Water
Analysis Batch: 517931

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517831

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00667	0.00705		mg/L		106	80 - 120		

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 517931

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517831

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00667	0.00692		mg/L		104	80 - 120		

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 517931

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA
Prep Batch: 517831

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00667	0.00693		mg/L		104	80 - 120	0	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-517943/4
Matrix: Water
Analysis Batch: 517943

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.20	0.073	mg/L			02/17/20 20:51	1
Chloride	0.291	J	0.50	0.28	mg/L			02/17/20 20:51	1
Sulfate	0.435	J	2.0	0.35	mg/L			02/17/20 20:51	1

Lab Sample ID: LCS 480-517943/3
Matrix: Water
Analysis Batch: 517943

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide			5.00	5.39		mg/L		108	90 - 110		
Chloride			50.0	53.38		mg/L		107	90 - 110		
Sulfate			50.0	51.53		mg/L		103	90 - 110		

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 517943

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Bromide	ND		10.0	10.21		mg/L		102	80 - 120		
Chloride	43.2	B	100	143.2		mg/L		100	81 - 120		
Sulfate	1.8	J B	100	100.7		mg/L		99	80 - 120		

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-166390-7 MSD — **Client Sample ID: 5-SAR-001-004-06**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 517943

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromide	ND		10.0	10.21		mg/L		102	80 - 120	0	15
Chloride	43.2	B	100	143.4		mg/L		100	81 - 120	0	15
Sulfate	1.8	J B	100	101.2		mg/L		99	80 - 120	0	15

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-518434/101 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 518434

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0347		0.020	0.0090	mg/L			02/19/20 17:20	1

Lab Sample ID: MB 480-518434/129 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 518434

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0234		0.020	0.0090	mg/L			02/19/20 18:34	1

Lab Sample ID: LCS 480-518434/102 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 518434

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.07		mg/L		107	90 - 110

Lab Sample ID: LCS 480-518434/130 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 518434

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.07		mg/L		107	90 - 110

Lab Sample ID: 480-166390-7 MS — **Client Sample ID: 5-SAR-001-004-06**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 518434

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	0.99	F1 B ^	0.200	1.19	4	mg/L		102	90 - 110

Lab Sample ID: 480-166390-7 MSD — **Client Sample ID: 5-SAR-001-004-06**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 518434

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ammonia	0.99	F1 B ^	0.200	1.20	4	mg/L		107	90 - 110	1	20

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: 480-166390-9 MS
Matrix: Water
Analysis Batch: 518434

Client Sample ID: 5-SAR-001-004-09
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	0.25	F1 B ^	0.200	0.468		mg/L		107	90 - 110

Lab Sample ID: MB 480-518798/51
Matrix: Water
Analysis Batch: 518798

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0167	J	0.020	0.0090	mg/L			02/24/20 12:20	1

Lab Sample ID: MB 480-518798/75
Matrix: Water
Analysis Batch: 518798

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0166	J	0.020	0.0090	mg/L			02/24/20 12:40	1

Lab Sample ID: LCS 480-518798/52
Matrix: Water
Analysis Batch: 518798

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.947		mg/L		95	90 - 110

Lab Sample ID: LCS 480-518798/76
Matrix: Water
Analysis Batch: 518798

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.940		mg/L		94	90 - 110

Lab Sample ID: 480-166390-5 MS
Matrix: Water
Analysis Batch: 518798

Client Sample ID: 5-SAR-001-004-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	6.1	B	1.00	5.95	4	mg/L		-15	90 - 110

Method: 410.4 - COD

Lab Sample ID: MB 480-518483/28
Matrix: Water
Analysis Batch: 518483

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0	5.0	mg/L			02/19/20 16:51	1

Method: 410.4 - COD (Continued)

Lab Sample ID: MB 480-518483/4
Matrix: Water
Analysis Batch: 518483

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0	5.0	mg/L			02/19/20 16:51	1

Lab Sample ID: MB 480-518483/52
Matrix: Water
Analysis Batch: 518483

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0	5.0	mg/L			02/19/20 16:51	1

Lab Sample ID: LCS 480-518483/29
Matrix: Water
Analysis Batch: 518483

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	25.0	26.21		mg/L		105	90 - 110

Lab Sample ID: LCS 480-518483/5
Matrix: Water
Analysis Batch: 518483

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	25.0	25.41		mg/L		102	90 - 110

Lab Sample ID: LCS 480-518483/53
Matrix: Water
Analysis Batch: 518483

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	25.0	24.87		mg/L		99	90 - 110

Lab Sample ID: 480-166390-5 MS
Matrix: Water
Analysis Batch: 518483

Client Sample ID: 5-SAR-001-004-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	44.5		50.0	87.75		mg/L		87	75 - 125

Lab Sample ID: 480-166390-5 MSD
Matrix: Water
Analysis Batch: 518483

Client Sample ID: 5-SAR-001-004-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	44.5		50.0	81.84		mg/L		75	75 - 125	7	20

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518483

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	27.0		50.0	72.86		mg/L		92	75 - 125

Method: 410.4 - COD

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518483

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	27.0		50.0	73.40		mg/L		93	75 - 125	1	20

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

Lab Sample ID: MB 480-518085/27
Matrix: Water
Analysis Batch: 518085

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.43	mg/L			02/16/20 07:10	1

Lab Sample ID: MB 480-518085/51
Matrix: Water
Analysis Batch: 518085

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.43	mg/L			02/16/20 19:12	1

Lab Sample ID: LCS 480-518085/28
Matrix: Water
Analysis Batch: 518085

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	60.0	56.34		mg/L		94	90 - 110

Lab Sample ID: LCS 480-518085/52
Matrix: Water
Analysis Batch: 518085

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	60.0	56.67		mg/L		94	90 - 110

Lab Sample ID: 480-166390-1 MS
Matrix: Water
Analysis Batch: 518085

Client Sample ID: 5-SAR-001-004-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	3.7		23.3	26.33		mg/L		97	54 - 131

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518085

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	5.7		23.3	30.37		mg/L		106	54 - 131

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

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518085

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	5.7		23.3	31.47		mg/L		111	54 - 131	4	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-517961/30
Matrix: Water
Analysis Batch: 517961

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	ND		5.0	0.79	mg/L			02/17/20 18:58	1

Lab Sample ID: MB 480-517961/7
Matrix: Water
Analysis Batch: 517961

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	ND		5.0	0.79	mg/L			02/17/20 16:39	1

Lab Sample ID: LCS 480-517961/31
Matrix: Water
Analysis Batch: 517961

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity, Total	100	91.67		mg/L		92	90 - 110

Lab Sample ID: LCS 480-517961/8
Matrix: Water
Analysis Batch: 517961

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity, Total	100	93.81		mg/L		94	90 - 110

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 517961

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity, Total	158		100	234.4		mg/L		76	60 - 140

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 517961

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Alkalinity, Total	158		100	234.9		mg/L		77	60 - 140	0	20

Method: SM 2340C - Hardness, Total (mg/l as CaC03)

Lab Sample ID: MB 480-518958/3
Matrix: Water
Analysis Batch: 518958

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total hardness as CaCO3	ND		2.0	0.53	mg/L			02/25/20 11:07	1

Lab Sample ID: LCS 480-518958/4
Matrix: Water
Analysis Batch: 518958

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total hardness as CaCO3			272	276.0		mg/L		101	90 - 110		

Lab Sample ID: 480-166390-7 MS
Matrix: Water
Analysis Batch: 518958

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total hardness as CaCO3	160		200	364.0		mg/L		102	74 - 130		

Lab Sample ID: 480-166390-7 MSD
Matrix: Water
Analysis Batch: 518958

Client Sample ID: 5-SAR-001-004-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total hardness as CaCO3	160		200	364.0		mg/L		102	74 - 130	0	15

Lab Sample ID: 480-166390-3 DU
Matrix: Water
Analysis Batch: 518958

Client Sample ID: 5-SAR-001-004-03
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total hardness as CaCO3	288			288.0		mg/L				0	15

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 480-518100/1
Matrix: Water
Analysis Batch: 518100

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0	4.0	mg/L			02/18/20 14:04	1

Lab Sample ID: LCS 480-518100/2
Matrix: Water
Analysis Batch: 518100

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			501	463.0		mg/L		92	85 - 115		

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: MB 480-518132/1
Matrix: Water
Analysis Batch: 518132

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0	4.0	mg/L			02/18/20 15:40	1

Lab Sample ID: LCS 480-518132/2
Matrix: Water
Analysis Batch: 518132

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	501	482.0		mg/L		96	85 - 115

GC/MS VOA

Analysis Batch: 518207

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-14	5-SAR-001-004-14	Total/NA	Water	8260C	
MB 480-518207/7	Method Blank	Total/NA	Water	8260C	
LCS 480-518207/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 518210

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	8260C	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	8260C	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	8260C	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	8260C	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	8260C	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	8260C	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	8260C	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	8260C	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	8260C	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	8260C	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	8260C	
MB 480-518210/7	Method Blank	Total/NA	Water	8260C	
LCS 480-518210/5	Lab Control Sample	Total/NA	Water	8260C	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	8260C	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	8260C	

GC/MS Semi VOA

Prep Batch: 517911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	3510C	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	3510C	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	3510C	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	3510C	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	3510C	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	3510C	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	3510C	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	3510C	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	3510C	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	3510C	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	3510C	
MB 480-517911/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-517911/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	3510C	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	3510C	

Prep Batch: 517915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	3510C	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	3510C	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	3510C	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	3510C	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	3510C	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	3510C	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	3510C	

GC/MS Semi VOA (Continued)

Prep Batch: 517915 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-9	5-SAR-001-004-09	Total/NA	Water	3510C	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	3510C	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	3510C	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	3510C	
MB 480-517915/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-517915/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	3510C	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	3510C	

Analysis Batch: 518282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	8270D_LL_PAH	517915
480-166390-2	5-SAR-001-004-02	Total/NA	Water	8270D_LL_PAH	517915
480-166390-3	5-SAR-001-004-03	Total/NA	Water	8270D_LL_PAH	517915
480-166390-4	5-SAR-001-004-04	Total/NA	Water	8270D_LL_PAH	517915
480-166390-5	5-SAR-001-004-05	Total/NA	Water	8270D_LL_PAH	517915
480-166390-7	5-SAR-001-004-06	Total/NA	Water	8270D_LL_PAH	517915
480-166390-8	5-SAR-001-004-08	Total/NA	Water	8270D_LL_PAH	517915
480-166390-9	5-SAR-001-004-09	Total/NA	Water	8270D_LL_PAH	517915
480-166390-10	5-SAR-001-004-10	Total/NA	Water	8270D_LL_PAH	517915
480-166390-12	5-SAR-001-004-12	Total/NA	Water	8270D_LL_PAH	517915
MB 480-517915/1-A	Method Blank	Total/NA	Water	8270D_LL_PAH	517915
LCS 480-517915/2-A	Lab Control Sample	Total/NA	Water	8270D_LL_PAH	517915
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	8270D_LL_PAH	517915
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	8270D_LL_PAH	517915

Analysis Batch: 518425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-11	5-SAR-001-004-11	Total/NA	Water	8270D_LL_PAH	517915

Analysis Batch: 518558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	8270D SIM ID	517911
480-166390-7	5-SAR-001-004-06	Total/NA	Water	8270D SIM ID	517911
MB 480-517911/1-A	Method Blank	Total/NA	Water	8270D SIM ID	517911
LCS 480-517911/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	517911
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	8270D SIM ID	517911
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	8270D SIM ID	517911

Analysis Batch: 518896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-2	5-SAR-001-004-02	Total/NA	Water	8270D SIM ID	517911
480-166390-3	5-SAR-001-004-03	Total/NA	Water	8270D SIM ID	517911
480-166390-5	5-SAR-001-004-05	Total/NA	Water	8270D SIM ID	517911
480-166390-8	5-SAR-001-004-08	Total/NA	Water	8270D SIM ID	517911
480-166390-9	5-SAR-001-004-09	Total/NA	Water	8270D SIM ID	517911
480-166390-10	5-SAR-001-004-10	Total/NA	Water	8270D SIM ID	517911
480-166390-11	5-SAR-001-004-11	Total/NA	Water	8270D SIM ID	517911
480-166390-12	5-SAR-001-004-12	Total/NA	Water	8270D SIM ID	517911

GC/MS Semi VOA

Analysis Batch: 519094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-4	5-SAR-001-004-04	Total/NA	Water	8270D SIM ID	517911

LCMS

Prep Batch: 152581

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	3535	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	3535	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	3535	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	3535	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	3535	
480-166390-6	5-SAR-001-004-07	Total/NA	Water	3535	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	3535	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	3535	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	3535	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	3535	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	3535	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	3535	
480-166390-13	5-SAR-001-004-13	Total/NA	Water	3535	
MB 200-152581/1-A	Method Blank	Total/NA	Water	3535	
LCS 200-152581/2-A	Lab Control Sample	Total/NA	Water	3535	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	3535	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	3535	

Analysis Batch: 152591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	537 (modified)	152581
480-166390-2	5-SAR-001-004-02	Total/NA	Water	537 (modified)	152581
480-166390-3	5-SAR-001-004-03	Total/NA	Water	537 (modified)	152581
480-166390-4	5-SAR-001-004-04	Total/NA	Water	537 (modified)	152581
480-166390-5	5-SAR-001-004-05	Total/NA	Water	537 (modified)	152581
480-166390-6	5-SAR-001-004-07	Total/NA	Water	537 (modified)	152581
480-166390-7	5-SAR-001-004-06	Total/NA	Water	537 (modified)	152581
480-166390-8	5-SAR-001-004-08	Total/NA	Water	537 (modified)	152581
480-166390-9	5-SAR-001-004-09	Total/NA	Water	537 (modified)	152581
480-166390-10	5-SAR-001-004-10	Total/NA	Water	537 (modified)	152581
480-166390-11	5-SAR-001-004-11	Total/NA	Water	537 (modified)	152581
480-166390-12	5-SAR-001-004-12	Total/NA	Water	537 (modified)	152581
480-166390-13	5-SAR-001-004-13	Total/NA	Water	537 (modified)	152581
MB 200-152581/1-A	Method Blank	Total/NA	Water	537 (modified)	152581
LCS 200-152581/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	152581
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	537 (modified)	152581
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	537 (modified)	152581

Metals

Prep Batch: 517772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	3005A	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	3005A	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	3005A	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	3005A	

Metals (Continued)

Prep Batch: 517772 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-5	5-SAR-001-004-05	Total/NA	Water	3005A	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	3005A	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	3005A	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	3005A	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	3005A	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	3005A	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	3005A	
MB 480-517772/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-517772/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	3005A	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	3005A	

Prep Batch: 517829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	7470A	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	7470A	
MB 480-517829/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-517829/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 517831

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-3	5-SAR-001-004-03	Total/NA	Water	7470A	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	7470A	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	7470A	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	7470A	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	7470A	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	7470A	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	7470A	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	7470A	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	7470A	
MB 480-517831/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-517831/2-A	Lab Control Sample	Total/NA	Water	7470A	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	7470A	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	7470A	

Analysis Batch: 517931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	7470A	517829
480-166390-2	5-SAR-001-004-02	Total/NA	Water	7470A	517829
480-166390-3	5-SAR-001-004-03	Total/NA	Water	7470A	517831
480-166390-4	5-SAR-001-004-04	Total/NA	Water	7470A	517831
480-166390-5	5-SAR-001-004-05	Total/NA	Water	7470A	517831
480-166390-7	5-SAR-001-004-06	Total/NA	Water	7470A	517831
480-166390-8	5-SAR-001-004-08	Total/NA	Water	7470A	517831
480-166390-9	5-SAR-001-004-09	Total/NA	Water	7470A	517831
480-166390-10	5-SAR-001-004-10	Total/NA	Water	7470A	517831
480-166390-11	5-SAR-001-004-11	Total/NA	Water	7470A	517831
480-166390-12	5-SAR-001-004-12	Total/NA	Water	7470A	517831
MB 480-517829/1-A	Method Blank	Total/NA	Water	7470A	517829
MB 480-517831/1-A	Method Blank	Total/NA	Water	7470A	517831
LCS 480-517829/2-A	Lab Control Sample	Total/NA	Water	7470A	517829

Metals (Continued)

Analysis Batch: 517931 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-517831/2-A	Lab Control Sample	Total/NA	Water	7470A	517831
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	7470A	517831
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	7470A	517831

Analysis Batch: 518190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	6010C	517772
480-166390-2	5-SAR-001-004-02	Total/NA	Water	6010C	517772
480-166390-3	5-SAR-001-004-03	Total/NA	Water	6010C	517772
480-166390-4	5-SAR-001-004-04	Total/NA	Water	6010C	517772
480-166390-5	5-SAR-001-004-05	Total/NA	Water	6010C	517772
480-166390-7	5-SAR-001-004-06	Total/NA	Water	6010C	517772
480-166390-8	5-SAR-001-004-08	Total/NA	Water	6010C	517772
480-166390-9	5-SAR-001-004-09	Total/NA	Water	6010C	517772
480-166390-10	5-SAR-001-004-10	Total/NA	Water	6010C	517772
480-166390-11	5-SAR-001-004-11	Total/NA	Water	6010C	517772
480-166390-12	5-SAR-001-004-12	Total/NA	Water	6010C	517772
MB 480-517772/1-A	Method Blank	Total/NA	Water	6010C	517772
LCS 480-517772/2-A	Lab Control Sample	Total/NA	Water	6010C	517772
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	6010C	517772
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	6010C	517772

General Chemistry

Analysis Batch: 517943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	300.0	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	300.0	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	300.0	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	300.0	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	300.0	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	300.0	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	300.0	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	300.0	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	300.0	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	300.0	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	300.0	
MB 480-517943/4	Method Blank	Total/NA	Water	300.0	
LCS 480-517943/3	Lab Control Sample	Total/NA	Water	300.0	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	300.0	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	300.0	

Analysis Batch: 517961

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	SM 2320B	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	SM 2320B	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	SM 2320B	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	SM 2320B	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	SM 2320B	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	SM 2320B	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Analysis Batch: 517961 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-9	5-SAR-001-004-09	Total/NA	Water	SM 2320B	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	SM 2320B	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	SM 2320B	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	SM 2320B	
MB 480-517961/30	Method Blank	Total/NA	Water	SM 2320B	
MB 480-517961/7	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-517961/31	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 480-517961/8	Lab Control Sample	Total/NA	Water	SM 2320B	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	SM 2320B	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	SM 2320B	

Analysis Batch: 518085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	9060A	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	9060A	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	9060A	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	9060A	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	9060A	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	9060A	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	9060A	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	9060A	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	9060A	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	9060A	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	9060A	
MB 480-518085/27	Method Blank	Total/NA	Water	9060A	
MB 480-518085/51	Method Blank	Total/NA	Water	9060A	
LCS 480-518085/28	Lab Control Sample	Total/NA	Water	9060A	
LCS 480-518085/52	Lab Control Sample	Total/NA	Water	9060A	
480-166390-1 MS	5-SAR-001-004-01	Total/NA	Water	9060A	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	9060A	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	9060A	

Analysis Batch: 518100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-4	5-SAR-001-004-04	Total/NA	Water	SM 2540C	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	SM 2540C	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	SM 2540C	
MB 480-518100/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-518100/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 518132

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	SM 2540C	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	SM 2540C	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	SM 2540C	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	SM 2540C	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	SM 2540C	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	SM 2540C	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	SM 2540C	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	SM 2540C	
MB 480-518132/1	Method Blank	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 518132 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-518132/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 518434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-7	5-SAR-001-004-06	Total/NA	Water	350.1	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	350.1	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	350.1	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	350.1	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	350.1	
MB 480-518434/101	Method Blank	Total/NA	Water	350.1	
MB 480-518434/129	Method Blank	Total/NA	Water	350.1	
LCS 480-518434/102	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-518434/130	Lab Control Sample	Total/NA	Water	350.1	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	350.1	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	350.1	
480-166390-9 MS	5-SAR-001-004-09	Total/NA	Water	350.1	

Analysis Batch: 518483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	410.4	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	410.4	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	410.4	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	410.4	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	410.4	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	410.4	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	410.4	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	410.4	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	410.4	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	410.4	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	410.4	
MB 480-518483/28	Method Blank	Total/NA	Water	410.4	
MB 480-518483/4	Method Blank	Total/NA	Water	410.4	
MB 480-518483/52	Method Blank	Total/NA	Water	410.4	
LCS 480-518483/29	Lab Control Sample	Total/NA	Water	410.4	
LCS 480-518483/5	Lab Control Sample	Total/NA	Water	410.4	
LCS 480-518483/53	Lab Control Sample	Total/NA	Water	410.4	
480-166390-5 MS	5-SAR-001-004-05	Total/NA	Water	410.4	
480-166390-5 MSD	5-SAR-001-004-05	Total/NA	Water	410.4	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	410.4	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	410.4	

Analysis Batch: 518798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	350.1	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	350.1	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	350.1	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	350.1	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	350.1	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	350.1	
MB 480-518798/51	Method Blank	Total/NA	Water	350.1	
MB 480-518798/75	Method Blank	Total/NA	Water	350.1	

General Chemistry (Continued)

Analysis Batch: 518798 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-518798/52	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-518798/76	Lab Control Sample	Total/NA	Water	350.1	
480-166390-5 MS	5-SAR-001-004-05	Total/NA	Water	350.1	

Analysis Batch: 518958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166390-1	5-SAR-001-004-01	Total/NA	Water	SM 2340C	
480-166390-2	5-SAR-001-004-02	Total/NA	Water	SM 2340C	
480-166390-3	5-SAR-001-004-03	Total/NA	Water	SM 2340C	
480-166390-4	5-SAR-001-004-04	Total/NA	Water	SM 2340C	
480-166390-5	5-SAR-001-004-05	Total/NA	Water	SM 2340C	
480-166390-7	5-SAR-001-004-06	Total/NA	Water	SM 2340C	
480-166390-8	5-SAR-001-004-08	Total/NA	Water	SM 2340C	
480-166390-9	5-SAR-001-004-09	Total/NA	Water	SM 2340C	
480-166390-10	5-SAR-001-004-10	Total/NA	Water	SM 2340C	
480-166390-11	5-SAR-001-004-11	Total/NA	Water	SM 2340C	
480-166390-12	5-SAR-001-004-12	Total/NA	Water	SM 2340C	
MB 480-518958/3	Method Blank	Total/NA	Water	SM 2340C	
LCS 480-518958/4	Lab Control Sample	Total/NA	Water	SM 2340C	
480-166390-7 MS	5-SAR-001-004-06	Total/NA	Water	SM 2340C	
480-166390-7 MSD	5-SAR-001-004-06	Total/NA	Water	SM 2340C	
480-166390-3 DU	5-SAR-001-004-03	Total/NA	Water	SM 2340C	

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-01

Lab Sample ID: 480-166390-1

Date Collected: 02/12/20 11:20

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 14:41	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518558	02/21/20 22:28	RJS	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 18:46	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/20/20 23:55	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 15:34	EMB	TAL BUF
Total/NA	Prep	7470A			517829	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:38	BMB	TAL BUF
Total/NA	Analysis	300.0		10	517943	02/17/20 21:05	IMZ	TAL BUF
Total/NA	Analysis	350.1		2	518798	02/24/20 12:46	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 13:10	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 16:57	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-02

Lab Sample ID: 480-166390-2

Date Collected: 02/12/20 14:00

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 15:06	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 16:43	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 19:15	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 00:03	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 15:38	EMB	TAL BUF
Total/NA	Prep	7470A			517829	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:39	BMB	TAL BUF
Total/NA	Analysis	300.0		10	517943	02/17/20 21:19	IMZ	TAL BUF
Total/NA	Analysis	350.1		2	518798	02/24/20 12:46	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 15:11	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 17:03	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-03

Lab Sample ID: 480-166390-3

Date Collected: 02/12/20 14:00

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 15:30	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 17:08	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 19:43	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 00:11	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 15:42	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:43	BMB	TAL BUF
Total/NA	Analysis	300.0		10	517943	02/17/20 21:34	IMZ	TAL BUF
Total/NA	Analysis	350.1		2	518798	02/24/20 12:47	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 15:42	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 17:09	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-04

Lab Sample ID: 480-166390-4

Date Collected: 02/12/20 15:00

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 15:54	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	519094	02/26/20 13:55	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 20:11	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 00:20	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 15:57	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:45	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/17/20 21:48	IMZ	TAL BUF
Total/NA	Analysis	350.1		5	518798	02/24/20 12:48	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 16:12	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 17:17	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518100	02/18/20 14:04	CSS	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-05

Lab Sample ID: 480-166390-5

Date Collected: 02/12/20 16:00
Matrix: Water
Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 16:18	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 17:55	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 20:39	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 00:36	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:00	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:46	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/17/20 22:02	IMZ	TAL BUF
Total/NA	Analysis	350.1		5	518798	02/24/20 12:51	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 16:42	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 17:23	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518100	02/18/20 14:04	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-07

Lab Sample ID: 480-166390-6

Date Collected: 02/12/20 16:20
Matrix: Water
Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 00:45	MBM	TAL BUR

Client Sample ID: 5-SAR-001-004-06

Lab Sample ID: 480-166390-7

Date Collected: 02/12/20 17:30
Matrix: Water
Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 16:43	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518558	02/21/20 22:05	RJS	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 17:49	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 00:53	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:04	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:50	BMB	TAL BUF
Total/NA	Analysis	300.0		2	517943	02/17/20 22:16	IMZ	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-06

Lab Sample ID: 480-166390-7

Date Collected: 02/12/20 17:30

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	350.1		1	518434	02/19/20 18:52	SRA	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 20:12	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 17:29	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518100	02/18/20 14:04	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-08

Lab Sample ID: 480-166390-8

Date Collected: 02/13/20 12:30

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 17:07	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 18:18	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 21:08	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 01:18	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:22	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:55	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/17/20 23:27	IMZ	TAL BUF
Total/NA	Analysis	350.1		2	518798	02/24/20 12:52	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 17:11	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 18:02	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-09

Lab Sample ID: 480-166390-9

Date Collected: 02/13/20 12:45

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 17:31	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 18:42	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 21:36	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 01:26	MBM	TAL BUR

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-09

Lab Sample ID: 480-166390-9

Date Collected: 02/13/20 12:45

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:26	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:56	BMB	TAL BUF
Total/NA	Analysis	300.0		1	517943	02/17/20 23:41	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	518434	02/19/20 19:11	SRA	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 17:42	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 18:07	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-10

Lab Sample ID: 480-166390-10

Date Collected: 02/13/20 13:15

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 17:55	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 19:05	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 22:05	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 01:34	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:41	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:58	BMB	TAL BUF
Total/NA	Analysis	300.0		1	517943	02/17/20 23:55	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	518434	02/19/20 19:16	SRA	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 21:41	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 18:12	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-11

Lab Sample ID: 480-166390-11

Date Collected: 02/13/20 13:45

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 18:19	RJF	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-11

Lab Sample ID: 480-166390-11

Date Collected: 02/13/20 13:45

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 19:28	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518425	02/20/20 15:52	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 01:43	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:45	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:59	BMB	TAL BUF
Total/NA	Analysis	300.0		2	517943	02/18/20 00:09	IMZ	TAL BUF
Total/NA	Analysis	350.1		5	518434	02/19/20 19:19	SRA	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 22:12	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 18:19	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Client Sample ID: 5-SAR-001-004-12

Lab Sample ID: 480-166390-12

Date Collected: 02/13/20 14:30

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518210	02/19/20 18:43	RJF	TAL BUF
Total/NA	Prep	3510C			517911	02/17/20 15:06	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518896	02/25/20 19:52	CLA	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/19/20 23:02	PJQ	TAL BUF
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 01:51	MBM	TAL BUR
Total/NA	Prep	3005A			517772	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	518190	02/18/20 16:48	EMB	TAL BUF
Total/NA	Prep	7470A			517831	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 16:00	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/18/20 00:23	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	518434	02/19/20 19:22	SRA	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518085	02/16/20 22:42	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	517961	02/17/20 18:25	BEF	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518132	02/18/20 15:40	CSS	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Client Sample ID: 5-SAR-001-004-13

Lab Sample ID: 480-166390-13

Date Collected: 02/13/20 14:45

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			152581	02/20/20 10:57	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152591	02/21/20 01:59	MBM	TAL BUR

Client Sample ID: 5-SAR-001-004-14

Lab Sample ID: 480-166390-14

Date Collected: 02/13/20 00:00

Matrix: Water

Date Received: 02/14/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518207	02/19/20 14:02	RJF	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-20 *

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

Analysis Method	Prep Method	Matrix	Analyte
300.0		Water	Bromide
SM 2340C		Water	Total hardness as CaCO3

Laboratory: Eurofins TestAmerica, Burlington

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10391	03-31-20

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

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)
537 (modified)	3535	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	3535	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic Acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctanesulfonamide (PFOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
8270D_LL_PAH	Semivolatile Organic Compounds (GC/MS) Low level PAH	SW846	TAL BUF
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL BUR
6010C	Metals (ICP)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
410.4	COD	MCAWW	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 2340C	Hardness, Total (mg/l as CaC03)	SM	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3535	Solid-Phase Extraction (SPE)	SW846	TAL BUR
5030C	Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166390-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-166390-1	5-SAR-001-004-01	Water	02/12/20 11:20	02/14/20 08:00	
480-166390-2	5-SAR-001-004-02	Water	02/12/20 14:00	02/14/20 08:00	
480-166390-3	5-SAR-001-004-03	Water	02/12/20 14:00	02/14/20 08:00	
480-166390-4	5-SAR-001-004-04	Water	02/12/20 15:00	02/14/20 08:00	
480-166390-5	5-SAR-001-004-05	Water	02/12/20 16:00	02/14/20 08:00	
480-166390-6	5-SAR-001-004-07	Water	02/12/20 16:20	02/14/20 08:00	
480-166390-7	5-SAR-001-004-06	Water	02/12/20 17:30	02/14/20 08:00	
480-166390-8	5-SAR-001-004-08	Water	02/13/20 12:30	02/14/20 08:00	
480-166390-9	5-SAR-001-004-09	Water	02/13/20 12:45	02/14/20 08:00	
480-166390-10	5-SAR-001-004-10	Water	02/13/20 13:15	02/14/20 08:00	
480-166390-11	5-SAR-001-004-11	Water	02/13/20 13:45	02/14/20 08:00	
480-166390-12	5-SAR-001-004-12	Water	02/13/20 14:30	02/14/20 08:00	
480-166390-13	5-SAR-001-004-13	Water	02/13/20 14:45	02/14/20 08:00	
480-166390-14	5-SAR-001-004-14	Water	02/13/20 00:00	02/14/20 08:00	

Revised

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		
Section C Deliverable Requirements		Purchase Order No:			
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day			
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	**Section D Additional Information**			
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD				

Preservative codes (for water only):

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B		
												0	1	0	0	2	2	3	1	0	0	0		
												#Bottles		2	3	2	2	1	1	1	2	1	1	1	
1	5-SAR-001-SP-01b	—	—	5-SAR-001-004 -01	2/12/20	11:20	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
2	5-SAR-001-SP-01a	—	—	5-SAR-001-004 -02	2/12/20	14:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
3	5-SAR-001-SP-01a	—	—	5-SAR-001-004 -03	2/12/20	14:00	WL	FD	16		N	X	X	X	X	X	X	X	X	X	X	X		
4	5-SAR-001-SP-02	—	—	5-SAR-001-004 -04	2/12/20	15:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
5	5-SAR-001-SP-8a	—	—	5-SAR-001-004 -05	2/12/20	16:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
6	5-SAR-001-FIELDQC	—	—	5-SAR-001-004 -07	2/12/20	16:20	WQ	FB	2		N	X		[illegible]										
7	5-SAR-001-SP-13a	—	—	5-SAR-001-004 -06	2/12/20	17:30	WL	N	48	X	N	X	X	X	X	X	X	X	X	X	X	X		
8	5-SAR-001-SP-8b	—	—	5-SAR-001-004 -08	2/13/20	12:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
9	5-SAR-001-SP-20	—	—	5-SAR-001-004 -09	2/13/20	12:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
10	5-SAR-001-SP-19	—	—	5-SAR-001-004 -10	2/13/20	13:15	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		

Special Instructions: 1. Metals and hardness - please take from same bottle.
2. Some bottle labels are incorrect. Please use labels on COC ~~instead~~ instead: 5-SAR-001-002 becomes 5-SAR-001-004 -02; 5-SAR-001-003 becomes 5-SAR-001-004 -03; 5-SAR-001-004 becomes 5-SAR-001-004 -04; 5-SAR-001-006 becomes 5-SAR-001-004 -06.

Samplers Name: Matt Zerbe, Sarah Lewis	Company: OBG	Relinquished By: Matt Zerbe	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time: 2/13/20		Date/Time: 2/13/20 16:30	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
Shipment Method:	Shipment Tracking No:	Accepted By: Rob Fader	Company: 2/13/20 1630	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time: [illegible]	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

2/13/20

Scanned with CamScanner

Revised

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		
Section C Deliverable Requirements		Purchase Order No:			
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day			
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	**Section D Additional Information**			
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD				

Preservative codes (for water only):

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met Hg 6010/7470	Hard-SM20 2340C	Ammonia COD 350.1/410.4	TOC 9060A	SO4 CHLBRO 300.0	TDS SM2540C	Alkalinity SM20 2320B
												0	1	0	0	2	2	3	1	0	0	0
											#Bottles	2	3	2	2	1	1	1	2	1	1	1
1	5-SAR-001-SP-13b	—	—	5-SAR-001-004 -11	2/13/20	13:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
2	5-SAR-001-SP-11	—	—	5-SAR-001-004 -12	2/13/20	14:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
3	5-SAR-001-FIELD QC	—	—	5-SAR-001-004 -13	2/13/20	14:45	WQ	FB	2		N	X										
4	5-SAR-001-FIELDQC	—	—	5-SAR-001-004 -14	2/13/20	—	WQ	TB	2		N		X									
5																						
6				KZ 2/13/20																		
7																						
8																						
9																						
10																						

Special Instructions: 1. Metals and hardness - please take from same bottle.

Samplers Name: Matt Zaskey, Laura Drachenberg	Company: OBG	Relinquished By: Matt Zaskey	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time: 2/13/20		Date/Time: 2/13/20 16:30	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
Shipment Method:	Shipment Tracking No:	Accepted By: Rob Lorden	Company: Eurofins	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time: 2/13/20 1630	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

KZ 2/13/20

Scanned with CamScanner

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		
Section C Deliverable Requirements		Purchase Order No:			
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day			
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	**Section D Additional Information**			
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD				

Preservative codes (for water only): 0 1 0 0 2 2 3 1 0 0 0

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Basin Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B
	#Bottles											2	3	2	2	1	1	1	2	1	1	1
1	5-SAR-001-SP-01b	—	—	5-SAR-001-001-01	2/12/20	11:20	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
2	5-SAR-001-SP-01a	—	—	5-SAR-001-001-02	2/12/20	14:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
3	5-SAR-001-SP-01a	—	—	5-SAR-001-001-03	2/12/20	14:00	WL	FD	16		N	X	X	X	X	X	X	X	X	X	X	X
4	5-SAR-001-SP-02	—	—	5-SAR-001-001-04	2/12/20	15:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
5	5-SAR-001-SP-8a	—	—	5-SAR-001-001-05	2/12/20	16:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
6	5-SAR-001-FIELDQC	—	—	5-SAR-001-001-07	2/12/20	16:20	WQ	FB	2		N	X		[illegible]								
7	5-SAR-001-SP-13a	—	—	5-SAR-001-001-06	2/12/20	17:30	WL	N	48	X	N	X	X	X	X	X	X	X	X	X	X	X
8	5-SAR-001-SP-8b	—	—	5-SAR-001-001-08	2/13/20	12:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
9	5-SAR-001-SP-20	—	—	5-SAR-001-001-09	2/13/20	12:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
10	5-SAR-001-SP-19	—	—	5-SAR-001-001-10	2/13/20	13:15	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X

Special Instructions: 1. Metals and hardness - please take from same bottle.
2. Some bottle labels are incorrect. Please use labels on COC ~~instead~~ instead: 5-SAR-001-002 becomes 5-SAR-001-001-02; 5-SAR-001-003 becomes 5-SAR-001-001-03; 5-SAR-001-004 becomes 5-SAR-001-001-04; 5-SAR-001-006 becomes 5-SAR-001-001-06.

Samplers Name: Matt Zerkle, Sarah Lewis	Company: OBG	Relinquished By: [signature]	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time: 2/13/20		Date/Time: 2/13/20 16:30	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
Shipment Method:	Shipment Tracking No:	Accepted By: [signature]	Company: 2/13/20 1630	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time: [signature]	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Page 1 of 2
2/13/20

Scanned with CamScanner 2/7/2020

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		
Section C Deliverable Requirements		Purchase Order No:			
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day			
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	**Section D Additional Information**			
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD				

Preservative codes (for water only): 0 1 0 0 2 2 3 1 0 0 0

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met *Hg 6010/7470	Hard-SM20 2340C	Ammonia COD 350.1/410.4	TOC 9060A	SO4 CHL-BRO 300.0	TDS SM2540C	Alkalinity SM20 2320B
	#Bottles											2	3	2	2	1	1	1	2	1	1	1
1	5-SAR-001-SP-13b	—	—	5-SAR-001-001-11	2/13/20	13:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
2	5-SAR-001-SP-11	—	—	5-SAR-001-001-12	2/13/20	14:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
3	5-SAR-001-FIELD QC	—	—	5-SAR-001-001-13	2/13/20	14:45	WQ	FB	2		N	X										
4	5-SAR-001-FIELDQC	—	—	5-SAR-001-001-14	2/13/20	—	WQ	TB	2		N		X									
5																						
6				KZ 2/13/20																		
7																						
8																						
9																						
10																						

Special Instructions: 1. Metals and hardness - please take from same bottle.

Samplers Name: Matt Zerbe, Laura Drachenberg	Company: OBG	Relinquished By: Matt Zerbe	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
Shipment Method:	Date/Time: 2/13/20		Date/Time: 2/13/20 16:30	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
	Shipment Tracking No:	Accepted By: Rob Loeber	Company: Client	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time: 2/13/20 1630	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Page 2 of 2
Page 1 of 3
(S) 2/13/20

Scanned with CamScanner 2/27/2020

CHAIN-OF-CUSTODY / Analytical Request Document

Albany #224

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		

Section C Deliverable Requirements

Report To: Scott.Tucker@Ramboll.com

Copy To: Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com; Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com

Deliverables: Level 2, CAT B Report, NYSDEC EQUIS EDD

Purchase Order No:

TAT - 10 Day

Section D Additional Information

Preservative codes (for water only):

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	1, 4 - Dioxane 8270SIM	PAHs 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B		
											#Bottles	2	3	2	2	1	1	1	2	1	1	1		
1	5-SAR-001-SP-016	—	—	5-SAR-001-001-01	2/12/20	11:20	WL	N	16		N													
2	5-SAR-001-SP-01a	—	—	5-SAR-001-001-02	2/12/20	14:00	WL	N	16		N													
3	5-SAR-001-SP-01a	—	—	5-SAR-001-001-03	2/12/20	14:00	WL	FD	16		N													
4	5-SAR-001-SP-02	—	—	5-SAR-001-001-04	2/12/20	15:00	WL	N	16		N													
5	5-SAR-001-SP-8a	—	—	5-SAR-001-001-05	2/12/20	16:00	WL	N	16		N	X	X	X	X	X								
6	5-SAR-001-FIELDQC	—	—	5-SAR-001-001-07	2/12/20	16:20	WQ	FB	2		N	X		X										
7	5-SAR-001-SP-13a	—	—	5-SAR-001-001-06	2/12/20	17:30	WL	N	48	X	N	X	X	X	X	X	X	X	X	X	X	X		
8	5-SAR-001-SP-8b	—	—	5-SAR-001-001-08	2/13/20	12:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
9	5-SAR-001-SP-20	—	—	5-SAR-001-001-09	2/13/20	12:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
10	5-SAR-001-SP-19	—	—	5-SAR-001-001-10	2/13/20	13:15	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		

480-166390 Chain of Custody

Special Instructions: 1. Metals and hardness - please take from same bottle.
2. Some bottle labels are incorrect. Please use labels on COC ~~instead~~ instead: 5-SAR-001-002 becomes 5-SAR-001-001-02; 5-SAR-001-003 becomes 5-SAR-001-001-03; 5-SAR-001-004 becomes 5-SAR-001-001-04; 5-SAR-001-006 becomes 5-SAR-001-001-06.

Samplers Name:	Company: OBG	Relinquished By:	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time: 2/13/20		Date/Time: 2/13/20 16:30	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
Shipment Method:	Shipment Tracking No:	Accepted By:	Company: 2/13/20 1630	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time:	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Relinquished By Kat Zadra 2/13/20 1700 Cwallace 2/14/20 0800

1.7, 2.0

#1 2.4, 2.1, 2.6, 1.9, 2.0 2.2

Page 1 of 2

2/13/20

2/27/2020

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		

Albany #224

Section C Deliverable Requirements		Section D Additional Information
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD	

Preservative codes (for water only): 0 1 0 0 2 2 3 1 0 0 0

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540C	Alkalinity SM20 2320B		
											#Bottles	2	3	2	2	1	1	1	2	1	1	1		
1	5-SAR-001-SP-13b	—	—	5-SAR-001-001-11	2/13/20	13:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
2	5-SAR-001-SP-11	—	—	5-SAR-001-001-12	2/13/20	14:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
3	5-SAR-001-FIELD QC	—	—	5-SAR-001-001-13	2/13/20	14:45	WQ	FB	2		N	X												
4	5-SAR-001-FIELDQC	—	—	5-SAR-001-001-14	2/13/20	—	WQ	TB	2		N		X											
5																								
6				KZ 2/13/20																				
7																								
8																								
9																								
10																								

Special Instructions: 1. Metals and hardness - please take from same bottle.

Samplers Name: Matt Zaske, Laura Drachenberg	Company: OBG	Relinquished By: Matt Zaske	Company: OBG	Date/Time: 2/13/20 16:30	Cooler Temp.:		Custody Seals Intact: Yes ☐ No ☐
	Date/Time: 2/13/20				Rec'd on Ice: Yes ☐ No ☐		Samples Intact: Yes ☐ No ☐
Shipment Method:	Shipment Tracking No:	Accepted By: Karl Loehn	Company: Courier	Date/Time: 2/13/20 1630	Cooler Temp.:		Custody Seals Intact: Yes ☐ No ☐
	Date/Time:				Rec'd on Ice: Yes ☐ No ☐		Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Relinquished By 2/13/20 1700 Karl Loehn Courier 2/14/20 0800

Page 2 of 2

2/13/20

2/27/2020

Revised

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		
Section C Deliverable Requirements		Purchase Order No:			
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day			
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	**Section D Additional Information**			
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD				

Preservative codes (for water only):

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1,4 - Dioxane 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard;SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/Cl+/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B	
												0	1	0	0	2	2	3	1	0	0	0	
												#Bottles	2	3	2	2	1	1	2	1	1	1	
1	5-SAR-001-SP-016	—	—	5-SAR-001-004 -01	2/12/20	11:20	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	
2	5-SAR-001-SP-01a	—	—	5-SAR-001-004 -02	2/12/20	14:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	
3	5-SAR-001-SP-01a	—	—	5-SAR-001-004 -03	2/12/20	14:00	WL	FD	16		N	X	X	X	X	X	X	X	X	X	X	X	
4	5-SAR-001-SP-02	—	—	5-SAR-001-004 -04	2/12/20	15:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	
5	5-SAR-001-SP-8a	—	—	5-SAR-001-004 -05	2/12/20	16:00	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	
6	5-SAR-001-FIELDQC	—	—	5-SAR-001-004 -07	2/12/20	16:20	WQ	FB	2		N	X											
7	5-SAR-001-SP-13a	—	—	5-SAR-001-004 -06	2/12/20	17:30	WL	N	48	X	N	X	X	X	X	X	X	X	X	X	X	X	
8	5-SAR-001-SP-8b	—	—	5-SAR-001-004 -08	2/13/20	12:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	
9	5-SAR-001-SP-20	—	—	5-SAR-001-004 -09	2/13/20	12:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	
10	5-SAR-001-SP-19	—	—	5-SAR-001-004 -10	2/13/20	13:15	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X	

Special Instructions: 1. Metals and hardness - please take from same bottle.
2. Some bottle labels are incorrect. Please use labels on COC ~~not~~ instead: 5-SAR-001-002 becomes 5-SAR-001-004 -02; 5-SAR-001-003 becomes 5-SAR-001-004 -03; 5-SAR-001-004 becomes 5-SAR-001-004 -04; 5-SAR-001-006 becomes 5-SAR-001-004 -06.

Samplers Name:	Company: OBG	Relinquished By:	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time: 2/13/20		Date/Time: 2/13/20 16:30	Rec'd on Ice: Yes ☐ No ☐	Samples Intact : Yes ☐ No ☐
Shipment Method:	Shipment Tracking No:	Accepted By:	Company: 2/13/20 1620	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time:	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Page 10f 2

2/13/20

Scanned with CamScanner

Revised

CHAIN-OF-CUSTODY / Analytical Request Document

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-004
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		
Section C Deliverable Requirements		Purchase Order No:			
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day			
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	**Section D Additional Information**			
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD				

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Eyeline UCCS 8260	PARS 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bdn Met *Hg 6010/7470	Hard-SM2O 2340C	Ammonia COD 350.1 410.4	TOC 9060A	SO4-CHL-FRO 300.0	TDS SM2540C	Alkalinity SM20 2320B
	Preservative codes (for water only):											0	1	0	0	2	2	3	1	0	0	0
	#Bottles											2	3	2	2	1	1	1	2	1	1	1
1	5-SAR-001-SP-136	—	—	5-SAR-001-004 -11	2/13/20	13:45	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
2	5-SAR-001-SP-11	—	—	5-SAR-001-004 -12	2/13/20	14:30	WL	N	16		N	X	X	X	X	X	X	X	X	X	X	X
3	5-SAR-001-FIELD QC	—	—	5-SAR-001-004 -13	2/13/20	14:45	WQ	FB	2		N	X										
4	5-SAR-001-FIELDQC	—	—	5-SAR-001-004 -14	2/13/20	—	WQ	TB	2		N		X									
5																						
6				KZ 2/13/20																		
7																						
8																						
9																						
10																						

Special Instructions: 1. Metals and hardness - please take from same bottle.

Sampler Name: Matt Jarzabek, Laura Drachenberg	Company: OBG	Relinquished By: Matt Jarzabek	Company: OBG	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
Shipment Method:	Date/Time: 2/13/20		Date/Time: 2/13/20 1630	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
	Shipment Tracking No:	Accepted By: Kat Zaccheo	Company: Parsons	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time: 2/13/20 1630	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Page 2 of 2
(5) 2/13/20

Scanned with CamScanner

Login Sample Receipt Checklist

Client: O'Brien & Gere Engineers, Inc.

Job Number: 480-166390-1

Login Number: 166390
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: O'Brien & Gere Engineers, Inc.

Job Number: 480-166390-1

Login Number: 166390
List Number: 2
Creator: Khudaier, Zahraa

List Source: Eurofins TestAmerica, Burlington
List Creation: 02/18/20 11:18 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	992825
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	8.0ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-166415-1
Client Project/Site: Tow Path LF, Region 5

For:
O'Brien & Gere Engineers, Inc.
PO BOX 4873
Syracuse, New York 13221-4873

Attn: Scott Tucker

Authorized for release by:
3/9/2020 12:12:12 PM
Alexander Gilbert, Project Management Assistant I
alexander.gilbert@testamericainc.com

Designee for

John Schove, Project Manager II
(716)504-9838
john.schove@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 6
Client Sample Results 9
Surrogate Summary 27
Isotope Dilution Summary 28
QC Sample Results 30
QC Association Summary 43
Lab Chronicle 48
Certification Summary 51
Method Summary 52
Sample Summary 53
Chain of Custody 54
Receipt Checklists 57

Definitions/Glossary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F3	Duplicate RPD exceeds the control limit
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-166415-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-166415-1

Comments
No additional comments.

Receipt
The samples were received on 2/15/2020 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.5º C and 1.8º C.

Receipt Exceptions
The PFAS samples received for the following login were received at ETA Burlington outside the required temperature criteria with a temperature of 8.0ºC: 480-166415. There was very little room for ice in the cooler. The ice that was in the cooler was received completely melted.

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

GC/MS Semi VOA
Method 8270D SIM ID: The 1,4-Dioxane result reported for sample (LCS 480-517907/2-A) have an E flag qualifier indicating the results are over the calibration range on the raw data. The actual amounts are within the calibration range; however, the E flag is generated based upon the bias corrected concentration. The LIMS system calculates a bias correction based on the recovery of the 1,4-Dioxane-d8 isotope.

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

HPLC/IC
Method 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: 5-SAR-001-005-01 (480-166415-1) and 5-SAR-001-005-06 (480-166415-6). Elevated reporting limits (RLs) are provided.

Method 300.0: The following sample was reported with elevated reporting limits for all analytes: 5-SAR-001-005-04 (480-166415-4). The sample was analyzed at a dilution based on screening results.

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

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

LCMS
Method 537 (modified): The method blank for preparation batch 200-152665 and analytical batch 200-152696 contained Perfluorooctanesulfonic acid (PFOS), Perfluorooctanoic acid (PFOA), Perfluorononanoic acid (PFNA), Perfluorobutanoic acid (PFBA), Perfluorododecanoic acid (PFDoA), Perfluorotridecanoic acid (PFTriA), Perfluorotetradecanoic acid (PFTeA) and Perfluoroundecanoic acid (PFUnA) above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method 537 (modified): Internal standard (ISTD) response for 13C2 PFOA for the following CCV was outside acceptance criteria: (CCV 200-152696/37). The needle on the autosampler had partially clogged during the run, leading to a reduced volume injection. All of the IDAs and targets pass quantitative acceptance criteria.

Method 537 (modified): The continuing calibration verification (CCV) associated with batch 200-152745 recovered above the upper control limit for Perfluorotetradecanoic acid (PFTeA). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

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

General Chemistry

Job ID: 480-166415-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

Method SM 2540C: The method blank associated with the following sample contained TDS above the reporting limit (RL). The sample were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank: 5-SAR-001-005-01 (480-166415-1)

Method SM 2540C: Reanalysis of the following sample(s) was performed outside of the analytical holding time to confirm the original result. The method blank and sample in the original batch contained TDS above the reporting limit (RL). Results confirmed and both are reported. : 5-SAR-001-005-02 (480-166415-2).

Method SM 2540C: Due to the matrix, the initial volume(s) used for the following sample deviated from the standard procedure: 5-SAR-001-005-02 (480-166415-2). The reporting limits (RLs) have been adjusted proportionately.

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

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

Detection Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-01 — Lab Sample ID: 480-166415-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	5.5	B	1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	6.5		1.8	0.91	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.5		1.8	0.86	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.3		1.8	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.6		1.8	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	6.0		1.8	0.69	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.72	J B	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	100	B	1.8	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	28	B	1.8	0.73	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.1		1.8	0.57	ng/L	1		537 (modified)	Total/NA
Barium	0.085		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.048		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	96.3		0.50	0.10	mg/L	1		6010C	Total/NA
Copper	0.0018	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	0.052		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	13.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.012	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	2.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	195		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0039	J	0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	353		2.5	1.4	mg/L	5		300.0	Total/NA
Sulfate	16.0		10.0	1.7	mg/L	5		300.0	Total/NA
Ammonia	0.041		0.020	0.0090	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	28.6		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	3.3		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	289		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	324		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	942	B	20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-005-02 — Lab Sample ID: 480-166415-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Manganese	0.00079	J B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Chloride	0.79		0.50	0.28	mg/L	1		300.0	Total/NA
Sulfate	0.36	J	2.0	0.35	mg/L	1		300.0	Total/NA
Total Dissolved Solids	50.0		10.0	4.0	mg/L	1		SM 2540C	Total/NA
Total Dissolved Solids	56.0	H	20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-005-03 — Lab Sample ID: 480-166415-3

No Detections.

Client Sample ID: 5-SAR-001-005-04 — Lab Sample ID: 480-166415-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	8.7		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.20		0.0020	0.00070	mg/L	1		6010C	Total/NA
Beryllium	0.00041	J	0.0020	0.00030	mg/L	1		6010C	Total/NA
Boron	0.38		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	1.0		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0087		0.0040	0.0010	mg/L	1		6010C	Total/NA
Cobalt	0.0016	J	0.0040	0.00063	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Detection Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-04 (Continued) — Lab Sample ID: 480-166415-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Copper	0.0032	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	5.3		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0074	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	1.7		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.035	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0038	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	4.8		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	184		1.0	0.32	mg/L	1		6010C	Total/NA
Vanadium	0.014		0.0050	0.0015	mg/L	1		6010C	Total/NA
Zinc	0.0088	J	0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	89.2		2.5	1.4	mg/L	5		300.0	Total/NA
Ammonia	0.62		0.020	0.0090	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	17.3		10.0	5.0	mg/L	1		410.4	Total/NA
Alkalinity, Total	303		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	8.0		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	541		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-005-05 — Lab Sample ID: 480-166415-5

No Detections.

Client Sample ID: 5-SAR-001-005-06 — Lab Sample ID: 480-166415-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	1.9		1.0	0.84	ug/L	1		8260C	Total/NA
Chlorobenzene	6.3		1.0	0.75	ug/L	1		8260C	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19		18	1.3	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.5	B	1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	5.1		1.8	0.88	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.0		1.8	0.84	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.7		1.8	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.0		1.8	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.4		1.8	0.67	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.1	J B	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	150	B	1.8	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	44	B	1.8	0.71	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.4		1.8	0.55	ng/L	1		537 (modified)	Total/NA
Aluminum	2.2		0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.37		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.071		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	121		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0024	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Cobalt	0.00097	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0037	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	43.5		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.080		0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	20.2		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	1.0	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0019	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	3.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	138		1.0	0.32	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 5-SAR-001-005-06 (Continued) — Lab Sample ID: 480-166415-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vanadium	0.0041	J	0.0050	0.0015	mg/L	1		6010C	Total/NA
Zinc	0.024		0.010	0.0015	mg/L	1		6010C	Total/NA
Chloride	231		2.5	1.4	mg/L	5		300.0	Total/NA
Ammonia	7.3	B	0.10	0.045	mg/L	5		350.1	Total/NA
Chemical Oxygen Demand	44.8		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	6.6		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	423		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total hardness as CaCO3	400		4.0	1.1	mg/L	1		SM 2340C	Total/NA
Total Dissolved Solids	799		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-005-07 — Lab Sample ID: 480-166415-7

No Detections.

This Detection Summary does not include radiochemical test results.

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-01
Date Collected: 02/14/20 10:15
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/20/20 15:44	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/20/20 15:44	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/20/20 15:44	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/20/20 15:44	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/20/20 15:44	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/20/20 15:44	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/20/20 15:44	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/20/20 15:44	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/20/20 15:44	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/20/20 15:44	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/20/20 15:44	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/20/20 15:44	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/20/20 15:44	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/20/20 15:44	1
2-Hexanone	ND		5.0	1.2	ug/L			02/20/20 15:44	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/20/20 15:44	1
Acetone	ND		10	3.0	ug/L			02/20/20 15:44	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/20/20 15:44	1
Benzene	ND		1.0	0.41	ug/L			02/20/20 15:44	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/20/20 15:44	1
Bromoform	ND		1.0	0.26	ug/L			02/20/20 15:44	1
Bromomethane	ND		1.0	0.69	ug/L			02/20/20 15:44	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/20/20 15:44	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/20/20 15:44	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/20/20 15:44	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/20/20 15:44	1
Chloroethane	ND		1.0	0.32	ug/L			02/20/20 15:44	1
Chloroform	ND		1.0	0.34	ug/L			02/20/20 15:44	1
Chloromethane	ND		1.0	0.35	ug/L			02/20/20 15:44	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/20/20 15:44	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/20/20 15:44	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/20/20 15:44	1
Dibromomethane	ND		1.0	0.41	ug/L			02/20/20 15:44	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/20/20 15:44	1
Iodomethane	ND		1.0	0.30	ug/L			02/20/20 15:44	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/20/20 15:44	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/20/20 15:44	1
o-Xylene	ND		1.0	0.76	ug/L			02/20/20 15:44	1
Styrene	ND		1.0	0.73	ug/L			02/20/20 15:44	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/20/20 15:44	1
Toluene	ND		1.0	0.51	ug/L			02/20/20 15:44	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/20/20 15:44	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/20/20 15:44	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/20/20 15:44	1
Trichloroethene	ND		1.0	0.46	ug/L			02/20/20 15:44	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/20/20 15:44	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/20/20 15:44	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/20/20 15:44	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/20/20 15:44	1

Client Sample ID: 5-SAR-001-005-01

Date Collected: 02/14/20 10:15
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-1

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*02/20/20 15:44*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*02/20/20 15:44*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*02/20/20 15:44*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*02/20/20 15:44*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:00	02/21/20 18:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*02/17/20 15:00*	*02/21/20 18:58*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 00:54	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/20/20 00:54	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/20/20 00:54	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/20/20 00:54	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 00:54	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 00:54	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 00:54	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/20/20 00:54	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/20/20 00:54	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 00:54	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 00:54	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 00:54	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/20/20 00:54	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/20/20 00:54	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/20/20 00:54	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 00:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*87*		*48 - 120*	*02/17/20 15:13*	*02/20/20 00:54*	*1*
Nitrobenzene-d5	*78*		*46 - 120*	*02/17/20 15:13*	*02/20/20 00:54*	*1*
p-Terphenyl-d14	*53*		*24 - 136*	*02/17/20 15:13*	*02/20/20 00:54*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.6	ng/L		02/24/20 13:43	02/26/20 18:10	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	5.0	ng/L		02/24/20 13:43	02/26/20 18:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.4	ng/L		02/24/20 13:43	02/26/20 18:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.5	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorobutanesulfonic acid (PFBS)	**5.5**	**B**	1.8	0.44	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorobutanoic acid (PFBA)	**6.5**		1.8	0.91	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.82	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.70	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.53	ng/L		02/24/20 13:43	02/26/20 18:10	1

Client Sample ID: 5-SAR-001-005-01

Date Collected: 02/14/20 10:15
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**2.5**		1.8	0.86	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluoroheptanoic acid (PFHpA)	**4.3**		1.8	0.82	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorohexanesulfonic acid (PFHxS)	**9.6**		1.8	0.72	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorohexanoic acid (PFHxA)	**6.0**		1.8	0.69	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorononanoic acid (PFNA)	**0.72**	**J B**	1.8	0.24	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorooctanesulfonamide (PFOSA)	ND		9.1	9.1	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorooctanesulfonic acid (PFOS)	**100**	**B**	1.8	0.55	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorooctanoic acid (PFOA)	**28**	**B**	1.8	0.73	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluoropentanoic acid (PFPeA)	**4.1**		1.8	0.57	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.83	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.54	ng/L		02/24/20 13:43	02/26/20 18:10	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.71	ng/L		02/24/20 13:43	02/26/20 18:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*99*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C2 PFDoA	*94*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C2 PFHxA	*95*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C2 PFUnA	*91*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C2 PFTeDA	*99*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C3 PFBS	*93*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C4 PFBA	*100*		*25 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C4 PFOA	*102*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C4 PFOS	*104*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C4 PFHpA	*101*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C5 PFNA	*106*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C5 PFPeA	*97*		*25 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
13C8 FOSA	*99*		*25 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
18O2 PFHxS	*100*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
d3-NMeFOSAA	*118*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
d5-NEtFOSAA	*105*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
M2-6:2 FTS	*123*		*25 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*
M2-8:2 FTS	*110*		*25 - 150*	*02/24/20 13:43*	*02/26/20 18:10*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/17/20 15:12	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/17/20 15:12	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/17/20 15:12	1
Barium	**0.085**		0.0020	0.00070	mg/L		02/17/20 08:25	02/17/20 15:12	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/17/20 15:12	1
Boron	**0.048**		0.020	0.0040	mg/L		02/17/20 08:25	02/17/20 15:12	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/17/20 15:12	1
Calcium	**96.3**		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:12	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/17/20 15:12	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/17/20 15:12	1
Copper	**0.0018**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/17/20 15:12	1
Iron	**0.052**		0.050	0.019	mg/L		02/17/20 08:25	02/17/20 15:12	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/17/20 15:12	1

Client Sample ID: 5-SAR-001-005-01

Lab Sample ID: 480-166415-1

Date Collected: 02/14/20 10:15

Matrix: Water

Date Received: 02/15/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**13.6**		0.20	0.043	mg/L		02/17/20 08:25	02/17/20 15:12	1
Manganese	**0.012**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/17/20 15:12	1
Nickel	ND		0.010	0.0013	mg/L		02/17/20 08:25	02/17/20 15:12	1
Potassium	**2.4**		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:12	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/17/20 15:12	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/17/20 15:12	1
Sodium	**195**		1.0	0.32	mg/L		02/17/20 08:25	02/17/20 15:12	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/17/20 15:12	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/17/20 15:12	1
Zinc	**0.0039**	**J**	0.010	0.0015	mg/L		02/17/20 08:25	02/17/20 15:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/18/20 05:07	5
Chloride	**353**		2.5	1.4	mg/L			02/18/20 05:07	5
Sulfate	**16.0**		10.0	1.7	mg/L			02/18/20 05:07	5
Ammonia	**0.041**		0.020	0.0090	mg/L			02/25/20 08:24	1
Chemical Oxygen Demand	**28.6**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	**3.3**		1.0	0.43	mg/L			02/20/20 05:18	1
Alkalinity, Total	**289**		5.0	0.79	mg/L			02/18/20 18:47	1
Total hardness as CaCO3	**324**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**942**	**B**	20.0	8.0	mg/L			02/18/20 16:10	1

Client Sample ID: 5-SAR-001-005-02

Lab Sample ID: 480-166415-2

Date Collected: 02/14/20 11:20

Matrix: Water

Date Received: 02/15/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/20/20 16:08	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/20/20 16:08	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/20/20 16:08	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/20/20 16:08	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/20/20 16:08	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/20/20 16:08	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/20/20 16:08	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/20/20 16:08	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/20/20 16:08	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/20/20 16:08	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/20/20 16:08	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/20/20 16:08	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/20/20 16:08	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/20/20 16:08	1
2-Hexanone	ND		5.0	1.2	ug/L			02/20/20 16:08	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/20/20 16:08	1
Acetone	ND		10	3.0	ug/L			02/20/20 16:08	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-02
Date Collected: 02/14/20 11:20
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acrylonitrile	ND		5.0	0.83	ug/L			02/20/20 16:08	1
Benzene	ND		1.0	0.41	ug/L			02/20/20 16:08	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/20/20 16:08	1
Bromoform	ND		1.0	0.26	ug/L			02/20/20 16:08	1
Bromomethane	ND		1.0	0.69	ug/L			02/20/20 16:08	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/20/20 16:08	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/20/20 16:08	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/20/20 16:08	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/20/20 16:08	1
Chloroethane	ND		1.0	0.32	ug/L			02/20/20 16:08	1
Chloroform	ND		1.0	0.34	ug/L			02/20/20 16:08	1
Chloromethane	ND		1.0	0.35	ug/L			02/20/20 16:08	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/20/20 16:08	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/20/20 16:08	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/20/20 16:08	1
Dibromomethane	ND		1.0	0.41	ug/L			02/20/20 16:08	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/20/20 16:08	1
Iodomethane	ND		1.0	0.30	ug/L			02/20/20 16:08	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/20/20 16:08	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/20/20 16:08	1
o-Xylene	ND		1.0	0.76	ug/L			02/20/20 16:08	1
Styrene	ND		1.0	0.73	ug/L			02/20/20 16:08	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/20/20 16:08	1
Toluene	ND		1.0	0.51	ug/L			02/20/20 16:08	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/20/20 16:08	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/20/20 16:08	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/20/20 16:08	1
Trichloroethene	ND		1.0	0.46	ug/L			02/20/20 16:08	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/20/20 16:08	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/20/20 16:08	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/20/20 16:08	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/20/20 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*02/20/20 16:08*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*02/20/20 16:08*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 123*		*02/20/20 16:08*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*02/20/20 16:08*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:00	02/21/20 19:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*26*		*15 - 110*	*02/17/20 15:00*	*02/21/20 19:22*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 01:22	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/20/20 01:22	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/20/20 01:22	1

Client Sample ID: 5-SAR-001-005-02

Date Collected: 02/14/20 11:20
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-2

Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/20/20 01:22	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 01:22	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 01:22	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 01:22	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/20/20 01:22	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/20/20 01:22	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 01:22	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 01:22	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 01:22	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/20/20 01:22	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/20/20 01:22	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/20/20 01:22	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*90*		*48 - 120*	*02/17/20 15:13*	*02/20/20 01:22*	*1*
Nitrobenzene-d5	*79*		*46 - 120*	*02/17/20 15:13*	*02/20/20 01:22*	*1*
p-Terphenyl-d14	*66*		*24 - 136*	*02/17/20 15:13*	*02/20/20 01:22*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.6	ng/L		02/24/20 13:43	02/25/20 23:12	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	4.9	ng/L		02/24/20 13:43	02/25/20 23:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.3	ng/L		02/24/20 13:43	02/25/20 23:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.5	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.44	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorobutanoic acid (PFBA)	ND		1.8	0.89	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.80	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.69	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.53	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.85	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.81	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.71	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.68	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.9	8.9	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.54	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.72	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.56	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.82	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.53	ng/L		02/24/20 13:43	02/25/20 23:12	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.70	ng/L		02/24/20 13:43	02/25/20 23:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*102*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:12*	*1*
13C2 PFDoA	*86*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:12*	*1*
13C2 PFHxA	*95*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:12*	*1*

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-02

Date Collected: 02/14/20 11:20
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	86		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C2 PFTeDA	79		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C3 PFBS	97		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C4 PFBA	100		25 - 150	02/24/20 13:43	02/25/20 23:12	1
13C4 PFOA	99		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C4 PFOS	106		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C4 PFHpA	100		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C5 PFNA	99		50 - 150	02/24/20 13:43	02/25/20 23:12	1
13C5 PFPeA	102		25 - 150	02/24/20 13:43	02/25/20 23:12	1
13C8 FOSA	83		25 - 150	02/24/20 13:43	02/25/20 23:12	1
18O2 PFHxS	96		50 - 150	02/24/20 13:43	02/25/20 23:12	1
d3-NMeFOSAA	97		50 - 150	02/24/20 13:43	02/25/20 23:12	1
d5-NEtFOSAA	107		50 - 150	02/24/20 13:43	02/25/20 23:12	1
M2-6:2 FTS	107		25 - 150	02/24/20 13:43	02/25/20 23:12	1
M2-8:2 FTS	126		25 - 150	02/24/20 13:43	02/25/20 23:12	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/17/20 15:16	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/17/20 15:16	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/17/20 15:16	1
Barium	ND		0.0020	0.00070	mg/L		02/17/20 08:25	02/17/20 15:16	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/17/20 15:16	1
Boron	ND		0.020	0.0040	mg/L		02/17/20 08:25	02/17/20 15:16	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/17/20 15:16	1
Calcium	ND		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:16	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/17/20 15:16	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/17/20 15:16	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/17/20 15:16	1
Iron	ND		0.050	0.019	mg/L		02/17/20 08:25	02/17/20 15:16	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/17/20 15:16	1
Magnesium	ND		0.20	0.043	mg/L		02/17/20 08:25	02/17/20 15:16	1
Manganese	**0.00079**	**J B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/17/20 15:16	1
Nickel	ND		0.010	0.0013	mg/L		02/17/20 08:25	02/17/20 15:16	1
Potassium	ND		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:16	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/17/20 15:16	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/17/20 15:16	1
Sodium	ND		1.0	0.32	mg/L		02/17/20 08:25	02/17/20 15:16	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/17/20 15:16	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/17/20 15:16	1
Zinc	ND		0.010	0.0015	mg/L		02/17/20 08:25	02/17/20 15:16	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.20	0.073	mg/L			02/18/20 05:21	1
Chloride	**0.79**		0.50	0.28	mg/L			02/18/20 05:21	1

Client Sample ID: 5-SAR-001-005-02

Lab Sample ID: 480-166415-2

Date Collected: 02/14/20 11:20

Matrix: Water

Date Received: 02/15/20 08:00

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**0.36**	**J**	2.0	0.35	mg/L			02/18/20 05:21	1
Ammonia	ND		0.020	0.0090	mg/L			02/25/20 08:25	1
Chemical Oxygen Demand	ND		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	ND		1.0	0.43	mg/L			02/20/20 05:46	1
Alkalinity, Total	ND		5.0	0.79	mg/L			02/18/20 18:53	1
Total hardness as CaCO3	ND		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**50.0**		10.0	4.0	mg/L			02/18/20 16:10	1
Total Dissolved Solids	**56.0**	**H**	20.0	8.0	mg/L			03/04/20 13:18	1

Client Sample ID: 5-SAR-001-005-03

Lab Sample ID: 480-166415-3

Date Collected: 02/14/20 11:45

Matrix: Water

Date Received: 02/15/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/24/20 13:43	02/26/20 18:26	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.5	ng/L		02/24/20 13:43	02/26/20 18:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.2	ng/L		02/24/20 13:43	02/26/20 18:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.40	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorobutanoic acid (PFBA)	ND		1.7	0.83	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.74	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.64	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.78	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.75	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.66	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.63	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.3	8.3	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.50	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.67	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.52	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.76	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		02/24/20 13:43	02/26/20 18:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.64	ng/L		02/24/20 13:43	02/26/20 18:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*102*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C2 PFDoA	*82*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C2 PFHxA	*95*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C2 PFUnA	*90*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C2 PFTeDA	*82*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C3 PFBS	*95*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C4 PFBA	*105*		*25 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C4 PFOA	*101*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*
13C4 PFOS	*105*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:26*	*1*

Client Sample ID: 5-SAR-001-005-03

Lab Sample ID: 480-166415-3

Date Collected: 02/14/20 11:45

Matrix: Water

Date Received: 02/15/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	100		50 - 150	02/24/20 13:43	02/26/20 18:26	1
13C5 PFNA	104		50 - 150	02/24/20 13:43	02/26/20 18:26	1
13C5 PFPeA	100		25 - 150	02/24/20 13:43	02/26/20 18:26	1
13C8 FOSA	81		25 - 150	02/24/20 13:43	02/26/20 18:26	1
18O2 PFHxS	96		50 - 150	02/24/20 13:43	02/26/20 18:26	1
d3-NMeFOSAA	107		50 - 150	02/24/20 13:43	02/26/20 18:26	1
d5-NEtFOSAA	99		50 - 150	02/24/20 13:43	02/26/20 18:26	1
M2-6:2 FTS	111		25 - 150	02/24/20 13:43	02/26/20 18:26	1
M2-8:2 FTS	106		25 - 150	02/24/20 13:43	02/26/20 18:26	1

Client Sample ID: 5-SAR-001-005-04

Lab Sample ID: 480-166415-4

Date Collected: 02/14/20 13:00

Matrix: Water

Date Received: 02/15/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/20/20 16:33	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/20/20 16:33	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/20/20 16:33	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/20/20 16:33	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/20/20 16:33	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/20/20 16:33	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/20/20 16:33	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/20/20 16:33	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/20/20 16:33	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/20/20 16:33	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/20/20 16:33	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/20/20 16:33	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/20/20 16:33	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/20/20 16:33	1
2-Hexanone	ND		5.0	1.2	ug/L			02/20/20 16:33	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/20/20 16:33	1
Acetone	ND		10	3.0	ug/L			02/20/20 16:33	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/20/20 16:33	1
Benzene	ND		1.0	0.41	ug/L			02/20/20 16:33	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/20/20 16:33	1
Bromoform	ND		1.0	0.26	ug/L			02/20/20 16:33	1
Bromomethane	ND		1.0	0.69	ug/L			02/20/20 16:33	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/20/20 16:33	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/20/20 16:33	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/20/20 16:33	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/20/20 16:33	1
Chloroethane	ND		1.0	0.32	ug/L			02/20/20 16:33	1
Chloroform	ND		1.0	0.34	ug/L			02/20/20 16:33	1
Chloromethane	ND		1.0	0.35	ug/L			02/20/20 16:33	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/20/20 16:33	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/20/20 16:33	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/20/20 16:33	1
Dibromomethane	ND		1.0	0.41	ug/L			02/20/20 16:33	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/20/20 16:33	1

Client Sample ID: 5-SAR-001-005-04

Date Collected: 02/14/20 13:00
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iodomethane	ND		1.0	0.30	ug/L			02/20/20 16:33	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/20/20 16:33	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/20/20 16:33	1
o-Xylene	ND		1.0	0.76	ug/L			02/20/20 16:33	1
Styrene	ND		1.0	0.73	ug/L			02/20/20 16:33	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/20/20 16:33	1
Toluene	ND		1.0	0.51	ug/L			02/20/20 16:33	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/20/20 16:33	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/20/20 16:33	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/20/20 16:33	1
Trichloroethene	ND		1.0	0.46	ug/L			02/20/20 16:33	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/20/20 16:33	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/20/20 16:33	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/20/20 16:33	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/20/20 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*02/20/20 16:33*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*02/20/20 16:33*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 123*		*02/20/20 16:33*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*02/20/20 16:33*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:00	02/21/20 19:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*20*		*15 - 110*	*02/17/20 15:00*	*02/21/20 19:45*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 01:51	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/20/20 01:51	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/20/20 01:51	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/20/20 01:51	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 01:51	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/20/20 01:51	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 01:51	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/20/20 01:51	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/20/20 01:51	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/20/20 01:51	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 01:51	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/20/20 01:51	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/20/20 01:51	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/20/20 01:51	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/20/20 01:51	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/20/20 01:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*92*		*48 - 120*	*02/17/20 15:13*	*02/20/20 01:51*	*1*
Nitrobenzene-d5	*80*		*46 - 120*	*02/17/20 15:13*	*02/20/20 01:51*	*1*

Client Sample ID: 5-SAR-001-005-04
Date Collected: 02/14/20 13:00
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-4
Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl-d14	*52*		*24 - 136*	*02/17/20 15:13*	*02/20/20 01:51*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.5	ng/L		02/24/20 13:43	02/25/20 23:28	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.7	ng/L		02/24/20 13:43	02/25/20 23:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.3	ng/L		02/24/20 13:43	02/25/20 23:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.42	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorobutanoic acid (PFBA)	ND		1.7	0.85	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.76	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.65	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.81	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.77	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.68	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.64	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.5	8.5	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.52	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.69	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.53	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.78	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.51	ng/L		02/24/20 13:43	02/25/20 23:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.66	ng/L		02/24/20 13:43	02/25/20 23:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*98*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C2 PFDoA	*86*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C2 PFHxA	*92*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C2 PFUnA	*87*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C2 PFTeDA	*74*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C3 PFBS	*90*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C4 PFBA	*102*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C4 PFOA	*98*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C4 PFOS	*101*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C4 PFHpA	*99*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C5 PFNA	*98*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C5 PFPeA	*104*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
13C8 FOSA	*91*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
18O2 PFHxS	*92*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
d3-NMeFOSAA	*91*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
d5-NEtFOSAA	*108*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
M2-6:2 FTS	*103*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*
M2-8:2 FTS	*107*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:28*	*1*

Client Sample ID: 5-SAR-001-005-04

Lab Sample ID: 480-166415-4

Date Collected: 02/14/20 13:00

Matrix: Water

Date Received: 02/15/20 08:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8.7**		0.20	0.060	mg/L		02/17/20 08:25	02/17/20 15:20	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/17/20 15:20	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/17/20 15:20	1
Barium	**0.20**		0.0020	0.00070	mg/L		02/17/20 08:25	02/17/20 15:20	1
Beryllium	**0.00041**	**J**	0.0020	0.00030	mg/L		02/17/20 08:25	02/17/20 15:20	1
Boron	**0.38**		0.020	0.0040	mg/L		02/17/20 08:25	02/17/20 15:20	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/17/20 15:20	1
Calcium	**1.0**		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:20	1
Chromium	**0.0087**		0.0040	0.0010	mg/L		02/17/20 08:25	02/17/20 15:20	1
Cobalt	**0.0016**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/17/20 15:20	1
Copper	**0.0032**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/17/20 15:20	1
Iron	**5.3**		0.050	0.019	mg/L		02/17/20 08:25	02/17/20 15:20	1
Lead	**0.0074**	**J**	0.010	0.0030	mg/L		02/17/20 08:25	02/17/20 15:20	1
Magnesium	**1.7**		0.20	0.043	mg/L		02/17/20 08:25	02/17/20 15:20	1
Manganese	**0.035**	**B**	0.0030	0.00040	mg/L		02/17/20 08:25	02/17/20 15:20	1
Nickel	**0.0038**	**J**	0.010	0.0013	mg/L		02/17/20 08:25	02/17/20 15:20	1
Potassium	**4.8**		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:20	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/17/20 15:20	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/17/20 15:20	1
Sodium	**184**		1.0	0.32	mg/L		02/17/20 08:25	02/17/20 15:20	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/17/20 15:20	1
Vanadium	**0.014**		0.0050	0.0015	mg/L		02/17/20 08:25	02/17/20 15:20	1
Zinc	**0.0088**	**J**	0.010	0.0015	mg/L		02/17/20 08:25	02/17/20 15:20	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/18/20 05:35	5
Chloride	**89.2**		2.5	1.4	mg/L			02/18/20 05:35	5
Sulfate	ND		10.0	1.7	mg/L			02/18/20 05:35	5
Ammonia	**0.62**		0.020	0.0090	mg/L			02/25/20 08:26	1
Chemical Oxygen Demand	**17.3**		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	ND		1.0	0.43	mg/L			02/20/20 07:10	1
Alkalinity, Total	**303**		5.0	0.79	mg/L			02/18/20 19:25	1
Total hardness as CaCO3	**8.0**		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	**541**		10.0	4.0	mg/L			02/19/20 09:49	1

Client Sample ID: 5-SAR-001-005-05

Lab Sample ID: 480-166415-5

Date Collected: 02/14/20 13:45

Matrix: Water

Date Received: 02/15/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		02/24/20 13:43	02/25/20 23:36	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	4.6	ng/L		02/24/20 13:43	02/25/20 23:36	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-05

Lab Sample ID: 480-166415-5

Date Collected: 02/14/20 13:45

Matrix: Water

Date Received: 02/15/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.3	ng/L		02/24/20 13:43	02/25/20 23:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.41	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorobutanoic acid (PFBA)	ND		1.7	0.84	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.75	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.64	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.80	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.76	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.67	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.64	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.23	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.4	8.4	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.51	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.68	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.53	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.77	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		02/24/20 13:43	02/25/20 23:36	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.65	ng/L		02/24/20 13:43	02/25/20 23:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*105*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C2 PFDoA	*92*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C2 PFHxA	*96*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C2 PFUnA	*102*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C2 PFTeDA	*90*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C3 PFBS	*99*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C4 PFBA	*113*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C4 PFOA	*104*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C4 PFOS	*106*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C4 PFHpA	*101*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C5 PFNA	*106*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C5 PFPeA	*109*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
13C8 FOSA	*96*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
18O2 PFHxS	*100*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
d3-NMeFOSAA	*116*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
d5-NEtFOSAA	*103*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
M2-6:2 FTS	*101*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*
M2-8:2 FTS	*121*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:36*	*1*

Client Sample ID: 5-SAR-001-005-06

Lab Sample ID: 480-166415-6

Date Collected: 02/14/20 14:30

Matrix: Water

Date Received: 02/15/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/20/20 16:57	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/20/20 16:57	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-06
Date Collected: 02/14/20 14:30
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-6
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/20/20 16:57	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/20/20 16:57	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/20/20 16:57	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/20/20 16:57	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/20/20 16:57	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/20/20 16:57	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/20/20 16:57	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/20/20 16:57	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/20/20 16:57	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/20/20 16:57	1
1,4-Dichlorobenzene	**1.9**		1.0	0.84	ug/L			02/20/20 16:57	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/20/20 16:57	1
2-Hexanone	ND		5.0	1.2	ug/L			02/20/20 16:57	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/20/20 16:57	1
Acetone	ND		10	3.0	ug/L			02/20/20 16:57	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/20/20 16:57	1
Benzene	ND		1.0	0.41	ug/L			02/20/20 16:57	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/20/20 16:57	1
Bromoform	ND		1.0	0.26	ug/L			02/20/20 16:57	1
Bromomethane	ND		1.0	0.69	ug/L			02/20/20 16:57	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/20/20 16:57	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/20/20 16:57	1
Chlorobenzene	**6.3**		1.0	0.75	ug/L			02/20/20 16:57	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/20/20 16:57	1
Chloroethane	ND		1.0	0.32	ug/L			02/20/20 16:57	1
Chloroform	ND		1.0	0.34	ug/L			02/20/20 16:57	1
Chloromethane	ND		1.0	0.35	ug/L			02/20/20 16:57	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/20/20 16:57	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/20/20 16:57	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/20/20 16:57	1
Dibromomethane	ND		1.0	0.41	ug/L			02/20/20 16:57	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/20/20 16:57	1
Iodomethane	ND		1.0	0.30	ug/L			02/20/20 16:57	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/20/20 16:57	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/20/20 16:57	1
o-Xylene	ND		1.0	0.76	ug/L			02/20/20 16:57	1
Styrene	ND		1.0	0.73	ug/L			02/20/20 16:57	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/20/20 16:57	1
Toluene	ND		1.0	0.51	ug/L			02/20/20 16:57	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/20/20 16:57	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/20/20 16:57	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/20/20 16:57	1
Trichloroethene	ND		1.0	0.46	ug/L			02/20/20 16:57	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/20/20 16:57	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/20/20 16:57	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/20/20 16:57	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/20/20 16:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*02/20/20 16:57*	*1*

Client Sample ID: 5-SAR-001-005-06

Date Collected: 02/14/20 14:30
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-6

Matrix: Water

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*02/20/20 16:57*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*02/20/20 16:57*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*02/20/20 16:57*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:00	02/21/20 20:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*24*		*15 - 110*	*02/17/20 15:00*	*02/21/20 20:09*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:14	02/20/20 02:20	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:14	02/20/20 02:20	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:14	02/20/20 02:20	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:14	02/20/20 02:20	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:14	02/20/20 02:20	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:14	02/20/20 02:20	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:14	02/20/20 02:20	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:14	02/20/20 02:20	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:14	02/20/20 02:20	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:14	02/20/20 02:20	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:14	02/20/20 02:20	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:14	02/20/20 02:20	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:14	02/20/20 02:20	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:14	02/20/20 02:20	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:14	02/20/20 02:20	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:14	02/20/20 02:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*87*		*48 - 120*	*02/17/20 15:14*	*02/20/20 02:20*	*1*
Nitrobenzene-d5	*77*		*46 - 120*	*02/17/20 15:14*	*02/20/20 02:20*	*1*
p-Terphenyl-d14	*48*		*24 - 136*	*02/17/20 15:14*	*02/20/20 02:20*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.6	ng/L		02/24/20 13:43	02/25/20 23:45	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	4.8	ng/L		02/24/20 13:43	02/25/20 23:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**19**		18	1.3	ng/L		02/24/20 13:43	02/25/20 23:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.5	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorobutanesulfonic acid (PFBS)	**3.5**	**B**	1.8	0.43	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorobutanoic acid (PFBA)	**5.1**		1.8	0.88	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.79	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.68	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.52	ng/L		02/24/20 13:43	02/25/20 23:45	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-06
Date Collected: 02/14/20 14:30
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-6
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	**2.0**		1.8	0.84	ng/L		02/24/20 13:43	02/26/20 18:35	1
Perfluoroheptanoic acid (PFHpA)	**3.7**		1.8	0.80	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorohexanesulfonic acid (PFHxS)	**8.0**		1.8	0.70	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorohexanoic acid (PFHxA)	**3.4**		1.8	0.67	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorononanoic acid (PFNA)	**1.1**	**J B**	1.8	0.24	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.8	8.8	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorooctanesulfonic acid (PFOS)	**150**	**B**	1.8	0.54	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorooctanoic acid (PFOA)	**44**	**B**	1.8	0.71	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluoropentanoic acid (PFPeA)	**2.4**		1.8	0.55	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.81	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.53	ng/L		02/24/20 13:43	02/25/20 23:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.69	ng/L		02/24/20 13:43	02/25/20 23:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*88*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C2 PFDoA	*88*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C2 PFHxA	*87*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C2 PFUnA	*85*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C3 PFBS	*86*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C4 PFBA	*85*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C4 PFOA	*93*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C4 PFOS	*85*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C4 PFOS	*85*		*50 - 150*	*02/24/20 13:43*	*02/26/20 18:35*	*1*
13C4 PFHpA	*91*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C5 PFNA	*86*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C5 PFPeA	*96*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
13C8 FOSA	*82*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
18O2 PFHxS	*87*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
d3-NMeFOSAA	*94*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
M2-6:2 FTS	*132*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*
M2-8:2 FTS	*106*		*25 - 150*	*02/24/20 13:43*	*02/25/20 23:45*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2.2**		0.20	0.060	mg/L		02/17/20 08:25	02/17/20 15:23	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/17/20 15:23	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/17/20 15:23	1
Barium	**0.37**		0.0020	0.00070	mg/L		02/17/20 08:25	02/17/20 15:23	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/17/20 15:23	1
Boron	**0.071**		0.020	0.0040	mg/L		02/17/20 08:25	02/17/20 15:23	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/17/20 15:23	1
Calcium	**121**		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:23	1
Chromium	**0.0024**	**J**	0.0040	0.0010	mg/L		02/17/20 08:25	02/17/20 15:23	1
Cobalt	**0.00097**	**J**	0.0040	0.00063	mg/L		02/17/20 08:25	02/17/20 15:23	1
Copper	**0.0037**	**J**	0.010	0.0016	mg/L		02/17/20 08:25	02/17/20 15:23	1
Iron	**43.5**		0.050	0.019	mg/L		02/17/20 08:25	02/17/20 15:23	1

Client Sample ID: 5-SAR-001-005-06

Lab Sample ID: 480-166415-6

Date Collected: 02/14/20 14:30

Matrix: Water

Date Received: 02/15/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.080		0.010	0.0030	mg/L		02/17/20 08:25	02/17/20 15:23	1
Magnesium	20.2		0.20	0.043	mg/L		02/17/20 08:25	02/17/20 15:23	1
Manganese	1.0	B	0.0030	0.00040	mg/L		02/17/20 08:25	02/17/20 15:23	1
Nickel	0.0019	J	0.010	0.0013	mg/L		02/17/20 08:25	02/17/20 15:23	1
Potassium	3.1		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 15:23	1
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/17/20 15:23	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/17/20 15:23	1
Sodium	138		1.0	0.32	mg/L		02/17/20 08:25	02/17/20 15:23	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/17/20 15:23	1
Vanadium	0.0041	J	0.0050	0.0015	mg/L		02/17/20 08:25	02/17/20 15:23	1
Zinc	0.024		0.010	0.0015	mg/L		02/17/20 08:25	02/17/20 15:23	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		1.0	0.37	mg/L			02/18/20 05:49	5
Chloride	231		2.5	1.4	mg/L			02/18/20 05:49	5
Sulfate	ND		10.0	1.7	mg/L			02/18/20 05:49	5
Ammonia	7.3	B	0.10	0.045	mg/L			02/24/20 12:56	5
Chemical Oxygen Demand	44.8		10.0	5.0	mg/L			02/19/20 16:51	1
Total Organic Carbon	6.6		1.0	0.43	mg/L			02/20/20 08:06	1
Alkalinity, Total	423		5.0	0.79	mg/L			02/18/20 19:33	1
Total hardness as CaCO3	400		4.0	1.1	mg/L			02/25/20 11:07	1
Total Dissolved Solids	799		10.0	4.0	mg/L			02/19/20 09:49	1

Client Sample ID: 5-SAR-001-005-07

Lab Sample ID: 480-166415-7

Date Collected: 02/14/20 00:00

Matrix: Water

Date Received: 02/15/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/20/20 17:21	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/20/20 17:21	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/20/20 17:21	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/20/20 17:21	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/20/20 17:21	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/20/20 17:21	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/20/20 17:21	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/20/20 17:21	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/20/20 17:21	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/20/20 17:21	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/20/20 17:21	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/20/20 17:21	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/20/20 17:21	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/20/20 17:21	1
2-Hexanone	ND		5.0	1.2	ug/L			02/20/20 17:21	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/20/20 17:21	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-07
Date Collected: 02/14/20 00:00
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-7
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	3.0	ug/L			02/20/20 17:21	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/20/20 17:21	1
Benzene	ND		1.0	0.41	ug/L			02/20/20 17:21	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/20/20 17:21	1
Bromoform	ND		1.0	0.26	ug/L			02/20/20 17:21	1
Bromomethane	ND		1.0	0.69	ug/L			02/20/20 17:21	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/20/20 17:21	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/20/20 17:21	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/20/20 17:21	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/20/20 17:21	1
Chloroethane	ND		1.0	0.32	ug/L			02/20/20 17:21	1
Chloroform	ND		1.0	0.34	ug/L			02/20/20 17:21	1
Chloromethane	ND		1.0	0.35	ug/L			02/20/20 17:21	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/20/20 17:21	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/20/20 17:21	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/20/20 17:21	1
Dibromomethane	ND		1.0	0.41	ug/L			02/20/20 17:21	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/20/20 17:21	1
Iodomethane	ND		1.0	0.30	ug/L			02/20/20 17:21	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/20/20 17:21	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/20/20 17:21	1
o-Xylene	ND		1.0	0.76	ug/L			02/20/20 17:21	1
Styrene	ND		1.0	0.73	ug/L			02/20/20 17:21	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/20/20 17:21	1
Toluene	ND		1.0	0.51	ug/L			02/20/20 17:21	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/20/20 17:21	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/20/20 17:21	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/20/20 17:21	1
Trichloroethene	ND		1.0	0.46	ug/L			02/20/20 17:21	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/20/20 17:21	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/20/20 17:21	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/20/20 17:21	1
Xylenes, Total	ND		2.0	0.66	ug/L			02/20/20 17:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*77 - 120*		*02/20/20 17:21*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*02/20/20 17:21*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*02/20/20 17:21*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*02/20/20 17:21*	*1*

Surrogate Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(75-123)	(80-120)
480-166415-1	5-SAR-001-005-01	105	103	100	106
480-166415-2	5-SAR-001-005-02	98	104	95	102
480-166415-4	5-SAR-001-005-04	100	102	95	102
480-166415-6	5-SAR-001-005-06	102	100	99	99
480-166415-7	5-SAR-001-005-07	106	101	99	100
LCS 480-518368/5	Lab Control Sample	94	102	95	100
MB 480-518368/7	Method Blank	102	104	98	104

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(48-120)	(46-120)	(24-136)
480-166415-1	5-SAR-001-005-01	87	78	53
480-166415-2	5-SAR-001-005-02	90	79	66
480-166415-4	5-SAR-001-005-04	92	80	52
480-166415-6	5-SAR-001-005-06	87	77	48
LCS 480-517915/2-A	Lab Control Sample	84	76	83
MB 480-517915/1-A	Method Blank	90	81	84

Surrogate Legend

FBP = 2-Fluorobiphenyl
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DXE (15-110)
480-166415-1	5-SAR-001-005-01	28
480-166415-2	5-SAR-001-005-02	26
480-166415-4	5-SAR-001-005-04	20
480-166415-6	5-SAR-001-005-06	24
LCS 480-517907/2-A	Lab Control Sample	28
MB 480-517907/1-A	Method Blank	30

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDA (50-150)	PFDoA (50-150)	PFHxA (50-150)	PFUnA (50-150)	PFTDA (50-150)	3C3-PFBS (50-150)	PFBA (25-150)	PFOA (50-150)
480-166415-1	5-SAR-001-005-01	99	94	95	91	99	93	100	102
480-166415-2	5-SAR-001-005-02	102	86	95	86	79	97	100	99
480-166415-3	5-SAR-001-005-03	102	82	95	90	82	95	105	101
480-166415-4	5-SAR-001-005-04	98	86	92	87	74	90	102	98
480-166415-5	5-SAR-001-005-05	105	92	96	102	90	99	113	104
480-166415-6	5-SAR-001-005-06	88	88	87	85	86	86	85	93
480-166415-6	5-SAR-001-005-06								
LCS 200-152665/2-A	Lab Control Sample	89	65	81	78	69	85	96	90
MB 200-152665/1-A	Method Blank	94	73	91	79	68	84	100	91

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOS (50-150)	PFHpA (50-150)	PFNA (50-150)	PFPeA (25-150)	PFOSA (25-150)	PFHxS (50-150)	NMeFOSA (50-150)	NEtFOSA (50-150)
480-166415-1	5-SAR-001-005-01	104	101	106	97	99	100	118	105
480-166415-2	5-SAR-001-005-02	106	100	99	102	83	96	97	107
480-166415-3	5-SAR-001-005-03	105	100	104	100	81	96	107	99
480-166415-4	5-SAR-001-005-04	101	99	98	104	91	92	91	108
480-166415-5	5-SAR-001-005-05	106	101	106	109	96	100	116	103
480-166415-6	5-SAR-001-005-06	85	91	86	96	82	87	94	82
480-166415-6	5-SAR-001-005-06	85							
LCS 200-152665/2-A	Lab Control Sample	93	97	88	97	60	95	96	94
MB 200-152665/1-A	Method Blank	94	97	88	100	62	98	95	82

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)
480-166415-1	5-SAR-001-005-01	123	110
480-166415-2	5-SAR-001-005-02	107	126
480-166415-3	5-SAR-001-005-03	111	106
480-166415-4	5-SAR-001-005-04	103	107
480-166415-5	5-SAR-001-005-05	101	121
480-166415-6	5-SAR-001-005-06	132	106
480-166415-6	5-SAR-001-005-06		
LCS 200-152665/2-A	Lab Control Sample	94	98
MB 200-152665/1-A	Method Blank	93	92

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Surrogate Legend

PFDA = 13C2 PFDA
PFDoA = 13C2 PFDoA
PFHxA = 13C2 PFHxA
PFUnA = 13C2 PFUnA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFBA = 13C4 PFBA
PFOA = 13C4 PFOA
PFOS = 13C4 PFOS
PFHpA = 13C4 PFHpA
PFNA = 13C5 PFNA
PFPeA = 13C5 PFPeA
PFOSA = 13C8 FOSA
PFHxS = 18O2 PFHxS
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

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

Lab Sample ID: MB 480-518368/7
Matrix: Water
Analysis Batch: 518368

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			02/20/20 11:08	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			02/20/20 11:08	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			02/20/20 11:08	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			02/20/20 11:08	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			02/20/20 11:08	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			02/20/20 11:08	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			02/20/20 11:08	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			02/20/20 11:08	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			02/20/20 11:08	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			02/20/20 11:08	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			02/20/20 11:08	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			02/20/20 11:08	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			02/20/20 11:08	1
2-Butanone (MEK)	ND		10	1.3	ug/L			02/20/20 11:08	1
2-Hexanone	ND		5.0	1.2	ug/L			02/20/20 11:08	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			02/20/20 11:08	1
Acetone	ND		10	3.0	ug/L			02/20/20 11:08	1
Acrylonitrile	ND		5.0	0.83	ug/L			02/20/20 11:08	1
Benzene	ND		1.0	0.41	ug/L			02/20/20 11:08	1
Bromodichloromethane	ND		1.0	0.39	ug/L			02/20/20 11:08	1
Bromoform	ND		1.0	0.26	ug/L			02/20/20 11:08	1
Bromomethane	ND		1.0	0.69	ug/L			02/20/20 11:08	1
Carbon disulfide	ND		1.0	0.19	ug/L			02/20/20 11:08	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			02/20/20 11:08	1
Chlorobenzene	ND		1.0	0.75	ug/L			02/20/20 11:08	1
Chlorobromomethane	ND		1.0	0.87	ug/L			02/20/20 11:08	1
Chloroethane	ND		1.0	0.32	ug/L			02/20/20 11:08	1
Chloroform	ND		1.0	0.34	ug/L			02/20/20 11:08	1
Chloromethane	ND		1.0	0.35	ug/L			02/20/20 11:08	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			02/20/20 11:08	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			02/20/20 11:08	1
Dibromochloromethane	ND		1.0	0.32	ug/L			02/20/20 11:08	1
Dibromomethane	ND		1.0	0.41	ug/L			02/20/20 11:08	1
Ethylbenzene	ND		1.0	0.74	ug/L			02/20/20 11:08	1
Iodomethane	ND		1.0	0.30	ug/L			02/20/20 11:08	1
m,p-Xylene	ND		2.0	0.66	ug/L			02/20/20 11:08	1
Methylene Chloride	ND		1.0	0.44	ug/L			02/20/20 11:08	1
o-Xylene	ND		1.0	0.76	ug/L			02/20/20 11:08	1
Styrene	ND		1.0	0.73	ug/L			02/20/20 11:08	1
Tetrachloroethene	ND		1.0	0.36	ug/L			02/20/20 11:08	1
Toluene	ND		1.0	0.51	ug/L			02/20/20 11:08	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			02/20/20 11:08	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			02/20/20 11:08	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			02/20/20 11:08	1
Trichloroethene	ND		1.0	0.46	ug/L			02/20/20 11:08	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			02/20/20 11:08	1
Vinyl acetate	ND		5.0	0.85	ug/L			02/20/20 11:08	1
Vinyl chloride	ND		1.0	0.90	ug/L			02/20/20 11:08	1

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

Lab Sample ID: MB 480-518368/7
Matrix: Water
Analysis Batch: 518368

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0	0.66	ug/L			02/20/20 11:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*02/20/20 11:08*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*02/20/20 11:08*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*02/20/20 11:08*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*02/20/20 11:08*	*1*

Lab Sample ID: LCS 480-518368/5
Matrix: Water
Analysis Batch: 518368

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	26.3		ug/L		105	80 - 120
1,1,1-Trichloroethane	25.0	23.8		ug/L		95	73 - 126
1,1,2,2-Tetrachloroethane	25.0	27.4		ug/L		110	76 - 120
1,1,2-Trichloroethane	25.0	26.6		ug/L		106	76 - 122
1,1-Dichloroethane	25.0	23.8		ug/L		95	77 - 120
1,1-Dichloroethene	25.0	22.5		ug/L		90	66 - 127
1,2,3-Trichloropropane	25.0	27.9		ug/L		112	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	24.0		ug/L		96	56 - 134
1,2-Dibromoethane	25.0	27.9		ug/L		112	77 - 120
1,2-Dichlorobenzene	25.0	25.8		ug/L		103	80 - 124
1,2-Dichloroethane	25.0	25.1		ug/L		101	75 - 120
1,2-Dichloropropane	25.0	25.4		ug/L		102	76 - 120
1,4-Dichlorobenzene	25.0	25.6		ug/L		102	80 - 120
2-Butanone (MEK)	125	136		ug/L		109	57 - 140
2-Hexanone	125	149		ug/L		119	65 - 127
4-Methyl-2-pentanone (MIBK)	125	139		ug/L		111	71 - 125
Acetone	125	151		ug/L		121	56 - 142
Acrylonitrile	250	233		ug/L		93	63 - 125
Benzene	25.0	24.5		ug/L		98	71 - 124
Bromodichloromethane	25.0	24.7		ug/L		99	80 - 122
Bromoform	25.0	26.7		ug/L		107	61 - 132
Bromomethane	25.0	25.2		ug/L		101	55 - 144
Carbon disulfide	25.0	21.2		ug/L		85	59 - 134
Carbon tetrachloride	25.0	23.4		ug/L		94	72 - 134
Chlorobenzene	25.0	26.2		ug/L		105	80 - 120
Chlorobromomethane	25.0	24.5		ug/L		98	72 - 130
Chloroethane	25.0	25.8		ug/L		103	69 - 136
Chloroform	25.0	23.3		ug/L		93	73 - 127
Chloromethane	25.0	24.8		ug/L		99	68 - 124
cis-1,2-Dichloroethene	25.0	24.8		ug/L		99	74 - 124
cis-1,3-Dichloropropene	25.0	25.1		ug/L		101	74 - 124
Dibromochloromethane	25.0	26.5		ug/L		106	75 - 125
Dibromomethane	25.0	25.9		ug/L		103	76 - 127
Ethylbenzene	25.0	25.6		ug/L		102	77 - 123
Iodomethane	25.0	23.6		ug/L		95	78 - 123

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

Lab Sample ID: LCS 480-518368/5
Matrix: Water
Analysis Batch: 518368

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
m,p-Xylene	25.0	26.0		ug/L		104	76 - 122
Methylene Chloride	25.0	23.2		ug/L		93	75 - 124
o-Xylene	25.0	26.3		ug/L		105	76 - 122
Styrene	25.0	27.1		ug/L		108	80 - 120
Tetrachloroethene	25.0	25.4		ug/L		101	74 - 122
Toluene	25.0	25.8		ug/L		103	80 - 122
trans-1,2-Dichloroethene	25.0	23.9		ug/L		96	73 - 127
trans-1,3-Dichloropropene	25.0	27.7		ug/L		111	80 - 120
trans-1,4-Dichloro-2-butene	25.0	26.4		ug/L		106	41 - 131
Trichloroethene	25.0	24.1		ug/L		96	74 - 123
Trichlorofluoromethane	25.0	26.0		ug/L		104	62 - 150
Vinyl acetate	50.0	45.6		ug/L		91	50 - 144
Vinyl chloride	25.0	25.1		ug/L		100	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*
Dibromofluoromethane (Surr)	*95*		*75 - 123*
Toluene-d8 (Surr)	*100*		*80 - 120*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-517907/1-A
Matrix: Water
Analysis Batch: 518558

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517907

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		02/17/20 15:00	02/21/20 14:37	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*30*		*15 - 110*	*02/17/20 15:00*	*02/21/20 14:37*	*1*

Lab Sample ID: LCS 480-517907/2-A
Matrix: Water
Analysis Batch: 518558

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517907

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	1.00	1.23	E	ug/L		123	40 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*28*		*15 - 110*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Lab Sample ID: MB 480-517915/1-A
Matrix: Water
Analysis Batch: 518282

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517915

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 15:55	1
Acenaphthylene	ND		0.50	0.34	ug/L		02/17/20 15:13	02/19/20 15:55	1
Anthracene	ND		0.50	0.39	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 15:55	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		02/17/20 15:13	02/19/20 15:55	1
Chrysene	ND		0.50	0.32	ug/L		02/17/20 15:13	02/19/20 15:55	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		02/17/20 15:13	02/19/20 15:55	1
Fluoranthene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 15:55	1
Fluorene	ND		0.50	0.37	ug/L		02/17/20 15:13	02/19/20 15:55	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		02/17/20 15:13	02/19/20 15:55	1
Naphthalene	ND		0.50	0.42	ug/L		02/17/20 15:13	02/19/20 15:55	1
Phenanthrene	ND		0.50	0.38	ug/L		02/17/20 15:13	02/19/20 15:55	1
Pyrene	ND		0.50	0.36	ug/L		02/17/20 15:13	02/19/20 15:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*90*		*48 - 120*	*02/17/20 15:13*	*02/19/20 15:55*	*1*
Nitrobenzene-d5	*81*		*46 - 120*	*02/17/20 15:13*	*02/19/20 15:55*	*1*
p-Terphenyl-d14	*84*		*24 - 136*	*02/17/20 15:13*	*02/19/20 15:55*	*1*

Lab Sample ID: LCS 480-517915/2-A
Matrix: Water
Analysis Batch: 518282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517915

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	32.0	26.9		ug/L		84	60 - 120
Acenaphthylene	32.0	27.6		ug/L		86	63 - 120
Anthracene	32.0	28.2		ug/L		88	69 - 131
Benzo[a]anthracene	32.0	27.8		ug/L		87	62 - 142
Benzo[a]pyrene	32.0	27.9		ug/L		87	46 - 156
Benzo[b]fluoranthene	32.0	30.4		ug/L		95	50 - 149
Benzo[g,h,i]perylene	32.0	30.1		ug/L		94	34 - 189
Benzo[k]fluoranthene	32.0	28.3		ug/L		88	47 - 147
Chrysene	32.0	28.1		ug/L		88	69 - 140
Dibenz(a,h)anthracene	32.0	30.0		ug/L		94	35 - 176
Fluoranthene	32.0	30.1		ug/L		94	67 - 133
Fluorene	32.0	28.8		ug/L		90	66 - 129
Indeno[1,2,3-cd]pyrene	32.0	29.6		ug/L		93	57 - 161
Naphthalene	32.0	24.9		ug/L		78	48 - 120
Phenanthrene	32.0	27.4		ug/L		86	67 - 130
Pyrene	32.0	26.8		ug/L		84	58 - 136

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*84*		*48 - 120*
Nitrobenzene-d5	*76*		*46 - 120*
p-Terphenyl-d14	*83*		*24 - 136*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 200-152665/1-A
Matrix: Water
Analysis Batch: 152696

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 152665

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		20	2.9	ng/L		02/24/20 13:43	02/25/20 19:03	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		20	5.5	ng/L		02/24/20 13:43	02/25/20 19:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.5	ng/L		02/24/20 13:43	02/25/20 19:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	1.7	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorobutanesulfonic acid (PFBS)	0.749	J	2.0	0.49	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorobutanoic acid (PFBA)	ND		2.0	1.0	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.90	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.77	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorododecanoic acid (PFDoA)	0.863	J	2.0	0.59	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.95	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.91	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.80	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.76	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorononanoic acid (PFNA)	0.578	J	2.0	0.27	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorooctanesulfonamide (PFOSA)	ND		10	10	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorooctanesulfonic acid (PFOS)	0.697	J	2.0	0.61	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorooctanoic acid (PFOA)	0.961	J	2.0	0.81	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.63	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorotetradecanoic acid (PFTeA)	1.01	J	2.0	0.92	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluorotridecanoic acid (PFTriA)	0.737	J	2.0	0.60	ng/L		02/24/20 13:43	02/25/20 19:03	1
Perfluoroundecanoic acid (PFUnA)	0.981	J	2.0	0.78	ng/L		02/24/20 13:43	02/25/20 19:03	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*94*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C2 PFDoA	*73*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C2 PFHxA	*91*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C2 PFUnA	*79*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C2 PFTeDA	*68*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C3 PFBS	*84*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C4 PFBA	*100*		*25 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C4 PFOA	*91*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C4 PFOS	*94*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C4 PFHpA	*97*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C5 PFNA	*88*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C5 PFPeA	*100*		*25 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
13C8 FOSA	*62*		*25 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
18O2 PFHxS	*98*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
d3-NMeFOSAA	*95*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
d5-NEtFOSAA	*82*		*50 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*
M2-8:2 FTS	*92*		*25 - 150*	*02/24/20 13:43*	*02/25/20 19:03*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 200-152665/2-A
Matrix: Water
Analysis Batch: 152696

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152665

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	38.3	34.6		ng/L		90	50 - 150
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	37.9	33.0		ng/L		87	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.3		ng/L		106	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.8		ng/L		112	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	70 - 130
Perfluorobutanoic acid (PFBA)	40.0	45.6		ng/L		114	50 - 150
Perfluorodecanesulfonic acid (PFDS)	38.6	29.6		ng/L		77	50 - 150
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	70 - 130
Perfluorododecanoic acid (PFDoA)	40.0	43.3		ng/L		108	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.0		ng/L		105	50 - 150
Perfluoroheptanoic acid (PFHpA)	40.0	37.7		ng/L		94	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.8		ng/L		90	70 - 130
Perfluorohexanoic acid (PFHxA)	40.0	42.5		ng/L		106	70 - 130
Perfluorononanoic acid (PFNA)	40.0	36.8		ng/L		92	70 - 130
Perfluorooctanesulfonamide (PFOSA)	40.0	35.2		ng/L		88	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	36.1		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	44.2		ng/L		110	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	38.0		ng/L		95	50 - 150
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5		ng/L		106	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	34.9		ng/L		87	70 - 130
Perfluoroundecanoic acid (PFUnA)	40.0	39.3		ng/L		98	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFDA	*89*		*50 - 150*
13C2 PFDoA	*65*		*50 - 150*
13C2 PFHxA	*81*		*50 - 150*
13C2 PFUnA	*78*		*50 - 150*
13C2 PFTeDA	*69*		*50 - 150*
13C3 PFBS	*85*		*50 - 150*
13C4 PFBA	*96*		*25 - 150*
13C4 PFOA	*90*		*50 - 150*
13C4 PFOS	*93*		*50 - 150*
13C4 PFHpA	*97*		*50 - 150*
13C5 PFNA	*88*		*50 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C8 FOSA	*60*		*25 - 150*
18O2 PFHxS	*95*		*50 - 150*
d3-NMeFOSAA	*96*		*50 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 200-152665/2-A
Matrix: Water
Analysis Batch: 152696

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 152665

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d5-NEtFOSAA	*94*		*50 - 150*
M2-6:2 FTS	*94*		*25 - 150*
M2-8:2 FTS	*98*		*25 - 150*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-517771/1-A
Matrix: Water
Analysis Batch: 517981

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517771

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		02/17/20 08:25	02/17/20 13:57	1
Antimony	ND		0.020	0.0068	mg/L		02/17/20 08:25	02/17/20 13:57	1
Arsenic	ND		0.015	0.0056	mg/L		02/17/20 08:25	02/17/20 13:57	1
Barium	ND		0.0020	0.00070	mg/L		02/17/20 08:25	02/17/20 13:57	1
Beryllium	ND		0.0020	0.00030	mg/L		02/17/20 08:25	02/17/20 13:57	1
Boron	ND		0.020	0.0040	mg/L		02/17/20 08:25	02/17/20 13:57	1
Cadmium	ND		0.0020	0.00050	mg/L		02/17/20 08:25	02/17/20 13:57	1
Calcium	ND		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 13:57	1
Chromium	ND		0.0040	0.0010	mg/L		02/17/20 08:25	02/17/20 13:57	1
Cobalt	ND		0.0040	0.00063	mg/L		02/17/20 08:25	02/17/20 13:57	1
Copper	ND		0.010	0.0016	mg/L		02/17/20 08:25	02/17/20 13:57	1
Iron	ND		0.050	0.019	mg/L		02/17/20 08:25	02/17/20 13:57	1
Lead	ND		0.010	0.0030	mg/L		02/17/20 08:25	02/17/20 13:57	1
Magnesium	ND		0.20	0.043	mg/L		02/17/20 08:25	02/17/20 13:57	1
Manganese	0.00101	J	0.0030	0.00040	mg/L		02/17/20 08:25	02/17/20 13:57	1
Nickel	ND		0.010	0.0013	mg/L		02/17/20 08:25	02/17/20 13:57	1
Potassium	ND		0.50	0.10	mg/L		02/17/20 08:25	02/17/20 13:57	1
Silver	ND		0.0060	0.0017	mg/L		02/17/20 08:25	02/17/20 13:57	1
Sodium	ND		1.0	0.32	mg/L		02/17/20 08:25	02/17/20 13:57	1
Thallium	ND		0.020	0.010	mg/L		02/17/20 08:25	02/17/20 13:57	1
Vanadium	ND		0.0050	0.0015	mg/L		02/17/20 08:25	02/17/20 13:57	1
Zinc	ND		0.010	0.0015	mg/L		02/17/20 08:25	02/17/20 13:57	1

Lab Sample ID: MB 480-517771/1-A
Matrix: Water
Analysis Batch: 518181

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517771

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	ND		0.025	0.0087	mg/L		02/17/20 08:25	02/18/20 11:52	1

Lab Sample ID: LCS 480-517771/2-A
Matrix: Water
Analysis Batch: 517981

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10.0	9.43		mg/L		94	80 - 120
Antimony	0.200	0.214		mg/L		107	80 - 120
Arsenic	0.200	0.194		mg/L		97	80 - 120
Barium	0.200	0.201		mg/L		100	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 480-517771/2-A
Matrix: Water
Analysis Batch: 517981

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	0.200	0.201		mg/L		101	80 - 120
Boron	0.200	0.195		mg/L		97	80 - 120
Cadmium	0.200	0.197		mg/L		99	80 - 120
Calcium	10.0	9.71		mg/L		97	80 - 120
Chromium	0.200	0.194		mg/L		97	80 - 120
Cobalt	0.200	0.185		mg/L		92	80 - 120
Copper	0.200	0.190		mg/L		95	80 - 120
Iron	10.0	9.69		mg/L		97	80 - 120
Lead	0.200	0.189		mg/L		94	80 - 120
Magnesium	10.0	9.55		mg/L		95	80 - 120
Manganese	0.200	0.193		mg/L		97	80 - 120
Nickel	0.200	0.186		mg/L		93	80 - 120
Potassium	10.0	9.55		mg/L		96	80 - 120
Silver	0.0500	0.0479		mg/L		96	80 - 120
Sodium	10.0	9.36		mg/L		93	80 - 120
Thallium	0.200	0.195		mg/L		97	80 - 120
Vanadium	0.200	0.191		mg/L		96	80 - 120
Zinc	0.200	0.195		mg/L		98	80 - 120

Lab Sample ID: LCS 480-517771/2-A
Matrix: Water
Analysis Batch: 518181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	0.200	0.194		mg/L		97	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-517829/1-A
Matrix: Water
Analysis Batch: 517931

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 517829

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		02/17/20 11:48	02/17/20 15:03	1

Lab Sample ID: LCS 480-517829/2-A
Matrix: Water
Analysis Batch: 517931

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 517829

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00705		mg/L		106	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-517943/28
Matrix: Water
Analysis Batch: 517943

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.20	0.073	mg/L			02/18/20 02:31	1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 480-517943/28
Matrix: Water
Analysis Batch: 517943

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			02/18/20 02:31	1
Sulfate	ND		2.0	0.35	mg/L			02/18/20 02:31	1

Lab Sample ID: LCS 480-517943/27
Matrix: Water
Analysis Batch: 517943

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	5.00	5.39		mg/L		108	90 - 110
Chloride	50.0	53.11		mg/L		106	90 - 110
Sulfate	50.0	50.95		mg/L		102	90 - 110

Lab Sample ID: 480-166415-6 MS
Matrix: Water
Analysis Batch: 517943

Client Sample ID: 5-SAR-001-005-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	ND		25.0	25.93		mg/L		104	80 - 120
Chloride	231		250	475.2		mg/L		98	81 - 120
Sulfate	ND		250	247.9		mg/L		99	80 - 120

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-518798/51
Matrix: Water
Analysis Batch: 518798

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0167	J	0.020	0.0090	mg/L			02/24/20 12:20	1

Lab Sample ID: MB 480-518798/75
Matrix: Water
Analysis Batch: 518798

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0166	J	0.020	0.0090	mg/L			02/24/20 12:40	1

Lab Sample ID: LCS 480-518798/52
Matrix: Water
Analysis Batch: 518798

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.947		mg/L		95	90 - 110

Lab Sample ID: LCS 480-518798/76
Matrix: Water
Analysis Batch: 518798

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.940		mg/L		94	90 - 110

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: MB 480-518881/27
Matrix: Water
Analysis Batch: 518881

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0146	J	0.020	0.0090	mg/L			02/25/20 07:58	1

Lab Sample ID: MB 480-518881/3
Matrix: Water
Analysis Batch: 518881

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.0112	J	0.020	0.0090	mg/L			02/25/20 07:37	1

Lab Sample ID: MB 480-518881/51
Matrix: Water
Analysis Batch: 518881

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			02/25/20 08:18	1

Lab Sample ID: LCS 480-518881/28
Matrix: Water
Analysis Batch: 518881

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.977		mg/L		98	90 - 110

Lab Sample ID: LCS 480-518881/4
Matrix: Water
Analysis Batch: 518881

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.984		mg/L		98	90 - 110
Ammonia	1.00	0.984		mg/L		98	90 - 110

Lab Sample ID: LCS 480-518881/52
Matrix: Water
Analysis Batch: 518881

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.968		mg/L		97	90 - 110

Method: 410.4 - COD

Lab Sample ID: MB 480-518483/76
Matrix: Water
Analysis Batch: 518483

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0	5.0	mg/L			02/19/20 16:51	1

Method: 410.4 - COD (Continued)

Lab Sample ID: LCS 480-518483/77
Matrix: Water
Analysis Batch: 518483

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chemical Oxygen Demand			25.0	26.55		mg/L		106	90 - 110		

Lab Sample ID: 480-166415-1 MS
Matrix: Water
Analysis Batch: 518483

Client Sample ID: 5-SAR-001-005-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chemical Oxygen Demand	28.6		50.0	68.76		mg/L		80	75 - 125		

Lab Sample ID: 480-166415-1 MSD
Matrix: Water
Analysis Batch: 518483

Client Sample ID: 5-SAR-001-005-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chemical Oxygen Demand	28.6		50.0	67.59		mg/L		78	75 - 125	2	20

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

Lab Sample ID: MB 480-518431/27
Matrix: Water
Analysis Batch: 518431

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.43	mg/L			02/20/20 01:33	1

Lab Sample ID: LCS 480-518431/28
Matrix: Water
Analysis Batch: 518431

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			60.0	59.97		mg/L		100	90 - 110		

Lab Sample ID: 480-166415-4 MS
Matrix: Water
Analysis Batch: 518431

Client Sample ID: 5-SAR-001-005-04
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	ND		23.3	26.33		mg/L		113	54 - 131		

Lab Sample ID: 480-166415-6 DU
Matrix: Water
Analysis Batch: 518431

Client Sample ID: 5-SAR-001-005-06
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	6.6		6.84		mg/L		4	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-518233/30
Matrix: Water
Analysis Batch: 518233

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	ND		5.0	0.79	mg/L			02/18/20 19:11	1

Lab Sample ID: MB 480-518233/7
Matrix: Water
Analysis Batch: 518233

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	ND		5.0	0.79	mg/L			02/18/20 16:57	1

Lab Sample ID: LCS 480-518233/31
Matrix: Water
Analysis Batch: 518233

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity, Total	100	92.08		mg/L		92	90 - 110

Lab Sample ID: LCS 480-518233/8
Matrix: Water
Analysis Batch: 518233

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity, Total	100	91.99		mg/L		92	90 - 110

Method: SM 2340C - Hardness, Total (mg/l as CaC03)

Lab Sample ID: MB 480-518958/27
Matrix: Water
Analysis Batch: 518958

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total hardness as CaCO3	ND		2.0	0.53	mg/L			02/25/20 11:07	1

Lab Sample ID: LCS 480-518958/28
Matrix: Water
Analysis Batch: 518958

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total hardness as CaCO3	272	276.0		mg/L		101	90 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 480-518139/1
Matrix: Water
Analysis Batch: 518139

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	14.00		10.0	4.0	mg/L			02/18/20 16:10	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 480-518139/2
Matrix: Water
Analysis Batch: 518139

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			501	495.0		mg/L		99	85 - 115		

Lab Sample ID: 480-166415-C-2 DU
Matrix: Water
Analysis Batch: 518139

Client Sample ID: 480-166415-C-2 DU
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	50.00			37.00	F3	mg/L				30	10

Lab Sample ID: MB 480-518236/1
Matrix: Water
Analysis Batch: 518236

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0	4.0	mg/L			02/19/20 09:49	1

Lab Sample ID: LCS 480-518236/2
Matrix: Water
Analysis Batch: 518236

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			501	490.0		mg/L		98	85 - 115		

Lab Sample ID: MB 480-520032/1
Matrix: Water
Analysis Batch: 520032

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0	4.0	mg/L			03/04/20 13:18	1

Lab Sample ID: LCS 480-520032/2
Matrix: Water
Analysis Batch: 520032

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			500	488.0		mg/L		98	85 - 115		

GC/MS VOA

Analysis Batch: 518368

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	8260C	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	8260C	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	8260C	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	8260C	
480-166415-7	5-SAR-001-005-07	Total/NA	Water	8260C	
MB 480-518368/7	Method Blank	Total/NA	Water	8260C	
LCS 480-518368/5	Lab Control Sample	Total/NA	Water	8260C	

GC/MS Semi VOA

Prep Batch: 517907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	3510C	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	3510C	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	3510C	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	3510C	
MB 480-517907/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-517907/2-A	Lab Control Sample	Total/NA	Water	3510C	

Prep Batch: 517915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	3510C	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	3510C	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	3510C	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	3510C	
MB 480-517915/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-517915/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 518282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	8270D_LL_PAH	517915
480-166415-2	5-SAR-001-005-02	Total/NA	Water	8270D_LL_PAH	517915
480-166415-4	5-SAR-001-005-04	Total/NA	Water	8270D_LL_PAH	517915
480-166415-6	5-SAR-001-005-06	Total/NA	Water	8270D_LL_PAH	517915
MB 480-517915/1-A	Method Blank	Total/NA	Water	8270D_LL_PAH	517915
LCS 480-517915/2-A	Lab Control Sample	Total/NA	Water	8270D_LL_PAH	517915

Analysis Batch: 518558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	8270D SIM ID	517907
480-166415-2	5-SAR-001-005-02	Total/NA	Water	8270D SIM ID	517907
480-166415-4	5-SAR-001-005-04	Total/NA	Water	8270D SIM ID	517907
480-166415-6	5-SAR-001-005-06	Total/NA	Water	8270D SIM ID	517907
MB 480-517907/1-A	Method Blank	Total/NA	Water	8270D SIM ID	517907
LCS 480-517907/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	517907

LCMS

Prep Batch: 152665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	3535	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	3535	

LCMS (Continued)

Prep Batch: 152665 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-3	5-SAR-001-005-03	Total/NA	Water	3535	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	3535	
480-166415-5	5-SAR-001-005-05	Total/NA	Water	3535	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	3535	
MB 200-152665/1-A	Method Blank	Total/NA	Water	3535	
LCS 200-152665/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 152696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-2	5-SAR-001-005-02	Total/NA	Water	537 (modified)	152665
480-166415-4	5-SAR-001-005-04	Total/NA	Water	537 (modified)	152665
480-166415-5	5-SAR-001-005-05	Total/NA	Water	537 (modified)	152665
480-166415-6	5-SAR-001-005-06	Total/NA	Water	537 (modified)	152665
MB 200-152665/1-A	Method Blank	Total/NA	Water	537 (modified)	152665
LCS 200-152665/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	152665

Analysis Batch: 152745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	537 (modified)	152665
480-166415-3	5-SAR-001-005-03	Total/NA	Water	537 (modified)	152665
480-166415-6	5-SAR-001-005-06	Total/NA	Water	537 (modified)	152665

Metals

Prep Batch: 517771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	3005A	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	3005A	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	3005A	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	3005A	
MB 480-517771/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-517771/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 517829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	7470A	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	7470A	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	7470A	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	7470A	
MB 480-517829/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-517829/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 517931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	7470A	517829
480-166415-2	5-SAR-001-005-02	Total/NA	Water	7470A	517829
480-166415-4	5-SAR-001-005-04	Total/NA	Water	7470A	517829
480-166415-6	5-SAR-001-005-06	Total/NA	Water	7470A	517829
MB 480-517829/1-A	Method Blank	Total/NA	Water	7470A	517829
LCS 480-517829/2-A	Lab Control Sample	Total/NA	Water	7470A	517829

Metals

Analysis Batch: 517981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	6010C	517771
480-166415-2	5-SAR-001-005-02	Total/NA	Water	6010C	517771
480-166415-4	5-SAR-001-005-04	Total/NA	Water	6010C	517771
480-166415-6	5-SAR-001-005-06	Total/NA	Water	6010C	517771
MB 480-517771/1-A	Method Blank	Total/NA	Water	6010C	517771
LCS 480-517771/2-A	Lab Control Sample	Total/NA	Water	6010C	517771

Analysis Batch: 518181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-517771/1-A	Method Blank	Total/NA	Water	6010C	517771
LCS 480-517771/2-A	Lab Control Sample	Total/NA	Water	6010C	517771

General Chemistry

Analysis Batch: 517943

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	300.0	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	300.0	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	300.0	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	300.0	
MB 480-517943/28	Method Blank	Total/NA	Water	300.0	
LCS 480-517943/27	Lab Control Sample	Total/NA	Water	300.0	
480-166415-6 MS	5-SAR-001-005-06	Total/NA	Water	300.0	

Analysis Batch: 518139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	SM 2540C	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	SM 2540C	
MB 480-518139/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-518139/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-166415-C-2 DU	480-166415-C-2 DU	Total/NA	Water	SM 2540C	

Analysis Batch: 518233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	SM 2320B	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	SM 2320B	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	SM 2320B	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	SM 2320B	
MB 480-518233/30	Method Blank	Total/NA	Water	SM 2320B	
MB 480-518233/7	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-518233/31	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 480-518233/8	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 518236

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-4	5-SAR-001-005-04	Total/NA	Water	SM 2540C	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	SM 2540C	
MB 480-518236/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-518236/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry

Analysis Batch: 518431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	9060A	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	9060A	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	9060A	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	9060A	
MB 480-518431/27	Method Blank	Total/NA	Water	9060A	
LCS 480-518431/28	Lab Control Sample	Total/NA	Water	9060A	
480-166415-4 MS	5-SAR-001-005-04	Total/NA	Water	9060A	
480-166415-6 DU	5-SAR-001-005-06	Total/NA	Water	9060A	

Analysis Batch: 518483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	410.4	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	410.4	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	410.4	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	410.4	
MB 480-518483/76	Method Blank	Total/NA	Water	410.4	
LCS 480-518483/77	Lab Control Sample	Total/NA	Water	410.4	
480-166415-1 MS	5-SAR-001-005-01	Total/NA	Water	410.4	
480-166415-1 MSD	5-SAR-001-005-01	Total/NA	Water	410.4	

Analysis Batch: 518798

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-6	5-SAR-001-005-06	Total/NA	Water	350.1	
MB 480-518798/51	Method Blank	Total/NA	Water	350.1	
MB 480-518798/75	Method Blank	Total/NA	Water	350.1	
LCS 480-518798/52	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-518798/76	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 518881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	350.1	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	350.1	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	350.1	
MB 480-518881/27	Method Blank	Total/NA	Water	350.1	
MB 480-518881/3	Method Blank	Total/NA	Water	350.1	
MB 480-518881/51	Method Blank	Total/NA	Water	350.1	
LCS 480-518881/28	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-518881/4	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-518881/52	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 518958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-1	5-SAR-001-005-01	Total/NA	Water	SM 2340C	
480-166415-2	5-SAR-001-005-02	Total/NA	Water	SM 2340C	
480-166415-4	5-SAR-001-005-04	Total/NA	Water	SM 2340C	
480-166415-6	5-SAR-001-005-06	Total/NA	Water	SM 2340C	
MB 480-518958/27	Method Blank	Total/NA	Water	SM 2340C	
LCS 480-518958/28	Lab Control Sample	Total/NA	Water	SM 2340C	

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

General Chemistry

Analysis Batch: 520032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-166415-2	5-SAR-001-005-02	Total/NA	Water	SM 2540C	
MB 480-520032/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-520032/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-01

Lab Sample ID: 480-166415-1

Date Collected: 02/14/20 10:15

Matrix: Water

Date Received: 02/15/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518368	02/20/20 15:44	RJF	TAL BUF
Total/NA	Prep	3510C			517907	02/17/20 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518558	02/21/20 18:58	RJS	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/20/20 00:54	PJQ	TAL BUF
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152745	02/26/20 18:10	ND	TAL BUR
Total/NA	Prep	3005A			517771	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	517981	02/17/20 15:12	LMH	TAL BUF
Total/NA	Prep	7470A			517829	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:30	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/18/20 05:07	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	518881	02/25/20 08:24	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518431	02/20/20 05:18	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	518233	02/18/20 18:47	KEB	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518139	02/18/20 16:10	CSS	TAL BUF

Client Sample ID: 5-SAR-001-005-02

Lab Sample ID: 480-166415-2

Date Collected: 02/14/20 11:20

Matrix: Water

Date Received: 02/15/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518368	02/20/20 16:08	RJF	TAL BUF
Total/NA	Prep	3510C			517907	02/17/20 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518558	02/21/20 19:22	RJS	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/20/20 01:22	PJQ	TAL BUF
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152696	02/25/20 23:12	JM1	TAL BUR
Total/NA	Prep	3005A			517771	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	517981	02/17/20 15:16	LMH	TAL BUF
Total/NA	Prep	7470A			517829	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:34	BMB	TAL BUF
Total/NA	Analysis	300.0		1	517943	02/18/20 05:21	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	518881	02/25/20 08:25	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518431	02/20/20 05:46	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	518233	02/18/20 18:53	KEB	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518139	02/18/20 16:10	CSS	TAL BUF
Total/NA	Analysis	SM 2540C		1	520032	03/04/20 13:18	T1S	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-03
Date Collected: 02/14/20 11:45
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152745	02/26/20 18:26	ND	TAL BUR

Client Sample ID: 5-SAR-001-005-04
Date Collected: 02/14/20 13:00
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518368	02/20/20 16:33	RJF	TAL BUF
Total/NA	Prep	3510C			517907	02/17/20 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518558	02/21/20 19:45	RJS	TAL BUF
Total/NA	Prep	3510C			517915	02/17/20 15:13	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/20/20 01:51	PJQ	TAL BUF
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152696	02/25/20 23:28	JM1	TAL BUR
Total/NA	Prep	3005A			517771	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	517981	02/17/20 15:20	LMH	TAL BUF
Total/NA	Prep	7470A			517829	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:35	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/18/20 05:35	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	518881	02/25/20 08:26	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518431	02/20/20 07:10	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	518233	02/18/20 19:25	KEB	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518236	02/19/20 09:49	CSS	TAL BUF

Client Sample ID: 5-SAR-001-005-05
Date Collected: 02/14/20 13:45
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152696	02/25/20 23:36	JM1	TAL BUR

Client Sample ID: 5-SAR-001-005-06
Date Collected: 02/14/20 14:30
Date Received: 02/15/20 08:00

Lab Sample ID: 480-166415-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518368	02/20/20 16:57	RJF	TAL BUF
Total/NA	Prep	3510C			517907	02/17/20 15:00	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	518558	02/21/20 20:09	RJS	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Client Sample ID: 5-SAR-001-005-06

Lab Sample ID: 480-166415-6

Date Collected: 02/14/20 14:30

Matrix: Water

Date Received: 02/15/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			517915	02/17/20 15:14	ATG	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	518282	02/20/20 02:20	PJQ	TAL BUF
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152696	02/25/20 23:45	JM1	TAL BUR
Total/NA	Prep	3535			152665	02/24/20 13:43	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	152745	02/26/20 18:35	ND	TAL BUR
Total/NA	Prep	3005A			517771	02/17/20 08:25	EMB	TAL BUF
Total/NA	Analysis	6010C		1	517981	02/17/20 15:23	LMH	TAL BUF
Total/NA	Prep	7470A			517829	02/17/20 11:48	BMB	TAL BUF
Total/NA	Analysis	7470A		1	517931	02/17/20 15:37	BMB	TAL BUF
Total/NA	Analysis	300.0		5	517943	02/18/20 05:49	IMZ	TAL BUF
Total/NA	Analysis	350.1		5	518798	02/24/20 12:56	CLT	TAL BUF
Total/NA	Analysis	410.4		1	518483	02/19/20 16:51	CSS	TAL BUF
Total/NA	Analysis	9060A		1	518431	02/20/20 08:06	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	518233	02/18/20 19:33	KEB	TAL BUF
Total/NA	Analysis	SM 2340C		1	518958	02/25/20 11:07	MJB	TAL BUF
Total/NA	Analysis	SM 2540C		1	518236	02/19/20 09:49	CSS	TAL BUF

Client Sample ID: 5-SAR-001-005-07

Lab Sample ID: 480-166415-7

Date Collected: 02/14/20 00:00

Matrix: Water

Date Received: 02/15/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	518368	02/20/20 17:21	RJF	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-20

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

Analysis Method	Prep Method	Matrix	Analyte
300.0		Water	Bromide
SM 2340C		Water	Total hardness as CaCO3

Laboratory: Eurofins TestAmerica, Burlington

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10391	03-31-20

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

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)
537 (modified)	3535	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	3535	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic Acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctanesulfonamide (PFOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
8270D_LL_PAH	Semivolatile Organic Compounds (GC/MS) Low level PAH	SW846	TAL BUF
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL BUR
6010C	Metals (ICP)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
410.4	COD	MCAWW	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 2340C	Hardness, Total (mg/l as CaC03)	SM	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3535	Solid-Phase Extraction (SPE)	SW846	TAL BUR
5030C	Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-166415-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-166415-1	5-SAR-001-005-01	Water	02/14/20 10:15	02/15/20 08:00	
480-166415-2	5-SAR-001-005-02	Water	02/14/20 11:20	02/15/20 08:00	
480-166415-3	5-SAR-001-005-03	Water	02/14/20 11:45	02/15/20 08:00	
480-166415-4	5-SAR-001-005-04	Water	02/14/20 13:00	02/15/20 08:00	
480-166415-5	5-SAR-001-005-05	Water	02/14/20 13:45	02/15/20 08:00	
480-166415-6	5-SAR-001-005-06	Water	02/14/20 14:30	02/15/20 08:00	
480-166415-7	5-SAR-001-005-07	Water	02/14/20 00:00	02/15/20 08:00	

CHAIN-OF-CUSTODY / Analytical Request Document

GD 2/14/20

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-~~004~~-005
Lab Name:	TestAmerica Albany #224	Company:	Parsons/Ramboll	Project Name:	ILI - Region 5
Attention:	Brian Fischer	Attention:	Scott Tucker	Project Site:	Tow Path Road Landfill
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Number:	450619
Phone:	(716) 504-9835	Phone:	315-956-6345		
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		

Section C Deliverable Requirements		Section D Additional Information
Report To:	Scott.Tucker@Ramboll.com	Purchase Order No:
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com; Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	TAT - 10 Day
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD	

Preservative codes (for water only):

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B		
												0	1	0	0	2	2	3	1	0	0	0		
												PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B		
												#Bottles		2	3	2	2	1	1	1	2	1	1	1	
1	5-SAR-001-TPP-2			5-SAR-001-005-01	2-14-20	10:15	WG	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
2	5-SAR-001-FIELD QC	–	–	5-SAR-001-005-02	2-14-20	11:20	WQ	EB	16		N	X	X	X	X	X	X	X	X	X	X	X		
3	5-SAR-001-FIELD QC	–	–	5-SAR-001-005-03	2-14-20	11:45	WQ	FB	2		N	X												
4	5-SAR-001-TPP-1			5-SAR-001-005-04	2-14-20	13:00	WG	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
5	5-SAR-001-FIELD QC	–	–	5-SAR-001-005-05	2-14-20	13:45	WQ	EB	2		N	X												
6	5-SAR-001-MW-02			5-SAR-001-005-06	2-14-20	14:30	WG	N	16		N	X	X	X	X	X	X	X	X	X	X	X		
7	5-SAR-001-FIELD QC	–	–	5-SAR-001-005-07	2-14-20	–	WQ	TB	2		N		X											
8																								
9	RR			2/14/20																				
10																								

480-166415 Chain of Custody

Special Instructions:

Samplers Name:	Company:	Relinquished By:	Company:	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
Shipment Method:	Date/Time: 2/14/20 15:15	Accepted By:	Date/Time: 2/14/20 15:15	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐
	Shipment Tracking No:		Company: Courier	Cooler Temp.:	Custody Seals Intact: Yes ☐ No ☐
	Date/Time:		Date/Time: 2/14/20 15:15	Rec'd on Ice: Yes ☐ No ☐	Samples Intact: Yes ☐ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Relinquished By Karl Fadum 2/14/20 1700 Walker 2/15/20 0800

#1 1.0, 1.5

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

480-166415 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Schove, John R	COC No: 480-54405.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: john.schove@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-166415-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 2/26/2020		
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:		
Email:	WO #:		
Project Name: Tow Path LF, Region 5	Project #: 48021686		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_IVWT PFAS, Standard List (21 analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
5-SAR-001-005-01 (480-166415-1)	2/14/20	10:15 Eastern		Water			X	2	
5-SAR-001-005-02 (480-166415-2)	2/14/20	11:20 Eastern		Water			X	2	
5-SAR-001-005-03 (480-166415-3)	2/14/20	11:45 Eastern		Water			X	2	
5-SAR-001-005-04 (480-166415-4)	2/14/20	13:00 Eastern		Water			X	2	
5-SAR-001-005-05 (480-166415-5)	2/14/20	13:45 Eastern		Water			X	2	
5-SAR-001-005-06 (480-166415-6)	2/14/20	14:30 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	2-17-20 17:00	ETAB	[signature]	2/18/2020 10:30	TDB4BL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: 992825 | Cooler Temperature(s) °C and Other Remarks: 3.0

Ver: 01/16/2019



ORIGIN ID:DKKA (716) 691-2600
CHRIS KOLB
TESTAMERICA
10 HAZELWOOD DR

AMHERST, NY 14228
UNITED STATES US

SHIP DATE: 17FEB20
ACTWGT: 77.60 LB
CAD: 846654/CAFE3312
DIMS: 26x15x14 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990
REF: TA BURLINGTON

565C2/049E/0502

FedEx Express

TUE - 18 FEB 10:30A
PRIORITY OVERNIGHT

TRK# 0201 4276 0722 6232

XH BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: O'Brien & Gere Engineers, Inc.

Job Number: 480-166415-1

Login Number: 166415
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: O'Brien & Gere Engineers, Inc.

Job Number: 480-166415-1

Login Number: 166415
List Number: 2
Creator: Khudaier, Zahraa

List Source: Eurofins TestAmerica, Burlington
List Creation: 02/18/20 11:18 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	992825
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	8.0ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-167913-1
Client Project/Site: Tow Path LF, Region 5

For:
O'Brien & Gere Engineers, Inc.
PO BOX 4873
Syracuse, New York 13221-4873

Attn: Scott Tucker

Authorized for release by:
4/3/2020 11:05:39 AM
Alexander Gilbert, Project Management Assistant I
alexander.gilbert@testamericainc.com

Designee for

John Schove, Project Manager II
(716)504-9838
john.schove@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 7
Surrogate Summary 17
Isotope Dilution Summary 18
QC Sample Results 20
QC Association Summary 33
Lab Chronicle 36
Certification Summary 38
Method Summary 39
Sample Summary 40
Chain of Custody 41
Receipt Checklists 44

Definitions/Glossary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-167913-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-167913-1

Comments
No additional comments.

Receipt
The samples were received on 3/28/2020 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.5º C.

GC/MS VOA
Method 8260C: The continuing calibration verification (CCV) associated with batch 480-523510 recovered above the upper control limit for Chlorodibromomethane and Vinyl acetate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: 5-SAR-001-006-02 (480-167913-2) and 5-SAR-001-006-04 (480-167913-4).

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

GC/MS Semi VOA
Method 8270D SIM ID: The 1,4-Dioxane result reported for sample(s) have an E flag qualifier indicating the results are over the calibration range on the raw data. The actual amounts are within the calibration range; however, the E flag is generated based upon the bias corrected concentration. The LIMS system calculates a bias correction based on the recovery of the 1,4-Dioxane-d8 isotope.5-SAR-001-006-02 (480-167913-2) and (LCS 480-523476/2-A)

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

HPLC/IC
Method 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: 5-SAR-001-006-01 (480-167913-1) and 5-SAR-001-006-02 (480-167913-2). Elevated reporting limits (RLs) are provided.

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

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

LCMS
Method 3535: A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: Due to concerns about sample matrix and the potential presence of organic interference, the following sample was diluted 2-fold prior to extraction: 5-SAR-001-006-02 (480-167913-2).

Method 537 (modified): The method blank for preparation batch 200-153750 and analytical batch 200-153762 contained Perfluoropentanoic acid (PFPeA) above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

General Chemistry
Method SM 2540C: Due to the matrix, the initial volume(s) used for the following sample deviated from the standard procedure: 5-SAR-001-006-01 (480-167913-1). The reporting limits (RLs) have been adjusted proportionately.

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

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

Detection Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Client Sample ID: 5-SAR-001-006-01 — Lab Sample ID: 480-167913-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dichlorobenzene	4.0		1.0	0.84	ug/L	1		8260C	Total/NA
Acetone	4.4	J	10	3.0	ug/L	1		8260C	Total/NA
Chlorobenzene	27		1.0	0.75	ug/L	1		8260C	Total/NA
Acenaphthene	0.32	J	0.50	0.30	ug/L	1		8270D_LL_PAH	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	23	J	40	3.0	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.8	J	4.0	0.98	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	5.2		4.0	2.0	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0	J	4.0	1.8	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.2		4.0	1.6	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.0		4.0	1.5	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.2	J	4.0	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	89		4.0	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	28		4.0	1.6	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.7	B	4.0	1.3	ng/L	1		537 (modified)	Total/NA
Aluminum	0.11	J	0.20	0.060	mg/L	1		6010C	Total/NA
Barium	0.25		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.091		0.020	0.0040	mg/L	1		6010C	Total/NA
Calcium	116		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0017	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Iron	40.5		0.050	0.019	mg/L	1		6010C	Total/NA
Lead	0.0044	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Magnesium	19.8		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.43	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0023	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	3.0		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	326		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0066	J B	0.010	0.0015	mg/L	1		6010C	Total/NA
Hardness as calcium carbonate	371		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Chloride	545		5.0	2.8	mg/L	10		300.0	Total/NA
Ammonia	5.9		0.10	0.045	mg/L	5		350.1	Total/NA
Chemical Oxygen Demand	31.7		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	6.6		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	391		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids	1110		20.0	8.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-006-02 — Lab Sample ID: 480-167913-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	3.0	E	0.19	0.095	ug/L	1		8270D SIM ID	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.7		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA)	5.2		1.8	0.90	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.6		1.8	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1		1.8	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.2		1.8	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	1.8	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	13		1.8	0.73	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.7	B	1.8	0.56	ng/L	1		537 (modified)	Total/NA
Aluminum	0.23		0.20	0.060	mg/L	1		6010C	Total/NA
Arsenic	0.015		0.015	0.0056	mg/L	1		6010C	Total/NA
Barium	0.13		0.0020	0.00070	mg/L	1		6010C	Total/NA
Boron	0.028		0.020	0.0040	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Client Sample ID: 5-SAR-001-006-02 (Continued) — Lab Sample ID: 480-167913-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00060	J	0.0020	0.00050	mg/L	1		6010C	Total/NA
Calcium	165		0.50	0.10	mg/L	1		6010C	Total/NA
Chromium	0.0069		0.0040	0.0010	mg/L	1		6010C	Total/NA
Cobalt	0.0013	J	0.0040	0.00063	mg/L	1		6010C	Total/NA
Copper	0.0073	J	0.010	0.0016	mg/L	1		6010C	Total/NA
Iron	10.9		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	37.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	8.6	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Nickel	0.0052	J	0.010	0.0013	mg/L	1		6010C	Total/NA
Potassium	1.7		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	33.0		1.0	0.32	mg/L	1		6010C	Total/NA
Zinc	0.0070	J B	0.010	0.0015	mg/L	1		6010C	Total/NA
Hardness as calcium carbonate	567		0.50	0.10	mg/L	1		SM 2340B	Total/NA
Bromide	0.46	J	1.0	0.37	mg/L	5		300.0	Total/NA
Chloride	180		2.5	1.4	mg/L	5		300.0	Total/NA
Sulfate	9.6	J	10.0	1.7	mg/L	5		300.0	Total/NA
Ammonia	0.13		0.020	0.0090	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	24.3		10.0	5.0	mg/L	1		410.4	Total/NA
Total Organic Carbon	9.3		1.0	0.43	mg/L	1		9060A	Total/NA
Alkalinity, Total	406		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids	706		10.0	4.0	mg/L	1		SM 2540C	Total/NA

Client Sample ID: 5-SAR-001-006-03 — Lab Sample ID: 480-167913-3

No Detections.

Client Sample ID: 5-SAR-001-006-04 — Lab Sample ID: 480-167913-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	0.51	J	1.0	0.44	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Client Sample ID: 5-SAR-001-006-01
Date Collected: 03/26/20 14:15
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/30/20 15:08	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/30/20 15:08	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/30/20 15:08	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/30/20 15:08	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/30/20 15:08	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/30/20 15:08	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/30/20 15:08	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/30/20 15:08	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			03/30/20 15:08	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			03/30/20 15:08	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/30/20 15:08	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/30/20 15:08	1
1,4-Dichlorobenzene	**4.0**		1.0	0.84	ug/L			03/30/20 15:08	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/30/20 15:08	1
2-Hexanone	ND		5.0	1.2	ug/L			03/30/20 15:08	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/30/20 15:08	1
Acetone	**4.4**	**J**	10	3.0	ug/L			03/30/20 15:08	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/30/20 15:08	1
Benzene	ND		1.0	0.41	ug/L			03/30/20 15:08	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/30/20 15:08	1
Bromoform	ND		1.0	0.26	ug/L			03/30/20 15:08	1
Bromomethane	ND		1.0	0.69	ug/L			03/30/20 15:08	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/30/20 15:08	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/30/20 15:08	1
Chlorobenzene	**27**		1.0	0.75	ug/L			03/30/20 15:08	1
Chlorobromomethane	ND		1.0	0.87	ug/L			03/30/20 15:08	1
Chloroethane	ND		1.0	0.32	ug/L			03/30/20 15:08	1
Chloroform	ND		1.0	0.34	ug/L			03/30/20 15:08	1
Chloromethane	ND		1.0	0.35	ug/L			03/30/20 15:08	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			03/30/20 15:08	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/30/20 15:08	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/30/20 15:08	1
Dibromomethane	ND		1.0	0.41	ug/L			03/30/20 15:08	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/30/20 15:08	1
Iodomethane	ND		1.0	0.30	ug/L			03/30/20 15:08	1
m,p-Xylene	ND		2.0	0.66	ug/L			03/30/20 15:08	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/30/20 15:08	1
o-Xylene	ND		1.0	0.76	ug/L			03/30/20 15:08	1
Styrene	ND		1.0	0.73	ug/L			03/30/20 15:08	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/30/20 15:08	1
Toluene	ND		1.0	0.51	ug/L			03/30/20 15:08	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/30/20 15:08	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/30/20 15:08	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			03/30/20 15:08	1
Trichloroethene	ND		1.0	0.46	ug/L			03/30/20 15:08	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/30/20 15:08	1
Vinyl acetate	ND		5.0	0.85	ug/L			03/30/20 15:08	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/30/20 15:08	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/30/20 15:08	1

Client Sample ID: 5-SAR-001-006-01

Date Collected: 03/26/20 14:15
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-1

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*77 - 120*		*03/30/20 15:08*	*1*
4-Bromofluorobenzene (Surr)	*94*		*73 - 120*		*03/30/20 15:08*	*1*
Dibromofluoromethane (Surr)	*90*		*75 - 123*		*03/30/20 15:08*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*03/30/20 15:08*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.19	0.096	ug/L		03/30/20 08:53	03/31/20 22:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*24*		*15 - 110*	*03/30/20 08:53*	*03/31/20 22:45*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**0.32**	**J**	0.50	0.30	ug/L		03/31/20 08:44	04/01/20 21:15	1
Acenaphthylene	ND		0.50	0.34	ug/L		03/31/20 08:44	04/01/20 21:15	1
Anthracene	ND		0.50	0.39	ug/L		03/31/20 08:44	04/01/20 21:15	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		03/31/20 08:44	04/01/20 21:15	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		03/31/20 08:44	04/01/20 21:15	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		03/31/20 08:44	04/01/20 21:15	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		03/31/20 08:44	04/01/20 21:15	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		03/31/20 08:44	04/01/20 21:15	1
Chrysene	ND		0.50	0.32	ug/L		03/31/20 08:44	04/01/20 21:15	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		03/31/20 08:44	04/01/20 21:15	1
Fluoranthene	ND		0.50	0.36	ug/L		03/31/20 08:44	04/01/20 21:15	1
Fluorene	ND		0.50	0.37	ug/L		03/31/20 08:44	04/01/20 21:15	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		03/31/20 08:44	04/01/20 21:15	1
Naphthalene	ND		0.50	0.42	ug/L		03/31/20 08:44	04/01/20 21:15	1
Phenanthrene	ND		0.50	0.38	ug/L		03/31/20 08:44	04/01/20 21:15	1
Pyrene	ND		0.50	0.36	ug/L		03/31/20 08:44	04/01/20 21:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*78*		*48 - 120*	*03/31/20 08:44*	*04/01/20 21:15*	*1*
Nitrobenzene-d5	*71*		*46 - 120*	*03/31/20 08:44*	*04/01/20 21:15*	*1*
p-Terphenyl-d14	*57*		*24 - 136*	*03/31/20 08:44*	*04/01/20 21:15*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		40	5.8	ng/L		03/31/20 13:54	03/31/20 19:33	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		40	11	ng/L		03/31/20 13:54	03/31/20 19:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	**23**	**J**	40	3.0	ng/L		03/31/20 13:54	03/31/20 19:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		40	3.4	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorobutanesulfonic acid (PFBS)	**2.8**	**J**	4.0	0.98	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorobutanoic acid (PFBA)	**5.2**		4.0	2.0	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		4.0	1.8	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorodecanoic acid (PFDA)	ND		4.0	1.5	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorododecanoic acid (PFDoA)	ND		4.0	1.2	ng/L		03/31/20 13:54	03/31/20 19:33	1

Client Sample ID: 5-SAR-001-006-01
Date Collected: 03/26/20 14:15
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND		4.0	1.9	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluoroheptanoic acid (PFHpA)	**3.0**	**J**	4.0	1.8	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorohexanesulfonic acid (PFHxS)	**5.2**		4.0	1.6	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorohexanoic acid (PFHxA)	**5.0**		4.0	1.5	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorononanoic acid (PFNA)	**1.2**	**J**	4.0	0.54	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorooctanesulfonamide (PFOSA)	ND		20	20	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorooctanesulfonic acid (PFOS)	**89**		4.0	1.2	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorooctanoic acid (PFOA)	**28**		4.0	1.6	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluoropentanoic acid (PFPeA)	**4.7**	**B**	4.0	1.3	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		4.0	1.8	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluorotridecanoic acid (PFTriA)	ND		4.0	1.2	ng/L		03/31/20 13:54	03/31/20 19:33	1
Perfluoroundecanoic acid (PFUnA)	ND		4.0	1.6	ng/L		03/31/20 13:54	03/31/20 19:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*107*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C2 PFDoA	*82*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C2 PFHxA	*106*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C2 PFUnA	*96*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C2 PFTeDA	*111*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C3 PFBS	*101*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C4 PFBA	*119*		*25 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C4 PFOA	*123*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C4 PFOS	*116*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C4 PFHpA	*112*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C5 PFNA	*113*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C5 PFPeA	*119*		*25 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
13C8 FOSA	*104*		*25 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
18O2 PFHxS	*109*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
d3-NMeFOSAA	*104*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
d5-NEtFOSAA	*123*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
M2-6:2 FTS	*135*		*25 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*
M2-8:2 FTS	*140*		*25 - 150*	*03/31/20 13:54*	*03/31/20 19:33*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.11**	**J**	0.20	0.060	mg/L		03/29/20 14:14	03/30/20 11:44	1
Antimony	ND		0.020	0.0068	mg/L		03/29/20 14:14	03/30/20 11:44	1
Arsenic	ND		0.015	0.0056	mg/L		03/29/20 14:14	03/30/20 11:44	1
Barium	**0.25**		0.0020	0.00070	mg/L		03/29/20 14:14	03/30/20 11:44	1
Beryllium	ND		0.0020	0.00030	mg/L		03/29/20 14:14	03/30/20 11:44	1
Boron	**0.091**		0.020	0.0040	mg/L		03/29/20 14:14	03/30/20 11:44	1
Cadmium	ND		0.0020	0.00050	mg/L		03/29/20 14:14	03/30/20 11:44	1
Calcium	**116**		0.50	0.10	mg/L		03/29/20 14:14	03/30/20 11:44	1
Chromium	**0.0017**	**J**	0.0040	0.0010	mg/L		03/29/20 14:14	03/30/20 11:44	1
Cobalt	ND		0.0040	0.00063	mg/L		03/29/20 14:14	03/30/20 11:44	1
Copper	ND		0.010	0.0016	mg/L		03/29/20 14:14	03/30/20 11:44	1
Iron	**40.5**		0.050	0.019	mg/L		03/29/20 14:14	03/30/20 11:44	1
Lead	**0.0044**	**J**	0.010	0.0030	mg/L		03/29/20 14:14	03/30/20 11:44	1

Client Sample ID: 5-SAR-001-006-01

Lab Sample ID: 480-167913-1

Date Collected: 03/26/20 14:15

Matrix: Water

Date Received: 03/28/20 08:00

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	**19.8**		0.20	0.043	mg/L		03/29/20 14:14	03/30/20 11:44	1
Manganese	**0.43**	**B**	0.0030	0.00040	mg/L		03/29/20 14:14	03/30/20 11:44	1
Nickel	**0.0023**	**J**	0.010	0.0013	mg/L		03/29/20 14:14	03/30/20 11:44	1
Potassium	**3.0**		0.50	0.10	mg/L		03/29/20 14:14	03/30/20 11:44	1
Selenium	ND		0.025	0.0087	mg/L		03/29/20 14:14	03/30/20 11:44	1
Silver	ND		0.0060	0.0017	mg/L		03/29/20 14:14	03/30/20 11:44	1
Sodium	**326**		1.0	0.32	mg/L		03/29/20 14:14	03/30/20 11:44	1
Thallium	ND		0.020	0.010	mg/L		03/29/20 14:14	03/30/20 11:44	1
Vanadium	ND		0.0050	0.0015	mg/L		03/29/20 14:14	03/30/20 11:44	1
Zinc	**0.0066**	**J B**	0.010	0.0015	mg/L		03/29/20 14:14	03/30/20 11:44	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		03/30/20 11:30	03/30/20 14:59	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	**371**		0.50	0.10	mg/L			03/30/20 15:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		2.0	0.73	mg/L			03/31/20 15:40	10
Chloride	**545**		5.0	2.8	mg/L			03/31/20 15:40	10
Sulfate	ND		20.0	3.5	mg/L			03/31/20 15:40	10
Ammonia	**5.9**		0.10	0.045	mg/L			03/30/20 14:13	5
Chemical Oxygen Demand	**31.7**		10.0	5.0	mg/L			04/01/20 14:30	1
Total Organic Carbon	**6.6**		1.0	0.43	mg/L			03/29/20 21:45	1
Alkalinity, Total	**391**		5.0	0.79	mg/L			03/31/20 23:34	1
Total Dissolved Solids	**1110**		20.0	8.0	mg/L			03/30/20 19:33	1

Client Sample ID: 5-SAR-001-006-02

Lab Sample ID: 480-167913-2

Date Collected: 03/26/20 16:00

Matrix: Water

Date Received: 03/28/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/30/20 17:31	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/30/20 17:31	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/30/20 17:31	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/30/20 17:31	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/30/20 17:31	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/30/20 17:31	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/30/20 17:31	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/30/20 17:31	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			03/30/20 17:31	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			03/30/20 17:31	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/30/20 17:31	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/30/20 17:31	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			03/30/20 17:31	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/30/20 17:31	1
2-Hexanone	ND		5.0	1.2	ug/L			03/30/20 17:31	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Client Sample ID: 5-SAR-001-006-02
Date Collected: 03/26/20 16:00
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/30/20 17:31	1
Acetone	ND		10	3.0	ug/L			03/30/20 17:31	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/30/20 17:31	1
Benzene	ND		1.0	0.41	ug/L			03/30/20 17:31	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/30/20 17:31	1
Bromoform	ND		1.0	0.26	ug/L			03/30/20 17:31	1
Bromomethane	ND		1.0	0.69	ug/L			03/30/20 17:31	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/30/20 17:31	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/30/20 17:31	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/30/20 17:31	1
Chlorobromomethane	ND		1.0	0.87	ug/L			03/30/20 17:31	1
Chloroethane	ND		1.0	0.32	ug/L			03/30/20 17:31	1
Chloroform	ND		1.0	0.34	ug/L			03/30/20 17:31	1
Chloromethane	ND		1.0	0.35	ug/L			03/30/20 17:31	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			03/30/20 17:31	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/30/20 17:31	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/30/20 17:31	1
Dibromomethane	ND		1.0	0.41	ug/L			03/30/20 17:31	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/30/20 17:31	1
Iodomethane	ND		1.0	0.30	ug/L			03/30/20 17:31	1
m,p-Xylene	ND		2.0	0.66	ug/L			03/30/20 17:31	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/30/20 17:31	1
o-Xylene	ND		1.0	0.76	ug/L			03/30/20 17:31	1
Styrene	ND		1.0	0.73	ug/L			03/30/20 17:31	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/30/20 17:31	1
Toluene	ND		1.0	0.51	ug/L			03/30/20 17:31	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/30/20 17:31	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/30/20 17:31	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			03/30/20 17:31	1
Trichloroethene	ND		1.0	0.46	ug/L			03/30/20 17:31	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/30/20 17:31	1
Vinyl acetate	ND		5.0	0.85	ug/L			03/30/20 17:31	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/30/20 17:31	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/30/20 17:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*03/30/20 17:31*	*1*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*03/30/20 17:31*	*1*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*03/30/20 17:31*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*03/30/20 17:31*	*1*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	**3.0**	**E**	0.19	0.095	ug/L		03/30/20 08:53	03/31/20 23:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*24*		*15 - 110*	*03/30/20 08:53*	*03/31/20 23:08*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		03/31/20 08:44	04/01/20 21:44	1

Client Sample ID: 5-SAR-001-006-02
Date Collected: 03/26/20 16:00
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-2
Matrix: Water

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	ND		0.50	0.34	ug/L		03/31/20 08:44	04/01/20 21:44	1
Anthracene	ND		0.50	0.39	ug/L		03/31/20 08:44	04/01/20 21:44	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		03/31/20 08:44	04/01/20 21:44	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		03/31/20 08:44	04/01/20 21:44	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		03/31/20 08:44	04/01/20 21:44	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		03/31/20 08:44	04/01/20 21:44	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		03/31/20 08:44	04/01/20 21:44	1
Chrysene	ND		0.50	0.32	ug/L		03/31/20 08:44	04/01/20 21:44	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		03/31/20 08:44	04/01/20 21:44	1
Fluoranthene	ND		0.50	0.36	ug/L		03/31/20 08:44	04/01/20 21:44	1
Fluorene	ND		0.50	0.37	ug/L		03/31/20 08:44	04/01/20 21:44	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		03/31/20 08:44	04/01/20 21:44	1
Naphthalene	ND		0.50	0.42	ug/L		03/31/20 08:44	04/01/20 21:44	1
Phenanthrene	ND		0.50	0.38	ug/L		03/31/20 08:44	04/01/20 21:44	1
Pyrene	ND		0.50	0.36	ug/L		03/31/20 08:44	04/01/20 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*83*		*48 - 120*	*03/31/20 08:44*	*04/01/20 21:44*	*1*
Nitrobenzene-d5	*78*		*46 - 120*	*03/31/20 08:44*	*04/01/20 21:44*	*1*
p-Terphenyl-d14	*56*		*24 - 136*	*03/31/20 08:44*	*04/01/20 21:44*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.6	ng/L		03/31/20 13:54	03/31/20 19:41	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	4.9	ng/L		03/31/20 13:54	03/31/20 19:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.3	ng/L		03/31/20 13:54	03/31/20 19:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.5	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorobutanesulfonic acid (PFBS)	**2.7**		1.8	0.44	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorobutanoic acid (PFBA)	**5.2**		1.8	0.90	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.81	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.69	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.53	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.85	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluoroheptanoic acid (PFHpA)	**2.6**		1.8	0.81	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorohexanesulfonic acid (PFHxS)	**2.1**		1.8	0.72	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorohexanoic acid (PFHxA)	**5.2**		1.8	0.68	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorooctanesulfonamide (PFOSA)	ND		9.0	9.0	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorooctanesulfonic acid (PFOS)	**1.5**	**J**	1.8	0.55	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorooctanoic acid (PFOA)	**13**		1.8	0.73	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluoropentanoic acid (PFPeA)	**2.7**	**B**	1.8	0.56	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.82	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.54	ng/L		03/31/20 13:54	03/31/20 19:41	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.70	ng/L		03/31/20 13:54	03/31/20 19:41	1

Client Sample ID: 5-SAR-001-006-02

Date Collected: 03/26/20 16:00
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-2

Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	84		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C2 PFDoA	71		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C2 PFHxA	82		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C2 PFUnA	75		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C2 PFTeDA	74		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C3 PFBS	81		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C4 PFBA	85		25 - 150	03/31/20 13:54	03/31/20 19:41	1
13C4 PFOA	90		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C4 PFOS	89		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C4 PFHpA	85		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C5 PFNA	83		50 - 150	03/31/20 13:54	03/31/20 19:41	1
13C5 PFPeA	87		25 - 150	03/31/20 13:54	03/31/20 19:41	1
13C8 FOSA	78		25 - 150	03/31/20 13:54	03/31/20 19:41	1
18O2 PFHxS	89		50 - 150	03/31/20 13:54	03/31/20 19:41	1
d3-NMeFOSAA	83		50 - 150	03/31/20 13:54	03/31/20 19:41	1
d5-NEtFOSAA	78		50 - 150	03/31/20 13:54	03/31/20 19:41	1
M2-6:2 FTS	98		25 - 150	03/31/20 13:54	03/31/20 19:41	1
M2-8:2 FTS	92		25 - 150	03/31/20 13:54	03/31/20 19:41	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**0.23**		0.20	0.060	mg/L		03/29/20 14:14	03/30/20 11:48	1
Antimony	ND		0.020	0.0068	mg/L		03/29/20 14:14	03/30/20 11:48	1
Arsenic	**0.015**		0.015	0.0056	mg/L		03/29/20 14:14	03/30/20 11:48	1
Barium	**0.13**		0.0020	0.00070	mg/L		03/29/20 14:14	03/30/20 11:48	1
Beryllium	ND		0.0020	0.00030	mg/L		03/29/20 14:14	03/30/20 11:48	1
Boron	**0.028**		0.020	0.0040	mg/L		03/29/20 14:14	03/30/20 11:48	1
Cadmium	**0.00060**	**J**	0.0020	0.00050	mg/L		03/29/20 14:14	03/30/20 11:48	1
Calcium	**165**		0.50	0.10	mg/L		03/29/20 14:14	03/30/20 11:48	1
Chromium	**0.0069**		0.0040	0.0010	mg/L		03/29/20 14:14	03/30/20 11:48	1
Cobalt	**0.0013**	**J**	0.0040	0.00063	mg/L		03/29/20 14:14	03/30/20 11:48	1
Copper	**0.0073**	**J**	0.010	0.0016	mg/L		03/29/20 14:14	03/30/20 11:48	1
Iron	**10.9**		0.050	0.019	mg/L		03/29/20 14:14	03/30/20 11:48	1
Lead	ND		0.010	0.0030	mg/L		03/29/20 14:14	03/30/20 11:48	1
Magnesium	**37.6**		0.20	0.043	mg/L		03/29/20 14:14	03/30/20 11:48	1
Manganese	**8.6**	**B**	0.0030	0.00040	mg/L		03/29/20 14:14	03/30/20 11:48	1
Nickel	**0.0052**	**J**	0.010	0.0013	mg/L		03/29/20 14:14	03/30/20 11:48	1
Potassium	**1.7**		0.50	0.10	mg/L		03/29/20 14:14	03/30/20 11:48	1
Selenium	ND		0.025	0.0087	mg/L		03/29/20 14:14	03/30/20 11:48	1
Silver	ND		0.0060	0.0017	mg/L		03/29/20 14:14	03/30/20 11:48	1
Sodium	**33.0**		1.0	0.32	mg/L		03/29/20 14:14	03/30/20 11:48	1
Thallium	ND		0.020	0.010	mg/L		03/29/20 14:14	03/30/20 11:48	1
Vanadium	ND		0.0050	0.0015	mg/L		03/29/20 14:14	03/30/20 11:48	1
Zinc	**0.0070**	**J B**	0.010	0.0015	mg/L		03/29/20 14:14	03/30/20 11:48	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		03/30/20 11:30	03/30/20 15:00	1

Client Sample ID: 5-SAR-001-006-02

Lab Sample ID: 480-167913-2

Date Collected: 03/26/20 16:00

Matrix: Water

Date Received: 03/28/20 08:00

Method: SM 2340B - Total Hardness (as CaCO3) by calculation

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness as calcium carbonate	567		0.50	0.10	mg/L			03/30/20 15:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	0.46	J	1.0	0.37	mg/L			03/31/20 15:54	5
Chloride	180		2.5	1.4	mg/L			03/31/20 15:54	5
Sulfate	9.6	J	10.0	1.7	mg/L			03/31/20 15:54	5
Ammonia	0.13		0.020	0.0090	mg/L			03/30/20 14:14	1
Chemical Oxygen Demand	24.3		10.0	5.0	mg/L			04/01/20 14:30	1
Total Organic Carbon	9.3		1.0	0.43	mg/L			03/29/20 22:41	1
Alkalinity, Total	406		5.0	0.79	mg/L			03/31/20 23:53	1
Total Dissolved Solids	706		10.0	4.0	mg/L			03/30/20 19:33	1

Client Sample ID: 5-SAR-001-006-03

Lab Sample ID: 480-167913-3

Date Collected: 03/26/20 16:20

Matrix: Water

Date Received: 03/28/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		18	2.5	ng/L		03/31/20 13:54	03/31/20 19:58	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		18	4.8	ng/L		03/31/20 13:54	03/31/20 19:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.3	ng/L		03/31/20 13:54	03/31/20 19:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	1.5	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.43	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorobutanoic acid (PFBA)	ND		1.8	0.88	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.79	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.67	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.52	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.83	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.80	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.8	0.70	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.67	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorooctanesulfonamide (PFOSA)	ND		8.8	8.8	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.53	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.71	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.55	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.81	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	0.53	ng/L		03/31/20 13:54	03/31/20 19:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.68	ng/L		03/31/20 13:54	03/31/20 19:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*84*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:58*	*1*
13C2 PFDoA	*70*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:58*	*1*
13C2 PFHxA	*90*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:58*	*1*
13C2 PFUnA	*76*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:58*	*1*
13C2 PFTeDA	*66*		*50 - 150*	*03/31/20 13:54*	*03/31/20 19:58*	*1*

Client Sample ID: 5-SAR-001-006-03

Lab Sample ID: 480-167913-3

Date Collected: 03/26/20 16:20

Matrix: Water

Date Received: 03/28/20 08:00

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 PFBS	80		50 - 150	03/31/20 13:54	03/31/20 19:58	1
13C4 PFBA	102		25 - 150	03/31/20 13:54	03/31/20 19:58	1
13C4 PFOA	97		50 - 150	03/31/20 13:54	03/31/20 19:58	1
13C4 PFOS	92		50 - 150	03/31/20 13:54	03/31/20 19:58	1
13C4 PFHpA	93		50 - 150	03/31/20 13:54	03/31/20 19:58	1
13C5 PFNA	91		50 - 150	03/31/20 13:54	03/31/20 19:58	1
13C5 PFPeA	94		25 - 150	03/31/20 13:54	03/31/20 19:58	1
13C8 FOSA	78		25 - 150	03/31/20 13:54	03/31/20 19:58	1
18O2 PFHxS	89		50 - 150	03/31/20 13:54	03/31/20 19:58	1
d3-NMeFOSAA	84		50 - 150	03/31/20 13:54	03/31/20 19:58	1
d5-NEtFOSAA	82		50 - 150	03/31/20 13:54	03/31/20 19:58	1
M2-6:2 FTS	98		25 - 150	03/31/20 13:54	03/31/20 19:58	1
M2-8:2 FTS	92		25 - 150	03/31/20 13:54	03/31/20 19:58	1

Client Sample ID: 5-SAR-001-006-04

Lab Sample ID: 480-167913-4

Date Collected: 03/26/20 00:00

Matrix: Water

Date Received: 03/28/20 08:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/30/20 17:56	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/30/20 17:56	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/30/20 17:56	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/30/20 17:56	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/30/20 17:56	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/30/20 17:56	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/30/20 17:56	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/30/20 17:56	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			03/30/20 17:56	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			03/30/20 17:56	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/30/20 17:56	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/30/20 17:56	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			03/30/20 17:56	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/30/20 17:56	1
2-Hexanone	ND		5.0	1.2	ug/L			03/30/20 17:56	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/30/20 17:56	1
Acetone	ND		10	3.0	ug/L			03/30/20 17:56	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/30/20 17:56	1
Benzene	ND		1.0	0.41	ug/L			03/30/20 17:56	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/30/20 17:56	1
Bromoform	ND		1.0	0.26	ug/L			03/30/20 17:56	1
Bromomethane	ND		1.0	0.69	ug/L			03/30/20 17:56	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/30/20 17:56	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/30/20 17:56	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/30/20 17:56	1
Chlorobromomethane	ND		1.0	0.87	ug/L			03/30/20 17:56	1
Chloroethane	ND		1.0	0.32	ug/L			03/30/20 17:56	1
Chloroform	ND		1.0	0.34	ug/L			03/30/20 17:56	1
Chloromethane	ND		1.0	0.35	ug/L			03/30/20 17:56	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			03/30/20 17:56	1

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Client Sample ID: 5-SAR-001-006-04
Date Collected: 03/26/20 00:00
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/30/20 17:56	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/30/20 17:56	1
Dibromomethane	ND		1.0	0.41	ug/L			03/30/20 17:56	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/30/20 17:56	1
Iodomethane	ND		1.0	0.30	ug/L			03/30/20 17:56	1
m,p-Xylene	ND		2.0	0.66	ug/L			03/30/20 17:56	1
Methylene Chloride	**0.51**	**J**	1.0	0.44	ug/L			03/30/20 17:56	1
o-Xylene	ND		1.0	0.76	ug/L			03/30/20 17:56	1
Styrene	ND		1.0	0.73	ug/L			03/30/20 17:56	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/30/20 17:56	1
Toluene	ND		1.0	0.51	ug/L			03/30/20 17:56	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/30/20 17:56	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/30/20 17:56	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			03/30/20 17:56	1
Trichloroethene	ND		1.0	0.46	ug/L			03/30/20 17:56	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/30/20 17:56	1
Vinyl acetate	ND		5.0	0.85	ug/L			03/30/20 17:56	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/30/20 17:56	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/30/20 17:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*03/30/20 17:56*	*1*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*		*03/30/20 17:56*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*03/30/20 17:56*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*03/30/20 17:56*	*1*

Surrogate Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(75-123)	(80-120)
480-167913-1	5-SAR-001-006-01	83	94	90	99
480-167913-2	5-SAR-001-006-02	97	102	100	96
480-167913-4	5-SAR-001-006-04	100	104	105	99
LCS 480-523510/6	Lab Control Sample	104	111	106	104
LCS 480-523513/5	Lab Control Sample	100	103	106	99
MB 480-523510/8	Method Blank	107	107	110	103
MB 480-523513/10	Method Blank	99	103	101	99

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		FBP	NBZ	TPHd14
Lab Sample ID	Client Sample ID	(48-120)	(46-120)	(24-136)
480-167913-1	5-SAR-001-006-01	78	71	57
480-167913-2	5-SAR-001-006-02	83	78	56
LCS 480-523635/2-A	Lab Control Sample	82	79	79
MB 480-523635/1-A	Method Blank	74	70	71

Surrogate Legend

FBP = 2-Fluorobiphenyl
NBZ = Nitrobenzene-d5
TPHd14 = p-Terphenyl-d14

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DXE (15-110)
480-167913-1	5-SAR-001-006-01	24
480-167913-2	5-SAR-001-006-02	24
LCS 480-523476/2-A	Lab Control Sample	26
MB 480-523476/1-A	Method Blank	27

Surrogate Legend

DXE = 1,4-Dioxane-d8

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDA (50-150)	PFDoA (50-150)	PFHxA (50-150)	PFUnA (50-150)	PFTDA (50-150)	3C3-PFBS (50-150)	PFBA (25-150)	PFOA (50-150)
480-167913-1	5-SAR-001-006-01	107	82	106	96	111	101	119	123
480-167913-2	5-SAR-001-006-02	84	71	82	75	74	81	85	90
480-167913-3	5-SAR-001-006-03	84	70	90	76	66	80	102	97
LCS 200-153750/2-A	Lab Control Sample	101	66	95	80	66	95	114	104
MB 200-153750/1-A	Method Blank	91	77	91	79	75	92	109	102

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOS (50-150)	PFHpA (50-150)	PFNA (50-150)	PFPeA (25-150)	PFOSA (25-150)	PFHxS (50-150)	NMeFOSA (50-150)	NEtFOSA (50-150)
480-167913-1	5-SAR-001-006-01	116	112	113	119	104	109	104	123
480-167913-2	5-SAR-001-006-02	89	85	83	87	78	89	83	78
480-167913-3	5-SAR-001-006-03	92	93	91	94	78	89	84	82
LCS 200-153750/2-A	Lab Control Sample	103	99	91	103	67	101	84	81
MB 200-153750/1-A	Method Blank	104	85	86	105	81	95	89	81

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)
480-167913-1	5-SAR-001-006-01	135	140
480-167913-2	5-SAR-001-006-02	98	92
480-167913-3	5-SAR-001-006-03	98	92
LCS 200-153750/2-A	Lab Control Sample	105	112
MB 200-153750/1-A	Method Blank	99	117

Surrogate Legend

PFDA = 13C2 PFDA
PFDoA = 13C2 PFDoA
PFHxA = 13C2 PFHxA
PFUnA = 13C2 PFUnA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFBA = 13C4 PFBA
PFOA = 13C4 PFOA
PFOS = 13C4 PFOS
PFHpA = 13C4 PFHpA
PFNA = 13C5 PFNA
PFPeA = 13C5 PFPeA
PFOSA = 13C8 FOSA

Isotope Dilution Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

PFHxS = 18O2 PFHxS
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

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

Lab Sample ID: MB 480-523510/8
Matrix: Water
Analysis Batch: 523510

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/30/20 14:34	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/30/20 14:34	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/30/20 14:34	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/30/20 14:34	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/30/20 14:34	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/30/20 14:34	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/30/20 14:34	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/30/20 14:34	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			03/30/20 14:34	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			03/30/20 14:34	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/30/20 14:34	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/30/20 14:34	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			03/30/20 14:34	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/30/20 14:34	1
2-Hexanone	ND		5.0	1.2	ug/L			03/30/20 14:34	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/30/20 14:34	1
Acetone	ND		10	3.0	ug/L			03/30/20 14:34	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/30/20 14:34	1
Benzene	ND		1.0	0.41	ug/L			03/30/20 14:34	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/30/20 14:34	1
Bromoform	ND		1.0	0.26	ug/L			03/30/20 14:34	1
Bromomethane	ND		1.0	0.69	ug/L			03/30/20 14:34	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/30/20 14:34	1
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/30/20 14:34	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/30/20 14:34	1
Chlorobromomethane	ND		1.0	0.87	ug/L			03/30/20 14:34	1
Chloroethane	ND		1.0	0.32	ug/L			03/30/20 14:34	1
Chloroform	ND		1.0	0.34	ug/L			03/30/20 14:34	1
Chloromethane	ND		1.0	0.35	ug/L			03/30/20 14:34	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			03/30/20 14:34	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/30/20 14:34	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/30/20 14:34	1
Dibromomethane	ND		1.0	0.41	ug/L			03/30/20 14:34	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/30/20 14:34	1
Iodomethane	ND		1.0	0.30	ug/L			03/30/20 14:34	1
m,p-Xylene	ND		2.0	0.66	ug/L			03/30/20 14:34	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/30/20 14:34	1
o-Xylene	ND		1.0	0.76	ug/L			03/30/20 14:34	1
Styrene	ND		1.0	0.73	ug/L			03/30/20 14:34	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/30/20 14:34	1
Toluene	ND		1.0	0.51	ug/L			03/30/20 14:34	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/30/20 14:34	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/30/20 14:34	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			03/30/20 14:34	1
Trichloroethene	ND		1.0	0.46	ug/L			03/30/20 14:34	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/30/20 14:34	1
Vinyl acetate	ND		5.0	0.85	ug/L			03/30/20 14:34	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/30/20 14:34	1

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

Lab Sample ID: MB 480-523510/8
Matrix: Water
Analysis Batch: 523510

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0	0.66	ug/L			03/30/20 14:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*77 - 120*		*03/30/20 14:34*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*03/30/20 14:34*	*1*
Dibromofluoromethane (Surr)	*110*		*75 - 123*		*03/30/20 14:34*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*03/30/20 14:34*	*1*

Lab Sample ID: LCS 480-523510/6
Matrix: Water
Analysis Batch: 523510

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	27.4		ug/L		110	80 - 120
1,1,1-Trichloroethane	25.0	25.9		ug/L		103	73 - 126
1,1,2,2-Tetrachloroethane	25.0	26.6		ug/L		106	76 - 120
1,1,2-Trichloroethane	25.0	27.0		ug/L		108	76 - 122
1,1-Dichloroethane	25.0	24.2		ug/L		97	77 - 120
1,1-Dichloroethene	25.0	24.7		ug/L		99	66 - 127
1,2,3-Trichloropropane	25.0	26.5		ug/L		106	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	26.7		ug/L		107	56 - 134
1,2-Dibromoethane	25.0	27.7		ug/L		111	77 - 120
1,2-Dichlorobenzene	25.0	26.3		ug/L		105	80 - 124
1,2-Dichloroethane	25.0	25.3		ug/L		101	75 - 120
1,2-Dichloropropane	25.0	26.2		ug/L		105	76 - 120
1,4-Dichlorobenzene	25.0	26.7		ug/L		107	80 - 120
2-Butanone (MEK)	125	137		ug/L		110	57 - 140
2-Hexanone	125	131		ug/L		105	65 - 127
4-Methyl-2-pentanone (MIBK)	125	131		ug/L		105	71 - 125
Acetone	125	139		ug/L		111	56 - 142
Acrylonitrile	250	255		ug/L		102	63 - 125
Benzene	25.0	25.4		ug/L		102	71 - 124
Bromodichloromethane	25.0	26.8		ug/L		107	80 - 122
Bromoform	25.0	28.0		ug/L		112	61 - 132
Bromomethane	25.0	24.4		ug/L		97	55 - 144
Carbon disulfide	25.0	24.6		ug/L		98	59 - 134
Carbon tetrachloride	25.0	25.9		ug/L		104	72 - 134
Chlorobenzene	25.0	26.1		ug/L		104	80 - 120
Chlorobromomethane	25.0	27.3		ug/L		109	72 - 130
Chloroethane	25.0	24.2		ug/L		97	69 - 136
Chloroform	25.0	24.2		ug/L		97	73 - 127
Chloromethane	25.0	23.4		ug/L		94	68 - 124
cis-1,2-Dichloroethene	25.0	24.9		ug/L		100	74 - 124
cis-1,3-Dichloropropene	25.0	27.2		ug/L		109	74 - 124
Dibromochloromethane	25.0	28.2		ug/L		113	75 - 125
Dibromomethane	25.0	26.1		ug/L		104	76 - 127
Ethylbenzene	25.0	25.8		ug/L		103	77 - 123
Iodomethane	25.0	25.8		ug/L		103	78 - 123

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

Lab Sample ID: LCS 480-523510/6
Matrix: Water
Analysis Batch: 523510

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
m,p-Xylene	25.0	25.5		ug/L		102	76 - 122
Methylene Chloride	25.0	24.2		ug/L		97	75 - 124
o-Xylene	25.0	26.1		ug/L		105	76 - 122
Styrene	25.0	27.6		ug/L		110	80 - 120
Tetrachloroethene	25.0	27.0		ug/L		108	74 - 122
Toluene	25.0	25.7		ug/L		103	80 - 122
trans-1,2-Dichloroethene	25.0	25.1		ug/L		100	73 - 127
trans-1,3-Dichloropropene	25.0	26.9		ug/L		107	80 - 120
trans-1,4-Dichloro-2-butene	25.0	13.5		ug/L		54	41 - 131
Trichloroethene	25.0	25.9		ug/L		104	74 - 123
Trichlorofluoromethane	25.0	25.2		ug/L		101	62 - 150
Vinyl acetate	50.0	60.3		ug/L		121	50 - 144
Vinyl chloride	25.0	24.0		ug/L		96	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*
4-Bromofluorobenzene (Surr)	*111*		*73 - 120*
Dibromofluoromethane (Surr)	*106*		*75 - 123*
Toluene-d8 (Surr)	*104*		*80 - 120*

Lab Sample ID: MB 480-523513/10
Matrix: Water
Analysis Batch: 523513

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		1.0	0.35	ug/L			03/30/20 14:33	1
1,1,1-Trichloroethane	ND		1.0	0.82	ug/L			03/30/20 14:33	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			03/30/20 14:33	1
1,1,2-Trichloroethane	ND		1.0	0.23	ug/L			03/30/20 14:33	1
1,1-Dichloroethane	ND		1.0	0.38	ug/L			03/30/20 14:33	1
1,1-Dichloroethene	ND		1.0	0.29	ug/L			03/30/20 14:33	1
1,2,3-Trichloropropane	ND		1.0	0.89	ug/L			03/30/20 14:33	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.39	ug/L			03/30/20 14:33	1
1,2-Dibromoethane	ND		1.0	0.73	ug/L			03/30/20 14:33	1
1,2-Dichlorobenzene	ND		1.0	0.79	ug/L			03/30/20 14:33	1
1,2-Dichloroethane	ND		1.0	0.21	ug/L			03/30/20 14:33	1
1,2-Dichloropropane	ND		1.0	0.72	ug/L			03/30/20 14:33	1
1,4-Dichlorobenzene	ND		1.0	0.84	ug/L			03/30/20 14:33	1
2-Butanone (MEK)	ND		10	1.3	ug/L			03/30/20 14:33	1
2-Hexanone	ND		5.0	1.2	ug/L			03/30/20 14:33	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	2.1	ug/L			03/30/20 14:33	1
Acetone	ND		10	3.0	ug/L			03/30/20 14:33	1
Acrylonitrile	ND		5.0	0.83	ug/L			03/30/20 14:33	1
Benzene	ND		1.0	0.41	ug/L			03/30/20 14:33	1
Bromodichloromethane	ND		1.0	0.39	ug/L			03/30/20 14:33	1
Bromoform	ND		1.0	0.26	ug/L			03/30/20 14:33	1
Bromomethane	ND		1.0	0.69	ug/L			03/30/20 14:33	1
Carbon disulfide	ND		1.0	0.19	ug/L			03/30/20 14:33	1

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

Lab Sample ID: MB 480-523513/10
Matrix: Water
Analysis Batch: 523513

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon tetrachloride	ND		1.0	0.27	ug/L			03/30/20 14:33	1
Chlorobenzene	ND		1.0	0.75	ug/L			03/30/20 14:33	1
Chlorobromomethane	ND		1.0	0.87	ug/L			03/30/20 14:33	1
Chloroethane	ND		1.0	0.32	ug/L			03/30/20 14:33	1
Chloroform	ND		1.0	0.34	ug/L			03/30/20 14:33	1
Chloromethane	ND		1.0	0.35	ug/L			03/30/20 14:33	1
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			03/30/20 14:33	1
cis-1,3-Dichloropropene	ND		1.0	0.36	ug/L			03/30/20 14:33	1
Dibromochloromethane	ND		1.0	0.32	ug/L			03/30/20 14:33	1
Dibromomethane	ND		1.0	0.41	ug/L			03/30/20 14:33	1
Ethylbenzene	ND		1.0	0.74	ug/L			03/30/20 14:33	1
Iodomethane	ND		1.0	0.30	ug/L			03/30/20 14:33	1
m,p-Xylene	ND		2.0	0.66	ug/L			03/30/20 14:33	1
Methylene Chloride	ND		1.0	0.44	ug/L			03/30/20 14:33	1
o-Xylene	ND		1.0	0.76	ug/L			03/30/20 14:33	1
Styrene	ND		1.0	0.73	ug/L			03/30/20 14:33	1
Tetrachloroethene	ND		1.0	0.36	ug/L			03/30/20 14:33	1
Toluene	ND		1.0	0.51	ug/L			03/30/20 14:33	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			03/30/20 14:33	1
trans-1,3-Dichloropropene	ND		1.0	0.37	ug/L			03/30/20 14:33	1
trans-1,4-Dichloro-2-butene	ND		1.0	0.22	ug/L			03/30/20 14:33	1
Trichloroethene	ND		1.0	0.46	ug/L			03/30/20 14:33	1
Trichlorofluoromethane	ND		1.0	0.88	ug/L			03/30/20 14:33	1
Vinyl acetate	ND		5.0	0.85	ug/L			03/30/20 14:33	1
Vinyl chloride	ND		1.0	0.90	ug/L			03/30/20 14:33	1
Xylenes, Total	ND		2.0	0.66	ug/L			03/30/20 14:33	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*03/30/20 14:33*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*03/30/20 14:33*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*03/30/20 14:33*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*03/30/20 14:33*	*1*

Lab Sample ID: LCS 480-523513/5
Matrix: Water
Analysis Batch: 523513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	25.3		ug/L		101	80 - 120
1,1,1-Trichloroethane	25.0	24.4		ug/L		97	73 - 126
1,1,2,2-Tetrachloroethane	25.0	23.9		ug/L		95	76 - 120
1,1,2-Trichloroethane	25.0	24.9		ug/L		99	76 - 122
1,1-Dichloroethane	25.0	24.3		ug/L		97	77 - 120
1,1-Dichloroethene	25.0	24.2		ug/L		97	66 - 127
1,2,3-Trichloropropane	25.0	24.8		ug/L		99	68 - 122
1,2-Dibromo-3-Chloropropane	25.0	24.2		ug/L		97	56 - 134
1,2-Dibromoethane	25.0	24.5		ug/L		98	77 - 120
1,2-Dichlorobenzene	25.0	25.0		ug/L		100	80 - 124

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

Lab Sample ID: LCS 480-523513/5
Matrix: Water
Analysis Batch: 523513

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloroethane	25.0	24.5		ug/L		98	75 - 120
1,2-Dichloropropane	25.0	25.0		ug/L		100	76 - 120
1,4-Dichlorobenzene	25.0	24.6		ug/L		99	80 - 120
2-Butanone (MEK)	125	122		ug/L		97	57 - 140
2-Hexanone	125	124		ug/L		99	65 - 127
4-Methyl-2-pentanone (MIBK)	125	118		ug/L		95	71 - 125
Acetone	125	127		ug/L		102	56 - 142
Acrylonitrile	250	245		ug/L		98	63 - 125
Benzene	25.0	24.9		ug/L		100	71 - 124
Bromodichloromethane	25.0	25.8		ug/L		103	80 - 122
Bromoform	25.0	26.2		ug/L		105	61 - 132
Bromomethane	25.0	24.0		ug/L		96	55 - 144
Carbon disulfide	25.0	25.6		ug/L		102	59 - 134
Carbon tetrachloride	25.0	25.6		ug/L		103	72 - 134
Chlorobenzene	25.0	24.5		ug/L		98	80 - 120
Chlorobromomethane	25.0	24.5		ug/L		98	72 - 130
Chloroethane	25.0	25.3		ug/L		101	69 - 136
Chloroform	25.0	23.7		ug/L		95	73 - 127
Chloromethane	25.0	23.0		ug/L		92	68 - 124
cis-1,2-Dichloroethene	25.0	24.4		ug/L		97	74 - 124
cis-1,3-Dichloropropene	25.0	25.5		ug/L		102	74 - 124
Dibromochloromethane	25.0	25.8		ug/L		103	75 - 125
Dibromomethane	25.0	25.0		ug/L		100	76 - 127
Ethylbenzene	25.0	24.1		ug/L		97	77 - 123
Iodomethane	25.0	26.4		ug/L		106	78 - 123
m,p-Xylene	25.0	25.1		ug/L		100	76 - 122
Methylene Chloride	25.0	24.1		ug/L		97	75 - 124
o-Xylene	25.0	24.3		ug/L		97	76 - 122
Styrene	25.0	24.9		ug/L		100	80 - 120
Tetrachloroethene	25.0	26.7		ug/L		107	74 - 122
Toluene	25.0	23.7		ug/L		95	80 - 122
trans-1,2-Dichloroethene	25.0	25.1		ug/L		100	73 - 127
trans-1,3-Dichloropropene	25.0	24.3		ug/L		97	80 - 120
trans-1,4-Dichloro-2-butene	25.0	25.8		ug/L		103	41 - 131
Trichloroethene	25.0	25.5		ug/L		102	74 - 123
Trichlorofluoromethane	25.0	24.8		ug/L		99	62 - 150
Vinyl acetate	50.0	49.5		ug/L		99	50 - 144
Vinyl chloride	25.0	23.8		ug/L		95	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*
Dibromofluoromethane (Surr)	*106*		*75 - 123*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-523476/1-A
Matrix: Water
Analysis Batch: 523719

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523476

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		03/30/20 08:53	03/31/20 15:20	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*27*		*15 - 110*	*03/30/20 08:53*	*03/31/20 15:20*	*1*

Lab Sample ID: LCS 480-523476/2-A
Matrix: Water
Analysis Batch: 523719

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523476

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dioxane	1.00	1.25	E	ug/L		125	40 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*26*		*15 - 110*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH

Lab Sample ID: MB 480-523635/1-A
Matrix: Water
Analysis Batch: 523889

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523635

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.50	0.30	ug/L		03/31/20 08:44	04/01/20 15:55	1
Acenaphthylene	ND		0.50	0.34	ug/L		03/31/20 08:44	04/01/20 15:55	1
Anthracene	ND		0.50	0.39	ug/L		03/31/20 08:44	04/01/20 15:55	1
Benzo[a]anthracene	ND		0.50	0.40	ug/L		03/31/20 08:44	04/01/20 15:55	1
Benzo[a]pyrene	ND		0.50	0.33	ug/L		03/31/20 08:44	04/01/20 15:55	1
Benzo[b]fluoranthene	ND		0.50	0.30	ug/L		03/31/20 08:44	04/01/20 15:55	1
Benzo[g,h,i]perylene	ND		0.50	0.37	ug/L		03/31/20 08:44	04/01/20 15:55	1
Benzo[k]fluoranthene	ND		0.50	0.085	ug/L		03/31/20 08:44	04/01/20 15:55	1
Chrysene	ND		0.50	0.32	ug/L		03/31/20 08:44	04/01/20 15:55	1
Dibenz(a,h)anthracene	ND		0.50	0.33	ug/L		03/31/20 08:44	04/01/20 15:55	1
Fluoranthene	ND		0.50	0.36	ug/L		03/31/20 08:44	04/01/20 15:55	1
Fluorene	ND		0.50	0.37	ug/L		03/31/20 08:44	04/01/20 15:55	1
Indeno[1,2,3-cd]pyrene	ND		0.50	0.44	ug/L		03/31/20 08:44	04/01/20 15:55	1
Naphthalene	ND		0.50	0.42	ug/L		03/31/20 08:44	04/01/20 15:55	1
Phenanthrene	ND		0.50	0.38	ug/L		03/31/20 08:44	04/01/20 15:55	1
Pyrene	ND		0.50	0.36	ug/L		03/31/20 08:44	04/01/20 15:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*74*		*48 - 120*	*03/31/20 08:44*	*04/01/20 15:55*	*1*
Nitrobenzene-d5	*70*		*46 - 120*	*03/31/20 08:44*	*04/01/20 15:55*	*1*
p-Terphenyl-d14	*71*		*24 - 136*	*03/31/20 08:44*	*04/01/20 15:55*	*1*

Method: 8270D_LL_PAH - Semivolatile Organic Compounds (GC/MS) Low level PAH (Continued)

Lab Sample ID: LCS 480-523635/2-A
Matrix: Water
Analysis Batch: 523889

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523635

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Acenaphthene			32.0	22.5		ug/L		70	60 - 120		
Acenaphthylene			32.0	24.5		ug/L		77	63 - 120		
Anthracene			32.0	24.1		ug/L		75	69 - 131		
Benzo[a]anthracene			32.0	24.7		ug/L		77	62 - 142		
Benzo[a]pyrene			32.0	23.5		ug/L		73	46 - 156		
Benzo[b]fluoranthene			32.0	25.6		ug/L		80	50 - 149		
Benzo[g,h,i]perylene			32.0	24.3		ug/L		76	34 - 189		
Benzo[k]fluoranthene			32.0	23.7		ug/L		74	47 - 147		
Chrysene			32.0	25.0		ug/L		78	69 - 140		
Dibenz(a,h)anthracene			32.0	24.9		ug/L		78	35 - 176		
Fluoranthene			32.0	24.6		ug/L		77	67 - 133		
Fluorene			32.0	24.3		ug/L		76	66 - 129		
Indeno[1,2,3-cd]pyrene			32.0	24.1		ug/L		75	57 - 161		
Naphthalene			32.0	22.8		ug/L		71	48 - 120		
Phenanthrene			32.0	23.4		ug/L		73	67 - 130		
Pyrene			32.0	24.7		ug/L		77	58 - 136		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*82*		*48 - 120*
Nitrobenzene-d5	*79*		*46 - 120*
p-Terphenyl-d14	*79*		*24 - 136*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 200-153750/1-A
Matrix: Water
Analysis Batch: 153762

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153750

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		20	2.9	ng/L		03/31/20 13:54	03/31/20 17:54	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		20	5.5	ng/L		03/31/20 13:54	03/31/20 17:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.5	ng/L		03/31/20 13:54	03/31/20 17:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	1.7	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.49	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorobutanoic acid (PFBA)	ND		2.0	1.0	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.90	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.77	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.95	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.91	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.80	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.76	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorooctanesulfonamide (PFOSA)	ND		10	10	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.61	ng/L		03/31/20 13:54	03/31/20 17:54	1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 200-153750/1-A
Matrix: Water
Analysis Batch: 153762

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 153750

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	ND		2.0	0.81	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluoropentanoic acid (PFPeA)	0.811	J	2.0	0.63	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.92	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.60	ng/L		03/31/20 13:54	03/31/20 17:54	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.78	ng/L		03/31/20 13:54	03/31/20 17:54	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFDA	*91*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C2 PFDoA	*77*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C2 PFHxA	*91*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C2 PFUnA	*79*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C2 PFTeDA	*75*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C3 PFBS	*92*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C4 PFBA	*109*		*25 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C4 PFOA	*102*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C4 PFOS	*104*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C4 PFHpA	*85*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C5 PFNA	*86*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C5 PFPeA	*105*		*25 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
13C8 FOSA	*81*		*25 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
18O2 PFHxS	*95*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
d3-NMeFOSAA	*89*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
d5-NEtFOSAA	*81*		*50 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
M2-6:2 FTS	*99*		*25 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*
M2-8:2 FTS	*117*		*25 - 150*	*03/31/20 13:54*	*03/31/20 17:54*	*1*

Lab Sample ID: LCS 200-153750/2-A
Matrix: Water
Analysis Batch: 153762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	38.3	24.9		ng/L		65	50 - 150
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	37.9	30.1		ng/L		79	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.2		ng/L		105	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	46.7		ng/L		117	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	35.5		ng/L		100	70 - 130
Perfluorobutanoic acid (PFBA)	40.0	40.5		ng/L		101	50 - 150
Perfluorodecanesulfonic acid (PFDS)	38.6	33.6		ng/L		87	50 - 150
Perfluorodecanoic acid (PFDA)	40.0	34.9		ng/L		87	70 - 130
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.0		ng/L		102	50 - 150
Perfluoroheptanoic acid (PFHpA)	40.0	36.6		ng/L		92	70 - 130

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 200-153750/2-A
Matrix: Water
Analysis Batch: 153762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 153750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.3		ng/L		89	70 - 130
Perfluorohexanoic acid (PFHxA)	40.0	39.4		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	40.0	32.2		ng/L		80	70 - 130
Perfluorooctanesulfonamide (PFOSA)	40.0	37.4		ng/L		93	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	36.2		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	38.5		ng/L		96	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	35.8		ng/L		90	50 - 150
Perfluorotetradecanoic acid (PFTeA)	40.0	45.5		ng/L		114	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	33.9		ng/L		85	70 - 130
Perfluoroundecanoic acid (PFUnA)	40.0	38.8		ng/L		97	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFDA	*101*		*50 - 150*
13C2 PFDoA	*66*		*50 - 150*
13C2 PFHxA	*95*		*50 - 150*
13C2 PFUnA	*80*		*50 - 150*
13C2 PFTeDA	*66*		*50 - 150*
13C3 PFBS	*95*		*50 - 150*
13C4 PFBA	*114*		*25 - 150*
13C4 PFOA	*104*		*50 - 150*
13C4 PFOS	*103*		*50 - 150*
13C4 PFHpA	*99*		*50 - 150*
13C5 PFNA	*91*		*50 - 150*
13C5 PFPeA	*103*		*25 - 150*
13C8 FOSA	*67*		*25 - 150*
18O2 PFHxS	*101*		*50 - 150*
d3-NMeFOSAA	*84*		*50 - 150*
d5-NEtFOSAA	*81*		*50 - 150*
M2-6:2 FTS	*105*		*25 - 150*
M2-8:2 FTS	*112*		*25 - 150*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-523412/1-A
Matrix: Water
Analysis Batch: 523528

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523412

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		0.20	0.060	mg/L		03/29/20 14:14	03/30/20 10:11	1
Antimony	ND		0.020	0.0068	mg/L		03/29/20 14:14	03/30/20 10:11	1
Arsenic	ND		0.015	0.0056	mg/L		03/29/20 14:14	03/30/20 10:11	1
Barium	ND		0.0020	0.00070	mg/L		03/29/20 14:14	03/30/20 10:11	1
Beryllium	ND		0.0020	0.00030	mg/L		03/29/20 14:14	03/30/20 10:11	1
Boron	ND		0.020	0.0040	mg/L		03/29/20 14:14	03/30/20 10:11	1
Cadmium	ND		0.0020	0.00050	mg/L		03/29/20 14:14	03/30/20 10:11	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 480-523412/1-A
Matrix: Water
Analysis Batch: 523528

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523412

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		0.50	0.10	mg/L		03/29/20 14:14	03/30/20 10:11	1
Chromium	ND		0.0040	0.0010	mg/L		03/29/20 14:14	03/30/20 10:11	1
Cobalt	ND		0.0040	0.00063	mg/L		03/29/20 14:14	03/30/20 10:11	1
Copper	ND		0.010	0.0016	mg/L		03/29/20 14:14	03/30/20 10:11	1
Iron	ND		0.050	0.019	mg/L		03/29/20 14:14	03/30/20 10:11	1
Lead	ND		0.010	0.0030	mg/L		03/29/20 14:14	03/30/20 10:11	1
Magnesium	ND		0.20	0.043	mg/L		03/29/20 14:14	03/30/20 10:11	1
Manganese	0.00106	J	0.0030	0.00040	mg/L		03/29/20 14:14	03/30/20 10:11	1
Nickel	ND		0.010	0.0013	mg/L		03/29/20 14:14	03/30/20 10:11	1
Potassium	ND		0.50	0.10	mg/L		03/29/20 14:14	03/30/20 10:11	1
Selenium	ND		0.025	0.0087	mg/L		03/29/20 14:14	03/30/20 10:11	1
Silver	ND		0.0060	0.0017	mg/L		03/29/20 14:14	03/30/20 10:11	1
Sodium	ND		1.0	0.32	mg/L		03/29/20 14:14	03/30/20 10:11	1
Thallium	ND		0.020	0.010	mg/L		03/29/20 14:14	03/30/20 10:11	1
Vanadium	ND		0.0050	0.0015	mg/L		03/29/20 14:14	03/30/20 10:11	1
Zinc	0.00687	J	0.010	0.0015	mg/L		03/29/20 14:14	03/30/20 10:11	1

Lab Sample ID: LCS 480-523412/2-A
Matrix: Water
Analysis Batch: 523528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523412

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10.0	9.38		mg/L		94	80 - 120
Antimony	0.200	0.215		mg/L		108	80 - 120
Arsenic	0.200	0.194		mg/L		97	80 - 120
Barium	0.200	0.200		mg/L		100	80 - 120
Beryllium	0.200	0.202		mg/L		101	80 - 120
Boron	0.200	0.198		mg/L		99	80 - 120
Cadmium	0.200	0.199		mg/L		99	80 - 120
Calcium	10.0	9.78		mg/L		98	80 - 120
Chromium	0.200	0.196		mg/L		98	80 - 120
Cobalt	0.200	0.182		mg/L		91	80 - 120
Copper	0.200	0.194		mg/L		97	80 - 120
Iron	10.0	9.74		mg/L		97	80 - 120
Lead	0.200	0.187		mg/L		93	80 - 120
Magnesium	10.0	9.72		mg/L		97	80 - 120
Manganese	0.200	0.195		mg/L		98	80 - 120
Nickel	0.200	0.187		mg/L		93	80 - 120
Potassium	10.0	9.39		mg/L		94	80 - 120
Selenium	0.200	0.192		mg/L		96	80 - 120
Silver	0.0500	0.0491		mg/L		98	80 - 120
Sodium	10.0	9.40		mg/L		94	80 - 120
Thallium	0.200	0.194		mg/L		97	80 - 120
Vanadium	0.200	0.191		mg/L		96	80 - 120
Zinc	0.200	0.200		mg/L		100	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 480-523505/1-A
Matrix: Water
Analysis Batch: 523557

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 523505

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00012	mg/L		03/30/20 11:30	03/30/20 14:39	1

Lab Sample ID: LCS 480-523505/2-A
Matrix: Water
Analysis Batch: 523557

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 523505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00667	0.00768		mg/L		115	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-523647/4
Matrix: Water
Analysis Batch: 523647

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromide	ND		0.20	0.073	mg/L			03/31/20 12:36	1
Chloride	ND		0.50	0.28	mg/L			03/31/20 12:36	1
Sulfate	ND		2.0	0.35	mg/L			03/31/20 12:36	1

Lab Sample ID: LCS 480-523647/3
Matrix: Water
Analysis Batch: 523647

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromide	5.00	4.84		mg/L		97	90 - 110
Chloride	50.0	50.09		mg/L		100	90 - 110
Sulfate	50.0	50.35		mg/L		101	90 - 110

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-523547/3
Matrix: Water
Analysis Batch: 523547

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			03/30/20 14:11	1

Lab Sample ID: LCS 480-523547/4
Matrix: Water
Analysis Batch: 523547

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.941		mg/L		94	90 - 110

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Method: 410.4 - COD

Lab Sample ID: MB 480-523923/3
Matrix: Water
Analysis Batch: 523923

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	ND		10.0	5.0	mg/L			04/01/20 14:30	1

Lab Sample ID: LCS 480-523923/4
Matrix: Water
Analysis Batch: 523923

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	25.0	23.98		mg/L		96	90 - 110

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

Lab Sample ID: MB 480-523680/51
Matrix: Water
Analysis Batch: 523680

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.43	mg/L			03/29/20 16:15	1

Lab Sample ID: LCS 480-523680/52
Matrix: Water
Analysis Batch: 523680

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	60.0	57.11		mg/L		95	90 - 110

Lab Sample ID: 480-167913-1 MS
Matrix: Water
Analysis Batch: 523680

Client Sample ID: 5-SAR-001-006-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	6.6		23.3	30.85		mg/L		104	54 - 131

Lab Sample ID: 480-167913-2 DU
Matrix: Water
Analysis Batch: 523680

Client Sample ID: 5-SAR-001-006-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	9.3		9.23		mg/L		0.9	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-523872/27
Matrix: Water
Analysis Batch: 523872

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity, Total	ND		5.0	0.79	mg/L			03/31/20 22:27	1

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 480-523872/28
Matrix: Water
Analysis Batch: 523872

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Alkalinity, Total	100	101.5		mg/L		102	90 - 110

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 480-523590/1
Matrix: Water
Analysis Batch: 523590

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10.0	4.0	mg/L			03/30/20 19:33	1

Lab Sample ID: LCS 480-523590/2
Matrix: Water
Analysis Batch: 523590

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	504	446.0		mg/L		88	85 - 115

Lab Sample ID: 480-167913-2 DU
Matrix: Water
Analysis Batch: 523590

Client Sample ID: 5-SAR-001-006-02
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	706		741.0		mg/L		5	10

QC Association Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

GC/MS VOA

Analysis Batch: 523510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-2	5-SAR-001-006-02	Total/NA	Water	8260C	
480-167913-4	5-SAR-001-006-04	Total/NA	Water	8260C	
MB 480-523510/8	Method Blank	Total/NA	Water	8260C	
LCS 480-523510/6	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 523513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	8260C	
MB 480-523513/10	Method Blank	Total/NA	Water	8260C	
LCS 480-523513/5	Lab Control Sample	Total/NA	Water	8260C	

GC/MS Semi VOA

Prep Batch: 523476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	3510C	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	3510C	
MB 480-523476/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-523476/2-A	Lab Control Sample	Total/NA	Water	3510C	

Prep Batch: 523635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	3510C	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	3510C	
MB 480-523635/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-523635/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 523719

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	8270D SIM ID	523476
480-167913-2	5-SAR-001-006-02	Total/NA	Water	8270D SIM ID	523476
MB 480-523476/1-A	Method Blank	Total/NA	Water	8270D SIM ID	523476
LCS 480-523476/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	523476

Analysis Batch: 523889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	8270D_LL_PAH	523635
480-167913-2	5-SAR-001-006-02	Total/NA	Water	8270D_LL_PAH	523635
MB 480-523635/1-A	Method Blank	Total/NA	Water	8270D_LL_PAH	523635
LCS 480-523635/2-A	Lab Control Sample	Total/NA	Water	8270D_LL_PAH	523635

LCMS

Prep Batch: 153750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	3535	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	3535	
480-167913-3	5-SAR-001-006-03	Total/NA	Water	3535	
MB 200-153750/1-A	Method Blank	Total/NA	Water	3535	
LCS 200-153750/2-A	Lab Control Sample	Total/NA	Water	3535	

QC Association Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

LCMS

Analysis Batch: 153762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	537 (modified)	153750
480-167913-2	5-SAR-001-006-02	Total/NA	Water	537 (modified)	153750
480-167913-3	5-SAR-001-006-03	Total/NA	Water	537 (modified)	153750
MB 200-153750/1-A	Method Blank	Total/NA	Water	537 (modified)	153750
LCS 200-153750/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	153750

Metals

Prep Batch: 523412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	3005A	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	3005A	
MB 480-523412/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-523412/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 523503

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	SM 2340B	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	SM 2340B	

Prep Batch: 523505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	7470A	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	7470A	
MB 480-523505/1-A	Method Blank	Total/NA	Water	7470A	
LCS 480-523505/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 523528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	6010C	523412
480-167913-2	5-SAR-001-006-02	Total/NA	Water	6010C	523412
MB 480-523412/1-A	Method Blank	Total/NA	Water	6010C	523412
LCS 480-523412/2-A	Lab Control Sample	Total/NA	Water	6010C	523412

Analysis Batch: 523557

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	7470A	523505
480-167913-2	5-SAR-001-006-02	Total/NA	Water	7470A	523505
MB 480-523505/1-A	Method Blank	Total/NA	Water	7470A	523505
LCS 480-523505/2-A	Lab Control Sample	Total/NA	Water	7470A	523505

General Chemistry

Analysis Batch: 523547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	350.1	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	350.1	
MB 480-523547/3	Method Blank	Total/NA	Water	350.1	
LCS 480-523547/4	Lab Control Sample	Total/NA	Water	350.1	

General Chemistry

Analysis Batch: 523590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	SM 2540C	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	SM 2540C	
MB 480-523590/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 480-523590/2	Lab Control Sample	Total/NA	Water	SM 2540C	
480-167913-2 DU	5-SAR-001-006-02	Total/NA	Water	SM 2540C	

Analysis Batch: 523647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	300.0	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	300.0	
MB 480-523647/4	Method Blank	Total/NA	Water	300.0	
LCS 480-523647/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 523680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	9060A	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	9060A	
MB 480-523680/51	Method Blank	Total/NA	Water	9060A	
LCS 480-523680/52	Lab Control Sample	Total/NA	Water	9060A	
480-167913-1 MS	5-SAR-001-006-01	Total/NA	Water	9060A	
480-167913-2 DU	5-SAR-001-006-02	Total/NA	Water	9060A	

Analysis Batch: 523872

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	SM 2320B	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	SM 2320B	
MB 480-523872/27	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-523872/28	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 523923

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-167913-1	5-SAR-001-006-01	Total/NA	Water	410.4	
480-167913-2	5-SAR-001-006-02	Total/NA	Water	410.4	
MB 480-523923/3	Method Blank	Total/NA	Water	410.4	
LCS 480-523923/4	Lab Control Sample	Total/NA	Water	410.4	

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Client Sample ID: 5-SAR-001-006-01

Lab Sample ID: 480-167913-1

Date Collected: 03/26/20 14:15

Matrix: Water

Date Received: 03/28/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	523513	03/30/20 15:08	RJF	TAL BUF
Total/NA	Prep	3510C			523476	03/30/20 08:53	JMP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	523719	03/31/20 22:45	CLA	TAL BUF
Total/NA	Prep	3510C			523635	03/31/20 08:44	JMP	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	523889	04/01/20 21:15	JMM	TAL BUF
Total/NA	Prep	3535			153750	03/31/20 13:54	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	153762	03/31/20 19:33	ND	TAL BUR
Total/NA	Prep	3005A			523412	03/29/20 14:14	NSW	TAL BUF
Total/NA	Analysis	6010C		1	523528	03/30/20 11:44	LMH	TAL BUF
Total/NA	Prep	7470A			523505	03/30/20 11:30	BMB	TAL BUF
Total/NA	Analysis	7470A		1	523557	03/30/20 14:59	BMB	TAL BUF
Total/NA	Analysis	SM 2340B		1	523503	03/30/20 15:46	LMH	TAL BUF
Total/NA	Analysis	300.0		10	523647	03/31/20 15:40	IMZ	TAL BUF
Total/NA	Analysis	350.1		5	523547	03/30/20 14:13	CRK	TAL BUF
Total/NA	Analysis	410.4		1	523923	04/01/20 14:30	CSS	TAL BUF
Total/NA	Analysis	9060A		1	523680	03/29/20 21:45	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	523872	03/31/20 23:34	BEF	TAL BUF
Total/NA	Analysis	SM 2540C		1	523590	03/30/20 19:33	T1S	TAL BUF

Client Sample ID: 5-SAR-001-006-02

Lab Sample ID: 480-167913-2

Date Collected: 03/26/20 16:00

Matrix: Water

Date Received: 03/28/20 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	523510	03/30/20 17:31	RJF	TAL BUF
Total/NA	Prep	3510C			523476	03/30/20 08:53	JMP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	523719	03/31/20 23:08	CLA	TAL BUF
Total/NA	Prep	3510C			523635	03/31/20 08:44	JMP	TAL BUF
Total/NA	Analysis	8270D_LL_PAH		1	523889	04/01/20 21:44	JMM	TAL BUF
Total/NA	Prep	3535			153750	03/31/20 13:54	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	153762	03/31/20 19:41	ND	TAL BUR
Total/NA	Prep	3005A			523412	03/29/20 14:14	NSW	TAL BUF
Total/NA	Analysis	6010C		1	523528	03/30/20 11:48	LMH	TAL BUF
Total/NA	Prep	7470A			523505	03/30/20 11:30	BMB	TAL BUF
Total/NA	Analysis	7470A		1	523557	03/30/20 15:00	BMB	TAL BUF
Total/NA	Analysis	SM 2340B		1	523503	03/30/20 15:46	LMH	TAL BUF
Total/NA	Analysis	300.0		5	523647	03/31/20 15:54	IMZ	TAL BUF
Total/NA	Analysis	350.1		1	523547	03/30/20 14:14	CRK	TAL BUF
Total/NA	Analysis	410.4		1	523923	04/01/20 14:30	CSS	TAL BUF
Total/NA	Analysis	9060A		1	523680	03/29/20 22:41	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	523872	03/31/20 23:53	BEF	TAL BUF
Total/NA	Analysis	SM 2540C		1	523590	03/30/20 19:33	T1S	TAL BUF

Lab Chronicle

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Client Sample ID: 5-SAR-001-006-03

Date Collected: 03/26/20 16:20
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			153750	03/31/20 13:54	ND	TAL BUR
Total/NA	Analysis	537 (modified)		1	153762	03/31/20 19:58	ND	TAL BUR

Client Sample ID: 5-SAR-001-006-04

Date Collected: 03/26/20 00:00
Date Received: 03/28/20 08:00

Lab Sample ID: 480-167913-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	523510	03/30/20 17:56	RJF	TAL BUF

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: O'Brien & Gere Engineers, Inc.
Job ID: 480-167913-1
Project/Site: Tow Path LF, Region 5

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	04-01-20

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

Analysis Method	Prep Method	Matrix	Analyte
300.0		Water	Bromide

Laboratory: Eurofins TestAmerica, Burlington

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10391	03-31-20

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

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)
537 (modified)	3535	Water	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)
537 (modified)	3535	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	3535	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic Acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctanesulfonamide (PFOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
8270D_LL_PAH	Semivolatile Organic Compounds (GC/MS) Low level PAH	SW846	TAL BUF
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL BUR
6010C	Metals (ICP)	SW846	TAL BUF
7470A	Mercury (CVAA)	SW846	TAL BUF
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
410.4	COD	MCAWW	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3535	Solid-Phase Extraction (SPE)	SW846	TAL BUR
5030C	Purge and Trap	SW846	TAL BUF
7470A	Preparation, Mercury	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: O'Brien & Gere Engineers, Inc.
Project/Site: Tow Path LF, Region 5

Job ID: 480-167913-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-167913-1	5-SAR-001-006-01	Water	03/26/20 14:15	03/28/20 08:00	
480-167913-2	5-SAR-001-006-02	Water	03/26/20 16:00	03/28/20 08:00	
480-167913-3	5-SAR-001-006-03	Water	03/26/20 16:20	03/28/20 08:00	
480-167913-4	5-SAR-001-006-04	Water	03/26/20 00:00	03/28/20 08:00	

CHAIN-OF-CUSTODY / Analytical Request Document

Albany #224

Section A Laboratory Information		Section B Client Information		COC #:	5-SAR-001-006
Lab Name:	TestAmerica	Company:	Parsons/Ramboll	Project Name:	ILI - Region _ 5
Attention:	Brian Fischer	Attention:	Scott Tucker		
Address:	10 Hazelwood Drive Amherst, NY 14228-2298	Address:	333 West Washington Street, PO Box 4873 Syracuse, NY 13221	Project Site:	Tow Path Road Landfill
Phone:	(716) 504-9835	Phone:	315-956-6345	Project Number:	450619
Email:	Brian.Fischer@testamericainc.com	Email:	Scott.Tucker@Ramboll.com		

Section C Deliverable Requirements		Purchase Order No:
Report To:	Scott.Tucker@Ramboll.com	TAT - 10 Day
Copy To:	Lorraine.Weber@parsons.com; Laura.Drachenberg@parsons.com Maryanne.Kosciewicz@parsons.com; Heather.Fettig@parsons.com	Section D Additional Information
Deliverables:	Level 2, CAT B Report, NYSDEC EQUIS EDD	

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID MUST BE UNIQUE	Sample Date	Sample Time	Sample Matrix	Sample Type	# of Cont.	MS/MSD	Composite (Y/N)	PFAS Modified 537	Modified Baseline VOCs 8260	PAHs 8270SIM	1, 4 - Dioxane 8270SIM	Mod Bsln Met/Hg 6010/7470	Hard-SM20 2340C	Ammonia/COD 350.1/410.4	TOC 9060A	SO4/CHL/BRO 300.0	TDS SM2540D	Alkalinity SM20 2320B		
										Preservative codes (for water only):		0	1	0	0	2	2	3	1	0	0	0		
										#Bottles		2	3	2	2	1	1	1	2	1	1	1		
1	5-SAR-001-~~TPP-3~~ - MW-01	13.00	13.00	5-SAR-001-006-01	03/26/20	14:15	WG	N	17		N	X	X	X	X	X	X	X	X	X	X	X		
2	5-SAR-001-~~MW-01~~ -TPP-3 (SD 3/26/20)	27.00	27.00	5-SAR-001-006-02	03/26/20	16:00	WG	N	17		N	X	X	X	X	X	X	X	X	X	X	X		
3	5-SAR-001-FIELDQC	--	--	5-SAR-001-006-03	03/26/20	16:20	WQ	FB	2		N	X												
4	5-SAR-001-FIELDQC	--	--	5-SAR-001-006-04	03/26/20	—	WQ	TB	2		N		X											
5																								
6																								
7																								
8																								
9																								
10																								

480-167913 Chain of Custody

Special Instructions:

#2 2.5

Samplers Name:	Sarah Travaly / Josh Jones	Company:	Ramboll	Relinquished By:		Company:		Cooler Temp.:		Custody Seals Intact:	Yes ☐ No ☐
		Date/Time:	3/26/20 1745			Date/Time:		Rec'd on Ice:	Yes ☐ No ☐	Samples Intact :	Yes ☐ No ☐
Shipment Method:	Test America Dropbox	~~Shipment Tracking No:~~	(SD 3/26/20)	Accepted By:	Karl Jadin	Company:	Eurofins	Cooler Temp.:		Custody Seals Intact:	Yes ☐ No ☐
		Date/Time:	3/26/20 1745			Date/Time:	3/27/20 0930	Rec'd on Ice:	Yes ☒ No ☐	Samples Intact:	Yes ☒ No ☐

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (H3PO4):

Relinquished By Karl Jadin 3/27/20 1700 C Walker 3/28/20 0800

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

480-167913 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Schove, John R	COC No: 30-55092.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: john.schove@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-167913-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 4/8/2020		
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:		
Email:	WO #:		
Project Name: Tow Path LF, Region 5	Project #: 48021686		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_IVWT PFAS, Standard List (21 analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
5-SAR-001-006-01 (480-167913-1)	3/26/20	14:15 Eastern		Water			X		
5-SAR-001-006-02 (480-167913-2)	3/26/20	16:00 Eastern		Water			X		
5-SAR-001-006-03 (480-167913-3)	3/26/20	16:20 Eastern		Water			X		

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by: [illegible]	Date/Time: 03/30/20 1700	Company TA	Received by: [illegible]	Date/Time: 3/31/2020 10:30	Company TAB&R	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	

Custody Seals Intact:	Custody Seal No:	Cooler Temperature(s) °C and Other Remarks:
☐ Yes ☐ No	806525	2.1

Ver: 01/16/2019



ORIGIN ID:DKKA (716) 691-2600
CHRIS KOLB
TESTAMERICA
10 HAZELWOOD DR

AMHERST, NY 14228
UNITED STATES US

SHIP DATE: 30MAR20
ACTWGT: 16.75 LB
CAD: 846654/CAFE3312
DIMS: 19x15x10 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990
REF: TA BURLINGTON

FedEx Express

TRK# 0201 4276 0722 8990

TUE - 31 MAR 10:30A
PRIORITY OVERNIGHT

XH BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: O'Brien & Gere Engineers, Inc.

Job Number: 480-167913-1

Login Number: 167913
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	PARSONS
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: O'Brien & Gere Engineers, Inc.

Job Number: 480-167913-1

Login Number: 167913
List Number: 2
Creator: Khudaier, Zahraa

List Source: Eurofins TestAmerica, Burlington
List Creation: 03/31/20 01:21 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	806525
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	