
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444

To: John-Paul Rossi, Stauffer Management Company
Paul Mazierski, Chemours Company FC LLC

From: Michael D. Burke, PG

Info: Stewart Abrams, Paul McMahon, Kimberly Semon, Matthew Wenrick

Date: May 8, 2020
Revised: December 7, 2020

Re: Emerging Contaminants Sampling Memorandum
DuPont-Stauffer Landfill
Newburgh, New York
Langan Project No.: 190037501

This Emerging Contaminants Sampling Memorandum ("Memo") was prepared by Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, DPC (Langan) on behalf of Stauffer Management Company, LLC (SMC) and the Chemours Company FC LLC (Chemours) for the DuPont-Stauffer Landfill (the "Site") in Newburgh, New York (New York State Department of Environmental Conservation [NYSDEC] Inactive Hazardous Waste Disposal Site No. 3-66-009). This Memo summarizes the work conducted in response to the NYSDEC request for additional groundwater sampling based on the results of the July 2019 Emerging Contaminant groundwater sampling event. The purpose of this sampling event was to assess the presence of per- and polyfluoroalkyl substances (PFAS) in groundwater at the Site and to supplement the emerging contaminant data collected during the July 2019 sampling event. **Figure 1** depicts a Site location map.

Groundwater Sampling Methodology

The field sampling included the collection of four groundwater samples, including one duplicate, from existing monitoring wells LF-09, LF-13 and LF-16D. The wells represent one upgradient (LF-09) and two downgradient (LF-13D and LF16D) locations with respect to the North Landfill which is subject to an ongoing Site Management Plan, dated November 2016, that was prepared to provide a framework for management of institutional and engineering controls that were implemented as part of the final remedy for NYSDEC Site No. 3-66-009. Sampling activities were carried out consistently with the safety guidelines outlined in the existing Health and Safety Plan.

Groundwater sampling for PFAS was performed in accordance with the NYSDEC March 1991 Sampling Guidelines and Protocol, the April 2018 NYSDEC Guidance on Groundwater Sampling for Emerging Contaminants, the June 2016 NYSDEC Guidance on Collection of Groundwater Samples for Perfluorooctanoic Acid and Perfluorinated Compounds from Monitoring Wells

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Sample Protocol and the Quality Assurance Program Plan, prepared by Langan, dated January 2019. Monitoring wells were purged and sampled with equipment made with stainless steel, high-density polyethylene, or polypropylene, in accordance with the referenced NYSDEC guidance documents. Prior to sample collection, groundwater was purged from each well while monitoring physical and chemical groundwater parameters for stability (i.e., pH, conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential). The United States Environmental Protection Agency (USEPA) Low-Flow Groundwater Sample Turbidity goal of 5 nephelometric turbidity units (NTUs) was not achieved for monitoring wells LF-09 and LF-16D, despite pumping both wells for approximately one hour, however turbidity readings were within 10% for three consecutive readings. Materials and equipment potentially containing PFAS compounds were not used or worn during sampling activities. Groundwater sampling logs are provided as **Attachment 1**.

Groundwater samples were collected into laboratory-supplied sample containers and submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program-certified laboratory and analyzed for NYSDEC's Target Analyte List of PFAS compounds using USEPA Modified Test Method 537.1. Laboratory analyses were reported in accordance with the NYSDEC Analytical Services Protocol Category B data deliverable format. Laboratory analytical reports are included in **Attachment 2**.

Groundwater Sampling Results

PFAS

Combined concentrations of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) ranged from 63 nanograms per liter (ng/L) in LF-09 to 146 ng/L in LF-13D. The duplicate sample collected from LF-13D had a combined PFOA and PFOS concentration of 147 ng/L. A map showing the analytical results of the emerging contaminants groundwater sampling event are shown on **Figure 2** and a table summarizing analytical results is included as **Table 1**.

Category B laboratory deliverables were provided to Langan's data validator to evaluate the usability of data. The following presents a summary of the Data Usability Summary Report (DUSR) as it relates to the PFAS results:

- One field duplicate and parent sample pair was collected and analyzed for all parameters. For results less than 5X the reporting limit (RL), analytes meet the precision criteria if the absolute difference is less than $\pm 1X$ the RL. For results greater than 5X the RL, analytes meet the precision criteria if the relative percent difference is less than or equal to 30% for groundwater. The field duplicate and parent sample results met the precision criteria for all parameters.

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The DUSR concludes that all data are considered usable, as qualified. Completeness, defined as the percentage of analytical results that are judged to be valid, is 100%. A copy of DUSR is included as **Attachment 3**.

1,4- Dioxane

Samples collected during the July 2019 sampling event were analyzed for the emerging contaminant 1,4-dioxane. 1,4-dioxane was not detected (detection limit <0.144 micrograms per liter [$\mu\text{g/L}$]) in both the upgradient well (LF-09) and downgradient well LF-13D. A 1,4-dioxane concentration of 0.285 $\mu\text{g/L}$ was detected in downgradient monitoring well LF-16D. A map showing the analytical results of the emerging contaminants groundwater sampling event are shown on **Figure 3**. A table summarizing analytical results is provided in the Emerging Contaminants Sampling Memorandum dated January 27, 2020.

The NYSDEC screening value for 1,4-dioxane is 1 $\mu\text{g/L}$. The results from the July 2019 sampling event were below this assessment value; therefore, additional sampling is not warranted.

Conclusions and Recommendations

NYSDEC established a framework for the assessment of PFOA and PFOS as part of the remedy selection process in its recently issued guidance document: *Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remediation Programs Guidance Document*, October 2020 (PFAS Guidance). Under the PFAS Guidance, PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L and is determined to be attributable to the site. In addition, further assessment of water may be warranted if any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L. Upgradient and downgradient concentrations shall be evaluated when determining if the source of PFAS is attributable to the site.

The PFAS Guidance provides a framework to follow when determining whether PFAS can be attributed to a site source. Applying this guidance to groundwater sample results allows us to conclude that, while PFOA and PFAS are present in groundwater at concentrations greater than 10 ng/L, these concentrations are not attributable to a site source, based on the following:

1. The Site is not known to have historically generated PFAS products/compounds as a result of manufacturing activities. Most site operations, beginning in 1911, predate the onset of PFOA use in 1951.
2. Any potential source material was either removed and disposed off-site or was relocated to a designated area in the north landfill, where an engineered cap, consisting of a 40-mil

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linear low density polyethylene (LLDPE) geomembrane, an 18-inch-thick barrier protection layer, and a 6-inch topsoil layer, was installed. This work was performed between August 2013 and May 2016.

3. While PFOA and PFOS were identified in groundwater at concentrations greater than the screening value of 10 ng/L, they were identified in both the upgradient and downgradient wells at comparable concentrations. The upgradient PFAS concentrations in groundwater suggest that other regulated industrial sites that are either directly adjacent to or in proximity to the DuPont Stauffer site are contributing sources of PFAS.
4. No single PFAS constituent was detected at or above the NYSDEC screening values of 100 ng/l for individual PFAS compounds; and
5. The total PFAS concentrations were below 500 ng/L in all monitoring wells.

The compound 1,4-dioxane was not detected at or above the NYSDEC screening value of 1 µg/L in any well sampled during the July 2019 sampling event; therefore, the site is not a source of 1,4-dioxane in groundwater.

These results appear to be consistent with a typical legacy industrial PFAS fingerprint. Additional local and regional context for the reported concentrations is difficult considering the Site is in an industrial area with several other regulated Sites either directly adjacent or in proximity to the DuPont Stauffer Site which may influence the results reported from Site wells. Assessment activities at all other neighboring properties/facilities in the area would need to be completed and collated before any discrete source or plumes could be indicated.

Other issues should be considered in combination with these results as well. Significant remedial actions (RA) occurred at the Site between August 2013 and May 2016 in accordance with the ROD, Explanation of Significant Differences, and the Final (100%) Remedial Design (RD) Report for Waste Removal and Cap (OBG, February 2013) and NYSDEC-approved modifications made thereto. Under the Order on Consent, the property was remediated to restricted commercial and industrial use. Hazardous waste was removed from the Site, and nonhazardous waste and impacted soil not satisfying the restricted commercial use site standards was consolidated on-site and covered by a geomembrane cap. The geomembrane cap is an Engineering Control that will require monitoring and maintenance for the life of the remedy in accordance with the Site Management Plan approved by NYSDEC

Based on this information and as suggested by the PFAS Guidance, the sampling results are not indicative of an on-site source or discrete on-site plume and no further assessment is indicated at the Site.

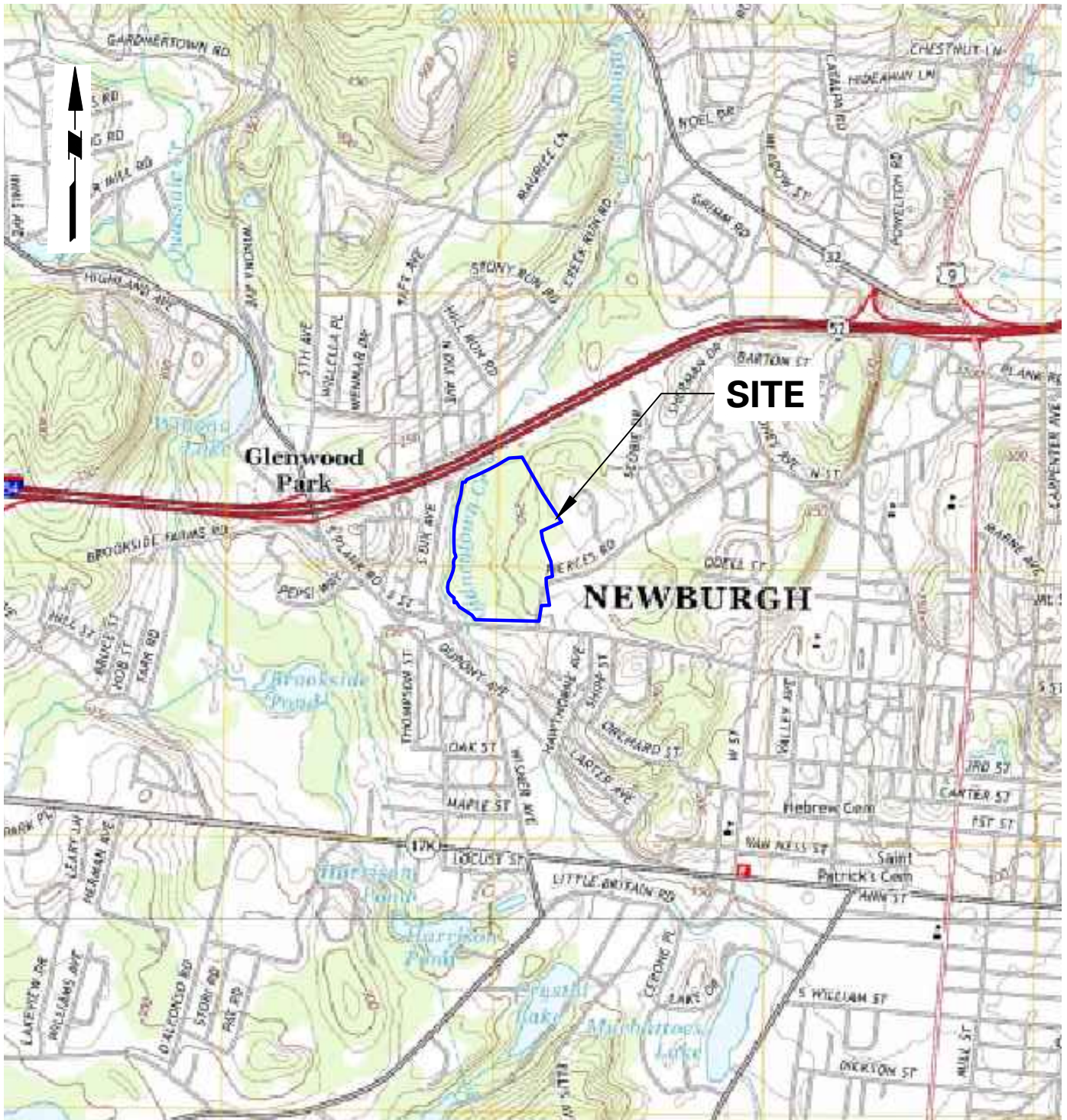
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Enclosure(s): Figure 1 – Site Location Map
 Figure 2 – PFAS Groundwater Sample Analytical Results Map
 Figure 3 – 1,4-Dioxane Groundwater Sample Analytical Results Map
 Table 1 – Emerging Contaminants Groundwater Sample Analytical Results Summary

 Attachment 1 – Groundwater Sampling Logs
 Attachment 2 – Laboratory Analytical Reports
 Attachment 3 – Data Usability Summary Report

FIGURES



LEGEND:

— APPROXIMATE SITE BOUNDARY

NOTES:

1. BASEMAP OBTAINED FROM USGS SERIES 7.5 MINUTE QUADRANGLES: NEWBURGH AND CORNWALL-ON-HUDSON (2013)
2. FIGURE IS NOT TO SCALE.

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Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001

T: 212.479.5400 F: 212.479.5444 www.langan.com

Project

**DUPONT-STAUFFER
LANDFILL**

NYSDEC SITE NO. 326009

SECTION No. 5, BLOCK No. 1, LOT Nos. 1 and 2
NEWBURGH

ORANGE

NEW YORK

Figure Title

**SITE LOCATION
MAP**

Project No.

190037501

Date

03/11/2020

Drawn By

EM

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PM

Figure No.

1

Sheet 1 of 2



| Sample ID | LF16D_030320 | |
|-------------------------------|--------------|---|
| Sample Date | 3/3/2020 | |
| PFAS (ng/L) | | |
| Perfluorobutanesulfonic Acid | 2.6 | J |
| Perfluorobutanoic acid | 7.5 | |
| Perfluoroheptanesulfonic acid | 0.7 | |
| Perfluoroheptanoic acid | 9.5 | |
| Perfluorohexanesulfonic Acid | 4.8 | J |
| Perfluorohexanoic Acid | 15 | |
| Perfluorononanoic Acid | 2 | |
| Perfluorooctanesulfonic acid | 16 | |
| Perfluorooctanoic Acid | 42 | J |
| Perfluoropentanoic Acid | 11 | |

LEGEND:

- APPROXIMATE SITE BOUNDARY
- GIDNEYTOWN CREEK
- LF-09

MONITORING WELL LOCATION

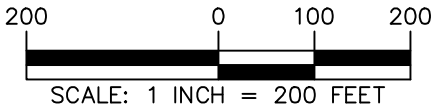
NOTES:

1. BASE MAP IS REFERENCED FROM O'BRIEN AND GERE FIGURE TITLED "SEDIMENT SAMPLE LOCATION PLAN" DATED JUNE 2016.
2. PFAS = PER- AND POLYFLUOROALKYL SUBSTANCES
3. GROUNDWATER SAMPLE RESULTS ARE PRESENTED. A GROUNDWATER STANDARD FOR PFAS HAS NOT BEEN ESTABLISHED IN NEW YORK STATE.
4. ng/L = NANOGRAM PER LITER
5. J = THE ANALYTE WAS DETECTED ABOVE THE METHOD DETECTION LIMIT, BUT BELOW THE REPORTING LIMIT (RL); THE RESULT IS AN ESTIMATED CONCENTRATION.

| Sample ID | LF13D_030320 | | GWDUP01_030320 | |
|---|--------------|---|----------------|---|
| Sample Date | 3/3/2020 | | 3/3/2020 | |
| PFAS (ng/L) | | | | |
| N-ethyl perfluorooctane- sulfonamidoacetic acid | 1.2 | J | 1.1 | J |
| Perfluorobutanesulfonic Acid | 3.2 | | 3.3 | |
| Perfluorobutanoic acid | 22 | | 22 | |
| Perfluorodecanoic acid | 2.8 | | 2.6 | |
| Perfluoroheptanesulfonic acid | 1.5 | J | 1.6 | J |
| Perfluoroheptanoic acid | 21 | | 21 | |
| Perfluorohexanesulfonic Acid | 6.9 | | 6.7 | |
| Perfluorohexanoic Acid | 74 | | 73 | |
| Perfluorononanoic Acid | 23 | | 23 | |
| Perfluorooctanesulfonamide | 0.5 | J | ND | |
| Perfluorooctanesulfonic acid | 46 | | 47 | |
| Perfluorooctanoic Acid | 100 | | 100 | |
| Perfluoropentanoic Acid | 36 | | 34 | |

| Sample ID | LF09_022720 | |
|-------------------------------|-------------|---|
| Sample Date | 2/27/2020 | |
| PFAS (ng/L) | | |
| Perfluorobutanesulfonic Acid | 2 | |
| Perfluorobutanoic acid | 5.7 | |
| Perfluorodecanoic acid | 0.69 | J |
| Perfluoroheptanesulfonic acid | 1.3 | J |
| Perfluoroheptanoic acid | 6.8 | |
| Perfluorohexanesulfonic Acid | 3.3 | |
| Perfluorohexanoic Acid | 8.5 | |
| Perfluorononanoic Acid | 4.8 | |
| Perfluorooctanesulfonic acid | 34 | |
| Perfluorooctanoic Acid | 29 | |
| Perfluoropentanoic Acid | 9.2 | |

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.



LANGAN

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Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project

DUPONT-STAUFFER
LANDFILL

NYSDEC SITE NO. 336009
Section No. 5, BLOCK No. 2, LOT Nos. 1 & 2
NEWBURGH

ORANGE NEW YORK

Figure Title

EMERGING
CONTAMINANTS
GROUNDWATER
SAMPLE ANALYTICAL
RESULTS MAP

Project No.

190037501

Date

03/13/2020

Drawn By

EM

Checked By

PM

Figure No.

2

Sheet 2 of 2

TABLES

Table 1
Groundwater Sample Analytical Results - Emerging Contaminants
DuPont-Stauffer Landfill Site
NYSDEC BCP Site No. 336009
Langan Project No. 190037501
4/2/2020

| Location Sample ID Laboratory ID Sample Date | LF-09 LF09_022720 1269272 2/27/2020 | LF-13D LF13D_030320 1271471 3/3/2020 | LF-13D GWDUP01_030320 1271475 3/3/2020 | LF-16D LF16D_030320 1271474 3/3/2020 |
|--|--|---|---|---|
| Per and Polyfluoroalkyl Substances (ng/L) | | | | |
| N-ethyl perfluorooctane- sulfonamidoacetic acid (NEtFOSAA) | 0.45 U | 1.2 J | 1.1 J | 0.44 U |
| Perfluorobutanesulfonic Acid (PFBS) | 2 | 3.2 | 3.3 | 2.6 |
| Perfluorobutanoic acid (PFBA) | 5.7 | 22 | 22 | 7.5 |
| Perfluorodecanoic acid (PFDA) | 0.69 J | 2.8 | 2.6 | 0.44 U |
| Perfluoroheptanesulfonic acid (PFHpS) | 1.3 J | 1.5 J | 1.6 J | 0.7 J |
| Perfluoroheptanoic acid (PFHpA) | 6.8 | 21 | 21 | 9.5 |
| Perfluorohexanesulfonic Acid (PFHxS) | 3.3 | 6.9 | 6.7 | 4.8 |
| Perfluorohexanoic Acid (PFHxA) | 8.5 | 74 | 73 | 15 |
| Perfluorononanoic Acid (PFNA) | 4.8 | 23 | 23 | 2 |
| Perfluorooctanesulfonamide (FOSA) | 0.45 U | 0.5 J | 0.44 U | 0.44 U |
| Perfluorooctanesulfonic acid (PFOS) | 34 | 46 | 47 | 16 |
| Perfluorooctanoic Acid (PFOA) | 29 | 100 | 100 | 42 |
| Perfluoropentanoic Acid (PFPeA) | 9.2 | 36 | 34 | 11 |

Notes:
1. Only detected analytes are shown in the table.
2. Sample GWDUP01_030320 is a duplicate sample of LF13D_030320.
3. ng/L = nanograms per liter

Qualifiers:
J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.
U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL; the value shown in the table is the RL.

Table 2
Groundwater Sample Analytical Results - Emerging Contaminants
DuPont-Stauffer Landfill Site
NYSDEC BCP Site No. 336009
Langan Project No. 190037501
10/2/2020

| Location Sample ID Laboratory ID Sample Date | LF-09 LF09_071619 L1931311-01 7/16/2019 | LF-13D LF13D_071619 L1931311-02 7/16/2019 | LF-13D GWDUP01_071619 L1931311-03 7/16/2019 | LF-16D LF16D_071719 L1931589-01 7/17/2019 |
|---|--|--|--|--|
| Semivolatile Organic Compounds (µg/L) | | | | |
| 1,4-Dioxane (P-Dioxane) | 0.144 U | 0.144 U | 0.144 U | 0.285 |

- Notes:**
- 1. Only detected analytes are shown in the table.
 - 2. Sample GWDUP01_071619 is a duplicate sample of LF13D_071619.
 - 3. µg/L = micrograms per liter

Qualifiers:

J = The analyte was detected above the Method Detection Limit (MDL), but below the RL; therefore, the result is an estimated concentration.

U = The analyte was analyzed for, but was not detected at a level greater than or equal to the RL; the value shown in the table is the RL.

ATTACHMENT 1
GROUNDWATER SAMPLING LOGS

Attachment 1
Groundwater Sampling Logs
 DuPont-Stauffer Landfill Site
 NYSDEC BCP Site No. 336009
 Langan Project No.: 190037501

| Project Information | | Well Information | | Equipment Information | | Sampling Conditions | | Sampling Information | | |
|--|--------------------------|------------------|------------|-----------------------------|--------------------------|------------------------------|-----------------------|----------------------|---|------------------|
| Project Name: | Dupont-Stauffer Landfill | Well No: | LF-09 | Water Quality Device Model: | Horiba U-52 | Weather: | Cloudy, 30s F | Sample(s): | LF09_022720 | |
| Project Number: | 190037501 | Well Depth: | 69.3 | Pine Number: | 25332 | Background PID (ppm): | 0.0 | | | |
| Site Location: | Newburgh, NY | Well Diameter: | 4 in | Pump Make and Model: | Bladder Pump | PID Beneath Inner Cap (ppm): | 0.0 | | | |
| Sampling Personnel: | Patrick Stovall | Well Screen | 6 | Pine Number: | - | Pump Intake Depth: | 45.0 | Sample Date: | 2/27/2020 | |
| | | Interval: | 69.3 | Tubing Diameter: | 1/4 x 3/8 | Depth to Water Before Purge: | N/A | Sample Time: | 16:05 | |
| STABILIZATION = 3 successive readings within limits | | | | | | | | | | |
| | TEMP °Celsius | PH | ORP mV | CONDUCTIVITY mS/cm | TURBIDITY ntu | DO mg/l | DTW ft | Flow Rate (lpm) | Cumulative Discharge Volume (Gal) | NOTES |
| TIME | (+/- 3%) | (+/- 0.1) | (+/- 10mV) | (+/- 3%) | (+/- 10%) above 5 NTU | (+/- 10%) above 0.5 mg/l | Drawdown < 0.33 ft | 0.25-0.5 l/m | | color, odor etc. |
| BEGIN PURGING | | | | | | | | | | |
| 14:55 | 8.20 | 5.89 | 124 | 0.637 | 22.3 | 7.75 | N/A | 0.40 | 0.25 | N/A |
| 15:00 | 8.21 | 5.93 | 91 | 0.635 | 16.7 | 6.56 | N/A | 0.40 | 0.50 | N/A |
| 15:05 | 8.26 | 5.93 | 87 | 0.633 | 13.8 | 6.42 | N/A | 0.45 | 0.75 | N/A |
| 15:10 | 8.41 | 5.95 | 63 | 0.632 | 7.9 | 5.42 | N/A | 0.45 | 1.00 | N/A |
| 15:15 | 8.87 | 5.97 | 49 | 0.631 | 7.8 | 4.75 | N/A | 0.45 | 1.25 | N/A |
| 15:20 | 9.36 | 5.97 | 36 | 0.629 | 6.1 | 4.05 | N/A | 0.45 | 1.50 | N/A |
| 15:25 | 8.64 | 5.98 | 30 | 0.630 | 6.7 | 3.72 | N/A | 0.45 | 1.75 | N/A |
| 15:30 | 8.08 | 5.99 | 23 | 0.629 | 6.3 | 3.21 | N/A | 0.45 | 2.00 | N/A |
| 15:35 | 7.92 | 5.99 | 20 | 0.631 | 6.6 | 2.71 | N/A | 0.45 | 2.25 | N/A |
| 15:40 | 8.23 | 6.00 | 15 | 0.630 | 6.5 | 2.28 | N/A | 0.45 | 2.50 | N/A |
| 15:45 | 8.04 | 5.97 | 13 | 0.632 | 5.9 | 2.75 | N/A | 0.45 | 2.75 | N/A |
| 15:50 | 8.10 | 6.01 | 12 | 0.632 | 6.3 | 2.13 | N/A | 0.45 | 3.00 | N/A |
| 15:55 | 8.90 | 6.01 | 7 | 0.629 | 5.4 | 1.04 | N/A | 0.45 | 3.25 | N/A |
| 16:00 | 8.92 | 6.01 | 7 | 0.629 | 7.1 | 1.00 | N/A | 0.45 | 3.50 | N/A |
| Notes: 1. Well depths and groundwater depths were measured in feet below the top of well casing 2. Well and tubing diameters are measured in inches. 3. PID = Photoionization Detector 4. PPM = Parts per million 5. pH = Hydrogen ion concentration 6. ORP = Oxidation-reduction potential, measured in millivolts (mV) 7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L) 8. DTW = Depth to water 9. mS/cm = milli-Siemans per centimeter 10. NTU = Nephelometric Turbidity Unit | | | | | | | | | | |
| LANGAN Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York | | | | | | | | | | |

Attachment 1
Groundwater Sampling Logs
 DuPont-Stauffer Landfill Site
 NYSDEC BCP Site No. 336009
 Langan Project No.: 190037501

| Project Information | | Well Information | | Equipment Information | | Sampling Conditions | | Sampling Information | | |
|--|----------------------------------|---------------------|-------------------------|-----------------------------------|--|---|------------------------------------|--|---|-------------------------------|
| Project Name: | Dupont-Stauffer Landfill | Well No: | LF13D | Water Quality Device Model: | Horiba U-52 | Weather: | Clear, 50s F | Sample(s): | LF13D_030320 | |
| Project Number: | 190037501 | Well Depth: | 34 | Pine Number: | 25332 | Background PID (ppm): | 0.0 | | GWDUP01_030320 | |
| Site Location: | Newburgh, NY | Well Diameter: | 4 in | Pump Make and Model: | Bladder Pump | PID Beneath Inner Cap (ppm): | 0.0 | | MS/MSD | |
| Sampling Personnel: | Patrick Stovall | Well Screen | 6.9 | Pine Number: | - | Pump Intake Depth: | 24.0 | Sample Date: | 3/3/2020 | |
| | | Interval: | 34.0 | Tubing Diameter: | 1/4 × 3/8 | Depth to Water Before Purge: | N/A | Sample Time: | 11:10 | |
| STABILIZATION = 3 successive readings within limits | | | | | | | | | | |
| TIME | TEMP °Celsius (+/- 3%) | PH (+/- 0.1) | ORP mV (+/- 10mV) | CONDUCTIVITY mS/cm (+/- 3%) | TURBIDITY ntu (+/- 10%) above 5 NTU | DO mg/l (+/- 10%) above 0.5 mg/l | DTW ft Drawdown < 0.33 ft | Flow Rate (lpm) 0.25-0.5 l/m | Cumulative Discharge Volume (Gal) | NOTES color, odor etc. |
| BEGIN PURGING | | | | | | | | | | |
| 10:25 | 12.81 | 7.27 | 187 | 0.673 | 0.0 | 0.21 | N/A | 0.4 | 0.25 | Clear (no odor) |
| 10:30 | 11.44 | 7.39 | 173 | 0.661 | 0.0 | 0.00 | N/A | 0.4 | 0.50 | N/A |
| 10:35 | 12.18 | 7.46 | 153 | 0.659 | 0.0 | 0.00 | N/A | 0.4 | 0.75 | N/A |
| 10:40 | 11.13 | 7.46 | 146 | 0.660 | 0.0 | 0.00 | N/A | 0.4 | 1.25 | N/A |
| 10:45 | 11.18 | 7.46 | 141 | 0.660 | 0.0 | 0.00 | N/A | 0.4 | 1.75 | N/A |
| 10:50 | 11.25 | 7.48 | 135 | 0.659 | 0.0 | 0.00 | N/A | 0.4 | 2.25 | N/A |
| 10:55 | 11.13 | 7.48 | 128 | 0.660 | 0.0 | 0.00 | N/A | 0.4 | 2.75 | N/A |
| 11:00 | 11.07 | 7.49 | 116 | 0.661 | 0.0 | 0.00 | N/A | 0.4 | 3.00 | N/A |
| 11:05 | 11.08 | 7.48 | 115 | 0.661 | 0.0 | 0.00 | N/A | 0.4 | 3.50 | N/A |
| 11:10 | 10.91 | 7.49 | 109 | 0.661 | 0.0 | 0.00 | N/A | 0.4 | 4.00 | N/A |
| Notes: 1. Well depths and groundwater depths were measured in feet below the top of well casing 2. Well and tubing diameters are measured in inches. 3. PID = Photoionization Detector 4. PPM = Parts per million 5. pH = Hydrogen ion concentration 6. ORP = Oxidation-reduction potential, measured in millivolts (mV) 7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L) 8. DTW = Depth to water 9. mS/cm = milli-Siemans per centimeter 10. NTU = Nephelometric Turbidity Unit | | | | | | | | | | |
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Attachment 1
Groundwater Sampling Logs
 DuPont-Stauffer Landfill Site
 NYSDEC BCP Site No. 336009
 Langan Project No.: 190037501

| Project Information | | Well Information | | Equipment Information | | Sampling Conditions | | Sampling Information | | |
|---|--------------------------|------------------|------------|-----------------------------|--------------------------|------------------------------|-----------------------|----------------------|---|-----------------------|
| Project Name: | Dupont-Stauffer Landfill | Well No: | LF16D | Water Quality Device Model: | Horiba U-52 | Weather: | Clear, 50s F | Sample(s): | LF16D_030320 | |
| Project Number: | 190037501 | Well Depth: | 33 ft | Pine Number: | 25332 | Background PID (ppm): | 0.0 | | | |
| Site Location: | Newburgh, NY | Well Diameter: | 4 in | Pump Make and Model: | Bladder Pump | PID Beneath Inner Cap (ppm): | 0.0 | | | |
| Sampling Personnel: | Patrick Stovall | Well Screen | 20.0 | Pine Number: | - | Pump Intake Depth: | 24.0 | Sample Date: | 3/3/2020 | |
| | | Interval: | 29.5 | Tubing Diameter: | 1/4 × 3/8 | Depth to Water Before Purge: | N/A | Sample Time: | 13:40 | |
| STABILIZATION = 3 successive readings within limits | | | | | | | | | | |
| | TEMP °Celsius | PH | ORP mV | CONDUCTIVITY mS/cm | TURBIDITY ntu | DO mg/l | DTW ft | Flow Rate (lpm) | Cumulative Discharge Volume (Gal) | NOTES |
| TIME | (+/- 3%) | (+/- 0.1) | (+/- 10mV) | (+/- 3%) | (+/- 10%) above 5 NTU | (+/- 10%) above 0.5 mg/l | Drawdown < 0.33 ft | 0.25-0.5 l/m | | color, odor etc. |
| BEGIN PURGING | | | | | | | | | | |
| 12:40 | 11.95 | 8.01 | -92 | 0.504 | 380.0 | 3.97 | N/A | 0.4 | 0.25 | Light brown (no odor) |
| 12:45 | 10.90 | 8.07 | -132 | 0.514 | 251.0 | 1.44 | N/A | 0.4 | 0.50 | N/A |
| 12:50 | 10.79 | 7.88 | -128 | 0.540 | 160.0 | 0.00 | N/A | 0.4 | 1.00 | N/A |
| 12:55 | 10.72 | 7.68 | -111 | 0.569 | 124.0 | 0.00 | N/A | 0.4 | 1.50 | N/A |
| 13:00 | 10.74 | 7.54 | -96 | 0.588 | 97.0 | 0.00 | N/A | 0.4 | 2.00 | N/A |
| 13:05 | 10.80 | 7.55 | -95 | 0.582 | 81.6 | 0.00 | N/A | 0.4 | 2.50 | N/A |
| 13:10 | 10.77 | 7.49 | -85 | 0.597 | 57.7 | 0.00 | N/A | 0.4 | 3.25 | N/A |
| 13:15 | 10.72 | 7.44 | -79 | 0.601 | 44.8 | 0.00 | N/A | 0.4 | 3.75 | N/A |
| 13:20 | 10.73 | 7.44 | -79 | 0.600 | 45.3 | 0.00 | N/A | 0.4 | 4.25 | N/A |
| 13:25 | 10.73 | 7.41 | -74 | 0.606 | 36.3 | 0.00 | N/A | 0.4 | 4.75 | N/A |
| 13:30 | 10.65 | 7.39 | -70 | 0.611 | 27.2 | 0.00 | N/A | 0.4 | 5.25 | N/A |
| 13:35 | 10.66 | 7.41 | -69 | 0.609 | 24.5 | 0.00 | N/A | 0.4 | 5.75 | N/A |
| 13:40 | 10.67 | 7.40 | -68 | 0.611 | 23.9 | 0.00 | N/A | 0.4 | 6.00 | N/A |
| Notes: 1. Well depths and groundwater depths were measured in feet below the top of well casing. 2. Well and tubing diameters are measured in inches. 3. PID = Photoionization Detector 4. PPM = Parts per million 5. pH = Hydrogen ion concentration 6. ORP = Oxidation-reduction potential, measured in millivolts (mV) 7. DO = Dissolved Oxygen, measured in milligrams per liter (mg/L) 8. DTW = Depth to water 9. mS/cm = milli-Siemans per centimeter 10. NTU = Nephelometric Turbidity Unit | | | | | | | | | | |
| LANGAN Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. 21 Penn Plaza, 360 West 31st Street, 8th Floor, New York | | | | | | | | | | |

ATTACHMENT 2
LAB REPORTS

Analysis Report

Partial Report

Sample Description: LF09_022720 Grab Groundwater

Project Name: DS Landfill/190037501

Langan Eng & Env Services
ELLE Sample #: GW 1269272
ELLE Group #: 2089965
Matrix: Groundwater

Submittal Date/Time: 02/28/2020 21:58

Collection Date/Time: 02/27/2020 16:05

SDG#: THD05-01

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | N.D. | 1.8 | 4.5 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | N.D. | 0.90 | 2.7 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | N.D. | 0.45 | 2.7 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | N.D. | 0.54 | 1.8 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | 2.0 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | 5.7 | 1.8 | 4.5 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | N.D. | 0.45 | 1.8 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | 0.69 J | 0.45 | 1.8 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | N.D. | 0.45 | 1.8 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | 1.3 J | 0.45 | 1.8 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | 6.8 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | 3.3 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | 8.5 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | 4.8 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | N.D. | 0.45 | 1.8 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | 34 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | 29 | 0.45 | 1.8 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | 9.2 | 0.45 | 1.8 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | N.D. | 0.45 | 1.8 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | N.D. | 0.45 | 1.8 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | N.D. | 0.45 | 1.8 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|----------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20059024 | 03/02/2020 19:02 | Jason W Knight | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20059024 | 02/29/2020 09:30 | Toby Barnhart | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2089965040320111257

Environment Testing
TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

NYC
222

Sample Administration
Receipt Documentation Log

Doc Log ID: 277271



Group Number(s):

Client: Langan Eng

2089965

Delivery and Receipt Information

Delivery Method: ELLE Courier Arrival Date: 02/28/2020
Number of Packages: 1 Number of Projects: 1

Arrival Condition Summary

| | | | |
|--------------------------------------|-----|-------------------------------------|-----|
| Shipping Container Sealed: | Yes | Sample IDs on COC match Containers: | Yes |
| Custody Seal Present: | No | Sample Date/Times match COC: | Yes |
| Samples Chilled: | Yes | Total Trip Blank Qty: | 0 |
| Paperwork Enclosed: | Yes | Air Quality Samples Present: | No |
| Samples Intact: | Yes | | |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |

*Unpacked by Ann-Marie Phillips***Samples Chilled Details**

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

| Cooler # | Matrix | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Elevated Temp? |
|----------|--------|----------------|----------------|-------------|----------|--------------|---------------|----------------|
| 1 | Water | 46730060WS | 4.4 | IR | Wet | Y | Bagged | N |

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

| | | | |
|-------------------------|--|-----------------|-------------------------------|
| BMQL | Below Minimum Quantitation Level | mL | milliliter(s) |
| C | degrees Celsius | MPN | Most Probable Number |
| cfu | colony forming units | N.D. | non-detect |
| CP Units | cobalt-chloroplatinate units | ng | nanogram(s) |
| F | degrees Fahrenheit | NTU | nephelometric turbidity units |
| g | gram(s) | pg/L | picogram/liter |
| IU | International Units | RL | Reporting Limit |
| kg | kilogram(s) | TNTC | Too Numerous To Count |
| L | liter(s) | µg | microgram(s) |
| lb. | pound(s) | µL | microliter(s) |
| m3 | cubic meter(s) | umhos/cm | micromhos/cm |
| meq | milliequivalents | MCL | Maximum Contamination Limit |
| mg | milligram(s) | | |
| < | less than | | |
| > | greater than | | |
| ppm | parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas. | | |
| ppb | parts per billion | | |
| Dry weight basis | Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis. | | |

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Data Qualifiers

| Qualifier | Definition |
|----------------|---|
| C | Result confirmed by reanalysis |
| D1 | Indicates for dual column analyses that the result is reported from column 1 |
| D2 | Indicates for dual column analyses that the result is reported from column 2 |
| E | Concentration exceeds the calibration range |
| K1 | Initial Calibration Blank is above the QC limit and the sample result is ND |
| K2 | Continuing Calibration Blank is above the QC limit and the sample result is ND |
| K3 | Initial Calibration Verification is above the QC limit and the sample result is ND |
| K4 | Continuing Calibration Verification is above the QC limit and the sample result is ND |
| J (or G, I, X) | Estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL) |
| P | Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported. |
| P^ | Concentration difference between the primary and confirmation column $>40\%$. The higher result is reported. |
| U | Analyte was not detected at the value indicated |
| V | Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference. |
| W | The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L. |
| Z | Laboratory Defined - see analysis report |

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.

Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Sample Description: LF13D_030320 Grab Groundwater
DS Landfil

Langan Eng & Env Services
ELLE Sample #: WW 1271471
ELLE Group #: 2090408
Matrix: Groundwater

Project Name: DS Landfill/190037501

Submittal Date/Time: 03/03/2020 11:59
Collection Date/Time: 03/03/2020 11:10
SDG#: THD06-01BKG

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | N.D. | 1.7 | 4.3 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | N.D. | 0.87 | 2.6 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | 1.2 J | 0.43 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | N.D. | 0.52 | 1.7 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | 3.2 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | 22 | 1.7 | 4.3 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | 2.8 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | 1.5 J | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | 21 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | 6.9 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | 74 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | 23 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | 0.50 J | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | 46 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | 100 | 0.43 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | 36 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | N.D. | 0.43 | 1.7 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/05/2020 19:29 | Anthony C Polaski | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/04/2020 08:00 | Austin Prince | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2090408070320111301

Sample Description: LF13D_030320 MS Grab Groundwater
DS Landfil

Langan Eng & Env Services
ELLE Sample #: WW 1271472
ELLE Group #: 2090408
Matrix: Groundwater

Project Name: DS Landfill/190037501

Submittal Date/Time: 03/03/2020 11:59
Collection Date/Time: 03/03/2020 11:10
SDG#: THD06-01MS

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|-------------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | 24 | 1.7 | 4.3 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | 22 | 0.87 | 2.6 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | 26 | 0.43 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | 27 | 0.52 | 1.7 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | 22 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | 43 | 1.7 | 4.3 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | 17 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | 22 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | 22 | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | 21 | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | 43 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | 26 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | 92 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | 45 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | 23 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | 61 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | 120 | 0.43 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | 57 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | 23 | 0.43 | 1.7 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | 22 | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | 21 | 0.43 | 1.7 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/05/2020 19:47 | Anthony C Polaski | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/04/2020 08:00 | Austin Prince | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2090408070320111301

Analysis Report

Partial Report

Sample Description: LF13D_030320 MSD Grab Groundwater
DS Landfil

Langan Eng & Env Services
ELLE Sample #: WW 1271473
ELLE Group #: 2090408
Matrix: Groundwater

Project Name: DS Landfill/190037501

Submittal Date/Time: 03/03/2020 11:59
Collection Date/Time: 03/03/2020 11:10
SDG#: THD06-01MSD

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|-------------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | 22 | 1.8 | 4.4 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | 21 | 0.88 | 2.6 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | 27 | 0.44 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | 24 | 0.53 | 1.8 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | 23 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | 43 | 1.8 | 4.4 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | 20 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | 25 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | 22 | 0.44 | 1.8 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | 21 | 0.44 | 1.8 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | 42 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | 26 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | 94 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | 46 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | 23 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | 66 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | 120 | 0.44 | 1.8 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | 57 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | 24 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | 23 | 0.44 | 1.8 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | 25 | 0.44 | 1.8 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/05/2020 19:56 | Anthony C Polaski | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/04/2020 08:00 | Austin Prince | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2090408070320111301

Partial Report

Sample Description: LF16D_030320 Grab Groundwater
DS Landfil

Langan Eng & Env Services
ELLE Sample #: WW 1271474
ELLE Group #: 2090408
Matrix: Groundwater

Project Name: DS Landfill/190037501

Submittal Date/Time: 03/03/2020 11:59
Collection Date/Time: 03/03/2020 13:40
SDG#: THD06-02

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | N.D. | 1.8 | 4.4 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | N.D. | 0.89 | 2.7 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | N.D. | 0.44 | 2.7 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | N.D. | 0.53 | 1.8 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | 2.6 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | 7.5 | 1.8 | 4.4 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | N.D. | 0.44 | 1.8 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | N.D. | 0.44 | 1.8 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | N.D. | 0.44 | 1.8 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | 0.70 J | 0.44 | 1.8 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | 9.5 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | 4.8 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | 15 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | 2.0 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | N.D. | 0.44 | 1.8 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | 16 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | 42 | 0.44 | 1.8 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | 11 | 0.44 | 1.8 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | N.D. | 0.44 | 1.8 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | N.D. | 0.44 | 1.8 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | N.D. | 0.44 | 1.8 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/05/2020 20:05 | Anthony C Polaski | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/04/2020 08:00 | Austin Prince | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2090408070320111301

Sample Description: GWDUP01_030320 Grab Groundwater
DS Landfil

Langan Eng & Env Services
ELLE Sample #: WW 1271475
ELLE Group #: 2090408
Matrix: Groundwater

Project Name: DS Landfill/190037501

Submittal Date/Time: 03/03/2020 11:59
Collection Date/Time: 03/03/2020
SDG#: THD06-03FD

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | N.D. | 1.7 | 4.4 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | N.D. | 0.87 | 2.6 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | 1.1 J | 0.44 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | N.D. | 0.52 | 1.7 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | 3.3 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | 22 | 1.7 | 4.4 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | 2.6 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | 1.6 J | 0.44 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | 21 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | 6.7 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | 73 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | 23 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | 47 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | 100 | 0.44 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | 34 | 0.44 | 1.7 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | N.D. | 0.44 | 1.7 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | N.D. | 0.44 | 1.7 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/05/2020 20:14 | Anthony C Polaski | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/04/2020 08:00 | Austin Prince | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2090408070320111301

Sample Description: FB01_030320 Grab Water
DS Landfil

Langan Eng & Env Services
ELLE Sample #: WW 1271476
ELLE Group #: 2090408
Matrix: Water

Project Name: DS Landfill/190037501

Submittal Date/Time: 03/03/2020 11:59
Collection Date/Time: 03/03/2020 14:00
SDG#: THD06-04FB

| CAT No. | Analysis Name | CAS Number | Result | Method Detection Limit* | Limit of Quantitation | Dilution Factor |
|--|---|------------|--------|-------------------------|-----------------------|-----------------|
| LC/MS/MS Miscellaneous EPA 537 Version 1.1 Modified | | | ng/l | ng/l | ng/l | |
| 14473 | 6:2-Fluorotelomersulfonic acid ¹ | 27619-97-2 | N.D. | 1.7 | 4.3 | 1 |
| 14473 | 8:2-Fluorotelomersulfonic acid ¹ | 39108-34-4 | N.D. | 0.85 | 2.6 | 1 |
| 14473 | NEtFOSAA ¹ | 2991-50-6 | N.D. | 0.43 | 2.6 | 1 |
| | NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | NMeFOSAA ¹ | 2355-31-9 | N.D. | 0.51 | 1.7 | 1 |
| | NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. | | | | | |
| 14473 | Perfluorobutanesulfonic acid ¹ | 375-73-5 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorobutanoic acid ¹ | 375-22-4 | N.D. | 1.7 | 4.3 | 1 |
| 14473 | Perfluorodecanesulfonic acid ¹ | 335-77-3 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorodecanoic acid ¹ | 335-76-2 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorododecanoic acid ¹ | 307-55-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanesulfonic acid ¹ | 375-92-8 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroheptanoic acid ¹ | 375-85-9 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorohexanesulfonic acid ¹ | 355-46-4 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorohexanoic acid ¹ | 307-24-4 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorononanoic acid ¹ | 375-95-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonamide ¹ | 754-91-6 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanesulfonic acid ¹ | 1763-23-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorooctanoic acid ¹ | 335-67-1 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoropentanoic acid ¹ | 2706-90-3 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorotetradecanoic acid ¹ | 376-06-7 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluorotridecanoic acid ¹ | 72629-94-8 | N.D. | 0.43 | 1.7 | 1 |
| 14473 | Perfluoroundecanoic acid ¹ | 2058-94-8 | N.D. | 0.43 | 1.7 | 1 |

Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 01/31/2021.

¹ = This analyte was not on the laboratory's NYSDOH Scope of Accreditation at the time of analysis.

Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---------|------------------|------------------------------|--------|----------|------------------------|-------------------|-----------------|
| 14473 | NY 21 PFAS Water | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/05/2020 20:23 | Anthony C Polaski | 1 |
| 14091 | PFAS Water Prep | EPA 537 Version 1.1 Modified | 1 | 20064005 | 03/04/2020 08:00 | Austin Prince | 1 |

*=This limit was used in the evaluation of the final result

Reference ID:
2090408070320111301

TAL-8210

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Sample Administration Receipt Documentation Log

Doc Log ID: 277603



Group Number(s): 2090408

Client: LANGAN ENG

Delivery and Receipt Information

| | | | |
|---------------------------|----------------------|---------------------|-------------------|
| Delivery Method: | <u>EQCL Drop Off</u> | Arrival Date: | <u>03/04/2020</u> |
| Number of Packages: | <u>1</u> | Number of Projects: | <u>1</u> |
| State/Province of Origin: | <u>NY</u> | | |

Arrival Condition Summary

| | | | |
|--------------------------------------|-----|-------------------------------------|-----|
| Shipping Container Sealed: | Yes | Sample IDs on COC match Containers: | Yes |
| Custody Seal Present: | No | Sample Date/Times match COC: | Yes |
| Samples Chilled: | Yes | Total Trip Blank Qty: | 0 |
| Paperwork Enclosed: | Yes | Air Quality Samples Present: | No |
| Samples Intact: | Yes | | |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | Yes | | |

Unpacked by Anthony Peelor

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Elevated Temp? |
|----------|----------------|----------------|-------------|----------|--------------|---------------|----------------|
| 1 | 46730060WS | 5.4 | IR | Wet | Y | Bagged | N |

Container Quantity Discrepancy Details

| Sample ID on COC | Container Qty. Received | Container Qty. on COC | Comments |
|------------------|-------------------------|-----------------------|----------|
| LF16D_030320 | 2 | 6 | |
| GWDUP01_030320 | 2 | 6 | |

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

| | | | |
|-------------------------|--|-----------------|-------------------------------|
| BMQL | Below Minimum Quantitation Level | mL | milliliter(s) |
| C | degrees Celsius | MPN | Most Probable Number |
| cfu | colony forming units | N.D. | non-detect |
| CP Units | cobalt-chloroplatinate units | ng | nanogram(s) |
| F | degrees Fahrenheit | NTU | nephelometric turbidity units |
| g | gram(s) | pg/L | picogram/liter |
| IU | International Units | RL | Reporting Limit |
| kg | kilogram(s) | TNTC | Too Numerous To Count |
| L | liter(s) | µg | microgram(s) |
| lb. | pound(s) | µL | microliter(s) |
| m3 | cubic meter(s) | umhos/cm | micromhos/cm |
| meq | milliequivalents | MCL | Maximum Contamination Limit |
| mg | milligram(s) | | |
| < | less than | | |
| > | greater than | | |
| ppm | parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas. | | |
| ppb | parts per billion | | |
| Dry weight basis | Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis. | | |

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Data Qualifiers

| Qualifier | Definition |
|----------------|---|
| C | Result confirmed by reanalysis |
| D1 | Indicates for dual column analyses that the result is reported from column 1 |
| D2 | Indicates for dual column analyses that the result is reported from column 2 |
| E | Concentration exceeds the calibration range |
| K1 | Initial Calibration Blank is above the QC limit and the sample result is ND |
| K2 | Continuing Calibration Blank is above the QC limit and the sample result is ND |
| K3 | Initial Calibration Verification is above the QC limit and the sample result is ND |
| K4 | Continuing Calibration Verification is above the QC limit and the sample result is ND |
| J (or G, I, X) | Estimated value \geq the Method Detection Limit (MDL or DL) and $<$ the Limit of Quantitation (LOQ or RL) |
| P | Concentration difference between the primary and confirmation column $>40\%$. The lower result is reported. |
| P^ | Concentration difference between the primary and confirmation column $>40\%$. The higher result is reported. |
| U | Analyte was not detected at the value indicated |
| V | Concentration difference between the primary and confirmation column $>100\%$. The reporting limit is raised due to this disparity and evident interference. |
| W | The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L. |
| Z | Laboratory Defined - see analysis report |

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.

Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

ATTACHMENT 3
DATA USABILITY SUMMARY REPORT

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Kimberly Semon, Langan Project Engineer

From: Emily Strake, Langan Senior Project Chemist

Date: March 23, 2020

Re: Data Usability Summary Report
For DS Landfill (New York)
February and March 2020 Groundwater Samples
Langan Project No.: 190037501

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of groundwater samples collected in February and March 2020 by Langan Engineering and Environmental Services ("Langan") at the DS Landfill site ("the site"). The samples were analyzed by Eurofins Lancaster Laboratories, Inc. (NYSDOH NELAP registration # 10670) for per- and polyfluoroalkyl substances (PFAS) by the method specified below.

- PFAS by USEPA Method 537M

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

TABLE 1: SAMPLE SUMMARY

| <i>SDG</i> | <i>Lab Sample ID</i> | <i>Client Sample ID</i> | <i>Sample Date</i> | <i>Analytical Parameters</i> |
|-------------------|---------------------------------|------------------------------------|-------------------------------|-------------------------------------|
| THD05 | 1269272 | LF09_022720 | 2/27/2020 | PFAS |
| THD06 | 1271471 | LF13D_030320 | 3/3/2020 | PFAS |
| THD06 | 1271474 | LF16D_030320 | 3/3/2020 | PFAS |
| THD06 | 1271475 | GWDUP01_030320 | 3/3/2020 | PFAS |
| THD06 | 1271476 | FB01_030320 | 3/3/2020 | PFAS |

Validation Overview

This data validation was performed in accordance with the USEPA Contract Laboratory Program "National Functional Guidelines for Organic Superfund Methods Data Review" (EPA-540-R-2017-002, January 2017) and the specifics of the methods employed.

Technical Memorandum

Data Usability Summary Report
For DS Landfill (New York)
February and March 2020 Groundwater Samples
Langan Project No.: 190037501
March 23, 2020 Page 2 of 3

EPA Method 537 was developed and validated for the analysis of finished drinking water from surface water and groundwater sources. Laboratories have modified Method 537 to enable the analysis of groundwater and soil, and to incorporate PFAS analytes not currently addressed by the promulgated method. NYSDOH offers certification for PFOA and PFOS in the drinking water category. Non-potable water and soil certification is not available; however, the method describes acceptable modifications. EPA recommends that modified methods be assessed relative to project goals and data quality objectives.

Validation includes review of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, isotope dilution recoveries, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, field duplicate, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- R** – The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- J** – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- UU** – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- U** – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- NJ** – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Technical Memorandum

Data Usability Summary Report
For DS Landfill (New York)
February and March 2020 Groundwater Samples
Langan Project No.: 190037501
March 23, 2020 Page 3 of 3

TABLE 2: VALIDATOR-APPLIED QUALIFICATION

| <i>Client Sample ID</i> | <i>Analysis</i> | <i>CAS #</i> | <i>Analyte</i> | <i>Validator Qualifier</i> |
|----------------------------|-----------------|--------------|----------------|----------------------------|
| No Qualifications Required | | | | |

MAJOR DEFICIENCIES:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

MINOR DEFICIENCIES:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. No minor deficiencies were identified.

OTHER DEFICIENCIES:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. No other deficiencies were identified.

COMMENTS:

One field duplicate and parent sample pairs were collected and analyzed for all parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than $\pm 1X$ the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 30% for groundwater. The following field duplicate and parent sample results did not meet the precision criteria the precision criteria:

- LF13D_030320 and GWDUP01_030320: none

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All of the data packages met ASP Category B requirements.

All data are considered usable, as qualified, with the exception of the rejected results. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake, CEP
Senior Project Chemist